ICD-11 PERSONALITY DISORDERS: UTILITY AND IMPLICATIONS OF THE NEW MODEL

EDITED BY: Bo Bach, Antonella Somma and Jared Keeley
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Topic Editors:
Bo Bach, Psychiatry Region Zealand, Denmark
Antonella Somma, Vita-Salute San Raffaele University, Italy
Jared Keeley, Virginia Commonwealth University, United States

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EDITORIAL
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Editorial: Entering the Brave New World of ICD-11 Personality Disorder Diagnosis

Bo Bach[1]*, *Antonella Somma*[2] *and Jared W. Keeley*[3]

[1] Center for Personality Disorder Research (CPDR), Psychiatric Research Unit, Slagelse Psychiatric Hospital, Slagelse, Denmark, [2] School of Psychology, Vita-Salute San Raffaele University, Milan, Italy, [3] Psychology Department, Virginia Commonwealth University, Richmond, VA, United States

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Editorial on the Research Topic

Entering the Brave New World of ICD-11 Personality Disorder Diagnosis

INTRODUCTION

WHO member states are soon expected to migrate from the ICD-10 to the ICD-11 Classification of Mental Disorders (1), which must be used for different coding purposes in mental health care including national statistics and billing for health insurance companies (see **Figure 1**). While most diagnoses remain unchanged[1], a fundamentally new approach to the classification of personality disorders (PD) is introduced (1, 2). Rather than diagnosing PDs according to familiar categorical types, the clinician is now requested to focus on general impairments of self- and interpersonal functioning, along with their cognitive, emotional, and behavioral manifestations, which can be classified according to their overall severity (i.e., *Mild Personality Disorder*, *Moderate Personality Disorder*, *Severe Personality Disorder*). Otherwise, the clinician can assign a sub-diagnostic *Personality Difficulty* code (akin to ICD-10 Z73.1 accentuated personality traits). The clinician is also allowed to assign one or more trait domain specifiers that contribute to the individual expression of personality disturbances (i.e., *Negative Affectivity*, *Detachment*, *Dissociality*, *Disinhibition*, *Anankastia*). Finally, with the aim of facilitating the identification of individuals who may respond to established treatments, a *Borderline Pattern specifier* has been included, which is essentially based on the DSM-5 Borderline PD diagnostic criteria. For a more detailed historical account and rationale behind the ICD-11 PD model, we refer to the overview article by Mulder in this special topic collection.

Given this radical shift in diagnostic practice, we now take the opportunity to focus on initial and preliminary findings and considerations related to the utility of the ICD-11 classification of PDs. The 17 articles included in this special topic collection are written by authors from 16 different nations. They address various aspects of this new diagnostic approach including assessment of personality functioning, utility of trait domain specifiers, the inclusion of a separate Anankastia domain, and conceptual considerations with reference to narrative identity, mentalization, and psychodynamic theory. Apart from pointing out key findings of the articles, we will also highlight challenges and opportunities that arise with respect to operationalization, clinical implementation, and future directions.

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Mario Luciano, University of Campania Luigi Vanvitelli, Italy

***Correspondence:**
Bo Bach
bbpn@regionsjaelland.dk

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ICD-10	ICD-11
Personality disorders	**Personality disorder**
60.0 Paranoid	10.Z Severity unspecified
60.1 Schizoid	10.0 Mild
60.2 Dissocial	10.1 Moderate
60.3 Emotionelly unstable	10.2 Severe
60.4 Histrionic	(50.7 Personality difficulty)
60.5 Anankastic	
60.6 Anxious [avoidant]	**Trait domain and pattern specifiers**
60.7 Dependent	11.0 Negative Affectivity
60.8 Other specific type	11.1 Detachment
60.9 Unspecified type	11.2 Dissociality
61 Mixed and other personality disorders	11.3 Disinhibition
	11.4 Anankastia
(73.1 Accentuated personality traits)	
	11.5 Borderline pattern

FIGURE 1 | Migration from ICD-10 to ICD-11 classification of personality disorders.

ASSESSMENT OF DISTURBANCES IN PERSONALITY FUNCTIONING

Hutsebaut et al. show that the Semi-Structured Interview for DSM-5 Personality Functioning (STiP-5.1) may be employed to assess level of PD severity in incarcerated patients with good inter-rater reliability. Gamache et al. demonstrate that the 24-item Self- and Interpersonal Functioning Scale (SIFS) is a useful measure for determining severity of personality pathology based on the ICD-11 model, and showed promising alignment with external criteria. Finally, Clark et al. introduce a set of preliminary self-report scales for ICD-11 personality disorder, covering both personality functioning and trait domains, which generally showed excellent psychometric qualities.

ASPECTS OF PSYCHODYNAMIC THEORY, NARRATIVE IDENTITY, AND MENTALIZATION

Blüml and Doering discuss how the ICD-11 classification of PD severity converges with long-standing psychodynamic conceptualizations of personality pathology, and provide a meaningful common ground for assessment and treatment of PDs. Using an empirical approach, Nazari et al. show that a pan-theoretical approach to personality functioning, such as the ICD-11 classification of PD severity, is well-aligned with the object-relations model of personality functioning. Lind illustrates how narrative identity contributes an indispensable aspect to ICD-11's definition of functioning in aspects of the self that revolves around "stability and coherence of one's sense of identity." Finally, with their empirical findings, Rishede et al. make a compelling proposal about how the capacity for mentalizing is involved in the ICD-11 model of personality functioning, which is deemed particularly relevant for its clinical utility.

TRAIT DOMAIN SPECIFIERS

Riegel et al. overall supported the ability of the 36-item Personality Inventory for DSM-5 and ICD-11 Brief Form Plus (PID5BF+M) to capture the five ICD-11 trait domains in a Czech-Speaking community sample, with the exception of the Disinhibition domain. Pires et al. demonstrate the ability of ICD-11 trait domain specifiers to differentiate patients with PDs from other clinical groups using the PID5BF+M measure. Fang et al. affirm that the ICD-11 trait domains have acceptable psychometric features in a large Chinese sample, including structural validity and continuity with familiar PD types. Gutiérrez et al. show that four trait domains (i.e., Negative affectivity, Detachment, Dissociality/Antagonism, and Disinhibition) are roughly interchangeable across ICD-11 and DSM-5 trait systems, and propose how the trait domains' discriminant validity can be improved. Using a mixed sample from the Kurdistan region, Hemmati et al. demonstrate that the

[2]ICD-11 also introduces a new classification of Autism Spectrum Disorder where the clinician can specify the degree of impairment on the spectrum rather than different types of autism; and clinicians are also allowed to use dimensional specifier scales for symptomatic manifestations of Primary Psychotic Disorders.

ICD-11 trait model outperforms the DSM-5 trait model in terms of factorial model fit within this particular region. Finally, Kerber et al. examine the utility of ICD-11 traits (as operationalized with the PID5BF+M) for predicting treatment outcome and serving as a measure of change.

RATIONALE OF INCLUDING A SEPARATE DOMAIN OF ANANKASTIA?

The ICD-11 PD workgroup decided to include a separate domain of Anankastia rather than focusing on low levels of Disinhibition as in the DSM-5 model. Strengths and weaknesses of this decision have already been discussed in the literature (3–7). Gecaite-Stonciene et al. review the empirical literature on personality features corresponding to the ICD-11 domain of Anankastia, and find this domain to have structural validity and substantial overlap with established traits of obsessive-compulsive PD. Using empirical data, Strus et al. show that the ICD-11 Anankastia domain reveals more distinct features of personality pathology than the DSM-5 domain of Psychoticism. Along the same lines, Clark et al. show that Anankastia is not merely the opposite end of a Disinhibition dimension. Finally, Bastiaens et al. use clinical cases to illustrate how the separate ICD-11 domain of Anankastia contribute with distinct and relevant patient information that is not merely explained by reversed Disinhibition.

CURRENT APPROACHES TO THE OPERATIONALIZATION OF ICD-11 PERSONALITY DISORDER FEATURES

Clinicians across all WHO member countries should be able to diagnose a PD using the freely accessible ICD-11 Clinical Descriptions and Diagnostic Guidelines (1) *per se* without having to use additional instruments or measures. Thus, it should be doable for practitioners to determine PD severity based on clinical observations or other available material. Nevertheless, standardized instruments or measures are often indispensable for ensuring sufficient reliability.

The international community of researchers and clinicians may consider using a range of instruments of which some are specifically developed for capturing the fullness of ICD-11 Personality Disorders and Related Traits. Some of these measures and instruments were also applied in the 17 studies of this special topic collection.

For the overall assessment of PD severity, researchers and clinicians may use the 14-item Personality Disorder Severity-ICD-11 (PDS-ICD-11) scale (8), which is currently being adapted to a clinician-rating form. As highlighted in this special topic, a preliminary tool by Clark et al. may also be used to measure specific ICD-11 features of self- and interpersonal functioning by means of 65 designated items. In comparison, the STiP 5.1 structured interview used by Hutsebaut et al., the 24-item SIFS measure used by Gamache et al., and the 80-item LPFS-SF measure used by Nazari et al. may be employed to capture more general features of self- and interpersonal functioning that are relevant but not specific for the ICD-11 model. Nevertheless, of the aforementioned instruments of PD severity, only the PDS-ICD-11 scale (8) seems to account for emotional, cognitive, and behavioral manifestations, which are used in the ICD-11 to determine PD severity with respect to self-harm, reality testing (e.g., psychotic-like perceptions), and risk of harm.

For the assessment of trait domain specifiers, researchers and clinicians may consider using the new scales developed by Clark et al. to capture the specified features of ICD-11 trait domains. Practitioners may also employ the 60-item Personality Inventory for ICD-11 (PiCD) (9–13) as done in the studies by Gutiérrez et al. and Strus et al. Notably, the PiCD is also available as an informant-report form (4, 14) aimed at clinicians or relatives who know the patient well. The 121-item Five-Factor Inventory for ICD-11 (FFiCD) (15) is available for practitioners who desire a more fine-granted portrait of their patient in terms of 20 facets and 47 nuances. Moreover, the more feasible 17-item Personality Assessment Questionnaire for ICD-11 personality trait domains (PAQ-11) (16) may be particularly useful for research purposes and clinical screening.

In addition to these ICD-11-specific measures, empirically validated algorithms for the Personality Inventory for DSM-5 (PID-5) may also be used to capture the ICD-11 traits (17, 18), as done in the studies by Fang et al. and Hemmati et al. Finally, as shown in the studies by Bastiaens et al., Kerber et al., Pires et al., and Riegel et al., the 36-item PID5BF+M can be used measure essential features of both ICD-11 and DSM-5 trait domains including 18 subfacets (3, 19).

FUTURE DIRECTIONS IN CLINICAL IMPLEMENTATION AND RESEARCH

Extensive knowledge is already available about the clinical utility of PD severity and dimensional assessment in general (20–22), but we only have sparse information about the specific ICD-11 definition of personality dysfunction (23). Based on comparable indices of PD severity, we expect that the introduction of the ICD-11 model may help in clinical decision making including relevant allocation of treatment resources (e.g., length, type, and intensity of treatment) (21, 24). Such an approach to allocation of resources may, if successful, help ensure treatment for those who need it the most rather than exclusively basing such decisions on individual practitioners' opinions or ideas. More studies are also needed to determine the prognostic value of classifying patients according to severity.

It also seems highly relevant to provide clinical guidelines for trait domain specifiers (in combination with the severity classification) in order to assist individualized case formulation, treatment planning, and intervention. Initial research suggests that such aspects of the ICD-11 classification's clinical utility are satisfactorily supported (21, 25–28).

Finally, we acknowledge the inclusion of a borderline pattern specifier as a preliminary pragmatic solution to divergent positions, which also may ease the transition for patients who have already been granted support or treatment based on a borderline diagnosis. Yet, preliminary research suggests that

global severity of personality dysfunction substantially accounts for the variance described by Borderline PD (29–32). The ICD-11 classification of PD severity may specifically capture borderline features such as maladaptive identity functioning, poor emotion regulation, impaired reality testing under stress, and risk of harm to self (8). In addition, clinical research and meta-analytic evidence suggest that trait domains of Negative Affectivity (e.g., emotional lability), Disinhibition (e.g., impulsivity), and Dissociality (e.g., aggression) elucidate the heterogeneity of Borderline PD (33, 34).

AUTHOR CONTRIBUTIONS

BB wrote the first draft of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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OPINION
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ICD-11 Personality Disorder: The Indispensable Turn to Narrative Identity

*Majse Lind**

Department of Psychology, University of Florida, Gainesville, FL, United States

Keywords: ICD-11, narrative identity, autobiographical reasoning, personality disorder, treatment

ICD-11 PERSONALITY DISORDER: THE INDISPENSABLE NARRATIVE TURN

The field of personality disorders (PD) is taking an important step away from a categorical approach by inviting a dimensional understanding of conceptualizing and diagnosing manifestations of personality pathology (1). This means that, in the long awaited 11th revision of the International Classification of Diseases (ICD-11), the core of PD is considered on a spectrum of intra- and interpersonal dysfunctions (2). Let me begin this paper by declaring my sympathy for the dimensional model. I do, however, encourage this shift to incorporate an aspect of (maladaptive) personality that is gaining momentum in PD research—a person's *narrative identity*. In the following, I illustrate why narrative identity contributes with an indispensable aspect to ICD-11's self-function that revolves around "stability and coherence of one's sense of identity" (1). For additional and more thorough arguments on this matter see also Lind, Dunlop and Sharp (under review).

NARRATIVE IDENTITY: THE TEMPORALLY COHERENT SELF

Narrative identity is the internal and dynamic story of a person's life (3). As individuals are living unique lives, each has a unique story to tell. Narrative identity (i.e., the self as author) constitutes the most unique aspect of a person's personality (4) and conveys the innermost perspective of personhood relative to a shared-by-many trait profile (i.e., the self as actor) and general social-cognitive abilities [i.e., the self as agent; (5)].

Narrative identity helps us understand and express to others who we once were, who we are today, and who we may become in the future (5) and therefore affirms us with a sense of self-continuity (i.e., *coherence*) and *stability* that, through time and place, we continue to stay the same person (4). The emergence of a coherent narrative identity occurs in adolescence, as these individuals are faced with the developmental task to form a mature identity (6). Narrative identity emerges as a final, organizing element of personality after traits and social-cognitive abilities are established (3).

The emergence of *Autobiographical Reasoning* is a crucial cognitive tool conveying the competence to construct global coherence in the story (7). Autobiographical reasoning is the underlying reflective process in which past events are interpreted, organized, and evaluated to construct temporally, culturally, causally, and thematically coherent accounts of a person's life (8). Temporal coherence refers to the understanding of how events are timely related in the life story and is, at least in Western countries, typically expressed as a chronological order of events (8). Cultural coherence refers to the ability to integrate normative cultural life events in the story [e.g., getting a job and having children; (9)].

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Edited by:
Bo Bach,
Psychiatry Region Zealand, Denmark

Reviewed by:
Tilmann Habermas,
Goethe University Frankfurt, Germany
Jefferson Singer,
Connecticut College, United States

***Correspondence:**
Majse Lind
mlind@ufl.edu

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Causal coherence encompasses the ability to create meaningful connections between events and periods across the life story and how events have contributed to both change and/or stability within the person. Finally, thematic coherence relates to the ability to establish thematic links across a person's life. While causal- and thematic coherence are more sophisticated processes of coherence beginning to emerge in mid to late adolescence, autobiographical reasoning related to temporal and cultural coherence has an earlier starting point (7, 8).

NARRATIVE IDENTITY AS A VITAL SELF-FUNCTION WITHIN ICD-11

Autobiographical reasoning provides nuance to conceptualizing and assessing "stability and coherence of one's sense of identity" within ICD-11 (1) by tackling coherence in terms of at least four distinct dimensions (i.e., chronological, cultural, causal, and thematic), while also providing an indicator of *global coherence* (8). With diminished autobiographical reasoning, a person's narrative identity appears disorganized and fragmented. A recent systematic review [see (10)] based on the last decade's studies on PD and narrative identity indicates that a disturbed autobiographical reasoning in people manifesting PD could play a key role in inducing a more incoherent temporal sense of self [i.e., chronological, cultural, causal, and thematic; (8)]. Note that the majority of these studies are based on borderline PD (BPD). That is, adults with BPD [e.g., (11–13)] construct narrative identities that are less chronologically coherent (i.e., lack orientation and structure) compared to control participants without BPD and people with OCD. Associations have also been found between elevated BPD features in adolescents and less chronological coherent narratives (14). Adults with BPD construct less normative narratives (12) compared to a community sample and people with OCD indicating impoverished cultural coherence in BPD. Adler and colleagues (11) showed negative associations between BPD and the ability to link stories to the person's larger sense of self when compared to a matched control group without BPD and Lind and colleagues found somewhat complex but overly negative causal connections between stories and between stories and the self in people with PD compared to a matched control group without PD pathology (15, 16). Furthermore, prominent narrative themes are present, however problematic, in both adults and adolescents manifesting PD. That is, for those with PD, narrative identity is dominated by themes of thwarted agency (stories of defeat, loss of control, victimization, failures) and strong needs for communion (e.g., belongingness and love) that are unfulfilled [e.g., interpersonal disappointments, betrayal, loneliness; e.g., (11, 15, 16, Lind et al., under review)]. A potential fifth and distinct aspect of coherence, engrained in the attachment literature (17, 18), involves inconsistency (e.g., contradictions) and a lack of plausibility of the narratives (19) and has been associated with, at least, borderline PD [e.g., (20)]. To recap, people manifesting PD show problematic autobiographical reasoning, reflected in diverse types of thwarted coherence. Adolescents manifesting BPD show reduced temporal coherence (14) as well as thematic disturbances related to diminished themes of communion fulfillment and particularly agency (Lind et al., under review) indicating that they struggle with both developmentally early and more sophisticated autobiographical reasoning (8).

DISCUSSION

Narrative Identity as a Marker of Self-Function in ICD-11

In ICD-11, aspects of self-function are evaluated on a severity scale when conceptualizing and diagnosing PD. Autobiographical reasoning in narrative identity could be integrated in a similar way, to nuance the coherence aspect of the self-function (see **Table 1** for a tentative suggestion). Moving forward, it will be crucial to identify clear cut-off points (i.e., narrative markers) to determine when the autobiographical reasoning converts from being adaptive to mildly-severely disturbed. Lind, Thomsen and colleagues (16) showed that differences in narrative identity predicted group membership (PD vs. control) even after controlling for depressive symptoms—an important first step. Since associations have been shown between inpatient adolescents with PD features and problematic chronological and thematic coherence [(14), Lind et al., under review], autobiographical reasoning could be a critical precursor of full-blown PD together with other identity aspects (22, 23). Because narrative chronology emerges earlier in development than thematic coherence, the former may be used as a more robust narrative marker of early on-set of maladaptive development. Future research should also clearly map out the unique aspects of autobiographical reasoning related to PD and those that might tap into a general *p* factor (24).

Assessment of Autobiographical Reasoning in ICD-11

Narrative identity is typically assessed using the Life Story Interview (25). This semi-structured interview provides rich material on the person's own interpretation on the self and the lived life. Narrative characteristics such as autobiographical reasoning are then assessed using previously validated coding systems. Some crucial aspects must, however, be considered before integrating existing narrative identity assessment in the context of PD. First, the LSI prompts for a prototypical life story and narration in Western countries. It may not adequately capture the normative reasoning and story-telling in other parts of the world, in which some adjustment will be required. Second, autobiographical reasoning covers a niche of personally significant reasoning distinctive from general cognitive difficulties. For example, the disturbances related to autobiographical reasoning in PD were evident even when the control group considered was matched on education [e.g., (11, 15, 16)]. Finally, existing assessment is based on the typically developing personality and, while researchers have started to create coding systems from a clinical stance (e.g., Lind and Dunlop, unpublished coding manual), more is needed to accurately assess personality (dys)functioning within ICD-11. Echoing Hoopwood (26), clinical and basic personality

TABLE 1 | Tentative "Cross Walk" for level of personality functioning focusing on autobiographical reasoning within narrative identity.

Domains	None	Mild	Moderate	Severe
Diagnosing	The autobiographical reasoning is well-functioning: Stories are chronologically meaningful (e.g., located in time and place), grounded in culture (i.e., inclusion and accurate timing of normative life events). Meaningful links are created between events and between events and the self. These links are predominantly positive. Themes are identified across the lifespan and encompass elevated agency and communion	Some areas of autobiographical reasoning may be affected. For example, stories could be chronologically and culturally coherent, but the causal connections might be predominantly negative or absent in certain parts of the story. Some themes are created across the lifespan, however, they may be characterized by thwarted agency and communion	Multiple areas of autobiographical reasoning are affected. For example, stories might be chronologically coherent (e.g., located in time and place) but less culturally grounded, and with few causal connections that are predominantly negative. The themes that are created are maladaptive and encompass thwarted agency and communion	Autobiographical reasoning is severely disturbed. For example, stories may be severely disorganized and culturally detached. The causal connections are either absent or seriously negative. Thematic connections are either absent or encompass themes of severe thwarted agency and communion
Treatment recommendation	Treatment focusing on repairing autobiographical reasoning is not recommended	Less structured and less intense therapy focusing on the areas of autobiographical reasoning that might be disturbed, for example in a group-based setting or/and by using a flexible narrative repair guide (Thomsen et al., under review)	Moderately structured therapy that incorporates the multiple areas of disturbed autobiographical reasoning in the narrative identity. Incorporating work on narrative identity may also strengthen the alliance that is often threatened at this stage. Any narrative tools should be adjusted to provide moderate structure (Thomsen et al., under review)	Highly structured treatment settings with clear boundaries when working on autobiographical reasoning that is severely disturbed. While a focus on a person's narrative identity may strengthen the working alliance it may be important to work on how autobiographical reasoning is nested within other areas of dysfunction and paying attention to suicidal risks

Inspired by Bach and First (1), Bach and Simonsen (21), and the ICD-11 Clinical Descriptions and Diagnostic Guidelines for Personality Disorders.

psychologists interact with each other less than they should. This would be a golden opportunity to do so, especially since no official instrument yet exists assessing self- and interpersonal functioning in ICD-11 [e.g., (1, 21)]. In DSM-5's Alternative Model for Personality Disorders [e.g., (27)], identity is evaluated based on the subdomains of self-differentiation, self-esteem, and emotional range and regulation and do not adequately capture the coherent sense of self as it is articulated in ICD-11. As such, adopting existing assessment from DSM-5 may be less than ideal if the temporal aspect of the self should be adequately integrated within forthcoming measurements.

Both written (28) and video-material (29) of the LSI have been used to successfully assess levels of self-functioning in community samples whereas the other-function (e.g., mentalization) were more challenging to assess. Recently, a modified LSI version was used to assess people with BPD's vicarious life story of a parent. That is, the patients were asked to tell their mother or father's life story—to put themselves in their parent's shoes and elaborate and reflect on this story from the parent's perspective (Lind et al., in preparation). Aspects of autobiographical reasoning (i.e., a temporal other- reasoning) and meta-cognition (30), a concept related to mentalization, were successfully assessed. The vicarious perspective (31) could be a fruitful area for future assessment of other-functioning in ICD-11.

Narrative Identity and Treatment: Implications for ICD-11

Prominent researchers in the field have suggested that the severity of personality functioning can be used as a decision tool to determine the optimal treatment and treatment intensity in a "personalized medicine manner" (22). Given the importance of a coherent identity in ICD-11 [e.g., (1)], the narrative identity seems significant. Several prominent researchers and clinicians [e.g., (32–35)] have emphasized the relevance of integrating narrative identity within psychotherapy. In my own research, I stress the importance of implementing narrative identity within treatment of PD [e.g., (10, 14, 15)] and particularly in the context of the dimensional model (Lind et al., under review, see also 27). Bach and Simonsen (21) further suggested that narrative identity could be a potential mechanism of change in therapy, especially for moderate-to-severe personality disorders in the context of ICD-11. Integrating narrative identity within a treatment setting has several advantages: first, it fits within "personalized/narrative medicine" by emphasizing the importance of a person's unique life, and second, it offers an empathic setting in which the therapist is giving voice and ownership to the patient's story creating a unique and vulnerable window into the person's sense of self nurturing epistemic trust [i.e., the willingness to consider new knowledge as trustworthy and relevant to the self: (36)] and building a working alliance with the patient (21). In **Table 1**, I offer tentative suggestions on how autobiographical reasoning can be considered within a therapeutic context and dependent on the severity of functioning in ICD-11. Importantly, the origin and underlying mechanisms of reasoning difficulties are complex and can be interpreted and treated from multiple therapeutic approaches. Together with close colleagues, I have recently developed a narrative repair guide to assist people with mental illness in gaining enhanced insight and more adaptive story telling (Thomsen et al., under review). This guide could be helpful in the context of PD and likely in combination with more cognitive evidence-based treatments. However, approaches

that perceive the reasoning abnormalities as emanating from splitting-based defense mechanisms [e.g., (17, 37)] or mentalizing difficulties (38) endorsing psychodynamic interventions may also be effective. For example, themes of narrative agency were improved in people manifesting PD after psychodynamic therapy (15). That is, the self has been highlighted as a driver of personality functioning [i.e., Criterion A; (39)]. Strengthening autobiographical reasoning (i.e., the self as author) may scaffold a healthy organization of personality regardless of whether these reasoning challenges are interpreted from a more cognitive or psychodynamic perspective.

CONCLUDING REMARKS

In this paper I stress the importance of considering narrative identity and particularly the role of autobiographical reasoning as a marker of self-(dys)function in the context of ICD-11's dimensional model of PD. I highlight implications for therapy as we dive deeper into the new dimensional era.

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ML contributed solely to all aspects of this paper.

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CASE REPORT
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Case Report: Pathological Personality Traits Through the Lens of the ICD-11 Trait Qualifiers and the DSM-5 Section III Trait Model: Two Patients Illustrating the Clinical Utility of a Combined View

Tim Bastiaens[1]*, *Dirk Smits*[2,3] and *Laurence Claes*[2,4]

[1] Department of Diagnostics, University Psychiatric Center KU Leuven, Kortenberg, Belgium, [2] Faculty of Psychology and Educational Sciences, KU Leuven, Leuven, Belgium, [3] Department of Research and Project Management, Odisee University College, Brussels, Belgium, [4] Faculty of Medicine and Health Sciences, University of Antwerp, Antwerp, Belgium

We report on two individuals presenting for treatment as part of everyday clinical practice, comparing their pathological personality traits through the lens of the ICD-11 trait qualifiers and the DSM-5 Section III personality trait model. We compare higher order pathological personality domains and lower order pathological personality trait facets of patient M (diagnosed with borderline personality traits according to DSM-5 Section II), and patient L (diagnosed with obsessive-compulsive personality traits according to DSM-5 Section II) with normative data and with each other. Findings highlight the clinical utility of a ICD-11/DSM-5 combined view, including: (1) the Disinhibition/Anankastia personality domain distinction as advocated in the ICD-11 model, (2) the Psychoticism personality domain as conceptualized in the DSM-5 Section III personality trait model, as well as (3) the use of lower order personality trait facets within each higher order personality domain.

Keywords: personality disorders, personality traits, ICD-11, DSM-5, PID5BF+ M

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Freie Universität Berlin, Germany

***Correspondence:**
Tim Bastiaens
Tim.Bastiaens@upckuleuven.be

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INTRODUCTION

Both the 11th edition of the International Classification of Diseases [ICD-11; (1)] and the fifth edition of the Diagnostic and Statistical Manual [DSM-5; (2)] contain personality pathology models. In DSM-5, two models are represented: a traditional categorical approach in section II, and a dimensional Alternative Model for Personality Disorders (AMPD) in section III. The latter provides a criterion A expressing severity through the Levels of Personality Functioning Scale [LPFS (3), ranging from no impairment (0), over mild (1), moderate (2), severe (3), to extreme (4) impairment], and a criterion B expressing descriptive pathological personality traits. Criterion B is separately referred to as the DSM-5 Trait model and is operationalized through the Personality Inventory for DSM-5 [PID-5; (4)]. In parallel to the AMPD, the ICD-11 also distinguishes between Personality Disorder Severity (ranging from None, over Personality Difficulties, Mild Personality Disorder, Moderate Personality disorder, to Severe Personality Disorder), and descriptive personality trait domains, labeled Qualifiers. In addition, the ICD-11 also contains an optional "borderline pattern qualifier," following the DSM-5 categorical description of borderline personality disorder.

The trait domains defined by both the ICD-11 and the DSM-5 are to a great extent commensurate, as both contain highly similar Negative Affectivity, Detachment, and Disinhibition dimensions. The ICD-11 Dissociality domain further parallels the DSM-5 Antagonism domain, albeit with a stronger focus on dissocial behavior and traits in the former (5). Contrary to the DSM-5 Trait model however, the ICD-11 contains an additional Anankastia domain, representing a Compulsivity dimension that, in the final DSM-5 Section III personality trait model, was subsumed under the Disinhibition domain (4). Contrary to the ICD-11 model, the DSM-5 Section III personality trait model comprises a Psychoticism domain, which in ICD-11 terms is considered part of the syndromal schizophrenia spectrum and thus not conceptualized as a separate personality dimension. Finally, the ICD-11 model does not provide further specifications through the use of personality trait facets, as the DSM-5 Section III model does.

Recent studies have documented the convergent validity of both models (5), but also point to potential shortcomings (6). First, the Disinhibition domain of the DSM-5 Trait model has been known to align more with Antagonism than with Compulsivity (7). Second, contrary to the current ICD-11 model, recent findings strongly advocate the conceptualization of a separate psychoticism personality domain (8). Third, lower-order trait facets, not present in the current ICD-11 model, have been shown to explain variance additional to their higher-order domain (9).

A synchronization of both models could benefit clinical utility (10), in providing more complete diagnostic coverage (11) and allowing for a more person-tailored case conceptualization and subsequent treatment approach. Recently, a measure combining both conceptualizations was developed starting from the item pool of the PID-5 and using ant colony optimization algorithms (12). The resulting Personality Inventory for DSM-5, Brief Form Plus (PID5BF+) was subsequently adapted to also capture trait facets of the ICD-11 Anankastia domain, leading to the Modified Personality Inventory for DSM-5—Brief Form Plus [PID5BF+ M; (6)].

In the current report, we compare the PID5BF+ M higher and lower order personality traits of two treatment-seeking individuals L and M with normative data and to each other. Our aims are to investigate: (1) whether maladaptive trait expressions are useful sources of information for case formulation and treatment planning, (2) whether the Disinhibition/Anankastia personality domain distinction as advocated in the ICD-11 model has clinical utility, (3) whether the Psychoticism trait domain as conceptualized in DSM-5 has clinical utility, and (4) whether the use of lower order personality trait facets has clinical value beyond trait domains.

CASE PRESENTATION

Table 1 summarizes background features of L and M. Both were admitted to an Inpatient Psychiatric Hospital in Belgium, in order to obtain a multidisciplinary assessment of experienced intra- and interpersonal problems. Neither presented with acute psychiatric symptoms at the time of hospital admission. The individual as well as family history of both patients revealed no relevant somatic or mental illnesses or genetic predispositions. M had briefly consulted a psychiatrist four months before current hospitalization on account of experienced moodiness. Three weeks before hospital admission, L had attended two group sessions with the faculty counselor as part of a performance anxiety course she subsequently dropped. Both patients were informed of and agreed to the anonymous use of their assessment data in the current case report through a signed informed consent, in accordance with the CARE guidelines. To further ensure anonymity, life history specifics were substituted by factitious parallel information. As part of hospital policy, the results were discussed at length with each patient upon completion of the assessment, including a presentation of the hypothetical case formulation derived from **Figure 1** and presented in **Figure 2**. Both patients experienced the received feedback as illuminating and helpful, as documented in their electronic patient file. The current case report was approved by the Ethical Committee of the hospital.

TABLE 1 | Descriptive background features of patients L and M.

	L	M
Gender	Female	Female
Age	19 years	20 years
Level of education	High school degree	High school degree
Family and living situation	One younger sister Living with mother and stepdad	Four sisters and two brothers Living with mother Father deceased at K's early age
Current occupation	1st year graduate student in biomedical sciences	Part time job in a second-hand record store

Patient L presented with intermittent outbursts of emotional dysregulated behavior in daily life, manifesting through re-occurring anxiety and suicidal ideation. These outbursts were experienced as impulsive moments of acute emotional turmoil, with an intensity L herself could not fully account for. During the initial conversation, L struck the interviewer as rather docile and ingratiating. The clinical interview further revealed that, according to L, mother and stepdad were very close and supportive but also suffering because of L's problems. Mother in particular was experienced by L as easily overwhelmed and quick to indirectly complain, adhering to a victim-like presentation for which L subsequently felt even more responsible. L further experienced difficulties with her biological father, who left mother at L's birth and who sought reconciliation at patient's eight years of age. Although L felt that he was not very mature and still didn't act much as a responsible parent, she agreed to his persistence on seeing her regularly, because this enabled her to spend time with her paternal grandmother, who, although of old age and thus to some degree frail as well, was L's secure attachment figure. L looked for proximity in peers, by whom she was considered a very friendly, acquiescent

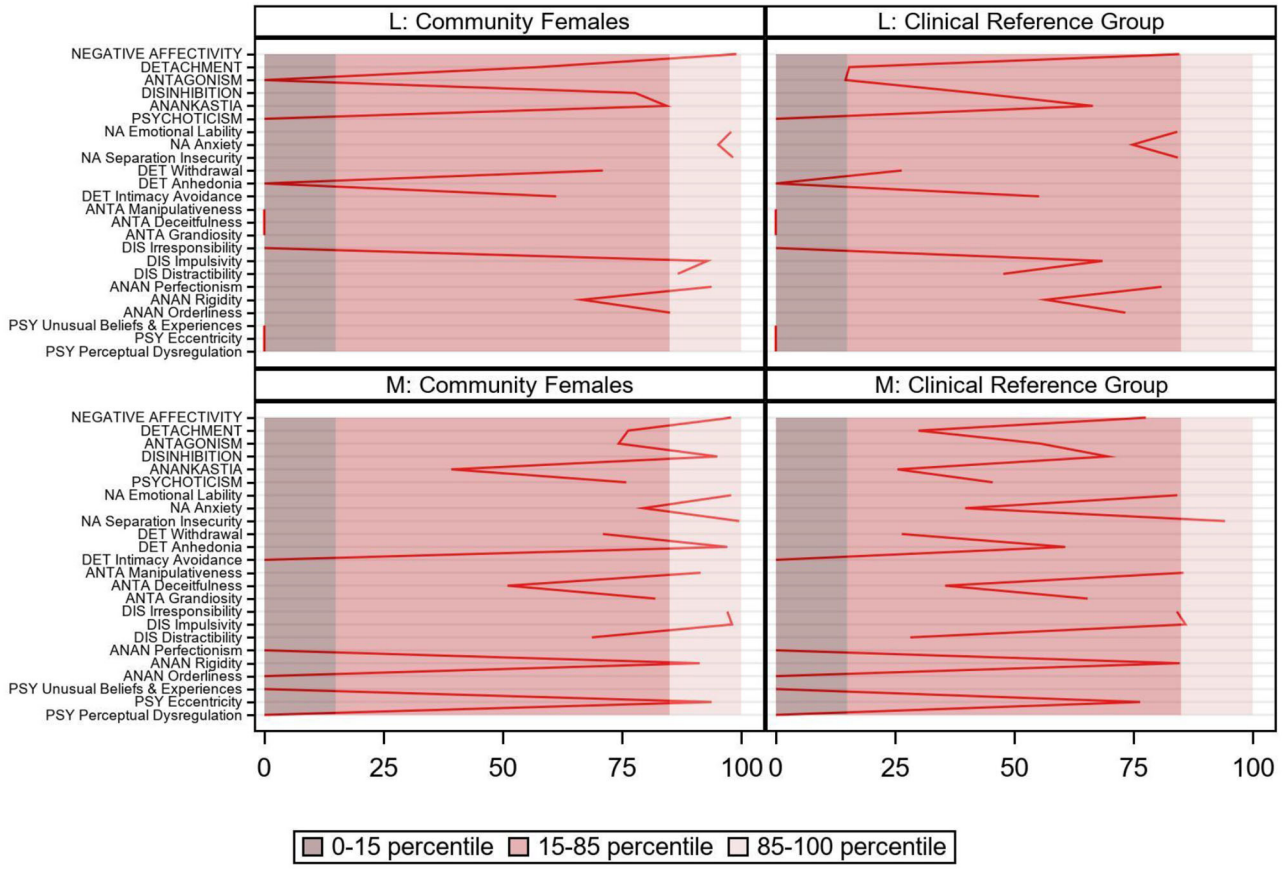

FIGURE 1 | PID5BF+ M pathological personality trait domains and facets for patients L and M, community [$N = 482$; (13)] and clinical [$N = 244$; (7)] reference group.

but cheerful, and upright person, sensitive to the needs and griefs of others. As a methodical individual, she studied hard as ever, but increasingly experienced difficulties meeting higher expectations. L developed an eating disorder for a while. She quit volleyball practice on account of her idea on ruining things for her teammates because of her bad performances—to which her team disagreed. In her postgraduate biomedical studies, L experienced trouble concentrating. She was failing several classes and losing motivation, which contrasted with her orderly and perfectionistic demeanor during high school studies. L had been head-over-heels involved in one romantic relationship, that ended abruptly and left L oscillating between feelings of despair and clinging behavior.

Patient M presented with re-occurring moments of emotional dysregulated behavior in daily life as well, in her case manifesting through anger fits. In the clinical interview, M further stated that she experienced her family situation as rather turbulent and quarrelsome, and resented that her mother did not grant her the financial resources to start a higher education. Her spare time was largely spent as an active member in a youth hangout bar, amongst friends. M stated to have multiple romantic relationships and to be flirtatious with boys out of proclaimed proximity needs. She described rather acquiescent behavior toward female peers, but also admitted to deliberately charming behavior toward boys, to get them to meet her wishes. Her re-occurring moments of emotional dysregulated behavior through anger fits occurred when things didn't go her way and frustration overwhelmed her, mostly occurring in the presence of mother or boyfriends. From the interviewer's first impression, M came across as somewhat whimsical and unconventional, displaying an apathetic laissez-faire attitude and presenting society as unduly denying career opportunities to people like herself. In contrast, she did value her friendships strongly, and was able to sustain part time employment at a second hand record store, where she was considered a bit of a weird one, but was nonetheless quite liked by her two colleagues and boss, despite her frequent tardiness. M described cannabis and alcohol use with peers as escaping as well as hedonistic behavior.

The Semi-structured Interview for DSM-5 Personality Functioning [STiP-5.1; (14)] situated both L and M at a moderate level of impairment in personality functioning according to the DSM-5 Section III criterion A**.** In terms of ICD-11 Personality Disorder Severity, L and M classified as having a Mild Personality Disorder. On the Structured Interview for DSM-5 Section II Personality Disorders [SCID-5-P; (15)], L met four out of the eight criteria for the DSM-5 Section II obsessive-compulsive personality disorder, thereby scoring below the threshold. M met three out of nine criteria for the DSM-5 Section II borderline

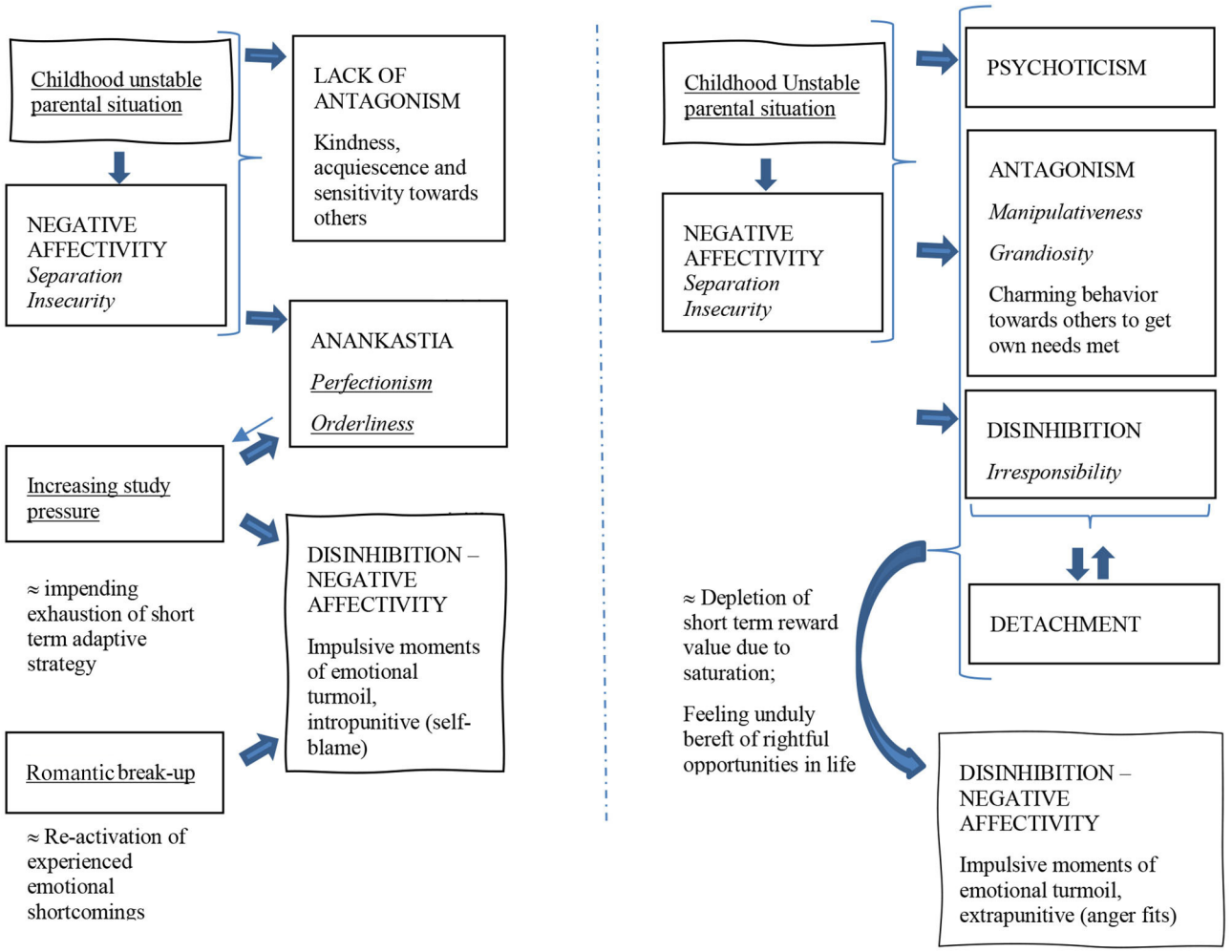

FIGURE 2 | Two possible hypothetical case formulations (left: L, right: M), based on PID5BF+ M domain (capitals) and trait scores (italic) and life history narratives (underscored); thick arrows indicate a further promotion/triggering of given personality traits.

personality disorder, thereby scoring below threshold for the categorical diagnosis as well. Combined with their life history narratives, we expected L to score high on the PID5BF+ M personality trait domains Negative Affectivity and Anankastia, and M to score high on Negative Affectivity and Disinhibition.

DIAGNOSTIC ASSESSMENT

Modified Personality Inventory for DSM-5—Brief Form Plus [PID5BF+ M; (6)]

The PID5BF+ M is a self-report questionnaire that represents a shortened and modified version of the original PID-5. It consists of 36 items and provides six higher order pathological personality trait domains, namely Negative Affectivity, Detachment, Antagonism, Disinhibition, Psychoticism, and Anankastia. Each domain comprises three pathological personality trait facets, listed in **Figure 1** (for example, Negative Affectivity comprises the trait facets Emotional Lability, Anxiety, and Separation Insecurity). Each personality trait facet encompasses two items, scored on a scale from 0 (*not at all true*) to 3 (*entirely true*). The construction process of the PID5BF+ M is described in Kerber et al. (12). Its validity has been documented in 15 countries (6).

RESULTS

Figure 1 shows PID5BF+ M trait domain and facet percentile scores in comparison to the Dutch community reference group. As hypothesized, both patients scored very high on Negative Affectivity (L: pc99 and M: pc97.9), L but not M showed an elevated (pc84.4) Anankastia score, and M (pc95) but not L scored high on Disinhibition. Surprisingly perhaps, L's Disinhibition score was moderately elevated as well (pc77.8). Consistent with their respective life history narrative, L displayed bottom scores on Antagonism and Psychoticism, in contrast to M's above average scores (resp. pc74.3 and pc75.9). On Detachment, M but not L exhibited a moderately elevated score

(pc76.3). Regarding trait facets, some interesting clarifications emerged. For example, M's Detachment domain comprised high Anhedonia (pc97.1) and a bottom score on Intimacy Avoidance, contrasting L's trait facet profile. Both M's and L's Disinhibition domain consisted of high Impulsivity (pc98.1 and pc92.9), but this was supplemented with a high (L: pc97.1) vs. bottom (M) Irresponsibility score. Regarding the Anankastia domain, M showed bottom scores on Perfectionism and on Orderliness, while scoring high on Rigidity (pc91.3). In contrast, L exhibited high Perfectionism (pc93.8) and high Orderliness (pc85.1), while scoring average on Rigidity. Finally, M's above average score on the Psychoticism domain was solely due to a high score on Eccentricity (pc93.8). In comparison to the clinical reference group, M's and L's trait domain and facet scores displayed a very similar pattern, all situated somewhat lower (**Figure 1**).

DISCUSSION

The current clinical case report illustrates how combining the DSM-5 Trait model and the ICD-11 personality trait qualifiers perspective can lead to a better understanding of patients individually, as well as of the similarities and differences between them. Firstly, distinguishing between a Disinhibition and an Anankastia personality domain as advocated in the ICD-11 model, allowed L's Anankastia to come into focus, that in a DSM-5 Trait model view would have been subsumed under the Disinhibition dimension and, as both ICD-11 domains contribute inversely to DSM-5 Section III Disinhibition, would have occluded both L's level of Anankastia as well as her level of Disinhibition. Secondly, the addition of the DSM-5 Psychoticism domain to the ICD-11 model allowed M's Eccentricity, in this case clearly to be conceptualized as a personality trait rather than a part of a syndromal schizophrenia spectrum, to show itself. Thirdly, the unfolding of each higher order personality domain in comprising personality trait facets allowed to conceptualize important differences between both L's and M's elevated Disinhibition domains, with clinically important differences in Irresponsibility. Also, it allowed clarification of M's normatively below average instead of very low Anankastia, as the from the narrative expectedly very low Perfectionism and expectedly very low Orderliness was tempered by high Rigidity, in this case associated with persistence and frustration regarding having things her way.

Integrating PID5 BF+ M results with life history narratives further enables us to formulate hypothetical working models depicting possible functional interactions [(16); **Figure 2**], that can be the starting point of individually tailored therapeutic interventions (17, 18). For L, we could for example think of her unstable parental situation during childhood, leading to heightened separation insecurity, as a context in which she further resorted to acquiescence and strong investment in others in order not to make matters worse. At the same time becoming even more sensitive to internal standards, both morally and in terms of performance, L developed a perfectionism and an inclination toward orderliness leading to an increase of academic pressure. With the romantic break-up triggering a re-activation of experienced emotional shortcomings, L experiences re-occurring outbursts of anxiety and suicidal ideation. From this hypothetical case formulation, targeting L's acute moments of emotional turmoil will imply addressing her inclination toward compulsivity as well her at first glance very adaptive agreeable behavior, as her inclination to deal with unmet emotional needs.

For M, disadvantageous childhood experiences may have led to heightened separation insecurity as well, but in contrast to L's case, fostered compensation mechanisms involving manipulativeness and irresponsibility. Finding solace in experiencing as well as portraying herself as eccentric, M uses alcohol and cannabis as escaping as well as hedonistic behavior. With increasing feelings of staying unduly bereft of life's opportunities as a long term consequence of her strategy, M experiences re-occurring outbursts of anger when things don't go her way on concrete occasions. From this hypothetical case formulation, targeting M's acute moments of emotional turmoil will imply facing up to her hedonistic lifestyle as her long-term dysfunctional coping strategy toward her equally unmet emotional needs.

It is important to note that neither of the presented cases received a PD diagnosis using the categorical diagnostic approach. We used the PID5BF+ M trait model to delineate clinically important personality traits so as to advance our understanding of the how and the why of presenting symptoms, not to unjustly pathologies symptoms that would be deemed subclinical under the DSM-5 Section II classification. For example, L's case formulation allows for an integrated understanding and therapeutic approach that classifying her as having a mood disorder with main concerns related to perfectionism cannot provide for. With the PID5BF+ M as an integration of the DSM-5/ICD-11 trait model, the formal diagnosis of a discrete personality disorder is still dependent upon the patients AMPD Criterion A/ICD-11 Personality Disorder Severity score.

The following limitations need to be considered. First, although the PID5BF+ M represents a solid possible operationalization of the combined ICD-11/DSM-5 Section III model view, the uni- vs. bipolar nature of dimensional scales remains subject of debate (19). Consider for example L's bottom score on Manipulativeness: does this conceptually represent an adaptive absence of manipulativeness, or the presence of a maladaptive gullibility? And in case of the latter, is the trait facet scale able to psychometrically differentiate between both maladaptive extremes on a measurement level? As a second limitation, clinical case reports by definition lack generalizability. However, if general models of personality disturbance have the ambition to claim authority, it is precisely the field of clinical practice that can ultimately test their performance. As a third limitation, the PID5BF+ M does not account for the ICD-11 borderline pattern qualifier. In line with McCabe and Widiger (20) however, we find that the combined ICD-11/DSM-5 trait model is able to adequately account for M's borderline traits. Overall, the

current clinical case report illustrates (1) that maladaptive trait expressions are useful sources of information for case formulation, (2) that the Disinhibition/Anankastia personality domain distinction as advocated in the ICD-11 model has clinical utility, (3) that the Psychoticism trait domain as conceptualized in DSM-5 has clinical utility, and (4) that the use of lower order personality trait facets has clinical value beyond trait domains.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethisch Comité UPC KU Leuven. The patients/participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

AUTHOR CONTRIBUTIONS

TB wrote the manuscript. LC and DS carefully read the text and provided suggestions for improvement. All authors contributed to the article and approved the submitted version.

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Obsessive-Compulsive (Anankastic) Personality Disorder in the ICD-11: A Scoping Review

Julija Gecaite-Stonciene[1], Christine Lochner[2], Clara Marincowitz[2], Naomi A. Fineberg[3] and Dan J. Stein[4]*

[1] *Laboratory of Behavioral Medicine, Neuroscience Institute, Lithuanian University of Health Sciences, Palanga, Lithuania,* [2] *South African Medical Research Council Unit on Risk and Resilience in Mental Disorders, Department of Psychiatry, Stellenbosch University, Stellenbosch, South Africa,* [3] *National Obsessive Compulsive Disorders Specialist Service, Hertfordshire Partnership University National Health Service Foundation Trust, University of Hertfordshire, Hatfield, United Kingdom,* [4] *South African Medical Research Council Unit on Risk and Resilience in Mental Disorders, Department of Psychiatry and Neuroscience Institute, University of Cape Town, Cape Town, South Africa*

Introduction: With the shift from a categorical to a dimensional model, ICD-11 has made substantial changes to the diagnosis of personality disorders (PDs), including obsessive-compulsive (anankastic) personality disorder (OCPD). The ICD-11 PD model proposes a single diagnosis of PD with specifications regarding severity and domains. However, a systematic overview of ICD-11 anankastia is lacking. In this review we address the reformulation of the OCPD diagnosis in the ICD-11, and draw comparisons with the DSM-5, with a particular focus on diagnostic validity and clinical utility. We hypothesized that the ICD-11 PD model provides a diagnostically valid and clinically useful approach to OCPD, with specific emphasis on the anankastia domain as the primary trait qualifier.

Methods: Literature published from 2010 to 2020 was systematically searched using the PubMed/MEDLINE, PsychInfo, Cochrane, and Web of Sciences search engines, in order to find all articles that addressed ICD-11 anankastia. Relevant articles were collated, and themes of these articles subsequently extracted.

Results: Out of the 264 publications identified, 19 articles were included in this review. Four themes were identified, namely (a) overlap of DSM-5 OCPD with the ICD-11 PD model, (b) the factorial structure of the ICD-11 PD model with respect to the anankastia domain, (c) the clinical utility of the ICD-11 PD model, and (d) comparison of the ICD-11 PD model of anankastia with the DSM-5 alternative model for OCPD.

Conclusions: The ICD-11 anankastia domain overlaps with DSM-5 OCPD traits, and the factor analyses of the ICD-11 PD model further support the diagnostic validity of this domain. There is some support for the clinical utility of the ICD-11 PD model of anankastia but further studies are needed, including of its relationship to obsessive-compulsive and related disorders.

Keywords: ICD-11, personality disorders, obsessive-compulsive personality, anankastic personality, anankastia, DSM-5, diagnosis and classification, domains

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****Correspondence:***
Julija Gecaite-Stonciene
julija.gecaite-stonciene@lsmu.lt

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INTRODUCTION

Obsessive-compulsive personality disorder (OCPD) in the *Diagnostic and Statistical Manual of Mental Disorders* (5th edition, DSM-5) (1) or anankastic personality disorder in the *International Classification of Diseases* (10th edition, ICD-10) (2), is characterized by an excessive preoccupation with orderliness, mental and interpersonal control, and perfectionism at the expense of efficiency, openness and flexibility. As with other personality disorders (PDs), this maladaptive pattern has an onset in adolescence or early adulthood, is stable over time, and markedly affects functioning resulting in significant distress and impairment (1). Even though obsessive-compulsive personality traits affect around 2–7% of the healthy population (3–6) and 23–26% of clinical populations (7, 8), OCPD is still a relatively under-diagnosed and under-researched disorder (9, 10).

The operationalization of PDs, including OCPD, in both the DSM and the ICD taxonomies, has been a subject of debate (9, 11, 12). In particular, the categorical model for PD diagnosis has been criticized, with some arguing that this approach lacks diagnostic validity and has limited clinical utility (13). Criticism regarding diagnostic validity emphasizes that personality traits are dimensional (rather than categorical), the high comorbidity of PDs in general, and the heterogeneity of OCPD in particular. The heterogeneity of OCPD is emphasized by data which fail to find specific hallmark factors underlying DSM-5 OCPD. Criticism regarding clinical utility emphasizes that inclusion of PDs in DSM-III and the ICD-10 has not diminished the substantial underdiagnosis of these conditions (9, 13–19).

A proposal to move to a dimensional conceptualization of PD, including OCPD, was put forward by the DSM-5 Personality and Personality Disorders Work Group (20), which outlined an Alternative Model of PD (AMPD). However, the final DSM-5 decision was to retain the categorical model of PDs, and the AMPD was confined to Section III of the DSM-5 for further research (1). While the DSM-5 AMPD does not include a domain for obsessive-compulsive personality traits, it retains six categories of PDs, one of which is OCPD (17, 21, 22). The compulsivity domain was not included in the final model, as this was considered to be an diametrically opposite trait to the disinhibition domain (20).

In contrast, ICD-11 has moved away from a categorical framework of PDs to an entirely dimensional system (23) without categorical PD diagnoses. According to the ICD-11 guidelines, the clinician first determines whether the individual has a PD (24). Thereafter the level of severity is assessed, and labeled as mild, moderate or severe (24). In the final step, the maladaptive personality is described in terms of the trait qualifiers including anankastia (24), which is characterized as "a narrow focus on one's rigid standard of perfection and of right and wrong" as well as controlling behavior regarding oneself, others and situations in order to "ensure conformity to these standards" (25). The ICD-11 PD model and the DSM-5 AMPD have a great deal in common, including agreeing on four out of five trait domains (i.e., negative affect, detachment, dissociality/antagonism, and disinhibition but not anankastia).

A number of publications have addressed the ICD-11 conceptualization of PDs in general, and a number of studies have focused on the ICD-11 domain of anankastia in particular. However, we are not aware of any review that has synthesized the literature on ICD-11 anankastia. Given the recency of this conceptualization, we chose to conduct a scoping review to assess the existing body of literature and identify knowledge gaps (26).

The current scoping review aims to provide a comprehensive overview and synthesis of empirical research on ICD-11 anankastia to date, with a particular focus on diagnostic validity and clinical utility. Due to the limited number of studies, the final pool of selected literature was not subjected to restrictions in terms of study population, intervention type, comparators or outcomes of interest (PICO). Our hypothesis was that the ICD-11 PD model is a diagnostically valid and clinically useful approach to OCPD.

METHODS

A systematic search was conducted using PubMed/MEDLINE, PsycInfo, Cochrane, and Web of Sciences electronic databases in order to identify relevant peer-reviewed manuscripts published from January 2010 to October 2020. The search was undertaken in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) (27). We used the following search strings: (1) ICD-11 AND personality disorder* AND ("obsessive compulsive personality" OR anankastia OR "anankastic personality"); (2) ICD-11 AND "personality disorder*" AND trait qualifier*; (3) ICD-11 AND "personality disorder*" AND domain* (**Figure 1**).

Studies were considered for inclusion if they addressed the classification of OCPD within the ICD-11 PD model. This included studies of the ICD-11 anankastia domain. There were no restrictions to inclusion criteria regarding country of origin, sample size, or PICO due to the relative scarcity of publications relevant to the study hypothesis. Due to the nature of the hypothesis, selection of studies was limited to those with a solely empirical research design (i.e., descriptive, correlational or experimental studies). Publications that were not available in English (29–32) were excluded. Relevant articles were collated, and themes of these articles were extracted. A methodological quality check was completed on the publications that were included in the final pool based on methodology checklists of NICE Clinical Guidelines (33, 34).

RESULTS

The search yielded 19 studies for review (**Table 1**), all of which had adequate methodological quality, as defined by NICE checklist (33). Based on these studies, four themes were identified, namely (a) overlap of DSM-5 OCPD with the ICD-11 PD model, (b) the factorial structure of the ICD-11 PD model with respect to the anankastia domain, (c) the clinical utility of the ICD-11 PD model, and (d) comparison of the ICD-11 PD model of anankastia with the DSM-5 alternative model for OCPD.

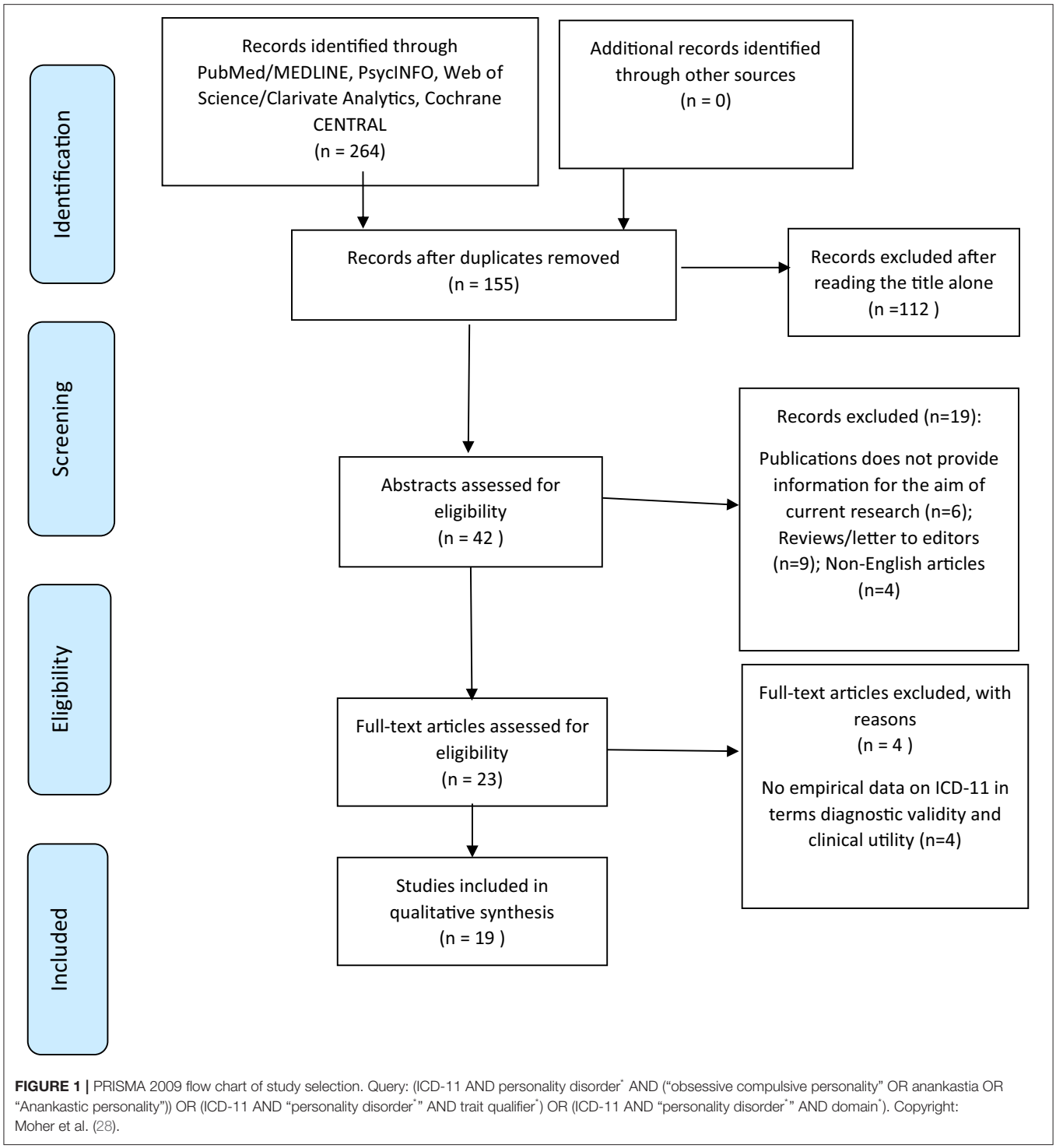

FIGURE 1 | PRISMA 2009 flow chart of study selection. Query: (ICD-11 AND personality disorder* AND ("obsessive compulsive personality" OR anankastia OR "Anankastic personality")) OR (ICD-11 AND "personality disorder*" AND trait qualifier*) OR (ICD-11 AND "personality disorder*" AND domain*). Copyright: Moher et al. (28).

Most of the studies (n =11) were published in 2020. Eight (8) studies were conducted in Europe, six in North America, three in Asia, one in Africa and one in New Zealand. Overall, nine studies were conducted on a clinical psychiatry sample, eight were conducted in the general population, and two studies were undertaken in both of these groups. Sample size ranged from 124 in a study of patients with PD (35) to 2,522 in a study of participants in a community sample (44). Most of the studies (n = 18) addressed the question of diagnostic validity, while a single study examined the clinical utility of the ICD-11 PD model.

Overlap of DSM-5 OCPD With the ICD-11 PD Model

Five (5) empirical studies investigated the overlap of DSM-5 OCPD with ICD-11 PD domains (17, 21, 22, 35, 39). The

TABLE 1 | Characteristics of selected studies.

References	Country	Study design	Study population (sample size, *n*)	Proportion of women [*n* (%)]	Mean age ± standard deviation	PD assessment	Main results regarding the ICD-11 classification (OCPD or anankastia domain)
Kim et al. (35)	South Korea	Field trial	Patients with PD ($n = 124$)	74 (59.68%)	30.7 ± 11.82	PAS SAPAS-SR NEO-FFI	The patients with OCPD were mainly distributed in the anankastic-obsessional domain; Highest predictive accuracy found in the anankastic domain; Anankastic domain showed good discriminant validity Convergent-divergent validities were not supported for the anankastic domain
Mulder et al. (22)	New Zealand	Cross-sectional (from five randomized control trials)	Psychiatric patients diagnosed with major depression ($n = 606$)	378 (62.4%)	34.2 ± 11.1	SCID II ICD-11 PD domains assessed by two individual clinicians	Anankastic domain mainly consists of all eight criteria for the OCPD (DSM-5). Criterion 7 (miserliness) is relatively weakly related to this domain; One criterion of Avoidant PD (reluctance to take risks) fell under anankastia domain.
Bach et al. (36)	Denmark	Cross-sectional	Derivation sample ($n = 1,541$): Psychiatric out-patients ($n = 615$) Community sample ($n = 925$) Replication sample –undergraduate students ($n = 637$)	1,248 (80.9 %) 357 (56%)	32.64±12.04 19.36±1.64	PID-5	Acceptable discriminant validity for anankastia domain in replication sample; Domain of anankastia emerged from negative affectivity (facet perseveration) and disinhibition (facets rigid perfectionism and distractibility) domains of the AMPD DSM-5;
Lotfi et al. (37)	Iran	Cross-sectional	Community sample ($n = 285$)	188 (66%)	30 ± 8.29	PID-5	Anankastia domain emerged from negative affectivity (facets perseveration, hostility) and disinhibition (facet rigid perfectionism) domains of the AMPD DSM-5.
Bach et al. (17)	Denmark	Cross-sectional	Psychiatric outpatients ($n = 226$)	131 (58%)	32.54 ± 10.02	SCID-II PID-5	ICD-11 model was superior to the DSM-5 AMPD in capturing OCPD; Anankastia domain was specified using facets of the DSM-5 AMPD rigid perfectionism (domain *low* Disinhibition) and perseveration (domain Negative affectivity) The ICD-11 domain of anankastia showed the strongest prediction of OCPD; OCPD was also predicted by domains of negative affectivity and low disinhibition.
Oltmanns et al. (38)	US	Cross-sectional	Clinical sample: Participants with previous or current mental health problems Study I: $n = 259$ Study II: $n = 285$	176 (68%) 188 (66%)	35.7 ± 11.0 35.1 ± 10.9	PiCD EPQ-R 5-DPT CAT-PD-SF SCID-II	Satisfactory discriminant validity of anankastia domain was found; Anankastic domain converged negatively with disinhibition domain at a medium effect size.
Pesic et al. (39)	Serbia	Cross-sectional	Psychiatric patients with diagnosed PD ($n = 223$)	149 (67%)	37.6 ± 13	Five ICD-11 PD domains retrieved from computed factor analysis	-Anankastic domain mainly consists of all eight criteria for OCPD (DSM-5)

(Continued)

TABLE 1 | Continued

References	Country	Study design	Study population (sample size, *n*)	Proportion of women [*n* (%)]	Mean age ± standard deviation	PD assessment	Main results regarding the ICD-11 classification (OCPD or anankastia domain)
McCabe et al. (40)	US	Cross-sectional	Community sample (n = 300)	162 (54%)	36.51 ± 10.36	SASPD PiCD PID-5 LPFS-BF BPS MAPP WISPI	Excellent convergent validity for anankastia domain Anankastia domain was associated with facets of rigid perfectionism (domain disinhibition) and perseveration (domain negative affectivity) from DSM-5 AMPD; Bipolar anankastia and disinhibition factor remained, suggesting anankastia and disinhibition are opposite to one another
Oltmanns et al. (41)	US	Cross-sectional	Clinical sample: Participants with previous or current mental health problems Study I: n = 311 Study II: n = 148 Study III: n = 301	205 (66%) 92 (62%) 184 (61%)	36.6 ± 12.0 35.6 ± 12.5 36.5 ± 10.7	FFiCD PiCD PID-5 FFMPD Pool-NEO-120 FFF FFMRF	Recommendation of four factors, where anankastia and disinhibition formed a single bipolar factor. The FFiCD facets of perfectionism, inflexibility, and workaholism loaded with the ICD-11 anankastia.
Carnovale et al. (42)	Canada	Cross-sectional	Student sample (n = 518)	366 (70.66%)	19.26 ± 3.05	PiCD MMPI-2-RF	Suggestion of 4-factor solution, with the one factor representing a bipolar continuum of Anankastia and Disinhibition. The largest absolute correlation was between disinhibition and anankastia scores, the smallest was between dissocial and anankastia scores; Anankastia domain showed low discriminant validity
Bach et al. (43)	Denmark	Cross-sectional	Psychiatric patients (n = 238)	174 (73%)	33.21 ± 15.48	PiCD-IRF	Two possible factorial solutions: 4-factor model included bipolar domain of anankastia/disinhibiton, while 5-factor solution included two separate unipolar domains of anankastia and disinhibition; Discriminant validity of anankastia domain satisfactory.
Sellbom et al. (21)	Canada	Cross-sectional	Psychiatric outpatients (n = 343)	172 (50.2%)	38.94 ± 10.17	PID-5 SCID-II-PQ MMPI-2-RF NEO PI-R	Anankastia was most strongly correlated with OCPD and was the best predictor of OCPD Anankastia domain was linked with facets of rigid perfectionism (domain disinhibition) and perseveration (domain negative affectivity) from AMPD DSM-5;
Gutierrez et al. (44)	Spain	Cross-sectional	Community sample (n = 2,522) Clinical sample (n = 797)	2,522 (59.2%) 558 (70.7%)	39.8 ± 19.0 41.7 ± 13.6	PiCD SASPD	Found 4 factor-solution, where anankastia and disinhibition formed a single bipolar factor.
Somma et al. (45)	Italy	Cross-sectional	Community sample (N = 1,122)	867 (77.3%)	31.94 ± 12.44	PiCD FFMPI BFI PID-5-SF MDPF	Found 4 factor-solution, where anankastia and disinhibition formed a single bipolar factor.

(Continued)

TABLE 1 | Continued

References	Country	Study design	Study population (sample size, *n*)	Proportion of women [*n* (%)]	Mean age ± standard deviation	PD assessment	Main results regarding the ICD-11 classification (OCPD or anankastia domain)
Kim et al. (46)	South Korea	Cross-sectional	Female students ($n = 334$) Psychiatric out-patients ($n = 75$) *A subset of the sample ($n = 210$):* Psychiatric patients ($n = 75$) Female students ($n = 135$)	337 (100 %) 49 (65.33%) 135 (100 %) 49 (65.33%)	23.7 ± 7.3 25.8 ± 9.5	PAQ-11 PBQ-SF NEO-FFI SAPAS-SR PID-5 SF	Found 5 factor-solution, where anankastia and disinhibition formed separate unipolar domains; Anankastia domain was correlated with obsessive–compulsive personality belief
Tarescavage et al. (47)	US	Cross-sectional	Student sample ($n = 328$)	178 (54.27%)	19.3 ± 1.4	PiCD MMPI-2-RF CAT-PD-SF	Found 4 factor-solution, where anankastia and disinhibition formed a single bipolar factor.
Aluja et al. (48)	Spain	Cross-sectional	Community sample ($n = 1,229$)	651 (52.97%)	39.63 ± 17.81	ZKA-PQ/SF PID-5-SF PiCD	Found 4 factor-solution, where anankastia and disinhibition formed a single bipolar factor.
Bach and Abiddine (49)	Algeria	Cross-sectional	Student sample ($n = 638$)	433 (67.9%)	21.3 ± 3.05	PID-5-BF	Revealed four-factor structure that aligned with the ICD-11 trait domain qualifiers, including a single factor dedicated to Disinhibition vs. low Anankastia
*Hansen et al. (50)	Denmark	Cross-sectional	Psychiatric patients ($n = 163$)	144 (69.9%)	33.15 ± 14.88	PD administered by 163 clinicians based on the given ICD-10 and ICD-11 guidelines *additional questionnaire CUQ	The ICD-11 dimensional PD model was rated as slightly more useful than former ICD-10 framework No specific information regarding the ICD-11 Anankastia domain and its relationship to OCPD is given

OCPD, Obsessive compulsive personality disorder; ICD-11, The International Classification of Diseases 11th revision; PD, personality disorder; AMPD DSM-5, Alternative Model for PD from Diagnostic and Statistical Manual of Mental Disorders Fifth Edition; PAS, Personality Assessment Schedule; SAPAS-SR, Standardized Assessment of Personality-Abbreviated Scale, self-report form; NEO-FFI, NEO Five-Factor Inventory; SCID-II, Structured Clinical Interview for DSM-IV; PID-5, Personality Inventory for DSM-5; PiCD, Personality Inventory for the ICD-11; EPQ-R, The Eysenck Personality Questionnaire-Revised; 5-DPT, 5-Dimensional Personality Test; CAT-PD-SF, CAT-Personality Disorder Scales Static Form; SASPD, Standardized Assessment of Severity of Personality Disorder; LPFS-BF, Levels of Personality Functioning Scale-Brief Form; BPS, Borderline Pattern Specifier; MAPP, Multi-Source Assessment of Personality Pathology; WISPI, The Wisconsin Personality Disorder Inventory; FFiCD, Five-Factor Personality Inventory for the ICD-11; FFMPD, five-factor model of personality disorder scales; Pool-NEO-120, International Personality Item; FFF, The Five Factor Form; FFMRF, Five Factor Model Rating Form; MMPI-2-RF, Minnesota Multiphasic Personality Inventory−2–Restructured Form; PiCD-IRF, Informant-report form of the Personality Inventory for the ICD-11; SCID-II-PQ, Structured Clinical Interview for DSM–IV Axis II Disorders—Personality Questionnaire; MMPI-2-RF, Minnesota Multiphasic Personality Inventory−2 Restructured Form; NEO PI-R, Revised NEO Personality Inventory; FFMPI, Five-Factor Model Personality Index; BFI, Big Five Inventory; PID-5-SF, Personality Inventory for DSM−5. Short Form; PID-5-BF, Personality Inventory for DSM−5. Brief Form; MDPF, Measure of Disordered Personality Functioning, PAQ-11, Personality Assessment Questionnaire for the ICD-11; PBQ-SF, Short Form The Personality Belief Questionnaire—Short Form; ZKA-PQ/SF, The Short Form of the Zuckerman–Kuhlman–Aluja Personality Questionnaire; CUQ, Clinical utility questionnaire.

**Additional study on clinical utility regarding the ICD-11 PD framework.*

largest of these studies examined the factorial structure of the ICD-11 PD model in 606 patients with major depression (22). The authors reported that all of the DSM-5 OCPD criteria (i.e., maladaptive preoccupation with details, perfectionism, excessive devotion to work, over-conscientiousness, inability to discard things, reluctance to delegate the tasks, miserliness, and rigidity) fell in the ICD-11 domain of anankastia. An additional symptom of avoidance of, or reluctance to take risks (found in the DSM-5 avoidant PD), also fell in the ICD-11 anankastia domain (22).

In an earlier study (35) conducted in 124 patients with PD defined by ICD-11 terms, a linear discriminant analysis revealed that DSM-5 OCPD traits were mainly distributed in the ICD-11 anankastia domain. In addition, the ICD-11 anankastia domain showed the highest predictive accuracy of all the ICD-11 PD domains, as well as good discriminant validity, but had weak convergent-divergent validity. In particular, the ICD-11 trait qualifiers correctly classified 100% of anankastic cases within the originally grouped individuals (35). However, the anankastic trait qualifier was not significantly linked with any of the traits of the five-factor model (51) as expected (i.e., neuroticism, extraversion, openness, agreeableness and conscientiousness) (35). Similar findings emerged in the later studies by Bach et al. (17), Pesic et al. (39) and Sellbom et al. (21). Specifically, when examining the multidimensional structure of the ICD-11 PD model in 343 psychiatric outpatients (39), all DSM-5 OCPD criteria fell in the ICD-11 anankastia domain. In the two other studies with psychiatric patients ($n = 226$ and $n = 223$, respectively) that examined associations between ICD-11 anankastia and DSM-5 OCPD, the ICD-11 anankastia domain was more predictive of the presence of the DSM-5 OCPD than of other PDs (17, 21). In addition, there is some evidence that the ICD-11 domains of *low* disinhibition and *high* negative affectivity (17, 21) are additional trait qualifiers that predict OCPD.

Factorial Structure of the ICD-11 PD Model Regarding Anankastia Domain

Eleven (11) publications reported on the factorial structure of the ICD-11 PD model, indicating a 4-factor solution (41, 42, 44, 45, 47–49), a 5-factor solution (46) or both (38, 40, 43). All of the studies were conducted in either psychiatry samples, general population samples, or both, while the sample size ranged from 162 to 2,522 participants. The ICD-11 PD domains of negative affectivity, dissociality and detachment formed separate factors in all of the studies. In the 4-factor solutions, the anankastia domain and the disinhibition domain fell at two ends of a single factor, with low disinhibition at the one end and high anankastia at the other. Additionally, in a study of 366 students (42), the anankastia domain showed low discriminant validity, while in a study of 174 psychiatric patients (43), the anankastia domain had satisfactory discriminant validity.

The Clinical Utility of the ICD-11 PD Model

A single study (50) in Denmark reported on the clinical utility of the ICD-11 PD model. PD was evaluated by mental health professionals based on the given ICD-10 and ICD-11 guidelines. In a sample of 163 psychiatric patients with mostly mood and anxiety disorders, psychotic disorders and PD disorders, the ICD-11 PD model was found to be slightly more useful than the ICD-10 in determining the presence of PD. Different professionals had somewhat different views, with psychologists reporting that the ICD-11 PD model was more useful in formulating an effective treatment plan whereas medical doctors and nurses found them equal. Regarding utility for communication with other mental health specialists and description of global personality, there was no difference between the ICD-11 PD model and ICD-10 categorical model. Age and work experience of the clinicians did not influence views regarding the rating of the ICD-10 vs. the ICD-11 clinical application.

The ICD-11 PD Model vs. the DSM-5 Alternative Model for OCPD

After the introduction of the new ICD-11 PD model, there have been five studies comparing the ICD-11 PD model and the DSM-5 trait based AMPD (17, 21, 36, 37, 40). All of these studies, whether conducted in a psychiatric sample or in a community sample, found a significant correlation between the ICD-11 anankastia domain and the DSM-5 domains of negative affectivity (specifying facet - perseveration) and *low* disinhibition (specifying facet - rigid perfectionism). In a sample of 1,541 individuals comprised of the general population and psychiatric outpatients, the additional trait of distractibility (found in the *low* disinhibition domain) was also associated with the ICD-11 anankastia domain (36). In 285 individuals from a community sample, the trait of hostility (negative affectivity domain) loaded on the ICD-11 anankastia domain (37). In 1,541 psychiatric and healthy participants (36), acceptable discriminant validity was found between the ICD-11 anankastia domain and DSM-5 OCPD. Similarly, in a general population sample of 300 individuals (40), excellent convergent validity between the ICD-11 anankastia domain and the DSM-5 OCPD was documented. In addition, in two studies comprised of 226 (17) and 343 (21) psychiatric outpatients, the ICD-11 domain of anankastia showed the strongest prediction of OCPD.

DISCUSSION

This scoping review found 19 empirical studies on the ICD-11 anankastia domain. Four themes were identified based on the literature, namely (a) overlap of DSM-5 OCPD with the ICD-11 PD model, (b) the factorial structure of the ICD-11 anankastia domain, (c) the clinical utility of the ICD-11 anankastia domain, and (d) comparison of the ICD-11 PD model of anankastia with the DSM-5 alternative model for OCPD.

As hypothesized, work on the overlap of DSM-5 OCPD with ICD-11 PD model found that the anankastia domain is strongly associated with OCPD traits in both clinical and community samples (21, 22, 25, 35, 39). One study found that the additional symptom of *avoidance of, or reluctance to take risks* (from the DSM-5 avoidant PD) was also associated with the anankastia

domain (22). DSM-5 OCPD traits were also associated with the ICD-11 domains of *low* disinhibition and negative affectivity (17, 21). The finding that OCPD traits overlap with different domains is consistent with work demonstrating that OCPD is comorbid with a number of other PDs including avoidant (52), paranoid (52, 53), schizotypal (54), borderline and narcissistic (52) PDs. A dimensional structure for describing maladaptive personality traits may be helpful in addressing the artifactual comorbidity that occurs in a categorical system (13, 55).

Studies on the ICD-11 PD model and its factorial structure suggested using either a five-factor solution or four-factor solutions, resulting in a single *low* disinhibition/*high* anankastia domain (38, 40–49). In this multidimensional structure, OCPD could be distinguished by a high score on anankastia traits, automatically resulting in low disinhibition traits. These findings complement work indicating that individuals with OCPD not only have high anankastia traits but also low disinhibition traits when these two domains are investigated separately (17, 21). In addition, it is also relevant to note inconsistencies regarding the convergent validity of the ICD-11 anankastia domain. Specifically, in a study including 124 patients with PD, convergent validity was not supported (35), while excellent convergent validity was documented within a sample of 300 community members (40). This inconsistency might be a consequence of population and/or methodological differences between studies.

Clinical utility of the ICD-11 PD model for psychiatric patients was observed in a study conducted in Denmark, which provided some evidence that the ICD-11 PD model is slightly more useful than the ICD-10 classification in determining the presence of PD (38). However, the OCPD and anankastia domain were not specifically addressed in this work. In the past mixed views regarding the clinical utility of the ICD-11 PD model have been expressed (36, 56, 57). On the one hand, the ICD-11 PD model was expected to be simpler to use (56) and more feasible for practitioners (36). On the other hand, it might not be easily accepted by practitioners, as thinking dimensionally might be more incommodious and time-consuming for clinicians compared to thinking in categorical terms (57). In addition, regarding clinical utility, several other questions raised in previous studies regarding the ICD-11 PD model were not addressed by the literature, and remain to be answered. First, the issue of arbitrary diagnostic thresholds that has been discussed for categorical diagnostic models (56, 58) may remain, since there is still no clear-cut way of distinguishing abnormal personality traits including anankastic traits in ICD-11 (59). Second, with the introduction of the ICD-11 PD model, it was hoped that PD would be detected more frequently, so addressing the underdiagnosis issue with previous versions of the ICD (60, 61). In the selected studies however, we could not find evidence comparing the ICD-10/DSM-5 with the ICD-11 in terms of detected prevalence of abnormal obsessive-compulsive personality traits. To answer these questions regarding the clinical utility of the ICD-11 PD model, more empirical studies in different regions and samples are needed.

In terms of comparison of the ICD-11 PD model and the DSM-5 AMPD, several relevant studies were found. The DSM-5 AMPD domains of negative affectivity (facets of perseveration, hostility) and *low* disinhibition (rigid perfectionism, distractibility) were found to be predictors of the ICD-11 anankastia domain (17, 21, 36, 37, 40), consistent with the conceptual similarity of the domains of negative affectivity and disinhibition in these nosologies (62). These findings were also in line with views that ICD-11 anankastia, or obsessive-compulsive traits in DSM-5, are the inverse trait of disinhibition, so leading to the omission of such traits in the final DSM-5 AMPD model (20). Nevertheless, perhaps because the ICD-11 PD model contains a separate anankastia domain, the ICD-11 was found to be superior in determining the presence of obsessive-compulsive personality traits in comparison to the DSM-5 AMPD framework (17).

Limitations of this scoping review deserve acknowledgment. In particular, the review was limited to articles written in English, so excluding a number of potentially relevant studies. In addition, key limitations of the literature itself deserve emphasis. First, the methods and instruments to assess the ICD-11 PD domains varied significantly, making it challenging to compare results across studies. Second, studies of the ICD-11 model are limited to only a small number of countries. Third, we found no longitudinal studies of the diagnostic reliability of the ICD-11 over time. Fourth, we found no papers exploring ICD-11 PD and the anankastia domain in individuals with obsessive-compulsive and related disorders. Thus, further longitudinal studies in more diverse cultural cohorts and in both community and clinical populations, using consensus instruments, are warranted.

CONCLUSION

OCPD is a common mental health problem that is still relatively under-recognized and lacks empirical investigations. This scoping review suggests that the ICD-11 PD model is a diagnostically valid and clinically useful approach to OCPD. Specifically, the ICD-11 anankastia domain overlaps with DSM-5 OCPD traits, with factor analyses of the ICD-11 PD model further supporting the diagnostic validity of this domain. There is some support for the clinical utility of the ICD-11 PD model with regards to anankastia. Future studies investigating the clinical utility of ICD-11 PD in more diverse clinical and cultural samples are warranted. Finally, further work exploring the overlap of the ICD-11 anankastia domain with DSM-5 obsessive compulsive and related disorders (9) is needed.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

DS conceptualized the idea, supervised during the writing process, and provided critical revisions. JG-S conducted

the systematic search, prepared the first draft of the manuscript, and revised the manuscript. CL, NF, and CM provided critical revision to its further development. All authors contributed to the article and approved the submitted version.

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The handling editor declared a past collaboration with one of the authors DS.

The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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A Proposed Classification of ICD-11 Severity Degrees of Personality Pathology Using the Self and Interpersonal Functioning Scale

Dominick Gamache[1], Claudia Savard[2], Philippe Leclerc[1], Maude Payant[3], Nicolas Berthelot[4], Alexandre Côté[1], Jonathan Faucher[1], Mireille Lampron[5], Roxanne Lemieux[4], Kristel Mayrand[5], Marie-Chloé Nolin[1] and Marc Tremblay[6]*

[1] Department of Psychology, Université du Québec à Trois-Rivières, Trois-Rivières, QC, Canada, [2] Department of Educational Fundamentals and Practices, Université Laval, Quebec City, QC, Canada, [3] Department of Psychology, Université du Québec à Montréal, Montreal, QC, Canada, [4] Department of Nursing Sciences, Université du Québec à Trois-Rivières, Trois-Rivières, QC, Canada, [5] School of Psychology, Université Laval, Quebec City, QC, Canada, [6] Centre intégré universitaire de santé et de services sociaux de la Capitale-Nationale, Quebec City, QC, Canada

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***Correspondence:**
Dominick Gamache
dominick.gamache@uqtr.ca

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Background: The 11th version of the World Health Organization's International Classification of Diseases (ICD-11) has adopted a dimensional approach to personality disorder (PD) nosology. Notably, it includes an assessment of PD degree of severity, which can be classified according to five categories. To date, there is no gold standard measure for assessing degree of PD severity based on the ICD-11 model, and there are no empirically-based anchor points to delineate the proposed categories. With the operationalization of PD degrees of severity in the ICD-11 PD model now being closely aligned with Criterion A of the DSM-5 Alternative Model for Personality Disorders (AMPD), sharing a focus on self and interpersonal dysfunction, self-report instruments developed for the latter model might prove useful as screening tools to determine degrees of severity in the former.

Methods: The Self and Interpersonal Functioning Scale, a brief validated self-report questionnaire originally designed to assess level of personality pathology according to the AMPD framework, was used to derive anchor points to delineate the five severity degrees from the ICD-11 PD model. Data from five clinical and non-clinical samples (total $N = 2{,}240$) allowed identifying anchor points for classification, based on Receiver Operating Characteristic curve analysis, Latent Class Analysis, and data distribution statistics. Categories were validated using multiple indices pertaining to externalizing and internalizing symptoms relevant to PD.

Results: Analyses yielded the following anchor points for PD degrees of severity: No PD = 0–1.04; Personality Difficulty = 1.05–1.29; Mild PD = 1.30–1.89; Moderate PD = 1.90–2.49; and Severe PD = 2.50 and above. A clear gradient of severity across the five categories was observed in all samples. A high number of significant contrasts among PD categories were also observed on external variables, consistent with the ICD-11 PD degree of severity operationalization.

Conclusions: The present study provides potentially useful guidelines to determine severity of personality pathology based on the ICD-11 model. The use of a brief

self-report questionnaire as a screening tool for assessing PD degrees of severity should be seen as a time-efficient support for clinical decision and treatment planning.

Keywords: personality disorder, ICD-11 classification of personality disorders, dimensional models of personality disorders, degree of severity, self and interpersonal dysfunction

INTRODUCTION

The field of personality disorders (PDs) is moving decisively toward a dimensional conceptualization of personality pathology. Shortcomings of the traditional, categorical method for PD classification have been well-documented [e.g., excessive comorbidity among disorders, heterogeneity within each category, inadequate coverage of PD presentations with an overreliance on "Not otherwise specified" diagnosis, lack of validity of diagnostic categories; e.g., (1, 2)]. It is widely believed that the adoption of a dimensional model of PDs will address these issues, and that a dimensional framework is more consistent with available empirical evidence on the nature of these disorders [e.g., (3–5)].

While calls for moving the field toward a dimensional paradigm are not new [e.g., (6–8)], it is only recently that changes have actually been implemented in the most recent versions of both the *Diagnostic and Statistical Manual for Mental Disorders* (DSM) and the *International Classification of Diseases* (ICD). An Alternative Model for Personality Disorders (AMPD) was introduced in Section III of the fifth edition of the DSM (9); it was meant to replace the traditional categorical PD model but was ultimately relegated to Section III by the APA Board of Trustees, awaiting further research. The AMPD includes two main components. Criterion A was proposed as an indicator of the level of personality pathology severity; it includes four elements that are believed to be closely intertwined and focus on impairments in one's sense of self (Identity and Self-direction) and in interpersonal relationships [Empathy and Intimacy; (10)]. Criterion B includes 25 maladaptive personality traits hierarchically organized into five broader domains [Negative Affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism; (11)]. The model also retains six specific personality disorders that can be diagnosed based on "algorithms"; in these algorithms, the presence of two or more Criterion A elements and of Criterion B traits specific to each disorder is necessary for PD diagnosis, making the AMDP a hybrid categorical-dimensional model. Research on the AMPD has burgeoned over the past years and has yielded very promising results [see (12) for a summary].

For its part, the eleventh version of the World Health Organization's (WHO) *International Classification of Diseases* (ICD-11) has resolutely adopted a dimensional approach to PD nosology [see (4) for a detailed timeline of the different steps that led to the final proposal]. The purpose of the new model was "to provide a classification that was easily understood, could be readily used by practitioners of all disciplines, and that allowed all people with personality disturbance to be recognized" [(4), p. 497]. In the retained model, PD is defined as a marked disturbance in personality functioning, leading to considerable personal and social disruption in most cases. The central manifestations of PD are impairments in self-functioning (e.g., identity, self-worth, self-direction) and/or problems in interpersonal functioning (e.g., developing and maintaining close and mutually satisfying relationships, understanding others' perspectives, managing conflict). Both may manifest in maladaptive (e.g., inflexible, dysregulated) patterns of cognition, affective experience and expression, and behavior. PD can be classified according to a gradient of severity, ranging from (a) "No Personality Disorder," (b) "Personality Difficulty," (c) "Mild Personality Disorder," (d) "Moderate Personality Disorder," to (e) "Severe Personality Disorder" (13, 14). **Table 1** summarizes the main differences among the different degrees of severity. The PD diagnosis may also be specified using one or more "Trait domain qualifiers" (Negative Affectivity, Detachment, Dissociality, Disinhibition, and Anankastia); an additional qualifier for Borderline Pattern may also be used. Of note, initial proposals for ICD-11 PDs did not focus on self and interpersonal dysfunction to define degree of severity, and were more closely aligned with the "British zeitgeist" of PD (15) in which personality pathology tends to be associated with potential of harm to self and others; they also did not include the Borderline specifier. It is only after some vocal opposition was expressed (16) that the initial proposal was amended.

Previous research has repeatedly shown that the global degree of PD severity, which will be the focus of this study, predicts a number of negative outcomes over and beyond PD categories. Indeed, general PD severity appears to be a strong predictor of current or future adjustment [e.g., (17–20)]. It also accounts for the comorbidity among categorical PD diagnoses (21) and appears to be sensitive to change (22). Moreover, it may provide valuable information for guiding intensity of clinical treatment [e.g., (13, 23)]. To this day, however, empirical work aiming to operationalize the ICD-11 degrees of severity has been scarce, in contrast with the AMPD Criterion A for which multiple self-report and clinician-rated measures have been developed to assess level of PD severity [see (24, 25) for a summary]. One notable exception is the Standardized Assessment of Severity of Personality Disorder [SASPD; (26)], which was specifically developed to assess the ICD-11 severity of PD. It includes nine items pertaining to traits from each of the five ICD-11 trait model domains; respondents are asked about the impact of a particular problem (e.g., acting on impulse, worrying) on their risk of harm to self and others and on their interpersonal functioning. Initial psychometric evaluation of the SASPD revealed good predictive ability for determining mild and moderate personality disorder severity, and high test-retest stability (26). However, the SASPD was developed based on the initial ICD-11 proposal for PD, and

TABLE 1 | Main differences among the ICD-11 degrees of severity for personality disorders.

Personality difficulty	Mild personality disorder	Moderate personality disorder	Severe personality disorder
– Presence of personality characteristics that may affect treatment or health services but fall short of a proper PD diagnosis.	– Disturbances only affect some areas of functioning of the self, or affect all areas but are of mild severity.	– Disturbances affect multiple areas of functioning of the self and are of moderate severity.	– Severe disturbances in multiple areas of functioning of the self.
– Difficulties are expressed only intermittently or at a low level of intensity.	– Some problems are noted in relationships or in performance/social roles, but the individual is able to maintain some of them.	– Marked problems (e.g., conflict, avoidance, extreme dependency) are noted in most relationships, and performance in most social/occupational roles is affected to some degree.	– Serious problems affect virtually all relationships, and the individual is unable or unwilling to perform expected social and occupational roles.
– Difficulties are insufficiently severe to cause significant disruption in social, occupational, and interpersonal relationships or may be limited to specific relationships/situations.	– Not typically associated with significant harm to self or others. – May be associated with substantial distress or with limited to circumscribed impairment in important areas of functioning.	– Sometimes associated with harm to self or others. – Associated with marked impairment in most important areas (although functioning in circumscribed areas may be preserved).	– Often associated with harm to self or others. – Associated with severe impairment in all (or nearly all) important areas of life.

Adapted from Bach and First (13) and World Health Organization (14). ICD-11, 11th revision of the International Classification of Diseases.

thus did not include elements pertaining to self and interpersonal deficits. In a comparative study of ICD-11 and DSM-5 Section III personality disorder models, McCabe and Widiger (27) found that the SASPD's convergence with the DSM-5 Section III model was improved when combined with the 12-item Level of Personality Functioning Scale-Brief Form [LPFS-BF; (28)], which assesses self and interpersonal impairments in line with the AMPD. McCabe and Widiger (27) concluded that the SASPD might benefit from a revision to include self and interpersonal deficits. In the same vein, in a study comparing the SASPD and the LPFS-BF in their relationships with external correlates, Bach and Anderson (15) outlined that the SASPD appeared to be more closely tied to the initial ICD-11 PD model, i.e., emphasizing risk of harm to self and others, while the LPFS-BF may have better sensitivity in detecting core personality disorder features (i.e., self and interpersonal pathology), which corresponds to the retained model. Furthermore, in a study of the psychometric properties of the SASPD in German non-clinical and clinical samples, Rek et al. (29) found mixed results for convergent and discriminant validity, calling into question its future usage as a screening tool of ICD-11-based degrees of PD severity.

These results, which highlight the potential shortcomings of the SASPD to capture essential features of the final ICD-11 PD model, along with positive results obtained using a self-report initially aimed to operationalize the AMPD, suggest that measures of the latter model might be useful in assessing ICD-11 PD degrees of severity. This "cross walk" strategy was also advocated by Bach and First [(13), p. 6], who stressed that "diagnostic information obtained from assessment tools developed for the DSM-5 AMPD model can be used for making an ICD-11 dimensional Personality Disorder diagnosis." As aforementioned, there have been numerous self-report questionnaires developed to assess the AMPD that could be useful for that purpose (25). One of these instruments is the Self and Interpersonal Functioning Scale [SIFS; (30)], a 24-item measure originally developed based on the AMPD Criterion A conceptualization. It provides a global personality dysfunction score and four subscale scores, corresponding to AMPD elements (Identity, Self-direction, Empathy, and Intimacy). In its original validation study, meaningful patterns of associations with related psychological constructs (e.g., self-esteem, satisfaction with life, empathy, aggression, pathological narcissism, borderline symptomatology, and AMPD Criterion B domains) were reported. Confirmatory Factor Analysis yielded a second-order model, with four elements organized into a higher-order personality dysfunction factor, consistent with AMPD formulation. In an independent study, content validity analysis of the SIFS items also showed promising results, and the severity level assessed by its items makes it well-suited to study populations with greater psychopathology (25).

The purpose of the present study is to determine, based on the SIFS' global score (i.e., a general indicator of personality impairment), cutoff points corresponding to the five categories in the ICD-11 PD model. Although there might be some irony in "imposing" categories in a fundamentally dimensional framework (31), we believe that these categories are likely to provide clinicians and researchers with useful guidelines, e.g., for treatment planning and level of care assessment [e.g., (13, 23)]. Furthermore, we concur with Rek et al. (29) that accessible and time-efficient PD screening tools are crucial in a context in which these pathologies are too often overlooked during assessment. Providing guidelines for a screening of PD severity based on a short and validated self-report measure such as the SIFS might be a valuable contribution in this regard.

MATERIALS AND METHODS

Participants and Procedure

A total of 2,240 adults, mainly French-speaking Canadians, were recruited in the Province of Quebec, Canada (84.6% women, $M_{age} = 31.43$, $SD = 8.66$, range 18–79). They were recruited in five distinct samples. The first three correspond to clinical samples. Sample 1 ($n = 287$) includes prospective PD patients with a more severe clinical presentation, recruited during the

intake procedure at a specialized psychiatric outpatient clinic in the Quebec City area. Sample 2 ($n = 249$) includes prospective PD patients with a less severe clinical presentation, who were also recruited during the intake procedure from different outpatient treatment establishments in the Quebec City area. Both settings are public, and have a mandate of treating PD patients; in line with a stepped care approach [e.g., see (32)], those with more severe clinical presentations are referred to the first clinic for more intensive treatment (Sample 1), while those with less severe presentations are referred to other establishments who offer PD treatment programs but with a less intensive level of care (Sample 2). Sample 3 ($n = 242$) includes patients from two general private practice clinics located in Quebec City; these clinics use a common set of intake measures as part of a collaborative study. The last two samples correspond to non-clinical participants. Sample 4 ($n = 1{,}200$) includes female participants from a study of pregnant women's mental health. They were recruited through advertisement on social media (Facebook and Instagram). Finally, Sample 5 ($n = 263$) includes participants from the community recruited as part of the initial validation study of the SIFS (30). They were recruited through social media, online message boards, and institutional e-mail from two universities in the Province of Quebec. **Supplementary Table 1** provides more detail on socio-demographic characteristics of these five samples.

Measures

Identification of Cutoffs for the ICD-11 PD Severity Degrees

The Self and Interpersonal Functioning Scale (30), described above, was used in our main analyses to determine clinical cutoff points corresponding to the proposed ICD-11 anchors for PD severity, based on its global score (Cronbach's alpha [α] for the combined sample =0.91). Items are rated on a five-point scale (range 0–4). Descriptive statistics for all five samples are displayed in **Supplementary Table 2**.

External Validation of Degrees of Severity

Samples had different sets of self-report questionnaires, which were used in further analyses to validate the different anchor points established using the SIFS. **Supplementary Table 2** displays the different questionnaires from each sample, along with their descriptive statistics (i.e., mean scores and internal consistency indices).

Samples 1, 2, 3, and 5

The Personality Inventory for DSM-5 was used in its 100-item version, the PID-5 Faceted Brief Form [PID-5-FBF; (33); French validation by Roskam et al. (34)] for Samples 1, 3, and 5, and in its 25-item version, the PID-5 Brief Form [PID-5-BF]; (35); French validation by Combaluzier et al. (36)] for Sample 2. It covers five domains of pathological personality functioning: Negative Affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism. Items are rated on a four-point scale (range 0–3).

Samples 1 and 2

The 23-item version of the Borderline Symptom List [BSL-23; (37); French validation by Nicastro et al. (38)] assesses borderline PD symptomatology according to DSM Section II BPD diagnostic criteria, in addition to other affective experiences typical of borderline pathology (e.g., proneness to shame, self-criticism, mistrustfulness). Items are scored on a five-point scale (range 0–4).

The 28-item Brief Version of the Pathological Narcissism Inventory [B-PNI; (39); French validation by Diguer et al. (40)] was used to measure two dimensions of pathological narcissism: Grandiosity (e.g., inflated self-image, exploitative behaviors, fantasies of power and perfection) and Vulnerability (e.g., depleted self-image, shame/anger, interpersonal hypersensitivity). Items are scored on a six-point scale (range 0–5).

Sample 1 Only

The 12-item short-form Buss-Perry Aggression Questionnaire [BPAQ-SF; (41, 42); French validation by Genoud and Zimmerman (43)] covers four manifestations of aggression: Verbal, Physical, Anger, and Hostility. It also yields a global Trait Aggression score. Items are scored on a six-point scale (range 1–6).

The 28-item Interpersonal Reactivity Index [IRI; (44); French validation by Gilet et al. (45)] measures empathy and its components. Two of its subscales were used in the present study: Perspective Taking (the ability to adopt others' point of view), which assesses the cognitive component of empathy, and Empathic Concern (the motivation to care about others), which focuses on the affective component. Items are scored on a seven-point scale (range 1–7).

The 30-item Barratt Impulsiveness Scale [BIS-11; (46); French validation by Baylé et al. (47)] is designed to assess three components of impulsiveness: Attentional, Motor, and Non-planning. Items are scored on a four-point scale (range 1–4).

Sample 3 Only

The 14-item version of the Psychiatric Symptom Index [PSI; (48); French validation by Préville et al. (49)] covers core psychological symptoms (e.g., depression, anxiety, anger). Items are scored on a four-point scale (range 0–3).

The shortened 12-item Experiences in Close Relationship Questionnaire [ECR-12; (50)] assesses both dimensions of romantic attachment: Anxiety about relationship issues, and Avoidance (discomfort with closeness and interdependence). Items are scored on a seven-point scale (range 1–7).

Sample 4 Only

The 10-item Kessler Psychological Distress Scale [K-10; (51) French validation by Gravel et al. (52)] assesses anxious and depressive symptomatology. Items are rated on a five-point scale (range 1–5).

The 10-item Edinburgh Perinatal/Postnatal Depression Scale [EPDS; (53) French validation by Adouard et al. (54)] indicates the presence of depressive symptoms during pregnancy and in

the year following childbirth. Items are scored on a four-point scale (range 1–4).

The 20-item Positive and Negative Affect Schedule [PANAS; (55); French validation by Gaudreau et al. (56)] covers the experience of feelings such as energy, enthusiasm, and inspiration (Positive Affect), as well as experiences such as fear, hostility, and shame (Negative Affect). Items are scored on a five-point scale (range 1–5).

Two subscales of the Dissociative Experiences Scale [DES; (57); French validation by Larøi et al. (58)], Absorption/Imaginative involvement (nine items) and Depersonalization/Derealization (six items), were used. Items are rated on an 11-point scale (range 0–10).

The 20-item Posttraumatic Stress Disorder (PTSD) Checklist for DSM-5 [PCL-5; (59); French validation by Ashbaugh et al. (60)] covers trauma-related symptoms aligned with the PTSD diagnostic criteria of the DSM-5. Items are rated on a five-point scale (range 0–4).

Sample 5 Only

The 19-item brief version of the Inventory of Personality Organization (IPO) validated by Verreault et al. (61) includes three scales from the original IPO (62): Identity Diffusion, Primitive Defenses, and Impaired Reality Testing, along with a Global Personality Organization score. Items are scored on a five-point scale (range 1–5).

The five-item Satisfaction with Life Scale [SWLS; (63); French validation by Blais et al. (64)] uses straightforward probes about participants' life satisfaction. Items are scored on a seven-point scale (range 1–7).

The 10-item Rosenberg Self-Esteem Scale [RSES; (65); French validation by Vallières and Vallerand (66)] is a unidimensional measure of global self-esteem. Items are scored on a four-point scale (range 1–4).

Analytic Strategy

In a preliminary step, *t*-tests for independent samples were computed on the global SIFS score for men and women for each sample (with the exception of Sample 4 which only includes women), to rule out the need for separate cutoffs based on gender. The ensuing statistical analyses followed a four-step procedure. (a) The first step aimed at delineating participants with vs. without a personality disorder. This should establish a first threshold between the "No PD" and the "Personality Difficulty" groups, on the one hand, and the Mild-Moderate-Severe PD groups, on the other hand. In order to do so, we ran a Receiver Operating Characteristic (ROC) curve analysis, combining Samples 1 and 2 (PD patients) to form a first dichotomous groups (with PD), and combining Samples 4 and 5 (pregnant women and participants from the community) to form a second dichotomous group (without PD)[1]. Sample 3, recruited in private practice clinics, was excluded at this step, as the expected prevalence of PD in these clinical settings is uncertain. The ROC analysis allowed choosing a cutoff point to establish the presence of a PD; this cutoff was selected based on empirical considerations (i.e., optimal sensitivity-specificity based on Youden's index, Diagnostic odds ratio). It was also based on "clinical plausibility," as the retained cutoff should yield a PD prevalence in non-clinical groups in the range observed in past epidemiological studies conducted in community samples. While the range of these estimates is quite large, from 4.4 (68) to 33.1% (69), the selected cutoff should ideally yield prevalence indices close to the median estimate of 11.5%, based on 14 major studies, reported by Morgan and Zimmerman (67).

(b) In a second step, delineation among the three categories where PD is present (Mild, Moderate, Severe) according to the ICD-11 model was established. This was computed using Latent Class Analysis (LCA) on the subsample of participants from all five samples identified as having a PD based on the threshold established in step (a). The SIFS total score was used as the sole latent indicator, and a predetermined number of three profiles was specified for the analysis. These profiles are thus expected to be established based on a gradient of severity; the Mild severity profile is expected to have more participants, while the Severe profile should have less, and the Moderate severity should be in between these two. Hallquist and Pilkonis (70), drawing on a previous work from Markon and Krueger (71), have commented on the potential use of LCA to determine severity degrees, suggesting that "when LCA supports the existence of two or more latent classes that differ by severity, the mean severity level for each class provides potential information about cut-points along a continuous severity dimension" (p. 229). Thus, means and standard deviations from the three profiles yielded by LCA were used to establish anchor points for the Mild, Moderate, and Severe categories.

(c) The third step involved delineating the "No PD" from the "Personality Difficulty" group. This latter group is defined in the ICD-11 PD model by the presence of long-standing difficulties in a person's way of experiencing and thinking about oneself, others, and the world; in contrast to PD proper, however, individuals with Personality Difficulty only show intermittent, or low intensity, manifestations of these difficulties in the cognitive, emotional, or behavioral domains (14). Thus, individuals with Personality Difficulty might be expected to be found in prospective patients referred to PD clinical programs in Samples 1 and 2, but who did not reach the diagnostic threshold for a PD. The delineation between No PD and Personality Difficulty was based on mean and standard deviation (i.e., within ≤ 1.0 *SD*) for these individuals.

(d) Finally, once anchor points were established for all five PD and non-PD categories, the last step involved their validation based on a set of external variables relevant for PD and general psychosocial functioning. The five samples included different sets of mostly non-overlapping self-report measures, tailored to their clinical context (e.g., more measures

[1]In practice, these two groups cannot be perfectly dichotomous and a small overlap between them is expected. On the one hand, a small part of the community sample probably has a diagnosable PD [in line with previous results from large-scale epidemiological studies; (67)]. On the other hand, this is most likely offset by the fact that patients referred for PD treatment might not always have PD proper; they might only display personality difficulty, and instances of misdiagnosis, although rare, cannot be excluded (e.g., Disorders due to substance use or Bipolar type II disorder mimicking PD symptomatology).

of externalizing pathology and potential for harm in the most severe samples). These measures should provide a wide range of clinical and functioning variables for validation. Samples were tested separately, using Kruskall-Wallis analysis (two-tailed, with Bonferroni's correction for multiple comparisons) to contrast categories, as the number of participants per category was likely to show marked differences. In Samples 1 and 2, the "No PD" category was omitted from analyses as it was expected to have a very low prevalence in these groups[2]. The same goes for the "Severe PD" group in Samples 3, 4, and 5. Valid PD severity categories would be expected to show a gradient of severity (i.e., minimal pathology in the No PD group, and maximal pathology in the Severe group, with increments between intermediate categories). Contrasts between contiguous/consecutive categories (e.g., between No PD and Personality Difficulty, or between Moderate and Severe PD) were considered a stringent test of the discriminative power of the cutoffs established through steps (a) to (c).

RESULTS

In a preliminary step, gender differences for the SIFS total score were ruled out for each sample: Sample 1 = M_{women} = 1.89, SD = 0.62; M_{men} = 1.92, SD = 0.58; $t_{(285)} = -0.48$, $p = 0.63$; Sample 2 = M_{women} = 1.66, SD = 0.61; M_{men} = 1.75, SD = 0.56; $t_{(246)} = -1.18$, $p = 0.24$; Sample 3 = M_{women} = 1.09, SD = 0.52; M_{men} = 1.19, SD = 0.60; $t_{(240)} = -1.29$, $p = 0.20$; Sample 5 = M_{women} = 0.97, SD = 0.48; M_{men} = 1.01, SD = 0.50; $t_{(261)} = -0.57$, p = 0.57. These results allowed determining common cutoffs for men and women in the ensuing analytic steps.

Delineation Between Participants With vs. Without PD

ROC analysis was performed using the SIFS total score as predictor of belonging to a PD group (Samples 1 and 2) vs. a non-clinical group (Samples 4 and 5; see **Figure 1**). Area under the curve was 0.90 (CI [0.88–0.92], $SE = 0.01$), an excellent accuracy with a large effect size (d = 1.84) according to established guidelines (72). Based on aforementioned criteria for cutoff selection, we chose 1.31 (rounded to 1.30; Sensitivity = 0.79, Specificity = 0.86, Diagnostic odds ratio = 23.23) as the cutoff between PD and absence of PD. This anchor point yielded the following prevalence for PD in our five samples: Sample 1 = 82.2%; Sample 2 = 71.3%; Sample 3 = 32.6%; Sample 4 = 11.2%; Sample 5 = 22.4%.

Delineation Among the Mild, Moderate, and Severe PD Groups Based on Degree of Severity

LCA was run using Mplus version 8.4 (73) on participants (n = 713) with a PD according to the 1.30 cutoff established in step (a), with the standardized SIFS total score as the profiling variable, forcing the analysis to extract three classes from data. The entropy figure (0.81) suggested an adequate classification according to usual guidelines (a score between 0.8 and 1.0 is generally considered adequate). The three classes, Mild, Moderate, and Severe PD, included, respectively, 439 (61.6%; M = 1.59, SD = 0.17), 213 (29.9%; M = 2.18, SD = 0.18), and 61 (8.6%; M = 2.84, SD = 0.23) participants.

Using SIFS means and standard deviations of roughly +/– 1.5 units for the three classes generated by LCA, the following anchor points were established for the three degrees of PD severity: Mild = 1.30–1.89; Moderate = 1.90–2.49; Severe = 2.50 and above (see **Table 2**).

Delineating Absence of PD From Personality Difficulty

Using the subsample of patients from Samples 1 and 2 who did not reach the threshold for PD (n = 123), we computed their mean SIFS score (M = 1.29, SD = 0.26) to determine the cutoff for Absence of PD vs. Personality Difficulty. Using an estimate of 1.0 SD, the final threshold between these two categories was established at 1.03 (rounded to 1.05); therefore, the Personality Difficulty anchor points correspond to 1.05–1.29 (see **Table 2**).

In sum, the final thresholds, corresponding to ICD-11 PD degree of severity categories and based on SIFS total score, are as follows: Absence of PD = 0 to 1.04; Personality Difficulty = 1.05 to 1.29; Mild PD = 1.30 to 1.89; Moderate PD = 1.90 to 2.49; and Severe PD = 2.50 and above. **Table 2** shows how participants from the five samples included in the present study are distributed along the five categories.

Validation of Categories With External Variables

Tables 3–7 display, for each sample, how participants from the five ICD-11 degree of severity categories differ across a number of external validation indices. Intergroup differences for the SIFS total score and elements are also presented but will not be considered as "external" comparators in the following analyzes as the ICD-11 categories are not statistically independent from these indices. A general pattern of results emerged in all five samples, as a clear gradient of severity across the five ICD-11 categories was observed. A high number of significant contrasts among PD categories were also observed.

In the most severe sample (Sample 1), there was a remarkably neat break between the Mild and Moderate categories, as significant differences were observed for 16 out of 18 comparisons. There was also a clear delineation between the Moderate and Severe categories, with 13 out of 18 contrasts yielding significant results. Fewer differences (two) were observed between the Personality Difficulty vs. Mild categories. Of note, two comparators (PID-5 Disinhibition and BIS-11 Motor impulsivity) showed a high discriminant capacity, with significant differences across all four ICD-11 categories tested in that sample (see **Table 3**). The other PD sample (Sample 2) showed a similar pattern of results, with a clear gradient of severity across PD severity categories for all external variables, although less significant contrasts between contiguous categories

[2]Absence of personality difficulty, at the very least, is implausible in these samples. Indeed, all patients from Samples 1 and 2 were referred to their respective clinics after a categorical PD diagnosis, or at least presence of pathological personality traits, was established by a psychiatrist or a general practitioner.

were observed: four out of eight for Personality Difficulty vs. Mild PD (PID-5 Disinhibition and Psychoticism, PNI Grandiosity and Vulnerability), three out of eight for Mild vs. Moderate PD (PID-5 Negative Affectivity and Detachment, PNI Vulnerability), and one out of eight for Moderate vs. Severe PD (BSL-23 Borderline symptoms; see **Table 4**).

Comparisons for Samples 3 to 5 did not include the Severe PD category. Again, the expected pattern of increased severity was observed across degrees of severity. In the private practice sample (Sample 3), the following significant contrasts were observed for contiguous categories: two out of eight for No PD vs. Personal difficulty (PID-5 Detachment; PSI symptoms); none between Personality Difficulty and Mild PD, and also none between Mild and Moderate PD. Of note, ECR-12 attachment avoidance did not show any significant difference across degrees of severity (see **Table 5**). In Sample 4 (pregnant women from the community), significant contrasts for contiguous categories were as follows: six out of seven for No PD vs. Personality Difficulty (K-10 psychological symptoms; EPDS depression; PANAS Negative Affect; DES Absorption and Derealization; PCL-5 trauma); five out of seven between Personality Difficulty and Mild PD (K-10 psychological symptoms; EPDS depression; DES Absorption and Depersonalization; PCL-5 trauma); and none between Mild and Moderate PD (see **Table 6**). Finally, for Sample 5, significant contrasts for contiguous categories were as follows: six out of 13 for No PD vs. Personality Difficulty (PID-5 Negative Affectivity; IPO Global Personality Organization, Identity Diffusion, and Primitive Defenses; SWLS Satisfaction with life; and RSES Self-esteem); one out of 13 between Personality Difficulties and Mild PD (SWLS Satisfaction with life); and three out of 13 between Mild and Moderate PD (PID-5 Psychoticism; IPO Reality Testing; RSES Self-esteem). IRI Empathic Concern had no discriminant power to distinguish PD degrees of severity (see **Table 7**).

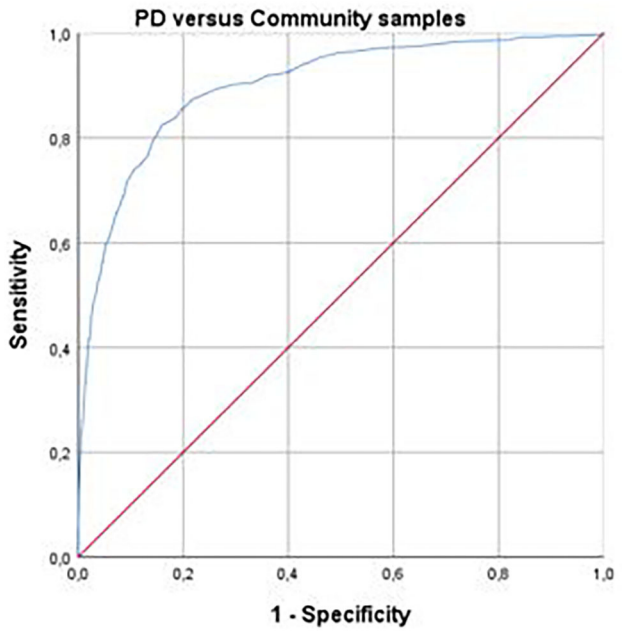

FIGURE 1 | Receiver Operating Characteristic (ROC) curve using Self and Interpersonal Functioning Scale total score to discriminate between personality disorder and community samples. Personality disorder samples = combination of samples 1 and 2 (n = 536); Community samples = combination of samples 4 and 5 (n = 1,463). Area under curve = 0.90 (Confidence internal [0.88–0.92], Standard error = 0.01).

DISCUSSION

The aim of the present study was to propose an empirically-based classification of the five ICD-11 PD degrees of severity based on the SIFS, a self-report questionnaire that was originally developed to operationalize the level of functioning criterion from the DSM-5 AMPD. Across five clinical and non-clinical samples, we found consistent support for a graduated classification of severity, based on the five categories from the ICD-11 PD model, which range from "No PD" to "Severe PD." Results tend to support the validity of the proposed anchor points, which were based on the SIFS' total score. They also substantiate the suggestion that diagnostic information from instruments originally developed for Criterion A of the DSM-5

TABLE 2 | Distribution of participants from the five samples according to ICD-11 degrees of severity thresholds established with the Self and Interpersonal Functioning Scale total score.

Category	SIFS score range	Clinical samples			Non-clinical samples	
		Sample 1 (n = 287)	Sample 2 (n = 249)	Sample 3 (n = 242)	Sample 4 (n = 1,200)	Sample 5 (n = 263)
No PD	0–1.04	24 (8.4%)	32 (12.9%)	124 (51.2%)	927 (77.3%)	150 (57.0%)
Personality difficulty	1.05–1.29	21 (7.3%)	35 (14.1%)	33 (13.6%)	128 (10.7%)	53 (20.2%)
Mild PD	1.30–1.89	100 (34.8%)	95 (38.2%)	64 (26.4%)	126 (10.5%)	45 (17.1%)
Moderate PD	1.90–2.49	98 (34.1%)	62 (24.9%)	15 (6.2%)	18 (1.5%)	13 (4.9%)
Severe PD	2.50 and above	44 (15.3%)	25 (10.0%)	6 (2.5%)	1 (0.1%)	2 (0.8%)

ICD-11, 11th revision of the International Classification of Diseases; SIFS, Self and Interpersonal Functioning Scale; PD, Personality disorder; Sample 1, Specialized psychiatric outpatient clinic for more severe PD; Sample 2, Outpatient treatment establishments for less severe PD; Sample 3, Private practice clinics; Sample 4, Pregnant women; Sample 5, Community participants.

TABLE 3 | Comparisons among the ICD-11 personality disorders degrees of severity on external variables for sample 1 (specialized clinic for more severe personality disorders).

Scale	Statistic	Personality difficulty ($n = 21$)	Mild PD ($n = 100$)	Moderate PD ($n = 98$)	Severe PD ($n = 44$)	*H*
SIFS total	*M(SD)*	1.27 (0.13)	1.70 (0.20)	2.19 (0.20)	2.78 (0.23)	217.46**
	MR[b]	14.12_a	74.60_b	167.32_c	240.05_d	
SIFS identity	*M(SD)*	1.95 (0.49)	2.40 (0.56)	2.83 (0.50)	3.19 (0.46)	83.53**
	MR[b]	49.86_a	100.33_b	152.17_c	198.26_d	
SIFS self-direction	*M(SD)*	1.13 (0.44)	1.74 (0.63)	2.24 (0.60)	3.01 (0.66)	108.58**
	MR[b]	40.57_a	97.84_b	149.16_c	215.06_d	
SIFS empathy	*M(SD)*	0.74 (0.41)	1.02 (0.49)	1.61 (0.61)	2.36 (0.59)	120.57**
	MR[b]	57.02_a	87.86_a	154.02_b	219.06_c	
SIFS intimacy	*M(SD)*	0.90 (0.37)	1.39 (0.56)	2.10 (0.65)	2.80 (0.67)	127.77**
	MR[b]	40.10_a	88.24_b	159.86_c	213.41_d	
PID-5 negative affectivity	*M(SD)*	1.51 (0.48)	1.82 (0.59)	2.11 (0.51)	2.07 (0.55)	28.64**
	MR[b]	71.57_a	115.36_{ac}	153.71_b	150.32_{bc}	
PID-5 detachment	*M(SD)*	1.12 (0.63)	1.35 (0.60)	1.57 (0.50)	1.92 (0.56)	37.04**
	MR[b]	84.31_a	111.36_a	140.12_b	183.58_c	
PID-5 antagonism	*M(SD)*	0.38 (0.34)	0.47 (0.46)	0.77 (0.59)	1.23 (0.74)	44.10**
	MR[b]	93.48_a	104.36_a	143.77_b	187.00_c	
PID-5 disinhibition	*M(SD)*	0.98 (0.42)	1.36 (0.52)	1.65 (0.53)	2.05 (0.47)	65.67**
	MR[b]	56.60_a	107.00_b	144.88_c	196.13_d	
PID-5 psychoticism	*M(SD)*	0.46 (0.33)	0.79 (0.62)	0.98 (0.55)	1.22 (0.58)	35.56**
	MR[b]	70.81_a	113.43_a	145.67_b	172.97_b	
BSL-23	*M(SD)*	1.42 (0.59)	1.83 (0.90)	2.28 (0.83)	2.56 (0.79)	36.76**
	MR[b]	70.76_a	111.29_a	147.13_b	171.15_b	
PNI grandiose	*M(SD)*	1.71 (0.80)	2.01 (0.87)	2.52 (0.91)	2.77 (1.26)	30.59**
	MR[b]	85.21_a	109.06_a	148.76_b	165.77_b	
PNI vulnerable	*M(SD)*	1.66 (0.80)	2.05 (0.80)	2.69 (0.81)	3.24 (0.88)	69.24**
	MR[b]	66.19_a	99.27_a	150.05_b	193.88_c	
BPAQ total (trait aggression)	*M(SD)*	2.71 (0.92)	2.88 (0.90)	3.51 (1.02)	4.35 (0.96)	63.35**
	MR[b]	87.69_a	98.53_a	143.89_b	199.01_c	
BPAQ verbal aggression	*M(SD)*	2.48 (0.79)	2.54 (1.06)	3.14 (1.18)	3.75 (1.27)	32.85**
	MR[b]	102.52_{ab}	105.62_b	143.67_{ac}	176.45_c	
BPAQ physical aggression	*M(SD)*	2.29 (1.61)	2.17 (1.31)	2.68 (1.68)	3.69 (1.74)	25.33**
	MR[b]	110.69_a	112.87_a	133.53_a	178.82_b	
BPAQ hostility	*M(SD)*	2.95 (1.31)	3.53 (1.21)	4.17 (1.22)	5.01 (1.06)	54.94**
	MR[b]	74.31_a	105.35_a	142.76_b	192.68_c	
BPAQ anger	*M(SD)*	3.13 (1.34)	3.30 (1.39)	4.06 (1.25)	4.96 (1.16)	51.65**
	MR[b]	93.93_{ab}	101.98_a	141.52_b	193.53_c	
IRI perspective taking[a]	*M(SD)*	4.94 (0.88)	4.86 (1.12)	4.27 (1.06)	3.12 (1.25)	60.25**
	MR[b]	169.07_{ab}	162.75_a	124.36_b	61.45_c	
IRI empathic concern[a]	*M(SD)*	5.41 (0.88)	5.42 (0.97)	5.31 (1.29)	4.57 (1.28)	14.45*
	MR[b]	140.45_{ab}	140.07_b	139.86_b	92.26_{ac}	
BIS-11 attentional	*M(SD)*	2.20 (0.42)	2.40 (0.51)	2.66 (0.43)	3.00 (0.40)	57.24**
	MR[b]	75.40_a	104.33_a	142.62_b	194.64_c	
BIS-11 motor	*M(SD)*	1.85 (0.32)	2.17 (0.44)	2.41 (0.50)	2.89 (0.45)	72.27**
	MR[b]	57.50_a	106.17_b	140.71_c	203.31_d	
BIS-11 non-planning	*M(SD)*	2.29 (0.31)	2.47 (0.35)	2.63 (0.41)	2.92 (0.41)	47.21**
	MR[b]	75.90_a	108.31_a	141.36_b	188.38_c	

ICD-11, 11th revision of the International Classification of Diseases; MR, Mean rank; SIFS, Self and Interpersonal Functioning Scale; PID-5, Personality Inventory for DSM–5 Faceted Brief Form (100 items); BSL-23, 23-item Borderline Symptoms List; PNI, Brief Version of the Pathological Narcissism Inventory; BPAQ, 12-item version of the Buss-Perry Aggression Questionnaire; IRI, Interpersonal Reactivity Index; BIS-11, Barratt Impulsiveness Scale (version 11).

[a] *Higher scores denote better functioning. For all other variables, higher scores denote more severe pathology.*

[b] *Mean rank with different subscripts ($_{a,b,c,d}$) indicate significant post-hoc comparisons following a significant Kruskall-Wallis test, two-tailed, $p < 0.05$, using Bonferroni's correction for multiple comparisons.*

*$p < 0.01$; **$p < 0.001$.*

TABLE 4 | Comparisons among the ICD-11 personality disorders degrees of severity on external variables for sample 2 (specialized clinic for less severe personality disorders).

Scale	Statistic	Personality difficulty ($n = 35$)	Mild PD ($n = 95$)	Moderate PD ($n = 62$)	Severe PD ($n = 25$)	*H*
SIFS total	*M(SD)*	1.17 (0.08)	1.61 (0.16)	2.15 (0.15)	2.80 (0.22)	191.76**
	MR[a]	18.00_a	83.00_b	161.59_c	205.00_d	
SIFS identity	*M(SD)*	1.82 (0.49)	2.40 (0.53)	2.84 (0.49)	3.23 (0.43)	89.47**
	MR[a]	42.90_a	94.62_b	141.02_c	176.76_c	
SIFS self-direction	*M(SD)*	1.34 (0.52)	1.78 (0.62)	2.24 (0.64)	2.94 (0.64)	75.00**
	MR[a]	55.83_a	93.87_b	132.06_c	183.88_d	
SIFS empathy	*M(SD)*	0.67 (0.34)	1.13 (0.49)	1.58 (0.56)	2.45 (0.63)	98.47**
	MR[a]	42.97_a	93.81_b	137.03_c	189.66_d	
SIFS intimacy	*M(SD)*	0.82 (0.43)	1.10 (0.58)	1.89 (0.50)	2.54 (0.64)	109.17**
	MR[a]	55.17_a	81.52_a	150.26_b	186.60_b	
PID-5 negative affectivity	*M(SD)*	1.51 (0.59)	1.70 (0.56)	1.95 (0.53)	2.22 (0.46)	30.05**
	MR[a]	79.01_a	96.68_a	126.29_b	154.90_b	
PID-5 detachment	*M(SD)*	0.80 (0.50)	1.05 (0.61)	1.43 (0.51)	1.86 (0.53)	53.22**
	MR[a]	67.60_a	93.12_a	132.58_b	168.84_b	
PID-5 antagonism	*M(SD)*	0.49 (0.45)	0.67 (0.60)	0.90 (0.58)	1.17 (0.54)	26.16**
	MR[a]	80.51_{ab}	97.20_{ab}	124.02_{bc}	151.68_c	
PID-5 disinhibition	*M(SD)*	0.83 (0.41)	1.16 (0.48)	1.36 (0.57)	1.67 (0.65)	34.57**
	MR[a]	63.34_a	104.01_b	126.05_{bc}	149.62_c	
PID-5 psychoticism	*M(SD)*	0.73 (0.44)	1.13 (0.57)	1.22 (0.55)	1.61 (0.73)	27.60**
	MR[a]	66.09_a	108.15_b	119.07_{bc}	147.54_c	
BSL-23	*M(SD)*	1.39 (0.78)	1.80 (0.84)	1.94 (0.89)	2.69 (0.76)	32.32**
	MR[a]	73.84_a	102.84_{ab}	115.82_b	164.72_c	
PNI grandiose	*M(SD)*	1.71 (0.86)	2.28 (0.80)	2.44 (0.76)	2.42 (0.81)	16.75*
	MR[a]	70.50_a	111.98_b	120.28_b	123.60_b	
PNI vulnerable	*M(SD)*	1.63 (0.79)	2.24 (0.67)	2.78 (0.72)	3.11 (0.84)	59.15**
	MR[a]	55.16_a	96.48_b	138.25_c	159.42_c	

ICD-11, 11th revision of the International Classification of Diseases; MR, Mean rank; SIFS, Self and Interpersonal Functioning Scale; BSL-23, 23-item Borderline Symptoms List; PNI, Brief Version of the Pathological Narcissism Inventory; PID-5, Personality Inventory for DSM–5 Brief Form (25 items).

[a]*Mean rank with different subscripts ($_{a,b,c,d}$) indicate significant post-hoc comparisons following a significant Kruskall-Wallis test, two-tailed, $p < 0.05$, using Bonferroni's correction for multiple comparisons.*

*$p < 0.01$; **$p < 0.001$.*

AMPD model can be used with confidence for the ICD-11 PD model's severity classification (13). More generally, our findings also constitute further evidence that general PD severity is a strong predictor of current symptomatology and distress [e.g., (19, 20)].

Prevalence of PD (i.e., as indicated by a score falling within the Mild, Moderate, or Severe PD categories) was very high in PD samples (84.3 and 73.0%), as expected. The prevalence in private practice was 35.1%, with very few participants in the Moderate or Severe categories. This is consistent with the fact that getting treatment in private practice, because of the costs incurred, most generally requires at least some capacity to maintain a source of revenue and thus to be able to sustain employment, which is a characteristic of Mild PD in contrast with the two most severe categories in the ICD-11 model (14). Prevalence in community participants was 12.1% in the sample of pregnant women, and 22.8% in the community sample collected for initial validation of the SIFS; in both cases, severe cases were extremely rare (< 1%). The prevalence for the latter sample, while falling within the range (4.4–33.1%) of previous epidemiological studies on PD prevalence, is still noticeably higher than the median of 11.5% reported in a recent review of 14 large-scale studies (67). This result might be partially explained by a self-selection bias, as participants from Sample 5 were aware that they were contributing to a study aiming to validate a self-report pertaining to personality functioning; this may have inadvertently attracted participants with personality issues. Nonetheless, these figures are both in a plausible range, which supports the validity of the proposed cutoff between PD and absence of PD. In addition, results from the ROC curve analysis strengthen findings regarding the validity of the SIFS, which showed an excellent capacity to classify participants from PD groups vs. community samples.

External validation of the five categories from the ICD-11 PD model showed a clear gradient of severity, in all samples, and for virtually all the tested variables; a high number of meaningful differences, both from a statistical and a clinical standpoint, were found. The most striking differences were

TABLE 5 | Comparisons among the ICD-11 personality disorders degrees of severity on external variables for sample 3 (private practice clinics).

Scale	Statistic	No PD (n = 124)	Personality difficulty (n = 33)	Mild PD (n = 64)	Moderate PD (n = 15)	H
SIFS total	*M(SD)*	0.70 (0.20)	1.17 (0.08)	1.56 (0.17)	2.13 (0.13)	195.70*
	MR[a]	62.50_{a}	141.00_{b}	185.50_{c}	229.00_{c}	
SIFS identity	*M(SD)*	1.11 (0.51)	1.79 (0.54)	2.17 (0.66)	2.80 (0.48)	116.57*
	MR[a]	75.31_{a}	140.58_{b}	168.77_{bc}	212.47_{c}	
SIFS self-direction	*M(SD)*	0.83 (0.45)	1.41 (0.39)	1.71 (0.72)	2.25 (0.77)	93.30*
	MR[a]	79.20_{a}	145.91_{b}	161.99_{b}	197.59_{b}	
SIFS empathy	*M(SD)*	0.43 (0.30)	0.78 (0.46)	1.08 (0.54)	1.70 (0.52)	98.95*
	MR[a]	79.83_{a}	132.44_{b}	164.70_{bc}	210.37_{c}	
SIFS intimacy	*M(SD)*	0.40 (0.29)	0.72 (0.33)	1.25 (0.58)	1.74 (0.70)	113.11*
	MR[a]	77.04_{a}	127.33_{b}	174.68_{c}	202.07_{c}	
PID-5 negative affectivity	*M(SD)*	0.95 (0.49)	1.19 (0.57)	1.49 (0.56)	1.71 (0.57)	47.07*
	MR[a]	90.96_{a}	117.96_{ab}	151.67_{bc}	174.74_{c}	
PID-5 detachment	*M(SD)*	0.37 (0.31)	0.67 (0.48)	0.85 (0.42)	1.29 (0.53)	74.68*
	MR[a]	83.06_{a}	126.81_{b}	158.04_{bc}	195.11_{c}	
PID-5 antagonism	*M(SD)*	0.42 (0.36)	0.34 (0.30)	0.58 (0.48)	0.76 (0.51)	13.21*
	MR[a]	110.48_{a}	99.16_{a}	131.25_{ab}	157.74_{b}	
PID-5 disinhibition	*M(SD)*	0.68 (0.44)	0.89 (0.46)	1.14 (0.54)	1.43 (0.71)	39.67*
	MR[a]	92.65_{a}	120.97_{ab}	145.23_{b}	169.63_{b}	
PID-5 psychoticism	*M(SD)*	0.24 (0.29)	0.34 (0.42)	0.47 (0.39)	0.71 (0.59)	26.23*
	MR[a]	98.42_{a}	115.23_{ab}	144.10_{b}	158.79_{b}	
PSI total	*M(SD)*	0.86 (0.42)	1.15 (0.46)	1.36 (0.61)	1.64 (0.54)	50.76*
	MR[a]	88.72_{a}	128.28_{b}	147.95_{bc}	180.53_{c}	
ECR anxiety	*M(SD)*	3.59 (1.23)	4.19 (1.30)	4.84 (1.21)	4.50 (1.72)	37.92*
	MR[a]	92.15_{a}	120.50_{ab}	155.74_{bc}	136.53_{abc}	
ECR avoidance	*M(SD)*[b]	2.48 (1.08)	2.90 (1.22)	2.81 (1.11)	2.76 (0.96)	4.92

ICD-11, 11th revision of the International Classification of Diseases; PD, Personality disorder; MR, Mean rank; SIFS, Self and Interpersonal Functioning Scale; PID-5, Personality Inventory for DSM-5 Faceted Brief Form (100 items); PSI, 14-item version of the Psychiatric Symptom Index; ECR, shortened 12-item version of the Experiences in Close Relationships questionnaire.

[a] *Mean rank with different subscripts ($_{a,b,c,d}$) indicate significant post-hoc comparisons following a significant Kruskall-Wallis test, two-tailed, $p < 0.05$, using Bonferroni's correction for multiple comparisons.*

[b] *Mean rank not shown in the absence of significant contrasts.*

*$p < 0.001$.

found in the most severe sample (Sample 1), as there was a very clear delineation among the Mild, Moderate, and Severe categories. These differences were very apparent on external variables reflective of externalizing pathology, notably aggression and impulsivity. This is especially important to support the validity of our classification, as the ICD-11 PD model stresses that the risk of harm to self and others is an important distinction among degrees of severity. It also supports the hypothesis from members of the ICD-11 PD Working Group, which was initially formulated about the borderline PD diagnosis specifically, "that individuals with mild personality disorder will display largely negative affective symptoms, whereas *those with more severe disturbance will also have disinhibited and dissocial behaviors* [emphasis added]" [(4), p. 495]. It also mitigates potential concerns regarding the SIFS' capacity for discrimination based on those variables, as the instrument was primarily developed to assess self and interpersonal dysfunction based on the AMPD model. In non-clinical samples, the most apparent distinctions were observed in Sample 4 (pregnant women), with the cleanest break being observed between the Personality Difficulty and Mild PD degrees; as measures in that sample mostly focused on internalizing pathology (e.g., depression, trauma, negative affectivity, dissociation), these results highlight the SIFS' capacity to discriminate among degrees of severity based on personal distress, which is key to discriminate between Personality Difficulty (where distress is expected to be transient or of low intensity) and Mild PD (where distress may be substantial) in the ICD-11 PD model.

However, it should be noted that the SIFS' capacity for fine-grained discrimination among severity degrees, as measured by the presence of statistically significant differences between contiguous categories, was uneven across samples. Interestingly, the scale's discriminant capacity was at its best in the most severe sample of PD patients (see **Table 3**), which supports Waugh et al.'s (25) conclusion that the SIFS seems more pathology-focused, and showed a lower discriminant capacity in the private practice sample (see **Table 5**). One possible—and intriguing—possibility is that "isomorphism" between structural personality deficits assessed by degree of severity measures and external correlates reflective of externalizing and/or internalizing

TABLE 6 | Comparisons among the ICD-11 personality disorders degrees of severity on external variables for sample 4 (pregnant women).

Scale	Statistic	No PD ($n = 927$)	Personality difficulty ($n = 128$)	Mild PD ($n = 126$)	Moderate PD ($n = 18$)	*H*
SIFS total	*M(SD)*	0.61 (0.23)	1.14 (0.08)	1.54 (0.16)	2.11 (0.16)	642.23*
	MR[b]	464.00_a	991.50_b	1118.50_{bc}	1190.50_c	
SIFS identity	*M(SD)*	0.86 (0.38)	1.39 (0.38)	1.97 (0.47)	2.11 (0.51)	436.61*
	MR[b]	490.39_a	865.25_b	1056.89_{bc}	1090.28_c	
SIFS self-direction	*M(SD)*	0.78 (0.43)	1.37 (0.49)	1.68 (0.51)	2.04 (0.60)	355.76*
	MR[b]	500.30_a	862.90_b	998.84_{bc}	1073.19_c	
SIFS empathy	*M(SD)*	0.46 (0.33)	0.93 (0.39)	1.28 (0.49)	2.15 (0.57)	392.89*
	MR[b]	496.08_a	867.75_b	1041.38_c	1168.14_c	
SIFS intimacy	*M(SD)*	0.37 (0.31)	0.89 (0.43)	1.25 (0.53)	2.13 (0.45)	394.87*
	MR[b]	495.48_a	876.46_b	1095.87_c	1175.67_c	
K-10	*M(SD)*	2.00 (0.64)	2.33 (0.60)	2.70 (0.63)	2.83 (0.56)	157.00*
	MR[b]	519.43_a	697.26_b	872.00_c	945.06_c	
EPDS	*M(SD)*	1.82 (0.46)	2.13 (0.49)	2.35 (0.52)	2.48 (0.41)	149.60*
	MR[b]	524.27_a	722.01_b	851.15_c	942.08_{bc}	
PANAS positive affect[a]	*M(SD)*	2.81 (0.62)	2.70 (0.58)	2.61 (0.58)	2.48 (0.41)	18.03*
	MR[b]	595.40_a	528.30_{ab}	492.79_b	380.47_b	
PANAS negative affect	*M(SD)*	2.17 (0.67)	2.62 (0.72)	2.77 (0.71)	2.87 (0.50)	118.63*
	MR[b]	523.55_a	728.25_b	802.84_b	876.15_b	
DES absorption	*M(SD)*	1.37 (1.19)	2.38 (1.69)	3.07 (1.89)	3.45 (1.88)	155.98*
	MR[b]	525.13_a	716.34_b	862.23_c	937.00_{bc}	
DES depersonalization	*M(SD)*	0.41 (0.92)	1.10 (1.82)	1.66 (2.18)	2.05 (2.45)	110.66*
	MR[b]	542.43_a	623.52_b	813.52_c	857.81_{bc}	
PCL-5	*M(SD)*	0.56 (0.51)	0.95 (0.68)	1.27 (0.68)	1.34 (0.57)	174.68*
	MR[b]	500.72_a	723.38_b	860.57_c	910.94_{bc}	

ICD-11, 11th revision of the International Classification of Diseases; SIFS, Self and Interpersonal Functioning Scale; MR, Mean rank; K-10, Kessler Psychological Distress Scale; EPDS, Edinburgh Perinatal/Postnatal Depression Scale; PANAS, Positive and Negative Affect Schedule; DES, Dissociative Experiences Scale; PCL-5, Posttraumatic Stress Disorder Checklist for DSM-5.

[a] *Higher scores denote better functioning. For all other variables, higher scores denote more severe pathology.*

[b] *Mean rank with different subscripts ($_{a,b,c,d}$) indicate significant post-hoc comparisons following a significant Kruskall-Wallis test, two-tailed, $p < 0.05$, using Bonferroni's correction for multiple comparisons.*

*$p < 0.001$.

symptoms may be at its highest in clinical samples where patients are the most dysfunctional. In contrast, in private practice patients, there might be a more pronounced gap, as "structural" deficits may be present but with less apparent impact, which is notably reflected in a preserved ability to maintain employment, a prerequisite in most cases to afford psychotherapy in private settings. Other factors, such as issues pertaining to statistical power (with notable differences between group sizes to test for contrasts), also likely played a role.

The main limitation of the present study is the sole reliance on self-reported variables as external validators. While evidence supporting the validity and usefulness of self-ratings of personality pathology is mounting [e.g., (74, 75)], the impact of response style bias as a potential confounding variable could not be taken into account. Future investigations of the validity of the present degrees of severity should not only include multiple instruments, but also multiple methods, as well as longitudinal and behavioral outcomes assessment, most notably to assess the risk of harm to self and others. The lack of uniformity among batteries of measures in the different samples is also a noteworthy limitation, and hampers some potentially useful comparisons. Precise estimation of participants' ethnic background was unavailable, but data were collected in overwhelmingly Caucasian-white communities, which limits generalization of the findings, given than ethnicity has a well-documented impact on PD epidemiology [e.g., (76)]; this calls for inclusion of more diverse samples in future research. There was a significantly unbalanced male-female ratio in the total sample as well as across the four mixed-gender samples (1, 2, 3, and 5).

In sum, the present study provides potentially useful guidelines to determine severity of personality pathology based on the ICD-11 model, using a short self-report questionnaire, the Self and Interpersonal Functioning Scale. Results suggest that the SIFS total score can be used with confidence as a screening tool for provisional assessment of PD severity; it showed a strong capacity, in five independent samples, to classify patients in categories that were meaningfully associated with a number of indices of externalizing and internalizing symptomatology relevant to PD. The present study should be seen as a positive step in the validation of time-efficient, accessible, and cost-effective clinical strategies to overcome the

TABLE 7 | Comparisons among the ICD-11 personality disorders degrees of severity on external variables for sample 5 (community participants).

Scale	Statistic	No PD (n = 150)	Personality difficulty (n = 53)	Mild PD (n = 45)	Moderate PD (n = 13)	H
SIFS total	*M(SD)*	0.64 (0.22)	1.15 (0.08)	1.52 (0.14)	2.11 (0.16)	207.28**
	MR[b]	75.50_a	177.50_b	225.00_c	255.00_c	
SIFS identity	*M(SD)*	0.90 (0.41)	1.47 (0.53)	1.85 (0.61)	2.69 (0.44)	118.23**
	MR[b]	90.04_a	95.46_b	162.74_{bc}	246.46_c	
SIFS self-direction	*M(SD)*	0.83 (0.44)	1.28 (0.40)	1.60 (0.56)	1.94 (0.62)	91.94**
	MR[b]	94.38_a	161.36_b	191.82_b	219.23_b	
SIFS empathy	*M(SD)*	0.43 (0.31)	0.83 (0.41)	1.18 (0.48)	1.48 (0.52)	115.34**
	MR[b]	90.71_a	159.19_b	205.44_c	230.15_c	
SIFS intimacy	*M(SD)*	0.45 (0.39)	1.01 (0.48)	1.43 (0.56)	2.21 (0.45)	129.33**
	MR[b]	88.02_a	164.92_a	204.11_b	245.92_b	
PID-5 negative affectivity	*M(SD)*	0.88 (0.47)	1.24 (0.59)	1.49 (0.61)	1.72 (0.52)	71.71**
	MR[b]	87.25_a	136.72_b	165.72_{bc}	194.86_c	
PID-5 detachment	*M(SD)*	0.36 (0.34)	0.68 (0.43)	1.02 (0.47)	1.59 (0.18)	95.51**
	MR[b]	82.51_a	126.81_b	165.85_b	217.86_c	
PID-5 antagonism	*M(SD)*	0.46 (0.47)	0.53 (0.39)	0.57 (0.49)	0.70 (0.50)	12.77**
	MR[b]	104.76_a	126.80_{ab}	140.26_b	144.79_{ab}	
PID-5 disinhibition	*M(SD)*	0.63 (0.43)	0.90 (0.52)	1.09 (0.53)	1.20 (0.48)	13.33**
	MR[b]	104.24_a	128.66_{ab}	139.95_b	144.46_{ab}	
PID-5 psychoticism	*M(SD)*	0.20 (0.29)	0.31 (0.33)	0.46 (0.51)	0.92 (0.60)	35.76**
	MR[b]	98.73_a	129.07_{ab}	139.13_b	196.68_c	
IRI perspective taking[a]	*M(SD)*	5.30 (0.76)	4.99 (0.87)	4.95 (0.86)	4.34 (1.12)	15.91*
	MR[b]	138.60_a	115.36_{ab}	109.30_{ab}	71.89_b	
IRI empathic concern[a]	*M(SD)*[c]	5.56 (1.12)	5.35 (0.94)	5.54 (0.92)	5.27 (1.07)	3.71
IPO total	*M(SD)*	1.54 (0.27)	1.77 (0.33)	2.02 (0.45)	2.32 (0.55)	74.05**
	MR[b]	93.46_a	142.91_b	185.12_{bc}	201.96_c	
IPO identity	*M(SD)*	2.07 (0.48)	2.45 (0.54)	2.74 (0.55)	2.89 (0.81)	59.37**
	MR[b]	96.54_a	143.55_b	175.92_b	185.32_b	
IPO defense mechanisms	*M(SD)*	1.46 (0.40)	1.85 (0.58)	2.10 (0.63)	2.59 (0.89)	66.50**
	MR[b]	95.69_a	145.19_b	173.32_b	201.64_b	
IPO reality testing	*M(SD)*	1.19 (0.30)	1.22 (0.21)	1.43 (0.58)	1.71 (0.50)	28.59**
	MR[b]	110.59_a	131.88_{ab}	147.50_b	204.64_c	
SWLS[a]	*M(SD)*	5.76 (0.90)	5.11 (0.94)	4.25 (1.11)	3.31 (1.42)	86.14**
	MR[b]	161.38_a	113.34_b	67.90_c	42.00_c	
RSES[a]	*M(SD)*	3.49 (0.39)	3.09 (0.40)	2.57 (0.54)	2.33 (0.47)	100.44**
	MR[b]	167.50_a	105.71_{ab}	70.58_b	30.57_c	

ICD-11, 11th revision of the International Classification of Diseases; SIFS, Self and Interpersonal Functioning Scale; MR, Mean rank; PID-5, Personality Inventory for DSM–5 Faceted Brief Form (100 items); IPO, Brief 19-item version of the Inventory of Personality Organization; SWLS, Satisfaction with Life Scale; RSES, Rosenberg Self-Esteem Scale.

[a] *Higher scores denote better functioning. For all other variables, higher scores denote more severe pathology.*

[b] *Mean rank with different subscripts ($_{a,b,c,d}$) indicate significant post-hoc comparisons following a significant Kruskall-Wallis test, two-tailed, $p < 0.05$, using Bonferroni's correction for multiple comparisons.*

[c] *Mean rank not shown in the absence of significant contrasts.*

$^*p < 0.01$; $^{**}p < 0.001$.

reluctance of some clinicians to diagnose PD, as it is often perceived as difficult, time-consuming, and off-putting [e.g., (29, 77)]. Indeed, the empirically-based anchors presented in this study are straightforward in their interpretation, which is likely to make them appealing for screening purposes to many clinicians irrespective of their PD assessment expertise. In addition, the SIFS provides an opportunity to assess personality pathology in a way that bridges the North American and European emerging conceptualizations of PD severity, with self and interpersonal deficits at their core. In order to rule on the validity of the proposed anchor points, future studies should focus on their usefulness to guide intensity of clinical treatment and to predict treatment course (13).

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because Ethics approval did not include sharing of the

dataset for the present research. Upon reasonable request, the dataset could be shared, contingent upon the approval of an amendment by ethics committees that authorized the present research. Requests to access the datasets should be directed to dominick.gamache@uqtr.ca.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics committees from the Université du Québec at Trois-Rivières, the Université Laval, the Integrated University Health and Social Services Center of the Capitale-Nationale Sectoral Research Ethics Committee in Neurosciences and Mental Health, and the Integrated University Health and Social Services Center of the Mauricie-et-du-Centre-du-Québec. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

DG and CS designed the study, drafted the first version of the manuscript, analyzed, and interpreted the data. CS drafted the grant proposals that secured financing for the study with the contribution of DG, NB, and MT. CS, NB, and RL drafted the ethics approval demands with the contribution of DG. CS, PL, MP, ML, KM, M-CN, and MT made substantial contributions to data acquisition. PL, NB, AC, JF, RL, KM, and M-CN made substantial revisions to the original draft. All authors have read the manuscript and have approved its submission in the present form.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2021.628057/full#supplementary-material

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Personality Inventory for DSM-5 in China: Evaluation of DSM-5 and ICD-11 Trait Structure and Continuity With Personality Disorder Types

*Shulin Fang[1], Zirong Ouyang[2], Panwen Zhang[1], Jiayue He[1], Lejia Fan[1], Xingwei Luo[1], Jianghua Zhang[3], Yan Xiong[3], Fusheng Luo[4], Xiaosheng Wang[5], Shuqiao Yao[1] and Xiang Wang[1,6]**

[1] Medical Psychological Center, The Second Xiangya Hospital, Central South University, Changsha, China, [2] Hunan Biological and Electromechanical Polytechnic, Changsha, China, [3] Student Affairs Department, Central South University, Changsha, China, [4] Student Affairs Department, Central South University of Forestry and Technology, Changsha, China, [5] Department of Human Anatomy and Neurobiology, Xiangya School of Medicine, Central South University, Changsha, China, [6] China National Clinical Research Center on Mental Disorders (Xiangya), Changsha, China

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***Correspondence:**
Xiang Wang
wangxiang0916@csu.edu.cn

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The Personality Inventory for the DSM-5 (PID-5) is an established tool for assessing personality disorder (PD) traits that was developed based on section III of the DSM-5. It is composed of 220 items, organized into 25 facets, which are distributed among five domains. The psychometric properties of the Chinese version of the PID-5 remain to be demonstrated. Two samples were embodied in this study that included 3,550 undergraduates and 406 clinical patients. To probe the structure of the PID-5, parallel analyses were conducted to explore the unidimensionality of its 25 facets and a series of confirmatory factor analyses (CFAs) were carried out to confirm the 25 lower-order facets and their distribution among five higher-order domains. Then, the PID-5 was employed to measure the DSM-5 and ICD-11 trait models and to explore the relationship of DSM-IV categorical PDs with DSM-5 and ICD-11 personality traits. Correlation and regression analyses were conducted to probe how well DSM-IV categorical PDs correspond with maladaptive personality traits specified in the DSM-5 and five ICD-11 domains. The respective average internal reliability coefficients of the 25 facets obtained for undergraduate and clinical patient samples were 0.76 and 0.81, those obtained for the five DSM-5 domains were 0.89 and 0.91, and those obtained for the five ICD-11 domains were 0.87 and 0.89. Serial CFAs confirmed the rationality of the PID-5's lower-order 25-facet structure and higher-order five-domain structure in both samples. Correlation and regression analyses showed that DSM-5 specified traits explain the variance in PD presentation with a manifold stronger correlation (R^2 = 0.24–0.44) than non-specified traits (R^2 = 0.04–0.12). Overall, the PID-5 was shown to be a reliable, stable, and structurally valid assessment tool that captures pathological personality traits related to DSM-5 and ICD-11 PDs.

Keywords: DSM-5, personality disorders, factor structure, ICD-11, dimensional trait model

INTRODUCTION

To address shortcomings in the DSM-IV categorical personality disorder (PD) diagnosis system—including complex comorbidity, within-category heterogeneity, and arbitrary diagnostic thresholds (1)—section III of the DSM-5 proposed a new hybrid alternative model of personality disorders (AMPD) that considers both pathological personality symptoms and maladaptive traits and provides accompanying assessment tools. There are two sets of core diagnostic criteria in the AMPD, A and B. Criteria A are intended to detect the severity of impairments affecting the self-domain (identity and self-direction) and the interpersonal domain (empathy and intimacy). Meanwhile, criteria B are intended to enable a dimensional assessment of pathological personality traits (that correlate with DSM-IV criteria) in concordance with the Personality Inventory for the DSM-5 (PID-5) instrument (2).

The PID-5 is a 220-item assessment organized hierarchically into 25 specific facets that are distributed among five broad domains (3). The general scoring method for the PID-5 involves the extraction of 15 facets, which are distributed three per domain across five domains (4). Although a scoring algorithm was proposed with the initial introduction of the PID-5, it was deemed to be not more suitable than the aforementioned scoring method and it has not been applied substantially in research (5). The ICD-11 proposes a fully dimensional PD diagnostic system rather than a categorical PD diagnostic system (6). This system proposes five domains—namely, negative affect, detachment, dissociality, disinhibition, and anankastia—to describe prominent PD characteristics (7), which are similar to the five domains in section III of DSM-5, with the exception of anankastia. To harmonize these two systems, scholars developed a new algorithm that uses 18 PID-5 facets to represent the five ICD-11 personality domains (8, 9).

The PID-5 has been translated into several languages since it was first published in English in 2012, starting with Italian, which Fossati et al. showed to have good reliability and validity in Italian general-population adults (10). Subsequently, the psychometric properties of German (11), French (12), Portuguese (13), Arabic (14), and Iranian (15) versions of the PID-5 were validated in normal populations. Meanwhile, German (11), Spanish (16), Dutch (17), and Danish (18) versions of the PID-5 were examined in clinical patient samples. The PID-5 has been less studied in clinical patients than in normal populations. Notwithstanding, studies have demonstrated that the PID-5 can distinguish clinical patients from normal populations effectively and that it exhibits good reliability and validity. In general, the PID-5 has been shown to be a stable and valid assessment tool across multiple language versions and various samples. Notably, almost all of these versions were validated for western populations, with the exceptions of the Arabic (14) and Iranian (15) versions. In a systematic review, McGilloway et al. (19) emphasized the importance of cultural factors in mental disorder diagnoses, particularly given that PDs are defined as enduring patterns of inner experiences and behaviors that deviate markedly from expectations, which are themselves heavily informed by cultural factors (2). To the best of our knowledge, there has been no published validation of the psychometric properties of a Chinese version of the PID-5.

The hierarchical structure of the PID-5, with its 25 lower-order facets and five higher-order domains, has been of keen interest to researchers. This construction was intended to reveal a preliminary maladaptive personality trait model for the DSM-5 and thus allow PDs to be viewed from a trait perspective (3). Based on their review of existing models and measures of maladaptive personality traits, the DSM-5 Personality and PDs workgroup identified five broad domains with which to construct a framework of the pathological personality trait model of the PID-5: negative affectivity, disinhibition, detachment, antagonism, and psychoticism (20). After considering 37 potential facets of maladaptive core personality trait features, the workgroup decided by consensus on 25 facets to be organized under the five domains (3). Several studies employing various methods, including exploratory factor analysis (EFA) (21), have confirmed the five-factor, 25-facet structure of the PID-5 (16, 17). Recently, this structure has been supported by studies of vulnerable populations, including adolescent and young-adult psychiatric patients (22). However, consistent findings of cross-loading between non-contributing facets (e.g., restricted affect, depressivity, hostility, rigid perfectionism, perseveration, and callousness) have raised questions about distinctions between contributing and non-contributing facets (16, 23). Using confirmatory factor analysis (CFA) under the condition of permitting variant correlations, Gore and Widiger confirmed a five-factor higher-order structure of the PID-5 from its 25 putative facets in a community sample (24). In general, prior EFA and CFA studies have demonstrated the appropriateness of a five-factor structure of the PID-5 directly from the 25 PID-5 facets, but the structure of the PID-5 has not been confirmed systemically starting from the level of its 220 items to first confirm the 25 specific facets before confirming the five broader domains. Additionally, the differences between contributing and non-contributing facets have not been clarified.

Section III of the DSM-5 retains six PDs from the DSM-IV, including borderline PD, schizotypal PD, antisocial PD, narcissistic PD, avoidant PD, and obsessive–compulsive PD (2) and includes descriptions corresponding to specific diagnostic traits. Corresponding traits were also specified for four PDs that were not included in section III of DSM-5 (paranoid PD, schizoid PD, histrionic PD, and dependent PD) in the "cross-walk" of the DSM-5 task force before the publication of the DSM-5 manual (25). Information from the psychiatric categorial PD diagnostic system in the DSM-IV was included in section II of the DSM-5.

To support clinical diagnostic practices, it is important to clarify how the full-dimensional PD diagnostic system relates to each PD. Although most of the proposed traits correlate strongly with corresponding PDs, some non-proposed traits show moderate or strong correlations with PDs (26–28). Indeed, a meta-analysis that was generally supportive of the specified PD traits showed that the AMPD model had low discriminative validity with some non-proposed traits correlating moderately or strongly with PDs (29). Thus, although traits that have

TABLE 1 | Sample characteristics by group.

Characteristic	Undergraduate sample *N* = 3,550	Clinical sample *N* = 406
Male/female gender ratio, *N* (%)	1,477 (41.6%)/2,324 (58.7%)	155 (38.2%)/251 (61.8%)
Mean age ± SD, years	18.25 ± 0.93	24.48 ± 8.25
Age range, years	18–23	18–57
Diagnosis, *N* (%)		
Depressive disorder	–	157 (38.67%)
Bipolar disorder	–	30 (7.39%)
Schizophrenia	–	21 (5.17%)
Obsessive–compulsive disorder	–	27 (6.65%)
Anxiety disorder	–	38 (9.36%)
Personality disorder	–	125 (30.79%)
Others	–	8 (1.97%)

been supposed to be related to particular PDs in the DSM-5 show a reasonable correspondence to those PDs, a further demonstration of the concrete significance of proposed traits is needed to optimize PD diagnostic methods.

It is imperative to establish how well the five domains of the full dimensional PD diagnostic system introduced in the ICD-11 capture PD categories. Previously, the five PID-5 domains have been associated with specific PD diagnoses as follows: (1) negative affect with paranoid PD, borderline PD, histrionic PD, avoidant PD, dependent PD, and obsessive–compulsive PD; (2) detachment with schizoid PD, schizotypal PD, and avoidant PD; (3) dissociality with paranoid PD, antisocial PD, borderline PD, histrionic PD, and narcissistic PD; (4) disinhibition with antisocial PD, borderline PD, and histrionic PD; and (5) anankastia with obsessive–compulsive PD (30, 31). The five DSM-5 domains are similar to those of the ICD-11 and showed similar correlation patterns, except that the psychoticism domain related mostly to paranoid PD and schizotypal PD (25).

Using the PID-5 to compare how categorical PDs relate to DSM-5 and ICD-11 domains can provide information that will be useful for harmonizing these two systems. Data regarding the relationships between these two systems are particularly lacking in relation to Chinese samples. Thus, the present study had three aims. Firstly, we examined the psychometric properties of the Chinese version of the PID-5, including its reliability and factor structure. Secondly, we used the PID-5 to investigate how the DSM-5 and ICD-11 trait models relate to each other and the PID-5. Lastly, we explored how well the DSM-5 and ICD-11 trait models fit categorical PDs determined based on the Personality Diagnostic Questionnaire (PDQ)-4+.

METHODS

Sample

Healthy undergraduate and clinical patient samples were recruited separately. Written informed consent forms were completed by all participants. This study was approved by the ethics committee of Second Xiangya Hospital, Central South University. The demographic characteristics of the subjects in each group and the diagnoses of the patients are shown in **Table 1**.

For the undergraduate sample, we conducted random recruitment of 3,800 freshmen from two universities in Hunan Province to complete the PID-5 and PDQ-4+. After exclusion of questionnaires that were unfinished or that had garbled responses, valid completed questionnaires were received from 3,550 of the recruits, including 1,447 males (41.6%) and 2,073 females (58.4%) with a mean age of 18.25 ± 0.93 years. A random subsample of 250 students was retested 4 weeks later; valid retest data were obtained from 204 of them, including 82 males (40.2%) and 122 females (59.8%), after deletion of invalid and extreme data.

The clinical sample included 406 patients recruited from the psychiatric outpatient clinic of the Second Xiangya Hospital. The patient sample included 155 males (38.2%) and 251 females (61.8%) with a mean age of 24.48 ± 8.25 years. All patients were diagnosed by two psychiatrists according to the DSM-IV. Their diagnoses included major depressive disorder, bipolar disorder, schizophrenia, obsessive–compulsive disorder, anxiety disorder, and PDs (see **Table 1**).

Instruments

PID-5

The PID-5 is a 220-item scale intended for individuals who are at least 18 years old. The items constitute 25 facets, which are organized into five domains (negative affectivity, detachment, antagonism, disinhibition, and psychoticism). Each item is answered on a four-point Likert-type scale ranging from 0 (very false or often false) to 3 (very true or often true); some are reverse coded. Each domain subscore is calculated as the average of its three contributing facets following the guidance provided by the DSM-5 (4). The remaining facets not included in domain subscore calculations are called non-contributing facets. The Chinese version of the PID-5 used in our study was developed through the translation/back-translation method wherein two linguistic experts translated the English version into a Chinese version, which was then back-translated by another translator who was unaware of the original PID-5. The back-translated version was compared with the original version to complete the Chinese version.

PDQ-4+

The original PDQ-4+ is a 99-item true–false instrument; the contents of the items correspond directly with the DSM-IV criteria for PDs (32). In the DSM-IV, there are 10 PD types in three clusters. Cluster A includes paranoid PD, schizoid PD, and schizotypal PD. Cluster B includes borderline PD, antisocial PD, narcissistic PD, and histrionic PD. Cluster C includes avoidant PD, obsessive–compulsive PD, and dependent PD. We employed Ling, Qian, and Yang's 108-item Chinese version of the PID-5, which has been adapted to Chinese culture (consistency reliability coefficient = 0.70–0.87; retest reliability coefficient = 0.50–0.80) (33).

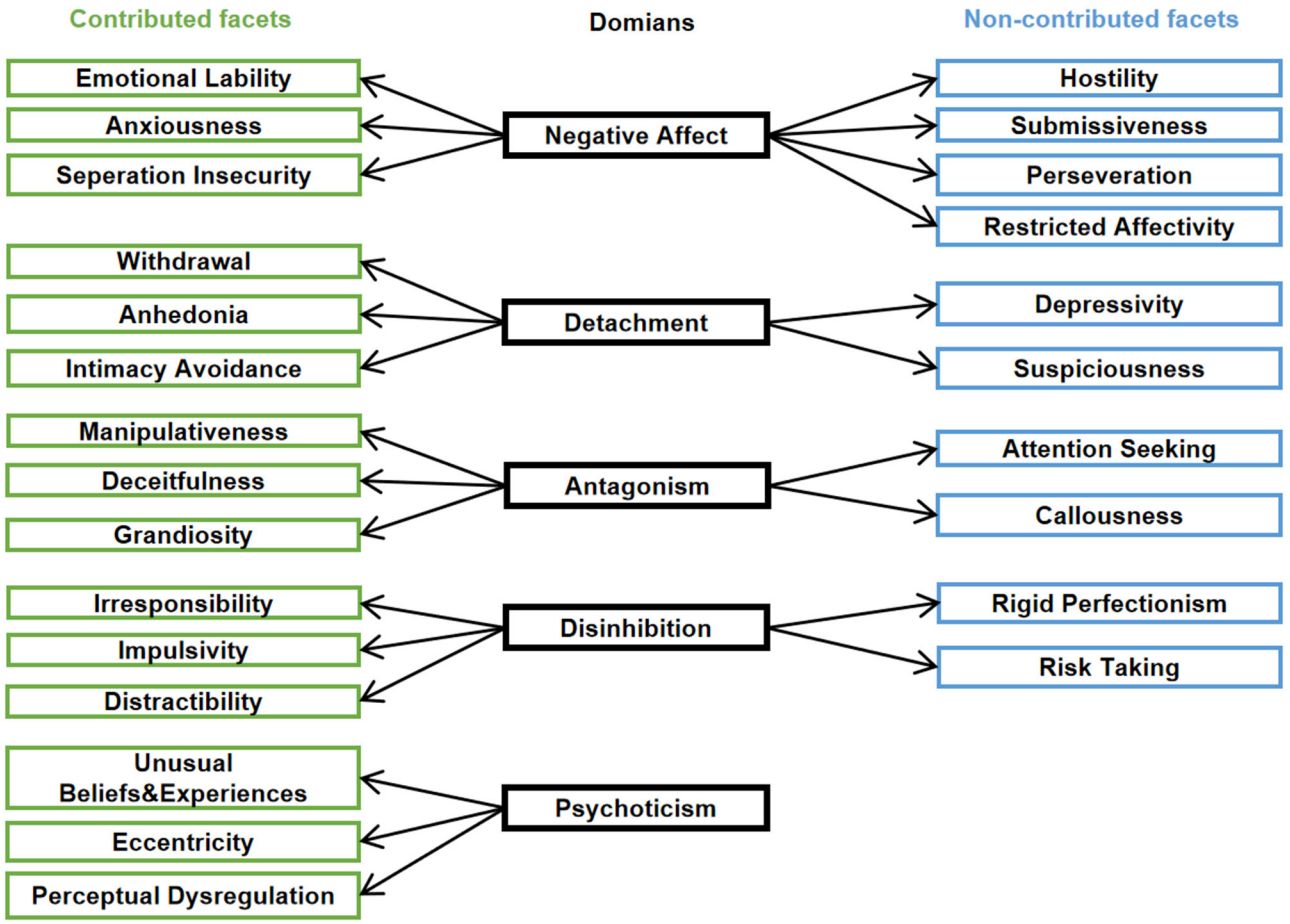

FIGURE 1 | The PID-5 structure. The domains are shown in the middle column, with contributed facets on the left (green) and non-contributed facets (blue) on the right, respectively.

Analysis

Reliability

Internal reliability and retest reliability statistics were completed in SPSS 25.0 software (34). Internal reliability was represented by Cronbach's α coefficient and mean inter-item correlation (MIC) values. We considered Cronbach's α coefficients above 0.70 to be acceptable and above 0.60 to be borderline acceptable (35). The optimal MIC range was 0.10–0.40 (36). Facet and domain score stability over the test–retest interval was assessed with Spearman correlation analysis (37).

Construct Validity

To probe facet structure, parallel analyses were conducted in M-plus 7.0 (38), which enabled us to determine how many factors to extract for each facet. Eigenvalues obtained from a factor analysis of the actual data were compared to eigenvalues obtained from a factor analysis of a random dataset (3,500 random permutations of the original dataset), and the number of factors to be retained was determined based on the number of actual-dataset eigenvalues that exceeded the upper 95% confidence limit of the random-dataset eigenvalues (39).

Next, we conducted a series of CFAs with a maximum likelihood with robust standards errors (MLR) for the 25 lower-order facets and the five higher-order domains of the PID-5 (40). We chose the contributing facets of each domain when confirming the five-factor structure of the PID-5 for two reasons. First, we used the domain-contributing facets when we calculated domain scores according to DSM-5 guidelines. Secondly, the non-contributing facets demonstrated cross-loading on domains yielding a blended structure (41).

The CFAs were conducted in M-plus 7.0 (38). Model fit was evaluated based on comparative fit index (CFI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA) values with the following criteria for a good fit: CFI $\geq$0.90, RMSEA $\leq$0.08, and SRMR $\leq$0.08 (42). Owing to the complexity and stability of the PID-5, parceling was applied to simplify and confirm the factor structure (43). A total of 61 four-item sets were examined.

The initial structure proposed in which each domain contains three to seven facets (3) and the concrete structure of the PID-5 used in our study are shown in **Figure 1**. Each domain subscore was determined by three contributing facets indicated by the

DSM-5 (4). The structure of the first and second columns in **Figure 1** was subjected to CFA of the higher-order structure of the PID-5.

Relationships Among PDQ-4+-Based PDs, Section III of the DSM-5, and the ICD-11

To probe the relationship between section III of the DSM-5 and the ICD-11, Spearman correlation analyses were conducted between the 25 facets and five domains in section III of the DSM-5 and the five ICD-11 domains. Spearman correlation analyses were also conducted between the 10 PDQ-4+-based PDs and the 25 facets and five domains of the PID-5, as well as between the 10 PDs and the five domains of the ICD-11. Correlation coefficients >0.30 were considered acceptable (44).

Regression analyses were carried out in two blocks to determine the capacity of pathological PD traits from section III of the DSM-5 to predict PDQ-4+ score variance. Proposed traits were entered in block 1 and non-proposed traits were entered in block 2. Additionally, the five DSM-5 domains and the five ICD-11 domains were entered into a regression analysis to determine the degree to which personality traits from the ICD-11 and DSM-5 explain the variance of the 10 PDs.

TABLE 2 | Internal reliability and retest reliability of DSM-5 and ICD-11 domains.

Domain	Internal reliability				Retest reliability
	Undergraduate sample		Clinical patient sample		
	α	MIC	α	MIC	
DSM-5					
Negative affect	0.88	0.24	0.91	0.30	0.81**
Detachment	0.88	0.24	0.92	0.33	0.78**
Antagonism	0.86	0.22	0.87	0.24	0.78**
Disinhibition	0.88	0.25	0.90	0.30	0.81**
Psychoticism	0.93	0.27	0.95	0.34	0.86**
ICD-11					
Negative affect	0.93	0.21	0.95	0.28	0.83**
Detachment	0.85	0.21	0.89	0.26	0.86**
Dissociality	0.89	0.20	0.90	0.21	0.83**
Disinhibition	0.84	0.13	0.87	0.16	0.82**
Anankastia	0.84	0.22	0.86	0.25	0.78**

*The α-values are Cronbach's α coefficients. MIC, mean inter-item correlations. **$p < 0.01$.*

RESULTS

Reliability

Descriptive analysis affirmed normal distributions of the 25 facets and five domains of the PID-5, in both the undergraduate sample and the clinical patient sample (means are reported with standard deviations in (**Supplementary Tables 1, 2**). Independent *t*-tests showed that the PID-5 facets and domains were distributed differently between the undergraduate sample and the PDs sample (**Supplementary Table 3**).

Regarding facet reliability of the 25 PID-5 facets (**Supplementary Table 4**), with the exceptions of suspiciousness and restricted affectivity, the Cronbach's α coefficients of the remaining 23 facets in the undergraduate sample were all >0.65, with a mean coefficient value of 0.76 (range, 0.54–0.91). With the exception of restricted affectivity, the Cronbach's α coefficients of the remaining 24 facets in the clinical patient sample were >0.70, with a mean coefficient value of 0.81 (range, 0.53–0.93). The mean MIC values for the 25 facets were 0.29 (range, 0.14–0.43) and 0.24 (range, 0.22–0.27) in the undergraduate sample and clinical patient sample, respectively. The mean retest reliability coefficient of the facets in the undergraduate sample was 0.68 (range, 0.52–0.81).

For the five domains from section III of the DSM-5, the mean Cronbach's α coefficient values were 0.89 (range, 0.86–0.93) in the undergraduate sample and 0.91 (range, 0.87–0.95) in the clinical patient sample (**Table 2**). The associated mean MIC values were 0.24 (0.22–0.27) in the undergraduate sample and 0.30 (range, 0.24–0.34) in the clinical patient sample. The mean retest reliability coefficient of the facets in the clinical patient sample was 0.81 (range, 0.78–0.86).

For the five domains from the ICD-11, we obtained mean Cronbach's α coefficient values of 0.87 (range, 0.84–0.93) in the undergraduate sample and 0.89 (range, 0.86–0.95) in the clinical patient sample (**Table 2**). The associated mean MIC values were 0.19 (0.13–0.22) and 0.23 (range, 0.16–0.28), respectively. The mean retest reliability coefficient of the facets in the clinical patient sample was 0.82 (range, 0.78–0.86).

Construct Validity

Unidimensionality

Parallel comparative analyses were conducted to determine the unidimensionality of the 25 facets of the PID-5 in the undergraduate sample and clinical patient sample, in which empirical data eigenvalues exceeding the upper 95% confidence limit of random data eigenvalues were considered reasonable to retain as factors. For the undergraduate sample, parallel analyses identified 17 unidimensional and 7 bi-dimensional facets (depressivity, hostility, perseveration, restricted affectivity, rigid perfectionism, suspiciousness, and withdrawal), and risk-taking suggested retaining three factors.

For the clinical patient sample, three facets (hostility, perseveration, and restricted affectivity) were suggested to retain two factors and one facet (restricted affective) was suggested to retain three factors. Overall, those facets identified as non-unidimensional tended to relate to non-contributing facets in both the undergraduate sample and the clinical patient sample.

Factor Structure

Serial CFAs showed that both the lower-order 25-facet model and the higher-order five-domain model fit well in the undergraduate and clinical patient samples. The CFI, SRMR, and RMSEA values obtained in the CFAs are reported in **Table 3**. Briefly, with the undergraduate sample, the fit indices for the lower-order model and higher-order five-domain model met the criteria for a reasonable fit. With the clinical patient sample, the CFA results for the lower-order structure showed a good fit, while those

TABLE 3 | Confirmatory factor analysis results.

Sample	χ^2	*df*	CFI	SRMR	RMSEA (90%CI)
Undergraduates					
Lower order	8134.037	1,469	0.935	0.046	0.036 (0.035, 0.037)
Higher order	5691.261	535	0.907	0.058	0.052 (0.051, 0.053)
Clinical patients					
Lower order	2758.241	1,469	0.919	0.049	0.046 (0.044, 0.049)
Higher order	1380.865	535	0.900	0.078	0.062 (0.058, 0.066)

χ^2, Chi-square; df, degrees of freedom; CFI, comparative fit index; SRMR, standardized root mean square residual; RMSEA, root mean square error of approximation.

TABLE 4 | Correlations between DSM-5 section III domains and ICD-11 domains.

DSM-5 domain	ICD-11 domain, undergraduate sample/clinical patient sample				
	Negative affect	**Detachment**	**Dissociality**	**Disinhibition**	**Anankastia**
Negative affect	**0.89**/0.89****	0.32**/0.38**	0.46**/0.36**	0.56**/0.60**	0.62**/0.56**
Detachment	0.61**/0.67**	**0.91**/0.92****	0.27**/0.12**	0.42**/0.47**	0.45**/0.40**
Antagonism	0.53**/0.40**	0.30**/0.23**	**0.89**/0.89****	0.45**/0.36**	0.45**/0.48**
Disinhibition	0.67**/0.71**	0.40**/0.46**	0.41**/0.30**	**0.94**/0.95****	0.39**/0.36**
Psychoticism	0.69**/0.64**	0.51**/0.54**	0.58**/0.46**	0.56**/0.56**	0.61**/0.58**

*Correlations between similar domains from the two systems are in bold; **$p < 0.01$.*

for the higher-order five-domain model met the criteria for a reasonable fit.

Relationship Between Domains of the DSM-5/Section III and Domains of the ICD-11

Four domains correlated strongly between the two systems in both the undergraduate sample and the clinical patient sample (DSM-5, section III: negative affect, detachment, antagonism, and disinhibition; ICD-11: negative affect detachment, dissociality, and disinhibition). The correlation coefficients are reported in **Table 4**. Briefly, the coefficients for similarity of related domains ranged from 0.89 to 0.94 in the undergraduate sample and ranged from 0.89 to 0.95 in the clinical patient sample. Meanwhile, the coefficients for other correlations ranged from 0.27 to 0.69 in the undergraduate sample and ranged from 0.30 to 0.71 in the clinical patient sample.

Relationships of PDQ-4+-Based PDs With Section III of the DSM-5 and the ICD-11

Section III of the DSM-5

As reported in **Table 5**, correlation analysis showed that, in general, specified traits correlated more strongly with PDQ-4+ scores for their respective PDs (mean $r^2 = 0.38$) than did non-specified traits (mean $r^2 = 0.19$). However, some specified traits correlated weakly with putatively corresponding PDs. For example, the correlation coefficient between avoidant PD and intimacy avoidance was 0.15, which is lower than the highest value coefficient obtained for non-specified traits (i.e., coefficient for borderline PD with anhedonia was 0.40).

As reported in **Table 6**, regression analysis showed that PD-specified traits (block 1) were predictive of the variance of their corresponding PDs, with coefficients ranging from 0.24 to 0.41 (for explicit beta coefficients, see **Supplementary Table 5**). However, the traits manipulativeness and irresponsibility were not predictive of antisocial PD criteria, and the traits separation insecurity and risk-taking were not predictive of borderline PD criteria. Non-specified traits (block 2) provided only minor incremental information for all 10 PDs, with explained variance values ranging from 0.02 to 0.12. Specified and non-specified traits were related to PD criteria scores with explained variance values ranging from 0.29 to 0.46.

The correlation coefficients obtained for analyses between the five DSM-5 domains and the 10 PDs ranged from 0.01 to 0.58 with a mean value of 0.33 (**Table 5**). Regression analysis showed that all five domains together predicted variance of the 10 PDs with a mean coefficient value of 0.28 (range, 0.18–0.42) (**Table 7**). Each domain was found to have focused correlations with PDs. For example, disinhibition correlated more strongly with borderline PD, antisocial PD, and dependent PD than with other PDs.

ICD-11

The correlation coefficients, beta coefficients, and R^2 values obtained in our examination of the relationship of ICD-11 domains with PDs are reported in **Tables 5**, **7**. The five ICD-11 domains correlated with PDs in distinct patterns. The mean correlation coefficient for hypothesized traits was 0.43 (bold values in **Table 6**; hypotheses based on a previous study), and the

TABLE 5 | Correlation between pathological personality traits measured by the PID-5 and personality disorders measured by PDQ-4+ in the undergraduate sample.

Trait	PPD	SPD	STPD	BPD	ASPD	NPD	HPD	APD	OCPD	DPD
25 facets										
Anhedonia	0.26*	**0.35***	0.20*	0.40*	0.10*	0.22*	0.04*	**0.43***	0.21*	0.30*
Anxiousness	0.42*	0.19*	0.34*	**0.50***	0.15*	0.38*	0.28*	**0.50***	0.40*	**0.46***
Attention seeking	0.33*	−0.04*	0.22*	0.23*	0.24*	**0.42***	**0.50***	0.21*	0.24*	0.27*
Callousness	0.32*	0.25*	0.25*	0.33*	**0.31***	0.30*	0.18*	0.24*	0.16*	0.20*
Cognitive and perceptual dysregulation	0.38*	0.25*	**0.41***	0.52*	0.28*	0.40*	0.27*	0.38*	0.35*	0.38*
Deceitfulness	0.38*	0.10*	0.26*	0.32*	**0.34***	0.35*	0.26*	0.26*	0.14*	0.27*
Depressivity	0.33*	0.30*	0.30*	**0.51***	0.20*	0.29*	0.15*	0.47*	0.30*	0.38*
Distractibility	0.23*	0.15*	0.16*	0.41*	0.20*	0.23*	0.24*	0.40*	0.21*	0.41*
Eccentricity	0.29*	0.28*	**0.43***	0.40*	0.31*	0.35*	0.20*	0.27*	0.31*	0.21*
Emotional lability	0.34*	0.22*	0.26*	**0.57***	0.26*	0.38*	**0.39***	0.39*	0.31*	0.38*
Grandiosity	0.32*	0.09*	0.31*	0.20*	0.23*	**0.43***	0.32*	0.16*	0.24*	0.16*
Hostility	**0.47***	0.22*	0.34*	**0.47***	**0.30***	0.44*	0.34*	0.39*	0.31*	0.33*
Impulsivity	0.19*	0.10*	0.09*	**0.43***	**0.33***	0.24*	0.29*	0.27*	0.14*	0.30*
Intimacy avoidance	**0.07***	**0.38***	0.13*	0.15*	−0.02	0.06*	−0.04*	**0.15***	**0.20***	0.07*
Irresponsibility	0.23*	0.15*	0.15*	0.38*	**0.28***	0.24*	0.20*	0.32*	0.12*	0.34*
Manipulativeness	0.35*	0.06*	0.29*	0.21*	**0.27***	0.34*	**0.32***	0.12*	0.18*	0.16*
Perseveration	0.33*	0.24*	0.33*	0.44*	0.20*	0.36*	0.27*	0.40*	**0.41***	0.41*
Restricted affect	0.21*	**0.33***	**0.28***	0.21*	0.11*	0.20*	−0.02	0.28*	**0.24***	0.16*
Rigid perfectionism	0.31*	0.18*	0.35*	0.24*	0.04	0.33*	0.22*	0.26*	**0.50***	0.24*
Risk taking	0.03	−0.05*	0.06*	**0.06***	**0.39***	0.11*	0.12*	−0.13*	−0.03	−0.12*
Separation insecurity	0.29*	−0.02	0.18*	**0.32***	0.12*	0.28*	0.27*	0.36*	0.21*	**0.45***
Submissiveness	0.19*	0.07*	0.16*	0.29*	0.04	0.18*	0.22*	0.37*	0.22*	**0.42***
Suspiciousness	**0.44***	0.21*	0.33*	0.35*	**0.19***	0.34*	0.19*	0.34*	0.27*	0.27*
Unusual belief and experiences	**0.35***	0.16*	**0.47***	0.33*	0.25*	0.37*	0.23*	0.19*	0.25*	0.17*
Withdrawal	0.25*	**0.45***	**0.33***	0.35*	0.10*	0.25*	0.01	**0.41***	0.30*	0.22*
DSM-5 domains										
Negative affect	**0.44***	0.17*	**0.34***	**0.58***	0.22*	**0.43***	**0.39***	**0.52***	**0.39***	**0.54***
Detachment	0.25*	**0.50***	**0.30***	**0.39***	0.08*	0.23*	0.01	**0.43***	**0.30***	0.26*
Antagonism	**0.42***	0.10*	**0.34***	**0.30***	**0.35***	**0.44***	**0.35***	0.23*	0.21*	0.25*
Disinhibition	0.26*	0.16*	0.16*	**0.49***	**0.31***	**0.28***	**0.29***	**0.41***	0.19*	**0.43***
Psychoticism	**0.39***	0.28*	**0.50***	0.49*	0.33*	0.43*	0.27*	0.34*	0.34*	0.30*
ICD-11 domains										
Negative affect	**0.51***	0.29*	**0.40***	**0.65***	0.28*	**0.50***	**0.36***	**0.53***	**0.43***	**0.47***
Detachment	0.21*	**0.49***	**0.31***	**0.29***	0.07*	0.21*	−0.02	**0.35***	**0.32***	0.19*
Dissociality	**0.43***	0.09*	**0.34***	**0.34***	**0.33***	**0.50***	**0.45***	0.23*	0.28*	0.26*
Disinhibition	0.21*	0.13*	0.16*	**0.47***	**0.42***	**0.32***	**0.31***	**0.32***	−0.19*	**0.35***
Anankastia	0.37*	0.24*	0.39*	0.41*	0.14*	0.41*	0.29*	0.38*	**0.53***	0.37*

*In the first section (facets), coefficients between specified traits and corresponding PDs are in bold. In the DSM-5 and ICD-11 domain sections, hypothesized correlations are in bold. *$p < 0.01$. (P/S/ST/B/AS/N/H/A/OC/D) PD refer to (paranoid/schizoid/schizotypal/borderline/antisocial/narcissistic/histrionic/avoidant/obsessive-compulsive/dependent) personality disorder, respectively.*

mean coefficient was 0.28 for non-hypothesized traits. With the exception of the correlation between detachment and paranoid PD ($r^2 = 0.21$), coefficient values were greater for hypothesized correlations than for non-hypothesized traits. Unexpectedly, some non-hypothesized correlations showed relatively high correlation coefficients (e.g., negative affect-schizotypal PD coefficient = 0.40). Regression analysis showed that the five ICD-11 domains together predicted the variance of PDs with coefficients ranging from 0.21 to 0.43.

DISCUSSION

In the present study, we obtained comprehensive data supporting the reliability and validity of the Chinese version of the PID-5 in undergraduate and clinical patient samples. To the best of our knowledge, this study provides the first systematic demonstration of the structure of the PID-5 across three levels: each item-composed facet structure, lower-order 25-facet structure, and higher-order five-domain structure. Previous

TABLE 6 | Regression analysis results for PID-5 specified and non-specified traits' predictiveness of SCID-II PD criteria scores in undergraduate sample.

Personality disorder	Overall R^2	ΔR^2	
		Criterion B traits	Non-specified traits
Paranoid	0.35**	0.30**	0.05**
Schizoid	0.29**	0.26**	0.03**
Schizotypal	0.33**	0.28**	0.05**
Antisocial	0.29**	0.27**	0.02**
Borderline	0.46**	0.44**	0.02**
Histrionic	0.35**	0.31**	0.04**
Narcissistic	0.36**	0.24**	0.12**
Avoidant	0.38**	0.33**	0.05**
Dependent	0.37**	0.32**	0.05**
Obsessive–compulsive	0.33**	0.29**	0.04**

**$p < 0.01$.

studies have included one or two levels. Furthermore, our results indicate that there was a smooth transition from the categorical paradigm of the DSM-IV to the dimensional paradigms of the DSM-5/section III and ICD-11.

Concerning reliability, our results showed internal reliability coefficients above 0.85 in both the undergraduate sample and the clinical patient sample, together with retest reliability coefficients above 0.75 for all five domains, indicating that the PID-5 is a reliable and stable tool for assessing pathological PD traits in individuals with a Chinese cultural background. Moreover, to the best of our knowledge, only three prior studies of the PID-5 included retest reliability (13, 45, 46). Thus, this study fills a gap in available evidence regarding the stable reliability of the PID-5. A previous psychometric review of the PID-5 underscored the importance of test–retest research due to measurement differences between retest reliability and internal reliability (47).

On the facet level, the internal coefficients that we obtained for the restricted affectivity facet were relatively low compared with those obtained for other facets in both samples, which may be the consequence of cultural divergence. Generally, modesty and restrained affect are more integral to and much more strongly promoted in Chinese culture than in western cultures, and most of the PID-5 literature has been conducted in the context of western cultures (48). The internal coefficient obtained for the facet suspiciousness was also relatively low in our undergraduate sample, perhaps due, at least in part, to two of the items that this facet is based on being reverse coded. Reverse coding can alter response patterns, compared with forward-coded items, and thus may impede internal reliability (21, 49).

The present results confirmed the 25-facet lower-order structure of the PID-5, as well as the five-domain higher-order structure of the PID-5 after examination of the unidimensionality of the 25 facets. Our unidimensionality analysis of PID-5 facets affirmed the distinction between contributing and non-contributing facets. Specifically, 7 of 10 non-contributing facets in the undergraduate sample and 4 of 10 non-contributing facets in the clinical patient sample were demonstrated to be non-dimensional. These findings are consistent with prior research, including a Czech study showing non-dimensionality of the non-contributed facets of callousness, risk-taking, depressivity, and suspiciousness (41), as well as a French study reporting non-dimensionality of callousness and depressivity (12). Additionally, prior exploratory factor analysis studies of the 25 PID-5 facets have shown that some facets exhibit cross-loading over the five-factor higher-order structure [e.g., rigid perfectionism loading primarily on psychoticism instead of disinhibition; (22)]. Some facets exhibit pure relationships with their corresponding domains, while others share meaningful features across domains (50, 51), which is reflected in the DSM-5 domain scoring rubric. Our parallel analysis suggested that two factors should be retained in the withdrawal facet in the undergraduate sample, one that represents an attitude of affiliation distancing and another that represents one's motivation for affiliation; notably, these two factors appear to be conceptually distinct in Chinese culture (52). Although the distinction between contributing and non-contributing facets has been affirmed, there remains a need to explore the significance of specified vs. non-specified traits in the PID-5 structure.

The presently reported series of CFAs demonstrated the established framework of the PID-5. Consistent with prior findings reported for the Italian PID-5 (10) and the Arabic PID-5 (14), we confirmed that the Chinese PID-5 has a five-domain higher-order structure in both normal and clinical samples. However, these prior studies did not demonstrate the 25-facet lower-order structure, which represents the core markers of the domains and is integral to the overall structure of the PID-5 (3). Thus, here we report, for the first time to our knowledge, a comprehensive, systemic study of the structure of the PID-5 that demonstrates the validity of the structure of the PID-5.

We observed obviously distinct correlation patterns between the DSM-5/section III domains and the ICD-11 domains, particularly for four similar domains across diagnostic systems. Overall, we found that the PID-5 represents the five domains of the ICD-11 accurately. Comparing the ICD-11 with section III of the DSM-5, the ICD-11 facet anankastia, which encompasses perfectionism and emotional and behavioral constraint, seems beneficial for capturing the main characteristics of obsessive–compulsive PD. Although psychoticism is not included in the ICD-11 because it considers the schizotypal phenotype to be a variant of schizophrenia rather than a distinct PD, a series of studies have highlighted the importance of psychoticism in PD descriptions (53, 54). Overall, harmonizing PD concepts between section III of the DSM-5 and the ICD-11 would benefit from more accurate elaboration of PDs. The algorithm for PID-5 may be helpful in advancing the harmonizing process.

Elucidating the relationships of the two presently examined dimensional PD diagnostic systems with a categorical PD diagnostic system can provide clinically useful information. Our correlation and regression analysis findings showing that DSM-5/section III–specified traits that have diagnostic significance for particular PDs can be discriminated from non-specified traits are consistent with previous studies to some extent (17, 26, 28, 55). However, some specified facets of avoidant PD and borderline PD had only weak correlations with their corresponding PDs and were not reliable predictors of corresponding scale scores,

TABLE 7 | Multiple regression coefficients for DSM-5 and ICD-11 domains as predictors of 10 PD.

Domain	PPD	SPD	STPD	BPD	ASPD	NPD	HPD	APD	OCPD	DPD
DSM-5										
Negative affect	**0.34****	−0.04	0.14**	**0.42****	−0.06**	0.30**	**0.32****	**0.43****	**0.30****	**0.47****
Detachment	**0.05****	**0.53****	**0.11****	0.07**	−0.18**	−0.02	−0.28**	0.26**	0.17**	0.00
Antagonism	**0.28****	−0.08**	0.09**	**−0.01**	**0.21****	**0.26****	0.24**	−0.01	−0.01	0.02**
Disinhibition	−0.13**	−0.13**	−0.26**	**0.13****	**0.24****	−0.06	**0.12****	0.06**	−0.16**	0.18**
Psychoticism	**0.07****	0.14**	**0.48****	0.15**	0.21**	0.16**	0.02	−0.08**	0.21**	−0.09**
R^2	0.28**	0.27**	0.29**	0.42**	0.18**	0.30**	0.24**	0.33**	0.22**	0.31**
ICD-11										
Negative affect	**0.49****	0.12**	0.26**	**0.59****	0.04**	0.34**	**0.22****	**0.49****	**0.19****	**0.37****
Detachment	**−0.05****	**0.46****	**0.12****	−0.05**	−0.09**	−0.07**	−0.28**	0.10**	0.08**	−0.10**
Dissociality	**0.24****	−0.08**	0.17**	**−0.04***	**0.22****	**0.32****	0.33**	−0.09**	−0.01	−0.05**
Disinhibition	−0.16**	−0.08**	−0.17**	**0.12****	**0.35****	−0.04*	**0.09****	−0.00	−0.10**	0.11**
Anankastia	0.03	0.02	0.14**	0.04*	−0.08**	0.08**	0.07**	0.08**	**0.41****	0.16**
R^2	0.31**	0.25**	0.23**	0.43**	0.21**	0.33**	0.28**	0.30**	0.30**	0.25**

*Hypothesized correlations are in bold; *p < 0.05 and **p < 0.001.*

perhaps due to substantial overlap between facets. For example, the facet risk-taking was not as predictive of borderline PD as expected and there was substantial overlap between impulsivity and risk-taking. Accordingly, it may be that impulsivity levels may provide a sufficient representation of the disinhibited aspects of borderline PD (56).

Consistent with a previous study (8), we found that four domains that are similar between the DSM-5 and ICD-11 showed similarity-focused correlations with PDs. Although both DSM-5 and ICD-11 domains related to PDs, the domains lack robust inter-PD discriminative validity. The psychoticism domain of the DSM-5 and the anankastia domain of the ICD-11 correlated very strongly with schizotypal PD and obsessive–compulsive PD, respectively; as expected, some other non-hypothesized correlations of moderate strength were also observed. Non-hypothesized correlations may be consequent to some comorbidity across PDs. Clark et al. (57) suggested that adopting PD-specified traits as the only PD diagnostic criterion would be effective and clinically useful. However, full-dimensional diagnosis takes time. Hence, when defining the particular traits of a PD, it is important to capture the core characteristics of the PD, both conceptually and based on previous empirical findings obtained in the context of other trait models, and in so doing to consider descriptive clinical perspectives (58).

This study had some limitations that should be considered and addressed in future research. First, this study focused mainly on measured properties of the PID-5; future research should explore the external validity of the PID-5. Second, our examination of the PD diagnostic transition from the DSM-IV to the DSM-5 was limited to trait criteria for PDs without consideration of other criteria, such as impairments in self and interpersonal functioning. Third, our clinical sample was slightly but significantly older than our healthy sample ($p < 0.01$). We do not believe that this difference affected our findings given that the main purpose of this study was to explore the psychometric properties not to compare the PID-5 across groups. Finally, we used the PID-5 to assess ICD-11 domains, although there is a different personality inventory for ICD-11 developed to assess ICD-11 trait domains (59). It may be useful to conduct similar analyses as those reported here with the ICD-11 personality inventory.

CONCLUSION

The present work extends prior research examining the psychometric properties of the PID-5 and does so for the first time in a Chinese sample. The results demonstrate that the PID-5 is a valid tool for assessing DSM-5 and ICD-11 pathological personality traits in Chinese individuals. More specifically, our systematic analysis confirmed, in series, the item-facet, lower-order 25-facet structure, and higher-order five-domain structure of the PID-5. The present findings highlight the difference between contributing facets and non-contributing facets and provide additional knowledge about the structure of the PID-5. Furthermore, employing 18 PID-5 facets, we assessed the five-dimensional traits of the ICD-11 and explored the relationship between the dimensional systems of the DSM-5/section III and the ICD-11, as well as their corresponding relationships with categorical PDs (DSM-IV), and thus demonstrated validity of the PID-5 while also obtaining evidence for improving trait-based criteria. Overall, the present study provided empirical evidence for the DSM-5 and ICD-11 trait models in a Chinese population.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Second Xiangya Hospital. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

SF and ZO conceptualized this study and accomplished primarily data analysis and writing. XianW, SY, and XiaoW supervised the research and revised the initial draft. PZ and JH provided the substantial analysis technical support. LF, XL, JZ, YX, and FL were responsibility for data curation. All authors contributed to the article and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2021.635214/full#supplementary-material

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The ICD-11 Personality Disorder Trait Model Fits the Kurdish Population Better Than the DSM-5 Trait Model

Azad Hemmati[1], *Fateh Rahmani*[1]* *and Bo Bach*[2]

[1] Department of Psychology, University of Kurdistan, Sanandaj, Iran, [2] Psychiatric Research Unit, Center for Personality Disorder Research, Region Zealand Psychiatry, Slagelse, Denmark

The ICD-11 Classification of Personality Disorders and the DSM-5 Alternative Model of Personality Disorders (AMPD) operate with trait domains that contribute to the individual expression of personality disturbance (i.e., negative affectivity, detachment, dissociality, disinhibition, anankastia, and psychoticism). To date, these trait frameworks have not been investigated sufficiently in Middle Eastern cultures. Thus, the present study explored the structure of the ICD-11 and AMPD personality disorder (PD) trait domains in a large mixed sample from the Kurdistan zone of Iran. The ICD-11 and AMPD trait domains were operationalized using empirically supported algorithms for the Personality Inventory for DSM-5 (PID-5). The PID-5 was administered to a large mixed sample (N = 3,196) composed of 2,678 community and 518 clinical participants. Structural validity was investigated using Exploratory Factor Analysis (EFA), whereas differential construct validity was explored by comparing clinical and community scores. Model fit and the expected factor structure were deemed appropriate for the ICD-11 trait model, but less adequate for the DSM-5 trait model (i.e., disinhibition did not emerge as a separate factor). All domain and facet scores showed significant differences between clinical and community subsamples with moderate to large effects, mostly for disinhibition and dissociality/antagonism while least for anankastia. The findings of the present study may suggest that the ICD-11 trait model is more cross-culturally fitting than the DSM-5 AMPD trait model, at least with respect to a large mixed sample from the region of Kurdistan. Accordingly, there is evidence for using PID-5 data for WHO ICD-11 purposes in this part of the World.

Keywords: ICD-11, DSM-5, alternative model of personality disorders (AMPD), PID-5, personality disorder, personality trait, Anankastia, compulsivity

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***Correspondence:**
Fateh Rahmani
f.rahmani@uok.ac.ir

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INTRODUCTION

A paradigm shift has occurred in response to 30 years of demonstrated shortcomings of the categorical conceptualization of personality disorders (PD) (1, 2). Compelling evidence suggests that personality pathology is best measured using a global dimension of dysfunction, whereas specific trait dimensions may serve as sound indicators of individual, stylistic expressions of the dysfunction (3). In 2013, a dimensional and trait-focused approach to PDs was introduced in the DSM-5 Alternative Model for Personality Disorders (AMPD) (4). The AMPD model conceptualizes PDs based on a combination of overall personality functioning and specific

pathological personality traits (i.e., Negative affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism). Likewise, the 11th Revision of WHO's International Classification of Diseases (ICD-11) (5) includes a classification of PDs based on severity (i.e., Mild, Moderate, Severe), and allows the clinician to characterize individual expressions of personality dysfunction by means of trait domain qualifiers (i.e., Negative Affectivity, Detachment, Dissociality, Disinhibition, and Anankastia). The DSM-5 AMPD and the ICD-11 approaches are similar in many respects. However, the ICD-11 trait model differs from its DSM-5 counterpart by its inclusion of a separate Anankastia domain and exclusion of a Psychoticism domain.[1] Research on these new trait models have provided broad support (1, 6–8), with particular emphasis on the assessment of the trait domains (9–12). More recently, a number of studies on the ICD-11 trait domains have been conducted (13–20). Nevertheless, only little research has been dedicated to these new trait models in non-Western cultures, and only few international studies have focused on the ICD-11 PD approach, despite the fact that this framework must be used for coding purposes by all WHO-member countries. For example, one Iranian study largely replicated the ICD-11 trait model in a non-clinical sample (21) using a small sample size, which may be considered insufficient and therefore warrants replication in a larger sample. The same applies to a study solely based on university students from Algeria (22). Beyond the aforementioned studies, only the AMPD trait model has been investigated in Middle Eastern cultures with some empirical support (23–25).

Given the overlap between ICD-11 and AMPD trait models and the need for more focus on WHO's international ICD-11 approach, Bach and colleagues (26) developed an algorithm that involved 16 designated PID-5 facets to assess the five proposed ICD-11 trait domains. This PID-5 operationalization of ICD-11 trait domains has subsequently been supported in several studies (21, 27, 28). For instance, Bach et al. (27) found that the PID-5-derived ICD-11 trait domains showed expected associations with categorical PD diagnoses. More recently, Sellbom et al. (29) updated Bach et al.'s (26) ICD-11 scoring algorithm by adding the PID-5 trait facets of Suspiciousness and Attention Seeking to account for more nuances of Negative Affectivity and Dissociality. This revised 18-facet scoring algorithm was validated (i.e., structural and criterion validity) using a large Canadian psychiatric inpatient sample. Thus, it should now be viable for researchers and clinicians across the world to measure the ICD-11 trait domains while simultaneously measuring DSM-5 AMPD traits.

The present study aimed to investigate and compare the psychometric features of the DSM-5 AMPD and ICD-11 trait domain operationalizations including their empirical suitability for the cultural setting of the Kurdistan region. We specifically evaluated the expected five-factor structures and the ability of AMPD and ICD-11 trait domains to distinguish between clinical and non-clinical groups.

[1]The decision not to include psychoticism as a trait domain in ICD-11 is consistent with the WHO tradition of explaining such features entirely within the psychotic spectrum disorders.

METHOD

Procedures and Participants

The current study was based on a mixed sample of 3,196 individuals including 2,678 community participants and 518 psychiatric patients. A total of 72 cases were excluded due to incomplete responses. To ensure valid responses, we employed the PID-5 Response Inconsistency Scale (PID-5-RIS) to detect and exclude cases with random responding based on a PID-5-RIS score of 17 or above (30), which resulted in the exclusion of 301 cases. Consequently, the analyses in the present study were ultimately based on a final sample (N = 2,823) composed of 2,447 community participants and 376 clinical participants. All participants were native Kurds mostly residing in the western provinces of Iran. Their age ranged from 14 to 88 years (mean = 27.5; SD = 9.43) and 50.4% were woman. Data were collected in the period from 2016 until 2019.

Clinical participants were recruited from hospital settings. Community participants were voluntarily recruited via public announcements among college students.

The inclusion criteria for both groups were at least eighth-grade education along with the ability to read and speak Farsi fluently. The exclusion criteria for the community sample were a history of mental disorder, substance use, and serious medical conditions. All participants voluntarily gave their informed consent to participate, and the study was approved by a local ethical committee.

Measure

The Personality Inventory for DSM-5 (PID-5; 23) is a 220-item self-report inventory with a four-point Likert scale ranging from 0 (very false or often false) to 3 (very true or often true). The PID-5 was constructed to measure 25 trait facet scales and five higher-order domain scores. The PID-5 was adapted to the Persian language and the Kurdish population under the supervision of its developer. We used the official APA scoring algorithm (23) to operationalize the DSM-5 AMPD trait domains, whereas the empirically supported ICD-11 scoring algorithm (26, 29) was employed to operationalize the ICD-11 trait domains.

Statistical Approach

In order to be methodologically consistent with the initial PID-5 construction study (31), we performed exploratory factor analysis (EFA) with CF-Equamax rotation and robust maximum likelihood estimation in Mplus 7.4. Model fit was evaluated using chi-square test ($\chi 2$), root mean square error of approximation (RMSEA), comparative fit index (CFI), Tucker–Lewis index (TLI), and standardized root mean square residual (SRMR). We relied on the CFI (above 0.90) and the RMSEA (below 0.08) as indicators of adequate model fit (32, 33). Tucker's congruence coefficients (34) were calculated to compare factor loadings of the obtained DSM-5 and ICD-11 trait structures with patterns in their respective U.S. and Canadian construction studies. Group differences for computed facet and domain scores were calculated using Cohen's d effect sizes (35), where differences may be interpreted as small (0.20), medium (0.50), and large (0.80).

TABLE 1 | Socio-demographic and diagnostic characteristics of participants.

	College sample (n = 2,444)	Patient sample (n = 376)
Age range (*M*; *SD*)	14–58 years (27.17; 9.93)	18–55 years (29.38; 7.57)
Gender		
Female	52.2%	30.1%
Male	46.5%	69.7%
Unidentified	1.3%	0.2%
Marriage		
Single	76.4%	62.5%
Married	20.4%	34.7%
Unidentified	3.2%	2.7%
Education		
≤ High school	3.1%	34.9%
High school	15.3%	41.5%
Undergraduate students	51.6%	14.7%
Master's students	17.7%	2.1%
Doctoral students	1.6%	1.0%
Unidentified	10.5%	5.8%
Personality disorders		
Paranoid	-	2.3%
Schizoid	-	0.8%
Schizotypal	-	1.4%
Antisocial	-	5.0%
Borderline	-	57.3%
Histrionic	-	1.0%
Narcissistic	-	0.8%
Avoidant	-	0.8%
Dependent	-	0.2%
Obsessive-compulsive	-	1.2%
Other mental disorders		
Bipolar disorder, type I	-	11.2%
Major depression	-	8.9%
OCD	-	5.0%
Generalized anxiety disorder	-	1.2%
Social anxiety disorder	-	0.8%
Panic disorder	-	0.6%
Anorexia nervosa	-	0.4%
Somatic symptom disorder	-	0.6%
Body dysmorphic disorder	-	0.2%
Alcohol use disorder	-	0.4%
PTSD	-	0.2%

RESULTS

Socio-demographics and clinical characteristics are reported in **Table 1**.

Scale Reliabilities

As presented in **Table 2**, the alpha coefficients were satisfactory ($\alpha > 0.70$) for 22 out of 25 trait facet scores, which is largely consistent with findings in other international studies. Only the facets of Suspiciousness (0.57), Submissiveness (0.59), and Intimacy avoidance (0.66) showed less adequate internal consistency. The median alpha coefficient across all facet scales was 0.81.

Replication of the Five-Factor Structure for DSM-5 and ICD-11 Models

As presented in **Tables 3**, **4**, the EFA analyses yielded five higher-order factors for both the DSM-5 and the ICD-11 models. The ICD-11 model largely showed the expected pattern, whereas the DSM-5 model only partially aligned with the expected pattern, as it did not yield a separate factor of Disinhibition. Instead, a separate domain with predominant features of Compulsivity/Anankastia emerged in the DSM-5 model, whereas features of Disinhibition were intermingled with Negative Affectivity.

The fit indices were acceptable for both the DSM-5 five-factor model [$\chi^2 = 2049.48$ ($df = 185$); RMSEA = 0.060; CFI = 0.955; TLI = 0.927; SRMR = 0.021] and the ICD-11 five-factor model [$\chi^2 = 532.83$ ($df = 73$); RMSEA = 0.047; CFI = 0.982; TLI = 0.963; SRMR = 0.014].

We used Tucker's formula to estimate congruence coefficients with the original construction studies. With respect to the DSM-5 model, four out of the five extracted factors showed some congruence with the U.S. construction study (23), with a total mean congruence coefficient of 65. For the ICD-11 model, all the five extracted factors showed some congruence with the related Canadian construction study (19), with a mean congruence coefficient of 81.

Facet and Domain Level Group Differences

The differential construct validity of DSM-5 and ICD-11 trait models was investigated by means of independent t-test and Cohen's d effect size for differences between clinical and community samples.

With respect to PID-5 trait facet scores, all group differences were statistically significant at the 0.001 level, except for Rigid Perfectionism, which was significant at the 0.002 level. The majority of facet scores showed group differences with medium to large effect sizes. The effect sizes generally ranged from 0.43 to 1.20, except for the facet of Rigid Perfectionism, which showed a very small differential effect size ($d = 0.16$).

With respect to trait domain scores, both the DSM-5 and ICD-11 models showed statistically significant group differences. All the DSM-5 trait domains showed large effect sizes, while the ICD-11 domains showed medium to large effect sizes, which is particularly attributed to the domain of Anankastia ($d = 0.51$).

DISCUSSION

The present comparative study aimed at evaluating the structural and differential construct validity of the ICD-11 and DSM-5 AMPD trait models in a large mixed sample derived from the Kurdistan region of Iran. We overall found appropriate model fit for both DSM-5 and ICD-11 five-factor solutions. However, the factor loading pattern was less adequate for the DSM-5 trait model (i.e., Disinhibition did not emerge as a separate factor).

TABLE 2 | Scale statistics and group differences for PID-5 facets and DSM-5 and ICD-11 domain scores.

	Total (N = 2,823)			Community (n = 2,444)		Patients (n = 376)		Diff. effect
Trait facets	***M***	***SD***	***α***	***M***	***SD***	***M***	***SD***	***d***
Emotional lability	1.27	0.63	0.81	1.21	0.60	1.66	0.69	0.70
Anxiousness	1.26	0.63	0.85	1.21	0.61	1.62	0.64	0.66
Separation insecurity	1.09	0.67	0.82	1.01	0.62	1.61	0.75	0.87
Submissiveness	1.22	0.58	0.59	1.19	0.56	1.46	0.64	0.45
Perseveration	1.18	0.55	0.81	1.12	0.52	1.54	0.61	0.74
Suspiciousness	1.28	0.48	0.57	1.21	0.45	1.68	0.52	0.97
Depressivity	0.92	0.66	0.92	0.82	0.60	1.56	0.71	1.12
Withdrawal	0.97	0.60	0.87	0.90	0.55	1.41	0.68	0.82
Restricted affectivity	1.08	0.53	0.70	1.02	0.50	1.43	0.59	0.75
Intimacy avoidance	1.04	0.56	0.66	1.00	0.54	1.25	0.63	0.43
Anhedonia	1.14	0.56	0.77	1.07	0.53	1.58	0.57	0.93
Manipulativeness	0.89	0.60	0.72	0.81	0.52	1.44	0.79	0.94
Deceitfulness	0.97	0.58	0.83	0.89	0.51	1.47	0.75	0.90
Grandiosity	1.15	0.60	0.78	1.11	0.57	1.43	0.72	0.49
Hostility	1.26	0.63	0.86	1.17	0.58	1.82	0.70	1.01
Callousness	0.82	0.54	0.77	0.72	0.43	1.44	0.73	1.20
Attention seeking	1.31	0.67	0.87	1.26	0.64	1.63	0.75	0.53
Impulsivity	1.06	0.69	0.83	0.96	0.63	1.65	0.79	0.97
Irresponsibility	0.93	0.57	0.76	0.83	0.49	1.55	0.69	1.20
Distractibility	1.15	0.64	0.88	1.06	0.60	1.70	0.64	1.03
Rigid perfectionism	1.38	0.54	0.80	1.37	0.53	1.46	0.57	0.16
Risk taking	1.42	0.44	0.75	1.38	0.42	1.65	0.54	0.56
Eccentricity	0.95	0.68	0.94	0.88	0.64	1.43	0.73	0.80
Perceptual dysregulation	0.88	0.58	0.87	0.80	0.51	1.38	0.70	0.95
Unusual beliefs	0.91	0.61	0.83	0.84	0.56	1.30	0.75	0.70
DSM-5 Domains								
DSM-5 Negative Affectivity	1.21	0.55		1.14	0.51	1.63	0.58	0.86
DSM-5 Detachment	1.05	0.47		0.99	0.44	1.41	0.51	0.88
DSM-5 Antagonism	1.00	0.51		0.94	0.44	1.45	0.67	0.90
DSM-5 Disinhibition	1.04	0.56		0.95	0.49	1.63	0.62	1.22
DSM-5 Psychoticism	0.91	0.56		0.84	0.51	1.37	0.68	0.88
ICD-11 Domains								
ICD-11 Negative affectivity	1.18	0.51		1.11	0.46	1.63	0.54	1.04
ICD-11 Detachment	1.03	0.47		0.98	0.43	1.36	0.54	0.72
ICD-11 Dissociality	1.09	0.49		1.01	0.42	1.55	0.63	1.01
ICD-11 Disinhibition	1.14	0.47		1.06	0.41	1.64	0.56	1.18
ICD-11 Anankastia	1.28	0.49		1.24	0.47	1.50	0.54	0.51

N = 2,823. α = alpha coefficients.
All group differences were statistically significant below the 0.001 level, except for Rigid Perfectionism, which was significant at the 0.002 level.

All domain and facet scores significantly differentiated between clinical and community samples primarily with medium to large effect sizes. Taken together, these findings therefore suggest that the ICD-11 trait model may be somewhat more cross-culturally appropriate than the DSM-5 AMPD trait model, at least with respect to a large mixed sample from the region of Kurdistan. Accordingly, the ICD-11 PD trait domain operationalization may potentially have superior utility in this region of the World. In the following, we will further discuss certain patterns in our findings.

First, in the present study, the expected five-factor structure for the DSM-5 trait model was only partially supported. Accordingly, the factor analysis did not yield a separate factor for Disinhibition. Instead, the Disinhibition facets were included in the factors of Negative Affectivity (e.g., Impulsivity) and Antagonism (e.g., Irresponsibility). Nevertheless, this deviation

TABLE 3 | DSM-5 five-factor loadings, factor correlations, and congruence coefficients.

	F1	F2	F3	F4	F5
Depressivity ^{NA,DT}	**0.59**	0.32	0.07	0.02	0.18
Anxiousness ^{NA*}	**0.56**	0.10	−0.13	0.33	0.14
Distractibiliy ^{DI*}	**0.55**	0.16	0.13	0.14	0.16
Emotional lability ^{NA*}	**0.44**	−0.11	0.09	0.37	0.25
Impulsivity ^{DI*}	**0.44**	0.03	0.34	0.00	0.19
Separation insecurity ^{NA*}	0.37	−0.13	0.21	0.31	0.13
Withdrawal ^{DT*}	0.09	**0.67**	0.04	0.12	0.11
Restricted affectivity $^{DT,-NA}$	−0.08	**0.64**	0.15	0.15	0.09
Intimacy avoidance ^{DT*}	−0.12	**0.63**	−0.05	0.00	0.11
Anhedonia ^{DT*}	**0.44**	**0.54**	0.01	0.02	0.03
Manipulativeness ^{AG*}	−0.10	0.05	**0.67**	0.12	0.19
Callousness ^{AG}	−0.02	0.36	**0.64**	−0.02	0.17
Deceitfulness ^{AG*}	0.15	0.04	**0.61**	0.08	0.23
Irresponsibility ^{DI*}	0.35	0.20	**0.49**	−0.13	0.19
Hostility ^{NA,AG}	0.26	0.17	**0.45**	0.32	−0.05
Risk taking ^{DI}	−0.07	−0.09	0.39	0.00	0.26
Rigid perfectionism $^{-DI}$	−0.11	0.19	−0.18	**0.77**	0.11
Attention seeking ^{AG}	0.12	−0.20	0.39	**0.51**	0.08
Grandiosity ^{AG*}	−0.25	0.04	0.34	**0.46**	0.22
Perseveration ^{NA}	0.31	0.17	−0.01	**0.44**	0.22
Submissiveness ^{NA}	0.28	0.02	0.05	0.38	0.06
Suspiciousness ^{NA,DT}	0.17	0.16	0.20	0.25	0.17
Unusual beliefs ^{PS*}	−0.12	0.03	−0.01	0.08	**0.87**
Perceptual dysregulation ^{PS*}	0.24	0.10	0.06	0.06	**0.67**
Eccentricity ^{PS*}	0.07	0.19	0.07	0.07	**0.60**
Factor correlations					
F2	0.33				
F3	0.31	0.27			
F4	0.35	0.26	0.30		
F5	0.40	0.49	0.53	0.55	
Tucker's congruence					
U.S. construction study (31)	0.76	0.75	0.83	−0.02	0.95

N = 2,823.

NA, Negative Affectivity; DT, Detachment; AG, Antagonism; DI, Disinhibition; PS, Psychoticism; Loadings above 0.40 are boldfaced.

remains conceptually coherent because Impulsivity is also a well-established feature of Neuroticism within the five-factor model of personality (36); it is also empirically well-established that Disinhibition and Antagonism overlap within one joint externalizing factor (37). The primary loading of Impulsivity on the Negative Affectivity domain is also consistent with previous research using Iranian (24) and Spanish-speaking (38) samples, suggesting that this pattern may be more pronounced in certain cultures. From a conceptual and clinical perspective, it also makes sense that Negative Affectivity (e.g., emotional dysregulation) co-occurs with features of Impulsivity (39, 40). In contrast to the DSM-5 Model, the ICD-11 model produced a somewhat pure Disinhibition factor, which, nevertheless, was also characterized by the facet of Emotional Lability.

Secondly, the five-factor structure of both DSM-5 and ICD-11 models yielded a distinct factor of Compulsivity/Anankastia, which aligns with the ICD-11 trait framework but not the DSM-5 framework. This is consistent with findings from EFA analysis of clinical PID-5 data from the United Arab Emirates (25), which yielded a distinct Compulsivity factor (i.e., Rigid Perfectionism and Perseveration), while facets of Disinhibition loaded on Antagonism and Negative Affectivity. Moreover, this study from United Arab Emirates did not yield a separate factor of Psychoticism. In the present study, both the ICD-11 and DSM-5 factors of Compulsivity/Anankastia included expected facets of Rigid Perfectionism and Perseveration but also unexpected facets of Grandiosity and Attention Seeking. This factorial pattern is consistent with the empirical and conceptual association between obsessive-compulsive personality features and a narcissistic sense of superiority (41).

Third, the ICD-11 trait domain of Anankastia, including the facet of Rigid Perfectionism, only showed small differential effects between clinical and community participants. This finding

TABLE 4 | ICD-11 five-factor loadings, factor correlations, and congruence coefficients.

	F1	F2	F3	F4	F5
Anxiousness [NA]	**0.92**	−0.02	−0.04	−0.02	0.07
Depressivity [NA]	**0.54**	0.25	0.06	0.31	−0.09
Suspiciousness [NA]	**0.42**	0.10	0.30	0.00	0.15
Intimacy avoidance [DT]	−0.02	**0.67**	−0.03	−0.03	0.06
Withdrawal [DT]	0.18	**0.65**	0.04	0.09	0.11
Restricted affectivity [DT]	0.02	**0.62**	0.15	0.05	0.18
Manipulativeness [DT]	0.09	0.06	**0.69**	0.04	0.11
Callousness [DS]	0.03	0.36	**0.63**	0.18	−0.01
Grandiosity [DS]	−0.05	0.05	**0.44**	−0.02	**0.52**
Risk taking [DI]	−0.07	−0.10	**0.44**	0.18	0.11
Hostility [DS]	0.26	0.05	0.35	0.25	0.18
Impulsivity [DI]	0.07	0.02	0.17	**0.66**	0.01
Distractibility [DI]	0.21	0.15	−0.07	**0.65**	0.11
Irresponsibility [DI]	0.13	0.21	0.36	**0.49**	−0.14
Emotional lability [NA]	0.29	−0.12	0.03	**0.44**	0.34
Rigid perfectionism [AK]	0.12	0.18	−0.10	−0.08	**0.75**
Perseveration [AK]	0.23	0.18	−0.08	0.36	**0.44**
Attention seeking [DS]	0.10	−0.22	0.33	0.23	**0.44**
Factor correlations					
F2	0.37				
F3	0.24	0.29			
F4	0.62	0.34	0.48		
F5	0.48	0.23	0.31	0.31	
Tucker's congruence					
Canadian patients (29)	0.84	0.87	0.82	0.84	0.68

N = 2,823. NA, Negative Affectivity; DT, Detachment; DS, Dissociality; DI, Disinhibition; AK, Anankastia.
Loadings above 0.40 are boldfaced.

is not surprising because such anankastic features, including orderliness, perfectionism, and perseveration, characterize many healthy individuals with resources and goal-directedness (42). However, it still seems informative to portray stylistic features of Anankastia and perfectionism because only global PD severity determines whether and to what extent the individual's personality is actually disordered (43). For example, elevated features of Anankastia may involve appropriate self-discipline and goal-directedness in individuals with overall healthy personality functioning, whereas it may compromise cooperation and personal fulfillment in individuals with impaired personality functioning. Nevertheless, the small difference between clinical and community scores on the domain of Anankastia may also be attributed to cultural aspects in the Region of Kurdistan if not the particular community population of primarily college students.

Limitations and Future Directions

The findings of the present study must be interpreted in the light of certain potential limitations along with recommendations for future research. First, in the present study we operationalized both DSM-5 and ICD-11 trait domains using the PID-5, which was originally constructed to exclusively capture the DSM-5 trait domains (31). Thus, future research should conduct a comparative evaluation of DSM-5 vs. ICD-11 trait models in Middle Eastern culture using a measure specifically developed for the ICD-11 trait domains such as the Personality Inventory for ICD-11 (PiCD) (13) or the Personality Assessment Questionnaire for ICD-11 (PAQ-11) (20). Second, the present study investigated differences between two groups that were not entirely matched in terms of age, gender, socio-demographics, and sample size. Thus, future studies using larger and better matched samples are warranted. Finally, the present study only investigated similarity with patterns of factor loadings in North American studies using Tucker's congruence coefficients (44). However, we are well-aware that this approach to investigating factorial similarity is insufficient in comparison to more stringent measurement invariance (45). We therefore recommend future research to formally investigate measurement invariance for both DSM-5 and ICD-11 trait models between Western and Middle Eastern countries, which was beyond the scope of the present study.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by IR.UOK.REC.1397.016. The patients/participants

provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

BB: the supervisor, the main parts of data analysis, and proofreading. AH: data gathering, preparing the manuscript, and some parts of data analysis. FR: data gathering and preparing the manuscript.

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BRIEF RESEARCH REPORT
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Personality Functioning and Mentalizing in Patients With Subthreshold or Diagnosed Borderline Personality Disorder: Implications for ICD-11

Marie Zerafine Rishede[1], Sophie Juul[1,2], Sune Bo[3], Matthias Gondan[1], Stine Bjerrum Møeller[1] and Sebastian Simonsen[1]*

[1] Stolpegaard Psychotherapy Centre, Mental Health Services in the Capital Region of Denmark, Gentofte, Denmark, [2] Department of Psychology, University of Copenhagen, Copenhagen, Denmark, [3] Psychiatric Research Unit, Slagelse, Denmark

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***Correspondence:**
Marie Zerafine Rishede
mariezerafine@gmail.com

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The 11th revision of the International Classification of Diseases for Mortality and Morbidity Statistics (ICD-11) defines personality disorder according to personality functioning, which relates to self- and interpersonal functioning. The aim of the present study was to assess the relationship between mentalizing and personality functioning in patients with subthreshold or diagnosed borderline personality disorder. A total of 116 eligible participants were included. Mentalizing was assessed using the Mentalization Questionnaire (MZQ), personality functioning (self- and interpersonal functioning) was assessed using the Level of Personality Functioning Scale-Brief Form 2.0 (LPFS-BF), and borderline severity was assessed using the Zanarini Rating Scale (ZAN-BPD). Mediation analysis was employed to test if mentalizing accounted for the relationship between borderline severity and self- and interpersonal functioning. We found a significant relationship between borderline severity and both subscales of the LPFS-BF. Mentalizing fully and significantly mediated the relationship between borderline severity and interpersonal functioning. However, mentalizing only partly mediated the relationship between borderline severity and self-functioning. Controlling for the covariates gender and age did not impact the results. Mentalizing is likely to be involved in the ICD-11 model of personality functioning, especially interpersonal functioning. This could emphasize the relevance of therapy aimed at strengthening mentalizing abilities when treating personality pathology in general and people with borderline personality disorder in particular. However, self-functioning may be more nuanced, as aspects other than mentalizing also influence self-functioning. The study is explorative in nature and has methodological limitations that require caution in the interpretation and generalizability.

Keywords: personality disorder, personality functioning, mentalizing, international classification of diseases 11th revision, interpersonal functioning, self-functioning, mediation, borderline personality disorder

INTRODUCTION

It is estimated that ∼8% of the world's population meets the diagnostic criteria for a personality disorder (PD) (1). Besides being a cause of distress to the individual, PDs complicate treatment of somatic and mental disorders, they heighten the risk of morbidity and mortality, and are a large socio-economic burden to society (2). Additionally, PDs are highly prevalent among patients already in the healthcare sector, with ∼25% of patients in primary care and 50% of patients in psychiatric outpatient clinics meeting the diagnostic criteria for at least one PD (3).

Historically, there has been a tradition of categorical classification of PDs, such as that followed by all editions of the *International Statistical Classification of Diseases and Related Health Problems* (ICD), published by the World Health Organization (WHO). A definite, categorical classification is sensible as far as the pivotal function of a diagnosis is to assist the clinician in the decision to offer treatment. However, it also has inherent pitfalls that can hamper its clinical utility: the separation into categories lacks reliability, results in high rates of comorbidity, and there remains large clinical heterogeneity within each PD category (4). In addition, the severity of PD, rather than its mere presence, has been shown to influence the course of the disorder and the level of disability that patients experience (5–7). This is partly related to the fact that the threshold for fulfilling a PD diagnosis is arbitrary, which makes the boundary between normal and abnormal personality somewhat artificial (8, 9). In sum, there is no compelling empirical evidence supporting the description of PDs as categorical entities (6, 10–12).

Concurrently, a dimensional classification of PDs has gained momentum, as PDs might be better described by a common pathology factor and specific traits (12–14). Within a dimensional classification, PDs are defined according to severity rather than distinct categories. In the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) (15), the American Psychiatric Association presented the dimensional approach termed *The Alternative Model of Personality Disorder*s (AMPD). This model was placed in a separate section termed *Emerging Measures and Models* (Section III) of the DSM-5, which largely retained the DSM-IV (16, 17) classification. In a bold move, the WHO (18) will abandon the categorical classification altogether in favor of a dimensional approach to PDs in ICD-11, which is to be introduced in all WHO member states in 2022.

The dimensional approach to PDs in both ICD-11 and the AMPD in DSM-5 focuses on the severity of PDs, termed *personality functioning*. Thus, personality functioning is a new term introduced and defined in ICD-11, and though it overlaps with terms like psychosocial functioning, it is not identical (see **Table 1** for thorough description). Hence, a PD is assessed by rating its severity on a continuum ranging from normal (healthy) personality functioning through mild and moderate to severe personality pathology. The link between personality pathology and personality functioning has previously been described thoroughly in the literature (19–21) and has been supported empirically (22–25), emphasizing the relevance of impaired personality functioning as a measure of the severity of personality pathology.

In practice, the conceptualizations of personality functioning in the AMPD and ICD-11 share many similarities. For example, both systems involve similar descriptions of self- and interpersonal functioning. Specifically, in ICD-11, the severity of PDs is determined by: *"(1) Impairments in self-functioning, (2) impairments in interpersonal functioning, (3) the pervasiveness, severity, and chronicity of emotional, cognitive, and behavioral manifestations of the personality dysfunction, (4) the extent to which the personality disturbance is associated with distress or significant impairment in personal, family, social, educational, occupational or other important areas of functioning"* (18). Trait domain qualifiers can be added to the diagnosis (e.g., negative affectivity, detachment, dissociality, disinhibition, and anankastia) (18). The ICD-11 working group chose to add a borderline qualifier to facilitate the choice of intervention and to preserve the empirical evidence, which has been gained using the categorical borderline personality disorder (BPD) diagnoses. However, the borderline qualifier is meant to be used only after the level of severity and trait domain qualifiers have been determined (17, 18).

When operationalizing assessment of personality functioning in the DSM-5, Bender and colleagues (26) described that personality functioning is closely linked to the social-cognitive ability of *mentalizing* (27). The concept of mentalizing stems from the psychodynamic tradition and is used to describe the ability to understand and interpret other's and one's own actions in terms of mental states (e.g., feelings, thoughts, and desires) (27). Mentalizing is a multidimensional concept, defined by four dimensions, each with two poles (i.e., self-other, internal-external, automatic-controlled, and cognitive-emotional) (28). When mentalizing is disrupted, three resulting categories of non-mentalizing modes termed *psychic equivalence mode*, *teleological mode*, and *pretend mode* are automatically activated (29). Mentalizing is closely related to social cognition, metacognition, and reflective functioning, and the terms are often used interchangeably in the literature (30). Thus, in this article, these abilities are referred to as mentalizing. Predictably, mentalizing and aspects of personality functioning have been linked repeatedly in empirical studies (31–35). Similarly, empirical studies have supported the link between mentalizing and personality pathology (36–41), especially BPD (38–41).

Even though mentalizing is not explicitly mentioned in DSM-5 or ICD-11, the close relationship between mentalizing and personality functioning is evident when looking at the aspects of personality functioning that contribute to the severity rating of PDs in ICD-11 (see **Table 1** for a tentative crosswalk between aspects of personality functioning and mentalizing poles). However, the association between mentalizing and personality functioning with regard to the ICD-11 model has, to our knowledge, only been empirically investigated in one study (31). The authors used the assessor-rated Reflective Functioning (RF) Scale (42) to assess mentalizing and the Semi-structured Interview for Personality Functioning for DSM-5 (STiP-5.1) (43) to assess personality functioning in clinical and non-clinical samples. They found significant relationships

TABLE 1 | Tentative "Cross Walk" for personality functioning and mentalizing poles.

Aspects of personality functioning that contribute to severity determination of personality disorder in ICD-11			Mentalizing poles
Degree and pervasiveness of disturbances in functioning of aspects of the self	Stability and coherence of one's sense of identity (e.g., extent to which identity or sense of self is variable and inconsistent or overly rigid and fixed)		Self, automatic, affective/cognitive, internal
	Ability to maintain an overall positive and stable sense of self-worth		Self, automatic, affective, internal
	Accuracy of one's view of one's characteristics, strengths, limitations		Self, cognitive, internal
	Capacity for self-direction (ability to plan, choose, and implement appropriate goals)		Self, cognitive, controlled, internal
Degree and pervasiveness of interpersonal dysfunction across various contexts and relationships (e.g., romantic relationships, school/work, parent-child, family, friendship, peer context)	Interest in engaging in relationships with others		Other, affective, automatic, internal
	Ability to understand and appreciate other's perspective		Other, affective/cognitive, internal
	Ability to develop and maintain close and mutually satisfying relationships		Other, affective
	Ability to manage conflict in relationships		Other, controlled
Pervasiveness, severity, and chronicity of emotional, cognitive, and behavioral manifestations of the personality dysfunction	Emotional manifestations	Range and appropriateness of emotional experience and expression	Self, automatic, affective
		Tendency to be emotionally over- or underreactive	Self, automatic, affective
		Ability to recognize and acknowledge unwanted emotions (e.g., anger, sadness.)	Self, affective, internal
	Cognitive manifestations	Accuracy of situational and interpersonal appraisals, especially under stress	Other, self, cognitive
		Ability to make appropriate decisions in situations of uncertainty	Self, cognitive
		Appropriate stability and flexibility of belief systems	Self, cognitive
	Behavioral manifestations	Flexibility in controlling impulses and modulating behavior based on the situation and consideration of the consequences	Self, cognitive, controlled, external
		Appropriateness of behavioral responses to intense emotions and stressful circumstances (e.g., propensity to self-harm or violence)	Self, controlled, external

The extent to which the dysfunction on the above areas are associated with distress or impairment in personal, family, social, educational, occupational, or other important areas of functioning.

between mentalizing and both self- and interpersonal functioning (31).

In summary, literature suggests that personality pathology, personality functioning, and mentalizing are related concepts. One likely way that these interact is that higher PD severity negatively influences the ability to mentalize. This reduced mentalizing ability leads to reduced functioning in relation to the self as well as others. The theoretical assumption is that PD severity reduces personality functioning, mediated by mentalizing ability.

The aim of the present study was to examine a mediation model in which PD severity acts as the exposure variable, personality functioning as the outcome variable, and mentalizing as the mediator. We examined two mediation models: one with self-functioning and the other with interpersonal functioning as the dependent variable.

We analyzed a sample of patients with subthreshold or diagnosed BPD. Based on the previous research findings, we predicted that: (1) higher BPD severity (i.e., personality pathology) would be linked to lower self-functioning and that this effect would be mediated by mentalizing; and (2) that higher BPD severity would be linked to lower interpersonal functioning and that this effect would also be mediated by mentalizing.

METHODS

Design

A cross-sectional design was employed with a sample of adult participants with subthreshold (four of nine criteria according to the DSM-5) or diagnosed BPD. We used baseline data from a randomized clinical trial (RCT) assessing the effects of short-term vs. long-term mentalization-based therapy for outpatients with subthreshold or diagnosed BPD (44). At the time the present study was conducted the inclusion of patients to the RCT was ongoing, hence the data used here is from patients recruited from September 2018 to December 2019.

Sample and Procedure

Participants were recruited from the Outpatient Clinic for Personality Disorders and Trauma at the Stolpegaard Psychotherapy Center, Mental Health Services in the Capital Region of Denmark. Participants were assessed for eligibility using the Mini International Neuropsychiatric Interview (MINI)

TABLE 2 | Eligibility criteria.

Criteria exclusive to the outpatient clinic	Criteria exclusive for the trial/Study
- Aged 18–60 - Personality disorder(s) considered to be the primary diagnosis/diagnoses. - Possibility of a learning disability (IQ > 75). - A full diagnosis of antisocial personality disorder or schizotypal personality disorder - Presence of a comorbid psychiatric disorder that warrants specialized treatment - Current (past 2 months) substance dependence including alcohol - Concurrent psychotherapeutic treatment outside the clinic - Unable to speak and understand Danish	- A minimum of four confirmed DSM-5 diagnostic criteria for borderline personality disorder - Written informed consent

TABLE 3 | Sociodemographic data.

Age	
Mean	32
Range	18–57
Gender	
Female	94%
Ethnicity	
Danish	91%
Other western	2%
Other	7%
Civil status	
Single	50%
Married	8%
In a relationship not cohabiting	19%
Cohabiting with partner	18%
Separated/divorced	5%
Educational level	
No educational training	50%
Vocational education and training	5%
Short-cycle higher education	18%
Medium-cycle higher education	23%
Long-cycle higher education	4%
Other	0%
Job-status	
Unemployed or at job center	55%
Under education	24%
Self-employed	1%
Unskilled worker	4%
Skilled worker	12%
Stay-at-home	2%
Other	2%

(45) for general psychopathology, and with the Structural Clinical Interview for DSM-5 Personality Disorders (SCID-5-PD) for personality pathology (46, 47). Participants were eligible for inclusion in the trial if they met the eligibility criteria outlined in **Table 2**. We chose to include participants with a subthreshold diagnosis because recent empirical research shows that having four out of nine BPD criteria can be equally impairing, similar to a full diagnosis (48).

The final sample comprised 116 participants. See **Table 3** for demographic data. Sixty-four percent of the sample was diagnosed with more than one PD, and 82 percent suffered from other mental disorders as diagnosed using MINI.

Upon inclusion, participants were interviewed using the Danish version of the Zanarini Rating Scale for Borderline Personality Disorder by trained investigators and filled out the Mentalization Questionnaire and Level of Personality Functioning Scale-Brief Form 2.0.

Measures

Mentalizing was assessed using the Mentalization Questionnaire (MZQ) (41) which consists of 15 statements that cover different areas of mentalizing: emotional awareness, refusal of self-reflection (teleological mode), psychic equivalence mode, and inability to modulate affect. The MZQ does not capture the last of the most common non-mentalizing modes, that is, the pretend mode. In terms of the mentalizing dimensions, the MZQ covers self-other, cognitive-affective, internal-external, and controlled, but not the automatic pole of mentalizing (49). The developers of the MZQ recommend not using the subscales until they have been further validated, but to resort to the total score (41). Participants rate the degree to which they agree with each statement on a five-point scale. The total score lies between 0 and 60, with high scores indicating good mentalizing abilities. The MZQ has been validated for use with samples with mental disorders but has a poorer ability to detect more sophisticated aspects of mentalizing. The total MZQ score has a test-retest reliability of 0.76 (41).

BPD severity (i.e., personality pathology) was assessed by trained investigators using the Danish version of the Zanarini Rating Scale for Borderline Personality Disorder (ZAN-BPD) (50). ZAN-BPD is a clinician-administered scale assessing each of the nine DSM-5 BPD criteria on an anchored scale from 0 to 4. The rating is based on both the frequency and severity of symptoms in the past 2 weeks. The total score ranges from 0 to 36, with higher scores indicating greater severity (50). The interclass correlation coefficient (ICC) for test-retest reliability has been estimated to be 0.93 (50), and was 0.92 in a random subsample of 40 participants in the RCT study where the data were drawn from (three raters).

Self- and interpersonal functioning was assessed using the Level of Personality Functioning Scale-Brief Form 2.0 (LPFS-BF) (25, 51, 52). The LPFS-BF consists of 12 statements and two subscales covering the domains of self- and interpersonal functioning. Self-functioning is covered by the subscales Identity and Self-direction; interpersonal functioning is covered by the subscales Intimacy and Empathy. Participants rate the degree to which they agree with each statement on a five-point scale. The

total score lies between 0 and 36, with high scores indicating low functioning. The LPFS-BF has adequate internal consistency (Cronbach's $\alpha = 0.82$) for the total scale, and $\alpha = 0.79$ and 0.71, for the self-functioning and interpersonal functioning scales, respectively (51).

Ethics and Data Management

Prior to commencing the RCT, ethical approval was obtained from the Regional Research Ethics Committee (ID number H-18023136), and approval for the present study was obtained from the Danish Data Protection Agency (Approval Number: P-2020-732). All participants provided written informed consent before enrollment and were informed that consent could be withdrawn at any point in the study.

Statistical Analysis

Mediation analysis was performed using the R package lavaan (53). A direct effect was allowed between ZAN-BPD and the outcome of LPFS-BF self- and interpersonal functioning (partial mediation model). In two separate analyses, MZQ scores were defined as the mediator between ZAN-BPD and LPFS-BF/self-functioning or LPFS-BF/interpersonal functioning, respectively. We chose to control for gender and age as covariates in the analysis, as previous research showed that older age (54, 55) and being female (56–58) were both correlated with better mentalizing abilities. We further performed a sensitivity analysis to control for current mental disorders (depression, dysthymia, hypomania, mania, agoraphobia, social anxiety, OCD, PTSD, general anxiety disorder, panic disorder, anorexia and bulimia), as assessed by MINI.

Results were reported as raw regression coefficients along with their 95% confidence intervals (CI), without standardization (which would remove any dimensional information) (59, 60). In line with the exploratory nature of the study, the reported results are based on the per-protocol population, excluding participants with missing data in any of the included variables.

RESULTS

All participants provided complete data that could be used for the mediation analysis. Overall, a unit increase in ZAN-BPD was associated with an 0.39 increase in LPFS/self-functioning (total effect, 95% CI from 0.23 to 0.55, $p < 0.001$) (a) higher score on LPFS/self-functioning indicates lower functioning). The mediation model divided this effect into a direct effect of 0.24 from ZAN-BPD to LPFS/self-functioning (95% CI 0.10 to 0.38, $p = 0.001$), and an indirect effect of 0.16 (95% CI 0.06 to 0.25 $p = 0.001$), mediated via MZQ. The mediator effect was modest but statistically significant at both stages ($p < 0.001$), with −0.06 (95% CI −0.09−0.03) from ZAN-BPD to MZQ(the negative sign reflects that the rating assesses severity, whereas MZQ assesses the ability to mentalize), and −2.6 (95% CI −3.3−1.9) from MZQ to LPFS/self-functioning (the negative sign reflects that the ZAN-BPD rating assessed severity, MZQ assessed ability to mentalize, and LPFS-BF assessed problems in self-functioning). The influence of the covariates, gender and age, was negligible and not statistically significant.

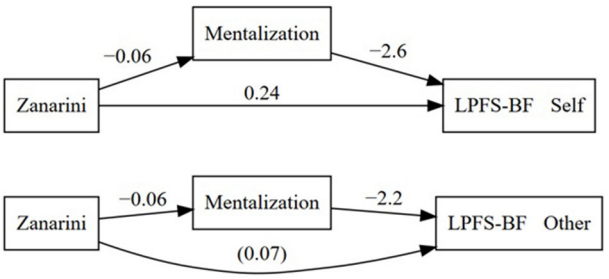

FIGURE 1 | Mediation models for the relationship between BPD severity and self- and other/interpersonal functioning as mediated by mentalizing abilities. The reported coefficients are obtained after controlling for the covariates gender and age.

A unit increase in ZAN-BPD was associated with a 0.20 increase in LPFS/interpersonal functioning (total effect, 95% CI 0.05–0.34, $p = 0.008$). The direct effect from ZAN-BPD to LPFS/interpersonal functioning was not statistically significant, 0.07 (95% CI −0.06–0.20, $p = 0.34$). The mediator effect via MZQ was modest but statistically significant at both stages ($p < 0.001$), with −0.06 from ZAN-BPD to MZQ (see above), and −2.2 (95% CI −2.9−1.5) from MZQ to LPFS/interpersonal functioning (the negative relationship reflects that MZQ assessed ability to mentalize and LPFS-BF assessed problems in interpersonal functioning). The influence of the covariates, gender and age, was negligible and not statistically significant. In other words, for LPFS/interpersonal functioning, a model was supported in which the relationship between ZAN-BPD and LPFS/interpersonal functioning was fully mediated by mentalization. The mediation models are summarized in **Figure 1**.

DISCUSSION

The present study examined mediation models of the relationship between BPD severity, mentalizing, and self- and interpersonal functioning. We expected that higher BPD severity would be related to both lower self- and interpersonal functioning. We further expected that mentalizing would mediate this effect.

Our analysis showed a significant relationship between BPD severity, self-functioning, and interpersonal functioning (total effect).

In the first mediation analysis, we found a significant relationship between BPD severity and self-functioning. Mentalizing modestly, but significantly, mediated this relationship (**Figure 1**). In the second mediation analysis, we found that mentalizing fully and significantly mediated the relationship between BPD severity and interpersonal functioning. We found no significant differences in the results when controlling for age and gender and current mental disorders assessed by MINI, lending no support that these variables moderate mentalizing.

The result that mentalizing fully mediated the relationship between BPD severity and interpersonal functioning confirmed

our hypothesis and is in line with prior research on the relationship between both personality functioning and mentalizing (31, 61) as well as personality pathology and personality functioning (22–25). Further, this result is in line with the mentalizing theory according to which mentalizing concerns the apprehension and interpretation of interpersonal interaction and, therefore, has a key function in constructive and meaningful interpersonal functioning (62). When the ability to reflect on the inner states of others and how others experience one's actions is flawed, interpersonal relations are negatively affected (62).

It was unexpected that mentalizing did not fully mediate the relationship between BPD severity and self-functioning, because low mentalizing abilities have been linked to pathology of the self, both theoretically (29) and empirically (31). Our results indicate that the relationship between personality functioning and mentalizing might not suffice in explaining the relationship between personality pathology (i.e., BPD severity) and self-functioning. Accordingly, other aspects likely affect the relationship between personality pathology and self-functioning. One likely contributor might be identity diffusion, which has been described as a core component of personality pathology (63, 64). Identity diffusion is a form of self-fragmentation characterized by problems with self-other boundaries (65), which can lead to loss of commitment to values and goals as well as distress from lack of self-definition and coherence (66, 67). Accordingly, identity diffusion likely influences self-functioning. The link between identity diffusion and self-functioning has been supported empirically (68). However, identity diffusion and mentalizing are likely overlapping concepts. From a mentalizing point of view, identity diffusion arises when mentalizing is impaired. Accordingly, the ability to experience one's own behavior as driven by internal mental states forms a sense of agency and autonomy, which contribute to self-coherence and a sense of the self as separate from others (65). Hence, the operationalization and empirical investigation of mentalizing or identity diffusion as two different aspects contributing to personality functioning might be unachievable.

The lack of full mediation of the relationship between BPD severity and self-functioning could be due to methodological factors. Such factors may include differences in participants' ability to self-report on self- and interpersonal functioning (69) [e.g., those with better mentalizing abilities may be more aware of self-dysfunction and hence report higher levels of dysfunction (70)], as well as shortcomings in the construct validity of the MZQ (e.g., ability to capture automatic mentalizing and pretend mode). Interestingly, some of these methodological issues were already touched upon in the first proposal for the ICD-11 classification, which only defined PDs in terms of interpersonal problems because self-pathology was deemed "too sophisticated to incorporate into a general definition" [(71), p. 250]. However, this position was eventually forsaken because of the need to align the definition of PD with the DSM, but also to pay sufficient attention to a first-person perspective that may have particular benefits for the clinical utility of a classification (72, 73).

The main argument for introducing the ICD-11 definition of PD was to enhance the clinical utility of assigning a PD diagnosis. Consequently, we will devote some space to elaborate on the clinical implications of our results. We acknowledge that the present study is explorative in nature, and more research on this area is needed and so the results and clinical implications should be considered with caution. The finding that mentalizing mediated the relationship between BPD severity and personality functioning, especially with regard to interpersonal functioning, points to the importance of mentalizing as a target of intervention for increasing personality functioning in patients diagnosed with PD (74). This can be facilitated through psychoeducation to the patient regarding this relationship. Additionally, the patient's difficulties and aims regarding mentalizing and personality functioning may be expressed in a mutually understood case formulation. This could stimulate the patient's engagement and motivation to practice their mentalizing ability. However, as mentioned, insight about problematic or inappropriate aspects of personality functioning can be flawed in people with PDs (69, 70), and the development of an agreed-upon case formulation can be challenging. Nevertheless, based on the present results, we find it worthwhile for therapists to engage in this challenging endeavor, as areas of impaired mentalizing about the self and others can be objects of mutual reflection between patient and therapist in therapy. One way the therapist can work with this is to explicitly mentalize their own thoughts and feelings to the patient and simultaneously aid the patient in mentalizing their own thoughts and feelings (63, 75). Hence, one relevant implication of the results is that they lend support for framing PD as a disorder that can be alleviated through the patient's active involvement in psychotherapy.

As mentalizing was initially explicitly mentioned in the description of personality functioning in the initial work on DSM-5 (26), it is unsurprising that we found empirical support for the relationship between personality functioning and mentalizing. However, the term was removed from the official description of personality functioning in DSM-5, because of the risk of being "too unfamiliar or relying excessively on a particular theoretical jargon" [(26), p. 340]. Thus, the results of the present study bring personality functioning back to its initial roots but may also contribute to a more nuanced way of understanding personality functioning with regard to self-functioning.

A strength of the present study is the thorough and structured assessment of the participants' diagnoses. The SCID-5-PD is accepted as the gold standard for the psychiatric diagnosis of PDs (76). Thus, the results are based on a narrowly defined sample of participants, which increases generalizability.

The present study also has some limitations. First, we did not publish a protocol prior to the mediation analysis. Hence, there is a risk of data-driven results. Second, all data were collected cross-sectionally. Therefore, the causal link between BPD severity, mentalizing, and personality functioning is questionable. A longitudinal design could be used to overcome this limitation. However, when the temporal relationship of the constructs measured is not known, it is doubtful that the study will benefit from using a longitudinal design. Often, we cannot be certain about which time lags to choose (77). Choosing arbitrary time points does not provide better evidence than cross-sectional design (77). Third, other risks related to cross-sectional design

are common method variance, such as the risk of overestimating correlations because of qualities related to the applied method of enquiry as opposed to actual covariation among the phenomena of interest (78). However, the use of multiple data sources minimized this risk in the present study. Fourth, the test-retest reliability of the total MZQ score has been deemed rather low (0.76) (41). This might be part of the reason that the effect sizes in the current study were rather small. Fifth, there is an inherent paradox in assessing mentalizing through self-report measures since assessing and understanding mental phenomena lies at the very core of mentalizing. Thus, persons with poor mentalizing abilities are likely to have difficulty in precisely reporting their mentalizing skills. However, previous studies have shown that mentalizing can be assessed both reliably and validly through self-reports (41, 79–81). A sixth limitation is the use of the LPFS-BF, which was developed for the DSM-5 AMPD. To this day, there is no official agreement on published instruments on the specific ICD-11 aspects of self- and interpersonal functioning. Accordingly, we chose the LPFS-BF. In terms of face validity, the items also cover the ICD-11 characteristics of self- and interpersonal dysfunction (52). A seventh limitation is that the generalizability of results is possibly hampered because of the skewed gender representation. Finally, we looked at mentalizing as a one-dimensional concept, where mentalizing abilities were rated from poor to better. However, mentalizing is a four-dimensional concept, each of which has two poles (i.e., internal-external, automatic-controlled, affective-cognitive, self-other) (28, 29). Similarly, we did not assess mentalizing deficits such as psychic equivalence, teleological mode, or pretend mode (29). However, to our knowledge, there is no self-report measure that can adequately capture such mentalizing deficits. In light of these limitations the conclusion made here is cautious.

To our knowledge, this is the first study to investigate the link between personality functioning and mentalizing in a PD sample. More research is needed in this area, especially since the transition to ICD-11 is approaching. For example, it would be relevant to assess generalizability by investigating the relationship between self- and interpersonal functioning and mentalizing dimensions in a sample of participants with different forms of personality pathology. It would be relevant to look at the relationship between different forms of personality pathology and mentalizing poles as different forms of personality pathology have been described based on the different mentalizing dimensions (82); however, this still lacks empirical support. Additionally, it would be valuable to insert both mentalizing and identity diffusion in a similar mediation model as the one assessed in the present study. Finally, it would be relevant to investigate whether a clinical intervention aimed at enhancing mentalizing would result in improved personality functioning, as the present results suggest.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the regional research ethics committee of Mental Health Services in the Capital Region of Denmark. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

The initial idea of investigating personality pathology, mentalizing, and personality functioning in a mediation analysis was conceived by MR, SJ, SB, and SS. MR was the main author of this article. SJ, SB, MG, SBM, and SS contributed to writing, discussing, and supervising the process and content of the article. MG designed the plan for statistical analyses and wrote the sections on the statistical approach and results. All authors read and approved the final manuscript.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2021.634332/full#supplementary-material

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Integration of the *ICD-11* and *DSM-5* Dimensional Systems for Personality Disorders Into a Unified Taxonomy With Non-overlapping Traits

Fernando Gutiérrez[1,2]*, *Josep M. Peri*[1], *Miguel Gárriz*[3], *Gemma Vall*[4,5], *Estela Arqué*[6], *Laura Ruiz*[6], *Jaume Condomines*[6], *Natalia Calvo*[7,8], *Marc Ferrer*[7,8] and *Bárbara Sureda*[1]

[1] *Institute of Neuroscience, Hospital Clinic, Barcelona, Spain,* [2] *Institut d'Investigacións Biomèdiques August Pi Sunyer (IDIBAPS), Barcelona, Spain,* [3] *Neuropsychiatry and Drug Addiction Institute, Parc de Salut Mar, Barcelona, Spain,* [4] *Department of Psychiatry, Mental Health, and Addiction, GSS–Hospital Santa Maria, Lleida, Spain,* [5] *Biomedical Research Institute, Lleida, Spain,* [6] *La Coma Therapeutic Community, ATRA Group, Barcelona, Spain,* [7] *Psychiatry Department, Vall d'Hebron University Hospital, Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Barcelona, Spain,* [8] *Psychiatry and Legal Medicine Department, Autonomous University of Barcelona, Barcelona, Spain*

The promise of replacing the diagnostic categories of personality disorder with a better-grounded system has been only partially met. We still need to understand whether our main dimensional taxonomies, those of the *International Classification of Diseases*, 11th Revision (*ICD-11*) and the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (*DSM-5*), are the same or different, and elucidate whether a unified structure is possible. We also need truly independent pathological domains, as they have shown unacceptable overlap so far. To inquire into these points, the Personality Inventory for *DSM-5* (PID-5) and the Personality Inventory for *ICD-11* (PiCD) were administered to 677 outpatients. Disattenuated correlation coefficients between 0.84 and 0.93 revealed that both systems share four analogous traits: negative affectivity, detachment, dissociality/antagonism, and disinhibition. These traits proved scalar equivalence too, such that scores in the two questionnaires are roughly interchangeable. These four domains plus psychoticism formed a theoretically consistent and well-fitted five-factor structure, but they overlapped considerably, thereby reducing discriminant validity. Only after the extraction of a general personality disorder factor (g-PD) through bifactor analysis, we could attain a comprehensive model bearing mutually independent traits.

Keywords: ***ICD-11***, ***DSM-5***, **personality disorders, discriminant validity, general factor**

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***Correspondence:**
Fernando Gutiérrez
fguti@clinic.cat

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INTRODUCTION

Despite being increasingly close to a scientifically based personality disorder (PD) classification, we still do not have a unique, generally accepted, and unproblematic dimensional substitute for the traditional categories (1, 2). An important step in this direction would entail collating the different dimensional models currently at our disposal, each of them somewhat different from the others, such that we can elucidate which personality domains are common, which differ, and how we can arrange all them in the best possible way to form a comprehensive nosology. Agreement is particularly important regarding the *ICD-11* model (3) and the *DSM-5* alternative model for PD (AMPD) (4), both because they are our two main dimensional classificatory systems, and because they themselves have been attempts to unify the pre-existing trait taxonomies (5, 6).

As the *ICD-11* will be the authoritative diagnostic taxonomy since 2022, it is the natural framework against which other models should be compared. Attempts have been made to capture the *ICD-11* domains from the more broadly studied Personality Inventory for *DSM-5* (PID-5) (7, 8), and the resulting factors confirmed the presumption that both models are commensurate. However, these studies did not take psychoticism into account, as it does not form part of the *ICD-11* classification, and their design did not allow testing a common structure for the AMPD and the *ICD-11*. Given the clinical relevance of psychoticism (or schizotypy) (9), such a comprehensive model would be worthwhile. Six further studies have compared the PID-5 with instruments directly designed to capture the *ICD-11* domains, either the Personality Inventory for *ICD-11 (*PiCD) (10) or the Five-Factor Personality Inventory for *ICD-11* (FFiCD) (11). Convergence between both systems was found to be good for four of the domains: negative affectivity (r = 0.75–0.86), detachment (0.60–0.80), dissociality/antagonism (0.67–0.81), and disinhibition (0.73–0.89) (10–15). Even so, results need to be replicated and extended in several respects.

These studies have not examined face-to-face clinical samples, which are the natural target of a diagnostic taxonomy. Four studies used internet-based self-declared patients (10, 11, 13, 14) and the other two were conducted with community subjects (12, 15). On the other hand, common structure has been analyzed at the PID-5 domain level, with one sole exception (14). This reduces the number of indicators per construct to unacceptable levels, then precluding psychoticism to form a separate factor and leaving little room for testing alternative solutions (16). Furthermore, most factor analyses have been conducted in conjunction with other models, either the Big Five or those of Zuckerman, Livesley, or Clark (11–13, 15). Even if insightful, this approach may reshape the resulting structure, such that the shared configuration of the two official classifications is obscured. This has been specially the case with the anankastia and psychoticism domains. The well-stablished bipolar factor with disinhibition and anankastia at opposite extremes has been replicated in some studies (10, 14, 15), but has split in different ways in others, depending on the accompanying model (12, 13). Concerning psychoticism, it has been sometimes excluded from analysis (11), while others has formed an independent factor (10, 14), and still others has loaded into the dissociality, disinhibition, or negative affectivity factors (12, 13, 15).

Importantly, good convergent validity for the four analogous domains has invariably been coupled with poor discriminant validity, with non-corresponding correlations averaging 0.29 in the community and 0.40 in patients (10–15). Thus, the promise that blurred boundaries between traditional diagnostic categories would be fixed by a dimensional system has not be met. In this respect, it has been proposed that a general factor of personality disorder (g-PD) may permeate every dimension of personality pathology (17), producing undue overlap. A suitable approach to examine this issue is bifactor analysis (18). It involves extracting an all-inclusive factor that captures variance of all traits (the general factor) and that is orthogonal to a variable number of other factors gathering the remaining covariance between narrower groups of traits (specific factors). The only attempt so far has indeed provided a clearer factor structure (11). However, the exclusion of psychoticism in accordance with the *ICD-11* model precluded the appearance of a fifth substantial factor in this study, and model fit and correlations between the resulting factors were not reported. Nor has exploratory structural equation modeling (ESEM) (19, 20) been hitherto applied to the common structure of the PiCD and the PID-5, though it has been to *DSM*-based algorithms (7, 8). This method is strongly recommended instead of the more usual exploratory (EFA) and confirmatory (CFA) approaches, as it relaxes some unreal constraints such as zero cross-loadings, which are unlikely to be fulfilled by personality structures (20). Therefore, it can adjust previously obtained exploratory structures that are rarely supported by CFA (21).

Finally, no studies have tested the direct equivalence of the PiCD and PID-5 scores beyond Pearson correlations. On the one hand, disattenuated correlations, which discount measurement error, will be closer to the true associations between domains (22). On the other, scalar equivalence between the two instruments is untested, that is, whether a certain score on the PiCD would correspond with a similar score on the PID-5, qualifying them as interchangeable (23).

Due to its recent publication, there is a paucity of data on the *ICD-11* classification of PD. The present study sought to replicate and extend the relationships between our main classificatory systems for PD, the *ICD-11* and the AMPD. Specifically, we examined in a sample of 677 outpatients, the extent to which both systems are similar or different, and how a unified and maximally comprehensive taxonomic system, comprising non-overlapping pathological traits, should ultimately look like.

MATERIALS AND METHODS

Subjects

The PID-5-SF and the PiCD were administered to 677 outpatients, 65.7% women, aged 13–81 years (M = 38.4, SD = 13.2), consecutively referred for assessment or treatment to five different mental health or drug addiction units in Catalonia, Spain. Patients were clinically diagnosed at their respective centers according to the *DSM-5* (4), with 18.6% of them presenting a phobic or other anxiety disorder, 18.6% mixed anxious and depressive symptoms, 11.5% a mild to moderate depressive disorder, 8.1% other affective disorders (dysthymia, cyclothymia, bipolar disorder), 15.4% drug abuse disorders, and 15.9% other disorders—eating, obsessive-compulsive, impulse control disorders—each with a frequency of under 5%.

Instruments

The Personality Inventory for *ICD-11* (PiCD) (10) is a 60-item self-report assessing the five-dimensional personality disorder classification of the *ICD-11* (3): negative affectivity, detachment, dissociality, disinhibition, and anankastia. Each domain has 12 items rated from 1 (*strongly disagree*) to 5 (*strongly agree*). The Personality Inventory for *DSM-5* Short Form (PID-5-SF) (24, 25) is a 100-item self-report measuring the 25 facets and five domains of the alternative model of the *DSM-5* (4): negative affectivity, detachment, antagonism, disinhibition, and psychoticism. It is

scored on a scale ranging from 0 (*strongly disagree*) to 3 (*strongly agree*) and has shown psychometric properties similar to the 220-item PID-5, on which it is based (26). The questionnaires were administered in their Spanish versions (27–29) as part of a routine personality evaluation by an experienced, doctoral-level clinical psychologist. They were delivered in the same order (PID-5 and then PiCD), in pencil-and-paper format, following an interview in which procedures were explained.

RESULTS

Summary statistics for the PID-5 and the PiCD are shown in **Supplementary Tables 1–8**. Normative T-scores were taken from the Spanish validation studies (27, 28). We first examined by means of Pearson's correlations the extent to which the PiCD and PID-5-SF domains measure the same constructs and can be considered equivalent. In order to count out measurement error, coefficients were disattenuated, that is, divided by the square root of the product of the alpha reliabilities of each pair of variables $r_c = \frac{r_{xy}}{\sqrt{r_{xx} \times r_{yy}}}$ (22). **Table 1** confirms a clear correspondence between four of the domains —negative affectivity, detachment, dissociality/antagonism, and disinhibition—, with r coefficients from 0.72 to 0.80, and r_c from 0.84 to 0.93.

Assuming that there is not a biunivocal correspondence between the two models, we also examined if each domain in one model can be explained by a linear combination of several domains in the other. Although multiple regression analyses confirmed that four out of five factors in each model were reasonably well-explained by the other model, additional predictors did not bring an improvement with respect to correlations: R coefficients ranged from 0.72 to 0.80 for the four corresponding PiCD domains predicted by the PID-5 (mean $R = 0.77$, $R^2 = 0.53$) and from 0.75 to 0.84 for the four corresponding PID-5 domains predicted by the PiCD (mean $R = 0.79$, $R^2 = 0.57$; **Supplementary Table 2**). Coefficients for PiCD anankastia ($R = 0.55$ using domains and 0.70 using facets) and PID psychoticism (0.62) were not as high as for the other domains, though anankastia was clearly predicted by disinhibition and negative affectivity. Both models were about equally comprehensive of the other's domains, but the inclusion of the PID-5 facets rather than domains improved prediction to $R = 0.81$ ($R^2 = 0.62$) on average.

In order to study scalar equivalence, we compared T-scores between the two questionnaires. We sought to know whether the corresponding domains of each questionnaire scored similarly, and therefore they are interchangeable. To this end, we used the two one-sided tests (TOST) procedure for paired data implemented in the TOSTER package for R (23). Rather than testing mean differences, TOST more appropriately checks for mean equivalences, that is, whether patients scoring at a given level in one domain fall within predefined lower and upper bounds in the other model's corresponding domain. With bounds set at $\Delta T < \pm 5$, only PID-5 detachment failed to show significant equivalence ($t = 2.93$, $p = 0.998$), whereas negative affectivity ($t = 12.00$, $p < 0.001$), antagonism ($t = 11.81$, $p < 0.001$), and disinhibition ($t = -7.33$, $p < 0.001$) proved to be equivalent between models. Similar results were found when this approach

TABLE 1 | Pearson's (lower triangle) and disattenuated correlations (upper triangle) between the PiCD and PID-5 domains ($n = 677$).

	PiCD						PID-5					
	Neg. affectivity	Detachment	Dissociality	Disinhibition	Anankastia	Total score	Neg. affectivity	Detachment	Antagonism	Disinhibition	Psychoticism	Total score
PiCD												
Neg. affectivity	–	0.35	0.34	0.51	0.11	**0.87**	**0.87**	0.39	0.48	0.53	0.07	**0.82**
Detachment	0.29	–	0.29	0.35	0.14	**0.82**	0.39	**0.84**	0.34	0.44	−0.01	**0.71**
Dissociality	0.28	0.24	–	**0.61**	−0.13	**0.80**	0.25	0.15	**0.86**	0.53	−0.15	0.56
Disinhibition	0.43	0.29	0.50	–	−0.57	**0.75**	0.54	0.36	**0.63**	**0.93**	−0.47	**0.71**
Anankastia	0.09	0.11	−0.10	−0.46	–	0.24	0.54	0.47	0.52	0.52	−0.06	**0.69**
Total Score	**0.73**	**0.68**	**0.65**	**0.63**	0.19	–	**0.72**	0.54	**0.68**	**0.72**	−0.12	**0.90**
PID-5												
Neg. affectivity	**0.77**	0.34	0.22	0.47	0.46	**0.65**	–	0.53	0.43	**0.68**	**0.69**	**0.93**
Detachment	0.34	**0.72**	0.13	0.31	0.40	0.48	0.48	–	0.25	0.51	0.56	**0.72**
Antagonism	0.41	0.29	**0.74**	0.53	0.44	**0.60**	0.40	0.23	–	**0.60**	0.43	**0.69**
Disinhibition	0.47	0.38	0.47	**0.80**	0.45	**0.65**	**0.62**	0.45	0.54	–	**0.64**	**0.88**
Psychoticism	0.06	−0.01	−0.13	−0.39	−0.05	−0.10	**0.62**	0.50	0.39	0.57	–	**0.84**
Total Score	**0.72**	**0.61**	0.49	**0.61**	0.59	**0.80**	**0.88**	**0.67**	**0.65**	**0.81**	**0.77**	–

PID-5, Personality Inventory for the DSM-5—Short Form; PiCD, Personality Inventory for ICD-11. Correlations are significant at $p < 0.05$ from $r = 0.07$ and at $p < 0.01$ from $r = 0.10$. Coefficients ≥ 0.60 are in bold type.

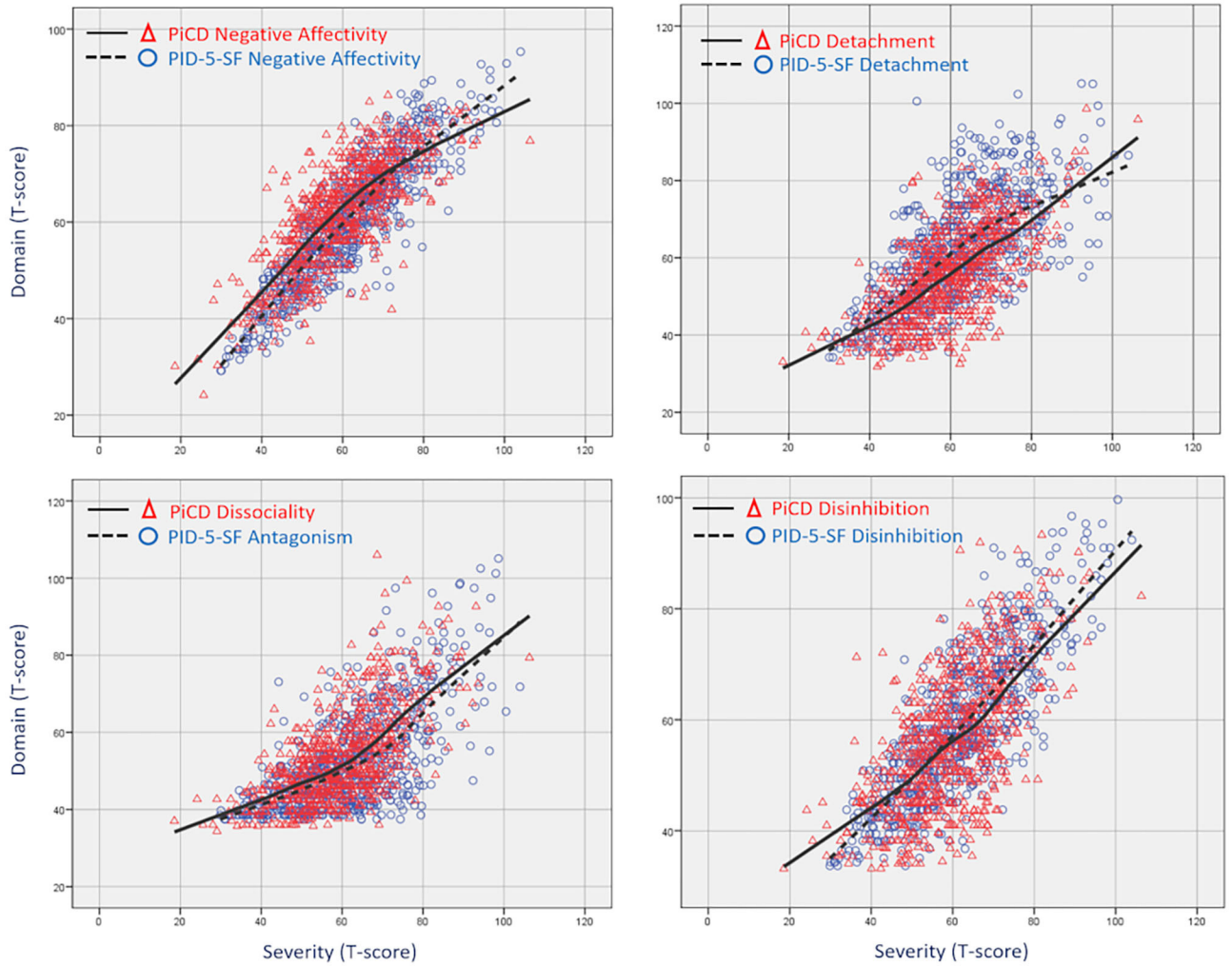

FIGURE 1 | Loess curves showing similar scores for the PiCD and the PID-5 domains as severity increases ($n = 677$). For each domain, severity is the total score of its corresponding questionnaire: PiCD or PID-5.

was applied in four different levels of severity, defined as the total score of each questionnaire expressed in T-scores. Whereas PID-5 negative affect, antagonism, and disinhibition differed little, PID-5 detachment scored between half and three quarters of a standard deviation higher all along the gradient from $T = 50$ to 90 (**Supplementary Table 3**). These results can be illustrated through a locally weighted scatterplot smoothing (LOESS) graph with severity in the *x*-axis and the four domains in the *y*-axes (**Figure 1**).

Whereas **Table 1** confirms the convergence between the PiCD and PID-5 corresponding domains, it also reveals considerable overlap between non-corresponding domains (mean $r = 0.36$). We undertook a series of factor analyses to examine whether the PiCD and the PID-5 can share a common structure formed by sufficiently differentiated constructs. Joint exploratory factor analyses (EFA) were conducted at the domain level first, using maximum likelihood extraction (ML) and oblique Geomin rotation, as factors were expected to correlate. Parallel analysis and Bayesian information criterion (BIC) suggested retaining four factors (**Supplementary Figure 1**), and Velicer's MAP suggested one. The 4-factor solution reproduced four of the expected constructs—negative affectivity, detachment, dissocial/antagonism, and disinhibition/anankastia, whereas extracting a fifth factor failed to recover psychoticism (**Supplementary Tables 4, 5**). This approach was unsatisfactory in other respects. Congruence with alternative extractions—weighted and unweighted least squares and principal axis factoring—and with Oblimin, Promax, and Equamax rotations was acceptable for the 4-factor solution (Tucker's Φ between 0.91 and 1.00, mean 0.98) but failed for the 5-factor solution (Φ between 0.55 and 1.00, mean 0.88), suggesting an unstable and hardly replicable structure (30). Moreover, factors were highly intercorrelated (mean $r = 0.38$ in the 4-factor and 0.46 in the 5-factor solutions). Using orthogonal instead of oblique rotations fixed this problem at the cost of unduly increasing cross-loadings.

Hence, we jointly analyzed the 25 PID-5 facets and five PiCD domains, expecting that more indicators would produce a clearer structure. This was accomplished to some extent. Parallel analysis, Velicer's MAP, and BIC coincided in suggesting five factors. A 5-factor solution showed excellent congruence with alternative extraction and rotation methods (Φ between 0.96 and 1.00, mean 0.99) and reproduced well the original constructs (**Supplementary Table 6**): negative affect ($r = 0.86$ with PiCD and 0.95 with PID-5), detachment (0.86 and 0.85), dissocial/antagonism (0.84 and 0.96) and disinhibition/anankastia (0.75 and 0.62 with disinhibition, −0.83 with anankastia). An ESEM analysis was then performed in lavaan R package (31) to evaluate model fit. To this end, factor variances were fixed, and all cross-loadings estimated through robust ML with the EFA loadings as starting points. Fit was within acceptable limits: $\chi^2 = 1302.06$, $df = 420$, $p < 0.001$, CFI = 0.924, TLI = 0.921, RMSEA = 0.056, and SRMR = 0.028. The 4-factor solution also showed good congruence between methods, but fused the negative affectivity and psychoticism factors together (**Supplementary Table 7**) and showed lower fit: $\chi^2 = 1769.21$, $df = 425$, $p < 0.001$, CFI = 0.884, TLI = 0.882, RMSEA = 0.068, and SRMR = 0.039. Both solutions partially improved discriminant validity, with factor intercorrelations averaging 0.22 in the 5-factor and 0.24 in the 4-factor solution (**Supplementary Table 6**).

Finally, we tested the existence of a general factor of personality disorder (g-PD) underlying all traits, which would explain the considerable overlap between them. PiCD domains and PID-5 facets were subjected to a purely exploratory bifactor analysis in FACTOR 10.10 (32, 33), retaining 4 + 1 and 5 + 1 factors. Loadings were then targeted in ESEM analysis as above. Fit was slightly better for the 5 + 1 solution ($\chi^2 = 1127.09$, $df = 419$, $p < 0.001$, CFI = 0.939, TLI = 0.937, RMSEA = 0.050, and SRMR = 0.025) than for the 4 + 1 solution ($\chi^2 = 1256.38$, $df = 390$, $p < 0.001$, CFI = 0.923, TLI = 0.920, RMSEA = 0.057, and SRMR = 0.028). In the former (**Table 2**), the g-PD factor received substantial and homogeneous contributions from all traits except anankastia and rigid perfectionism, which qualifies it as a genuine general factor. Specific factors still correlated in the range 0.56–0.74 with their corresponding PiCD and PID-5 domains. Discriminant capacity was improved, with quasi-orthogonal factors (mean $r = 0.12$) and low correlations (<0.30) with non-corresponding domains. Only anankastia and dissociality showed intrusions into negative affectivity and disinhibition, respectively. Similar remarks can be made regarding the 4+1 model, whose factor intercorrelations averaged 0.08, but in which psychoticism was assimilated by the g-PD (**Supplementary Table 8**).

DISCUSSION

We examined the relationships between the *ICD-11* and *DSM-5* systems for PD as measured through the PiCD and PID-5-SF questionnaires in 677 outpatients. We found that both systems share four basic constructs of personality pathology: negative affectivity, detachment, dissociality/antagonism, and disinhibition/anankastia. Once measurement error is taken into account, correlations range from 0.84 to 0.93 between these factors. Two domains, anankastia and psychoticism, maintain more complex relationships between the two models. However, because of their clinical relevance (9, 34), they must be kept in the nosology, which legitimates the attempt to integrate both models instead of selecting one over the other. Indeed, our 5-factor and 5+1-factor models capture anankastia ($R = 0.84$ and 0.86, respectively) and psychoticism (both $R = 0.96$) at once, while the *ICD-11* and the AMPD taken individually cannot. Furthermore, the PiCD and the PID-5-SF use the same metric, such that scores are approximately equivalent between them. A relative exception is detachment, for which the PID-5 scored about half a standard deviation higher than the PiCD. **Supplementary Table 1** suggests that this may be attributed to high levels of anhedonia in our patients, a feature which is less prominent in the PiCD.

We confirmed the prior finding that the extraction of a g-PD fixes the otherwise serious problems of blurred boundaries between domains (11). Under factor analysis as usual, constructs overlap extensively with each other—as the original domains also do—, thus decreasing discriminant validity. Contrarily, bifactor modeling produces an unequivocal general factor that uniformly underlies every trait except anankastia, as well as five factors that correspond with the four *ICD-11* domains plus psychoticism. The latter is one major difference with Oltmanns and Widiger (11), who circumscribed the analysis to the four-factor *ICD-11* framework. Furthermore, the 5 + 1 model fits the data well in ESEM and produces quasi-orthogonal constructs. Although giving preference to a bifactor model on the sole basis of good fit is discouraged (21), this is not our case: Obtaining sufficiently differentiated traits is a worthwhile achievement in itself, and the empirical and theoretical bases supporting the existence of a general factor underlying PD are on the rise (17).

This does not imply an agreement on the interpretation of the g-PD. This construct has been understood quite heterogeneously as a response bias, as another name for neuroticism or borderline organization, as a general vulnerability to psychopathology, or as the conjoint of maladaptive consequences shared by all disorders (17). Either way, it is a plausible explanation for the well-established fact that all personality disorders—in fact, all mental disorders—correlate with each other (35). For example, the psychoticism factor correlates 0.51 on average with the non-corresponding PID-5 domains in our study (**Supplementary Table 6**), but only 0.11 after the g-PD has been factorially isolated (**Table 2**). Thus, the g-PD may partly explain why psychoticism maintains unspecific associations with all other domains and with the Big Five, including high neuroticism and low agreeableness and conscientiousness (36), and why it predicts psychosis but also other psychopathology (37, 38). At the facet level, this effect seems more pronounced for eccentricity than for perceptual dysregulation and unusual beliefs (**Table 2**), which are also better able to predict psychosis (37, 39). Our findings are in line with the proposal that pathological traits are a mixture of normal-range traits plus unspecific personality dysfunction (40), but leave unsolved how to interpret pathological traits once the maladaptation component has been removed. Not less important, the *ICD-11* and AMPD systems have proposed separate constructs for

TABLE 2 | ESEM 5+1-factor solution for the PiCD domains and PID-5 facets targeted to the purely exploratory bifactor analysis ($n = 677$).

	g-PD	Neg. affectivity	Detachment	Dissocial	Disinhibition	Psychoticism
Factor solution						
PiCD negative affectivity	**0.44**	**0.69**	−0.03	−0.06	0.26	0.06
PiCD detachment	**0.47**	0.03	**0.69**	−0.15	0.04	0.05
PiCD dissociality	**0.51**	0.02	0.00	**0.60**	0.21	0.04
PiCD disinhibition	**0.69**	−0.04	−0.05	−0.05	**0.54**	−0.06
PiCD anankastia	−0.23	**0.40**	0.19	0.25	**−0.52**	0.06
PID-5 anxiousness	**0.42**	**0.68**	−0.04	−0.03	0.05	0.02
PID-5 rigid perfectionism	0.25	**0.55**	0.07	0.28	−0.12	0.18
PID-5 emotional lability	**0.36**	**0.55**	−0.25	−0.11	0.29	0.11
PID-5 separation insecurity	**0.37**	**0.44**	**−0.31**	0.04	0.03	−0.04
PID-5 perseveration	**0.54**	**0.42**	−0.02	−0.01	0.19	−0.04
PID-5 submissiveness	**0.39**	**0.35**	−0.03	−0.06	−0.10	−0.17
PID-5 suspiciousness	**0.59**	**0.32**	0.05	0.13	0.08	0.21
PID-5 depressiveness	**0.62**	**0.32**	0.22	−0.23	0.21	0.10
PID-5 restricted affect	**0.43**	−0.19	**0.62**	0.03	−0.05	0.00
PID-5 withdrawal	**0.46**	0.14	**0.60**	−0.19	0.07	0.08
PID-5 intimacy avoidance	**0.30**	−0.16	**0.43**	−0.19	0.14	0.15
PID-5 anhedonia	**0.63**	**0.31**	**0.32**	−0.16	0.15	−0.07
PID-5 manipulativeness	**0.49**	−0.08	−0.15	**0.68**	0.02	−0.10
PID-5 deceitfulness	**0.66**	−0.04	−0.16	**0.56**	−0.02	−0.19
PID-5 attention seeking	**0.39**	0.10	**−0.39**	**0.55**	−0.01	−0.11
PID-5 grandiosity	**0.39**	0.09	−0.06	**0.54**	−0.14	−0.03
PID-5 callousness	**0.55**	−0.17	0.11	**0.36**	0.08	−0.02
PID-5 impulsivity	**0.55**	0.15	−0.17	−0.01	**0.54**	0.07
PID-5 hostility	**0.48**	**0.34**	0.10	0.12	**0.37**	0.01
PID-5 risk taking	**0.49**	−0.14	−0.06	0.20	**0.31**	0.27
PID-5 unusual beliefs	**0.55**	−0.01	−0.02	−0.03	0.06	**0.62**
PID-5 perceptive distortion	**0.61**	0.03	−0.07	−0.18	−0.12	**0.61**
PID-5 eccentricity	**0.57**	0.17	0.15	−0.05	0.16	**0.33**
PID-5 irresponsibility	**0.69**	−0.09	0.01	0.11	0.26	−0.17
PID-5 distractibility	**0.55**	0.24	0.04	−0.21	0.24	−0.06
Correlations with domains						
PiCD negative affectivity	**0.47**	**0.74**	0.03	−0.03	0.26	0.16
PiCD detachment	**0.50**	0.13	**0.76**	−0.03	−0.04	0.10
PiCD dissociality	**0.55**	−0.02	0.10	**0.73**	**0.40**	0.25
PiCD disinhibition	**0.73**	−0.08	−0.12	0.04	**0.66**	−0.07
PiCD anankastia	−0.25	**0.49**	**0.36**	0.19	**−0.61**	0.20
PID-5 negative affectivity	**0.69**	**0.70**	0.05	0.06	0.18	0.22
PID-5 detachment	**0.65**	0.14	**0.69**	−0.05	0.03	0.09
PID-5 antagonism	**0.68**	−0.10	−0.11	**0.72**	0.15	0.04
PID-5 disinhibition	**0.81**	0.03	−0.10	0.10	**0.56**	0.08
PID-5 psychoticism	**0.73**	0.18	0.10	0.08	0.06	**0.68**
Factor intercorrelations						
g-PD	–					
Neg. affectivity	0.06	**–**				
Detachment	0.07	0.11	–			
Dissociality	0.11	−0.11	0.09	–		
Disinhitibition	0.16	−0.12	−0.20	0.11	–	
Psychoticism	0.10	0.14	0.08	0.22	−0.06	–

PID-5, Personality Inventory for the DSM-5—Short Form; PiCD, Personality Inventory for ICD-11. Correlations and factor loadings ≥ 0.30 are in bold type.

personality traits and severity/dysfunction, but these have been found to be ultimately redundant (41, 42). It is a pending question if the g-PD might represent this common component of dysfunction, and if it could explain the overlap between dysfunction and traits.

A weakness of this study is that sample size did not allow to have exploratory and confirmatory subsamples, so our factor solutions may partially capitalize on chance. Furthermore, we have focused in only a part of the *ICD-11* and AMPD systems, namely trait models. Although the inclusion of additional components—the borderline specifier in the *ICD-11*, six diagnostic categories in the AMPD, and the severity/dysfunction measures of each system—would have offered a more complete picture, it would also have led to excessive complexity for one sole study. Furthermore, using the FFiCD (11) instead of the PiCD would have enriched our facet-level analyses, but this instrument was not yet been published when our study began.

In sum, we have found considerable agreement between the two main dimensional taxonomies for PD, the *ICD-11* and the AMPD. As they have been developed independently, this can be regarded as a strong validation for both. Interestingly, divergences between models can be settled if we integrate them into a comprehensive framework, and discriminant validity issues can be addressed if we consider the existence of an underlying general factor. The fact that we can partial out this component does not mean, however, that we are able to understand it yet, and calling it maladaptation is conjectural. Neither does it mean that we know what exactly maladaptation is. Thus, putting all the pieces together to form a theoretically sound and clinically useful taxonomy of PD still requires extensive empirical work, as well as careful thought.

DATA AVAILABILITY STATEMENT

The datasets presented in this study can be found in the Open Science Framework [https://osf.io/a3shm/].

ETHICS STATEMENT

This study involves human participants and was reviewed and approved by the Comité de Ética de Investigación con Medicamentos (CEIm, Drug Research Ethics Committee), Hospital Clínic, Barcelona, Spain. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

FG, JP, MG, GV, and BS contributed to the conception and design of the study. FG performed the statistical analysis and wrote the first draft of the manuscript. JP, MG, GV, NC, MF, and BS made amendments to the manuscript and rewrote parts of it. All authors contributed to the manuscript revision and approved the submitted version, recruited samples in their respective centers, assessed outpatients, and organized the database.

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The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2021.591934/full#supplementary-material

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Assessment of ICD-11 Personality Disorder Severity in Forensic Patients Using the Semi-structured Interview for Personality Functioning DSM-5 (STiP-5.1): Preliminary Findings

Joost Hutsebaut[1]*, *Laura C. Weekers*[1], *Nynke Tuin*[1], *Jessica S. P. Apeldoorn*[2] and *Erik Bulten*[3,4]

[1] Viersprong Institute for Studies on Personality Disorders, Halsteren, Netherlands, [2] GGZ Noord-Holland-Noord, Heerhugowaard, Netherlands, [3] Division Diagnostics Research and Education, Forensic Psychiatric Center Pompefoundation, Nijmegen, Netherlands, [4] Behavioral Science Institute of Radboud University, Nijmegen, Netherlands

In forensic settings, several challenges may affect reliability of assessment of personality pathology, specifically when based upon self-report. This study investigates the Semi-Structured Interview for DSM-5 Personality Functioning (STiP-5.1) to assess level of severity of personality functioning in incarcerated patients. Thirty inpatients of three forensic psychiatric facilities completed the STiP 5.1 and additionally completed self-report questionnaires assessing symptom severity, personality functioning and traits. Staff members completed informant versions of personality functioning questionnaires. Previously assessed community ($N = 18$) and clinical samples ($N = 80$) were used as a reference. Interrater reliability and internal consistency of the STiP 5.1 were good. As expected, no associations were found between self-report and expert-ratings (STiP 5.1) of personality functioning. Remarkably, no associations were found between informant rated personality functioning and the STiP 5.1. This study confirms the discrepancies between self-report and expert-ratings in forensic settings and identifies the need to design and test assessment instruments within this context instead of generalizing findings obtained in regular mental health care samples. The STiP-5.1 may be a candidate for use in forensic samples, particularly to guide treatment planning and individual patient policy, although it remains unclear what specific information it offers above and beyond self-report and informant-report.

Keywords: assessment, personality problems, forensic, semi-structured interview, severity

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***Correspondence:**
Joost Hutsebaut
joost.hutsebaut@deviersprong.nl

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INTRODUCTION

Personality disorders (PDs) are severe mental disorders characterized by enduring patterns of experiencing and behaving that are markedly different from what is expected in the cultural context (1). The Diagnostic and Statistical Manual of Mental Disorders fifth edition (DSM-5) identifies 10 specific PDs, divided into three cluster. The "odd or excentric" cluster (Cluster A) includes the Paranoid, Schizoid, and Schizotypal PD. The "dramatic or emotional" cluster (Cluster B) includes the Antisocial, Borderline, Narcissistic, and Histrionic PD. The "anxious" cluster (Cluster C)

includes the Avoidant, Depedent, and Obsessive-compulsive PD. However, DSM-5 anticipated a shift away from this traditional categorical classification by introducing a new hybrid model in Section III, the Alternative Model for Personality Disorders [AMPD; (1)]. Likewise, the World Health Organization replaced its categorical approach in the 10th edition of the International Classification of Diseases (ICD-10) by a dimensional model in ICD-11 (2). It is designed to meet many of the shortcomings of the categorical model, the ICD-11 focuses on the global level of severity (impairment in self- and interpersonal functioning) and five trait qualifiers (3). This approach strongly resembles the new definition and criteria within the AMPD. Comparable to ICD-11, the AMPD defines impairments in self and interpersonal functioning (Criterion A) as the core of personality disorders, while a range of personality traits (Criterion B) determines the expression of these impairments in specific types of personality pathology (4). To assess these core impairments, i.e., Criterion A, DSM-5 introduced the Level of Personality Functioning Scale [LPFS; (5)]. The LPFS provides verbal descriptors on five levels of severity for 12 facets, assumed to express an underlying general dimension of severity.

Following this new conceptualization, new instruments have been developed. Since severity in the AMPD model and ICD-11 PD model are virtually identical, instruments for assessing Criterion A of the AMPD can be used to assess ICD-11 severity (6). Several self-report questionnaires have been developed, like the Level of Personality Functioning Scale—Self Report (7), the DSM-5 Levels of Personality Functioning Scale (8) and the Level of Personality Functioning Scale—Brief Form (9–11).

Additionally, two structured interview schedules have been designed to specifically address the 12 facets of the LPFS: the Structured Clinical Interview for DSM-5 Alternative Model for Personality Disorders module I [SCID-5-AMPD-I; (12)] and the Semi-Structured Interview for DSM-5 Personality functioning [STiP-5.1; (13, 14)]. Both interview schedules showed promising results regarding reliability and validity of assessments of personality functioning (14–16).

An important limitation of almost all studies on the AMPD, especially Criterion A studies, is that they are conducted in either community samples or samples of mental health care patients, mainly consisting of patients suffering from specific types of PDs, like Borderline and Avoidant PD. It remains unclear to what degree findings from these samples can be generalized to samples of patients with severe PDs (e.g., suffering from Cluster A PDs) and to samples with a high prevalence of Antisocial PD (ASPD). ASPD, as described in Section II of DSM-5, is characterized by a pervasive pattern of lack of respect or violation of the rights of others (1). It is the most common PD in forensic settings (17). The few studies in forensic samples show mixed results. One study, using clinical ratings, found that Section III ASPD diagnosis outperformed Section II ASPD diagnosis in predicting psychopathy in inmates (18). Furthermore, the specific ASPD impairment scores (Criterion A) were meaningfully related to section II ASPD and psychopathy. However, Bach and Hutsebaut (9) question the usefulness of the LPFS-BF 2.0 (self-report) in forensic patients. In their study, the structure of the scale and reliability of scores seemed less optimal in a forensic sample as compared to a mental health care sample. This may correspond to well-known challenges on assessing personality pathology among convicts using self-report. Compared to systematic interview schedules, self report instruments seem to fail to detect pathological personality features (19), more specifically expressions of aggression and hostility (20).

Although it has been extensively demonstrated that the average incarcerated person is severely personality disordered, with lifetime and actual prevalence rates of PD diagnoses of 40–88% (17), several challenges may indeed affect reliable assessment of personality functioning in forensic settings. First, ASPD is the most common PD diagnosis in forensic settings (17, 21) as forensic patients are 10 times more likely to have ASPD compared to the general population (22). Deceitfulness is a core feature of ASPD (1) and ASPD has been associated with malingering (23–25). Although studies on malingering in ASPD subjects show mixed results (26), a careful or even suspicious attitude regarding self-report in the presence of ASPD is advised (25, 27). Second, it has been demonstrated that many convicted patients suffer from severe personality pathology, limiting their reflective capacities (28). Finally, the specific context in which assessment is conducted may affect reliability. Given the potential legal consequences of self-disclosure, the willingness to openly discuss impairments and problems in a diagnostic evaluation can be limited (23, 29). Forensic patients have been described to be defensive in assessments and even manipulative and misleading (30). In sum, as well as internal factors related to the severity and type of the prevailing personality pathology, including lack of morality and reflective capacities, and social desirability and deceitfulness, as external factors related to the specific context, may severely affect reliability of assessment of personality pathology in forensic settings, specifically when based upon self-report (31).

Given the questionnable status of self-report, assessing personality functioning in forensic patients may be more reliable and valid when using interview-based expert ratings, although the forensic setting may posit additional scoring difficulties for experts. Expert-interpretation of both verbal and non-verbal interview data is important in order to overcome the aforementioned challenges. However, as this interpretative process may induce subjectivity and may deviate from actual self-report from patients, the level of difficulty of assessing the LPFS may be impacted. In turn, this may affect reliability of assessment of personality functioning using an interview schedule.

This study aims to investigate the feasibility of assessment of level of personality functioning (based upon the LPFS) using the STiP-5.1 in a sample of incarcerated patients. We were interested in (1) the reliability of STiP 5.1 assessment in this setting, given the inevitable interpretative nature of the expert rating within this sample, and (2) associations between different sources of information (expert, self-report, informant report). We expected different patterns of associations between expert based assessment of the level of personality functioning (STiP 5.1) and self-report as compared to a regular clinical sample. More specifically, given the assumed invalidity of self-report in this specific sample, we expected less convergence in this sample as

compared to a clinical sample. Furthermore, we expected strong associations between informant reports of personality pathology and STiP-5.1 based ratings.

METHODS

Participants

This study was commissioned and subsidized by the Dutch center of expertise for forensic psychiatry (Expertisecentrum Forensische Psychiatrie). Three forensic psychiatric inpatient facilities in the Netherlands (TBS clinics) took part: De Pompestichting (The Pompe foundation), GGZ Noord Holland Noord and De Woenselse Poort (part of GGZe). Under Dutch criminal law, the court can impose detention under hospital order (called "TBS"). This implies that forensic patients are admitted involuntarily given their crimes are judged to be associated (at least) partly by mental disorder(s) and they are therefore judged to be partially or fully unaccountable for their crime. The forensic sample consisted of 30 participants. The previously assessed community and clinical samples, as described in the original Hutsebaut et al. study (14), were used as a reference group. All interviews were conducted between July 2018 and November 2019.

Procedure

Participants were recruited by a staff member of the forensic facility. Patients with an intellectual disability or who were in the acute phase of a psychotic disorder were excluded. After completing informed consent, participants were asked to complete self-report instruments (see section Measures) and were administered the interview. As videotaping was not possible in these settings, the interview was simultaneously scored by two raters independent of each other. The first rater was the interviewer, while the second rater was an observer who was in the same room but did not participate in the interview. Both raters were blind for any information (besides first name, sex, and age), including convicted crime or diagnoses. Their scores were obtained independently. All information was anonymized and protected according to European privacy regulations. Participants were rewarded with 10 euros. After the self-report measures, a mentor or counselor of each patient was asked to fill in informant reports.

Measures

Semi-structured Interview for DSM-5 Personality Functioning

This interview schedule was designed to systematically address each of the 12 facets of the Level of Personality Functioning Scale [STiP-5.1; (13, 14)]. It consists of 28 open questions, with optional clarifying questions. The open questions are followed by a couple of auxiliary questions, which often check more directly the different criteria. The interviewer is encouraged to score each facet of the LPFS from 0 (*no impairment*) to 4 (*extreme impairment*) before proceeding to the next section of the interview. The STiP 5.1 has good psychometric qualities in clinical and community samples (14). Hutsebaut et al. (14) demonstrated good to excellent interrater reliability (ICCs ranging from 0.58 to 0.82 in the clinical sample), which is remarkable considering the amount of training (3 h) and practice (two trial interviews) interviewers received. In the same study, construct validity was supported by the ability of the STiP-5.1 to differentiate between community and clinical subjects (d = 3.27) and within the clinical sample between subjects with and without a DSM-IV PD diagnosis (d = 1.53). Moreover, STiP 5.1. ratings were consistently associated with both interview-based, and self-report measures of severity of personality problems.

Brief Symptom Inventory

The BSI (32, 33) is a 53 item self-report measure for assessing symptom severity. The questionnaire yields nine subscales (symptom dimensions): somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. The present study only utilized the BSI total score, which provides an index of the intensity of distress due to psychological symptoms during the past week (with higher scores reflecting higher symptom severity). Respondents can rate each item on a 5-point scale ranging from 0 (*not at all*) to 4 (*extremely*). Cronbach's alpha in the present sample was 0.97.

Severity Indices of Personality Problems-Short Form

The SIPP-SF (34, 35) is a 60-item version of the SIPP-118 and is a dimensional self-report measure designed to assess core components of (mal-)adaptive personality functioning. The SIPP-SF consists of 60 statements and asks the respondents to think about the last 3 months and answer the extent to which they agree on a 4-point Likert scale, ranging from 1 (*fully disagree*) to 4 (*fully agree*). The measure comprises five higher-order domains named (a) Self-control, (b) Identity Integration, (c) Relational Capacities, (d) Social Concordance, and (e) Responsibility. High scores indicate better adaptive functioning. The comprising SIPP-SF subscales have yielded adequate to strong internal consistencies in PD samples, with alpha scores ranging from 0.62 to 0.89 (34, 35). Internal consistencies in the current sample were slightly lower and ranged from acceptable to good, with alpha's of 0.52 (Social Concordance), 0.67 (Self-control), 0.68 (Identity Integration), and 0.80 (Responsibility and Relational Capacities).

Level of Personality Functioning Brief Form 2.0

The LPFS-BF 2.0 (10, 11) is a 12-item self-report questionnaire for assessing Criterion A, the LPFS, as described in DSM-5 Section III (1). Participants are asked to rate the items on a 4-point Likert scale ranging from 1 (*completely untrue*) to 4 (*completely true*). The questionnaire comprises two higher order domains, Self- and Interpersonal functioning, and a total score. In the current sample, internal consistency was high for the total scale (α = 0.87), and adequate to high for the Self- and Interpersonal functioning domains (α = 0.88 and α = 0.68 respectively). We developed an informant version of the LPFS-BF 2.0 and asked members of the daily staff (mentors or counselors), who worked directly with the forensic patients, to complete the informant version of the LPFS-BF 2.0. Internal consistency of the informant version was high for the total scale (α = 0.83)

and for the Self- and Interpersonal domains (α = 0.77 and α = 0.80, respectively).

Personality Inventory for DSM-5 Brief Form

The PID-5-BF (36, 37) is a 25-item questionnaire for assessing the DSM-5 trait domains. Items are measured on a 4-point Likert scale, ranging from 0 (*completely untrue*) to 3 (*completely true*). The questionnaire comprises five higher order domains: Negative Affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism. Both the self-report version and the informant version of the questionnaire were used. Members of the daily staff (mentors or counselors) were asked to complete the informant version of the PID-5-BF. Cronbach's α's of the self-report version ranged from α = 0.59 (Antagonism) to α = 0.73 (Negative Affectivity). For the informant version internal consistency was acceptable to good, ranging form α = 0.59 (Negative Affectivity) to α = 0.85 (Antagonism).

Level of Personality Functioning Scale DSM-5

The LPFS (1) is described in Section III of DSM-5. The scale assesses the level of personality functioning from 0 (*no impairments*) to 4 (*severe impairments*) for 12 facets, divided into 4 aspects (Identity, Self-direction, Empathy, and Intimacy) and two higher order domains (Self- and Interpersonal functioning). Members of the daily staff (mentors or counselors) were asked to assess the level of personality functioning by scoring each facet, aspect, domain, and total score, using the original LPFS. Internal consistency of the LPFS scale was high for the total scale with Cronbach's α = 0.87 and acceptable to good for the Self- and Interpersonal functioning domains with α = 0.68 and α = 0.90, respectively.

Interviewers

In setting 1, the interviewers and raters were recruited from de Viersprong. They had varying levels of education and experience with the instrument, but all were psychologists with (some) experience with PD patients in regular clinical settings. None of them had previous experience in forensic settings. In settings 2 and 3, interviewers and raters were recruited locally. All were psychologists or trainees, having followed a half-day training in the interview instrument. No additional supervision was offered. Information on interviewers and raters in the community and clinical sample can be found in Hutsebaut et al. (14).

Statistical Analysis

To assess the degree in which interviewers and second raters agreed upon ratings of personality functioning across participants, interrater reliability was assessed using a one-way random, absolute agreement, single measures intraclass correlation coefficient [ICC; (38)]. Independent samples *t*-tests were conducted to assess differences on STiP 5.1 scores between the forensic, clinical, and community samples and between expert-rated- and informant rated personality functioning. Cohen's *d* ($d = M_2\text{-}M_1/\sqrt{((SD_1{}^2 + SD_2{}^2)/2)}$) was used to calculate effect sizes.

Spearman $r_s$correlation coefficients were calculated to assess associations between STiP 5.1 scores and self-reported personality functioning (LPFS-BE 2.0 and SIPP-SF), maladaptive traits (PID-5), and symptom severity (BSI). Lastly, to assess associations between self-reported- and informant reported personality functioning and traits Spearman r_s correlation coefficients were calculated.

TABLE 1 | DSM-IV-TR diagnoses (*N* = 30).

	N	%
Anxiety disorders	6	20
Mood disorders	3	10.7
Eating disorders	1	3.3
Psychotic disorders	5	18.5
Parafilic disorders	7	23.3
Attention-deficit/hyperactivity disorder	2	6.7
Autism spectrum disorder	1	3.3
Any axis I diagnosis	20	66.7
Personality disorders	19	63.7

RESULTS

Sample Characteristics

Of the 30 forensic participants 27 were male (89.7%), their age ranged from 21 to 65 (*M* = 38.43, SD = 11.70). All of them were in TBS, duration of their stay ranged from 0 to 23 years (*M* = 4.30, SD = 6.59). Most participants were in a treatment programs targeting aggression (53.3%) or in a treatment program for sex offenders (26.7%). Unfortunately, there was limited information on psychiatric classification, due to incomplete assessment data. Moreover, diagnostic procedures between institutions were different, limiting the value of classifications. Considering these limitations, patients were diagnosed with several psychiatric or personality disorders (**Table 1**). Paraphilic disorders and PD not otherwise specified were the most prevalent. In addition, 26.7% had a history of alcohol abuse, and 60.4% had a history of substance abuse.

Previously assessed community and clinical samples were used as a reference group (14). Briefly, 18 non-clinical participants were included in the study, 16 of whom (84.2%) were female. Their age ranged from 18 to 60 years old (*M* = 39, SD = 14.5). None of these participants had been in treatment for mental disorders in the past 5 years. Participants from the clinical sample were 80 treatment seeking adults, referred to De Viersprong, 53 (66.3%) of whom were female. Their age ranged from 16 to 61 years old (*M* = 33.6, SD = 12). More details can be found in Hutsebaut et al. (14).

Interrater Reliability

Interrater reliability in this sample was comparable to the clinical sample (14), with *ICCs* ranging from 0.54 to 0.90 for the 12 facets, 0.69 for the Self-functioning domain, 0.64 for the Interpersonal functioning domain and 0.81 for the total severity score (**Table 2**). Internal consistency of the STiP 5.1 was high, with Cronbach's α = 0.91 for the total scale, α = 0.84 for the Self-functioning domain and α = 0.87 Interpersonal functioning domain.

Comparisons of ICC's of the current forensic sample and previous clinical sample (14), with Fisher's *r* to *z* transformations, showed no significant differences.

Comparison With Community and Clinical Samples

As expected, independent samples *t*-tests showed a significant difference on the STiP 5.1 total score between the participants from the community ($M = 0.56$, SD $= 0.51$) and the forensic patients [$M = 2.60$, SD $= 0.89$; $t\ (46) = -8.85$, $p < 0.001$, $d = 2.70$]. No significant differences were found between the clinical- ($M = 2.63$, SD $= 0.66$) and the forensic sample [$t\ (108) = -0.16$, $p = .874$, $d = 0.04$].

TABLE 2 | Inter-rater reliability: ICC per facet, aspect, and domain of STiP 5.1 ($N = 29$).

Scale	ICC
STiP-5.1 total score	0.81
Self-functioning	0.69
Identity	0.73
Experience of oneself as unique	0.54
Self-esteem	0.82
Emotions	0.88
Self-direction	0.77
Goals	0.64
Norms	0.62
Self-reflection	0.84
Interpersonal functioning	0.64
Empathy	0.69
Understanding others	0.90
Perspectives	0.69
Impact	0.64
Intimacy	0.90
Connection	0.85
Closeness	0.75
Mutuality	0.61

Associations With Self-Report

Table 3 shows correlations between STiP 5.1 scores and self-report measures of personality functioning and symptom severity. As expected, no significant associations were found between self-report measures and the STiP 5.1.

Associations With Informant-Report

Contrary to expectations informant-rated personality functioning and personality traits were not associated with personality functioning as rated by the STiP 5.1 (**Table 4**). Interestingly, average scores of informants on LPFS-ratings were significantly lower ($M = 1.99$, SD $= 0.86$) than expert-ratings using the STiP 5.1 [$M = 2.38$, SD $= 0.85$; $t\ (25) = -2.14$, $p = .043$].

Associations Between Self-Report and Informant-Report

Informant-rated Self-functioning as assessed by the LPFS-BF 2.0 was associated with self-reported Self-functioning ($r_s = 0.58$) and self-reported Interpersonal functioning as assessed by the LPFS-BF 2.0 ($r_s = 0.43$). No significant associations were found between the informant-rated DSM-5 LPFS and self-reported LPFS-BF 2.0 scores. Informant-rated Disinhibition as assessed by the PID-5 was moderately associated with self-reported Disinhibition ($r_s = 0.48$) and self-reported Psychoticism ($r_s = 0.48$). Informant-rated Negative Affectivity was associated with self-reported Negative Affectivity ($r_s = 0.41$) and self-reported Detachment ($r_s = 0.41$).

TABLE 3 | Means and standard deviations of self-report measures, and correlations of expert-rated personality functioning (STiP 5.1) with self-report measures of personality functioning and symptom severity ($N = 30$).

	M (SD)	STiP-5.1 total score	Self functioning	Interpersonal functioning
LPFS-BF 2.0 total score	1.75 (0.58)	0.02	−0.09	0.04
LPFS-BF 2.0 self	1.82 (0.78)	−0.14	−0.19	−0.16
LPFS-BF 2.0 interpersonal	1.68 (0.52)	0.28	0.12	0.36
SIPP-SF self-control	3.53 (0.39)	0.05	−0.16	0.03
SIPP-SF identity integration	3.31 (0.67)	0.12	−0.04	0.13
SIPP-SF responsibility	3.39 (0.46)	0.04	−0.09	−0.04
SIPP-SF relational capacities	2.98 (0.58)	−0.25	−0.10	−0.34
SIPP-SF social concordance	3.35 (0.46)	−0.22	−0.25	−0.32
PID-5-BF total score	0.64 (0.42)	0.12	0.13	0.14
PID-5-BF negative affectivity	0.77 (0.65)	−0.20	−0.20	−0.20
PID-5-BF detachment	0.80 (0.64)	−0.06	−0.08	0.01
PID-5-BF disinhibition	0.63 (0.56)	0.12	0.13	0.21
PID-5-BF antagonism	0.56 (0.52)	0.24	0.13	0.23
PID-5-BF psychoticism	0.45 (0.50)	0.01	0.13	−0.06
BSI total score	0.68 (0.63)	0.03	0.16	0.02

TABLE 4 | Means and standard deviations of informant-report (IR) measures and correlations of expert-rated personality functioning with informant-report (IR) measures of personality functioning ($N = 26$).

	M (SD)	STiP-5.1 total score	Self functioning	Interpersonal functioning
LPFS-BF 2.0 IR total score	2.30 (0.55)	−0.11	−0.24	0.01
LPFS-BF 2.0 IR self	2.23 (0.66)	−0.10	−0.13	−0.09
LPFS-BF 2.0 IR interpersonal	2.39 (0.64)	−0.10	−0.24	0.09
PID-5-BF IR total score	1.04 (0.40)	−0.13	−0.09	−0.06
PID-5-BF IR negative affectivity	1.25 (0.57)	−0.14	−0.34	−0.12
PID-5-BF IR detachment	0.96 (0.60)	0.04	−0.11	0.11
PID-5-BF IR disinhibition	1.08 (0.57)	0.05	0.06	0.11
PID-5-BF IR antagonism	1.23 (0.75)	−0.15	−0.16	0.02
PID-5-BF IR psychoticism	0.68 (0.59)	0.10	0.25	0.05
LPFS total score	1.99 (0.86)	0.13	0.21	0.13
LPFS self functioning	1.99 (0.89)	−0.05	0.11	−0.08
LPFS interpersonal functioning	1.77 (0.99)	0.02	0.04	0.16

DISCUSSION

This study used the Semi-structured interview for DSM-5 Personality functioning (STiP-5.1) to assess impairments in personality functioning in a very specific sample of incarcerated and severely disordered patients. Results are informative for using the ICD-11 severity ratings in this sample. We found a pattern of interrater reliability scores that was comparable to previous research in the clinical and community samples, showing on average moderate to good reliability. It is promising that across different settings and using interviewers and raters with different levels of experience, the STiP 5.1 allowed to obtain good levels of agreement between raters. This is even more remarkable considering the increased level of difficulty to rate the level of personality functioning in the current sample, as the rater was obliged to include not only verbal information, but also rely upon observations. Therefore, it seems feasible to obtain reliable ratings of personality functioning using the STiP-5.1, even in this difficult sample.

As expected, we found no significant associations between the expert-based STiP-5.1 scores of level of personality functioning and self-report measures of personality functioning. This pattern of results was clearly different from the pattern of associations previously found in a clinical sample (14). Where in a clinical sample, there seemed a clear association between the patient's self-assessment of his or her personality features and the expert-based assessment, in the present forensic sample, there was a general lack of agreement between self-report and expert-based report. This may reflect the specific nature of this sample, as discussed before, characterized by a profound lack of self-reflection and personality traits like deceitfulness and defensiveness (1, 28). Although we have no evidence that an expert-based rating reflects a more valid rating of these patients' personality functioning, these characteristics suggest that self-report scores should indeed be interpreted cautiously in forensic settings (23–27).

Interestingly, and opposite to our expectations, we found no associations between informant-reports of personality pathology and STiP-5.1 based expert ratings. It seems that professionals working daily with these patients may have a different picture of their functioning than experts who base their judgment upon a single interview. More specifically, we found that staff members rated personality functioning as less impaired than experts concluded as based upon the interview. One explanation may be that informants were less familiar with the scale. Whereas, interviewers were trained for 3 h, informants only received a 30-min slide show, lacking the examples that were used in the training of interviewers. However, discussion of our findings with local experts involved in the study, revealed another, possibly related, explanation. Informants seemed to use another frame of reference when assessing severity. As the focus in their work is on reduction of recidivism and crime-related behaviors and cognitions (39), they may be focused more on actual behavior instead of on the personality processes that are implied in the assessment of the impairments in personality functioning. Indeed, cognitive behavioral therapy is widely used in forensic settings (40). If a patient behaves well, this may from a behavioral point of view be rated as highly adaptive, while from an ICD-11 severity-perspective, it could also signal "lack of unique self" or "suppressing emotions," and may therefore in some instances be considered as rather (or very) impaired.

Further complicating this issue, is the fact that several patients had been incarcerated for many years. Ratings of personality functioning were based upon judgment of their actual functioning within a very structured and protected environment. Such an environment may provide only few challenges to their personality functioning, e.g., the staff is trained to prevent aggression by acting in a de-escalating manner (41), thereby preventing problematic behaviors from occurring and thus limiting situations in which emotions should be regulated autonomously. The complex issue then is whether this context should be taken into account when assessing a patient's ability, e.g., to regulate emotions. It is plausible in our opinion that

experts tried to take this context into account when assessing possible impairments, thereby trying to generate a more general and context-free assessment, while patients and informants—both being focused more on actual behavior—may take the occurrence of (dysregulated) behavior as a point of reference. Indeed, we believe that not only characteristics of the patient's pathology, but also the context and the frame of reference used within this context, may account for the differences between expert ratings on th one hand and self and informant ratings on the other hand. This may also explain that some convergence was seen between patients' self-report and informants' report (i.e., LPFS-BF 2.0 and PID-5-BF), especially in the domain of Self-functioning which relates more to regulation of emotions and impulses.

An important implication of this issue of context-dependent assessment may be that ICD-11 ratings of personality functioning obtained during incarceration may have limited value for a patient's functioning within the outside world. On probation, away from the protected environment, impairment may become more visible, providing a more valid picture of someone's abilities and impairments. Future research should focus on the predictive value of the STiP 5.1 for functioning outside the specific inpatient setting. Given the results of the current study, we believe that STiP-5.1 based ratings of personality functioning should not be taken as a criterion to predict functioning outside the forensic context and decisions on recidivism risk should surely not be based upon severity ratings using the STiP-5.1. However, severity-ratings could be helpful to guide treatment planning and individual patient policy. For example, based upon an assessment of impairment level, staff members could be informed to tailor their responses in daily interactions to the needs of the patients. Also, decisions on type of treatment or on mixing types of patients may be informed by patients' level of functioning and specific pattern of traits, rather than by their convicted crime.

There are several limitations to this study with the most obvious one, the rather small number of participants, limiting the possibility to detect relevant associations. Also, information on diagnoses was not available for all patients, and prevalence rates of certain disorders (e.g., autism spectrum disorder and attention deficit hyperactivity disorder) were lower than usual prevalence rates in forensic settings. Altough this could be due to the missing diagnostic information, this may limit the generalizability of our findings to the entire "TBS" -population in the Netherlands. Furthermore, the clinical comparison group consisted mostly of female patients, whereas the forensic sample was almost exclusively male. Another limitation related to the limited training we could give to informants on the LPFS. While interviewers were trained in a 3-h course, informants only received brief verbal or written information on how to interpret and use the LPFS and had only a few patients to assess using the scale. This may limit their capacity to reliably complete the LPFS.

Despite these limitations, we believe this study provides interesting findings that may inform future research. It highlights again the severe personality pathology of an incarcerated sample and reconfirms the gap between self-report and expert-ratings in this specific sample. Most importantly, we believe it identifies the need to design and test assessment instruments for this specific sample instead of generalizing findings obtained in regular mental health care samples. We believe the STiP-5.1 may be a candidate to be used in this sample to assess ICD-11 severity of personality disfunction, although it remains unclear what specific information it offers above and beyond self-report and informant-report and how the information relates to the focus of forensic settings on the crime and preventing recidivism. Future studies may include relevant external criteria to investigate predictive validity of the severity-ratings, as well as related to prediction of real-world outcomes as to behavior within the ward.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by University of Amsterdam. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

JH: conceptualization, writing, and data collection. LW: data collection, data analysis, and writing. NT: writing and data collection. JA: data collection. EB: writing. All authors: contributed to the article and approved the submitted version.

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ICD-11 Personality Disorders: A Psychodynamic Perspective on Personality Functioning

Victor Blüml and Stephan Doering*

Department of Psychoanalysis and Psychotherapy, Medical University of Vienna, Vienna, Austria

The new ICD-11 introduces a fully dimensional classification of personality disorders representing a fundamental change in personality disorder diagnosis with major implications for clinical practice and research. The new system centers on the evaluation of the severity of impairment in the areas of self and interpersonal functioning. This focus on personality functioning converges with long-standing psychoanalytic/psychodynamic conceptualizations of personality pathology. In a detailed conceptual analysis and review of existing empirical data, points of convergence and notable differences between major exponents of the psychodynamic tradition—object relations theory as developed by Kernberg et al. and the Operationalized Psychodynamic Diagnosis—and the ICD-11 system are critically discussed. Personality functioning can be considered to be the current "common ground" for the assessment of personality disorders and constitutes a considerable step forward in making personality disorder diagnosis both clinically meaningful and suitable for research purposes.

Keywords: personality disorder classification, personality functioning, self and interpersonal functioning, psychoanalysis, psychodynamic, object relations theory, OPD, ICD-11

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Edited by:
Bo Bach,
Psychiatry Region Zealand, Denmark

Reviewed by:
Vittorio Lingiardi,
Sapienza University of Rome, Italy
Elfrida Hartveit Kvarstein,
Oslo University Hospital, Norway

****Correspondence:***
Victor Blüml
victor.blueml@meduniwien.ac.at

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INTRODUCTION

The upcoming 11th revision of the ICD includes "the most radical change in the personality disorders classification history" (1). Arguably the biggest change is the move from a categorical classification of personality disorders to a fully dimensional system (2). The "traditional" categorical classification system has been the subject of decades-long critique and its deficiencies and shortcomings are well-known (3). A move toward a dimensional system was already planned for the last revision of the DSM, but in the last instance the old categorical model was retained in the main corpus and the newly developed "Alternative Model for Personality Disorders" (AMPD) was placed in section III reserved for emerging models and measures (4). The AMPD provides a hybrid dimensional-categorical model with an evaluation of core personality functioning and five broad areas of pathological personality traits as well as identifying six specific personality disorder types (5, 6). Meanwhile, the ICD-11 originally planned to abandon all specific personality disorders, but after intense criticism from several personality disorder expert organizations a special "borderline pattern descriptor" was included in the final version (1, 7). However, at its core the new ICD-11 presents the first official version of a purely dimensional personality disorder classification with major implications for clinical practice and research.

One of the key issues is the new focus on personality functioning as the essence of personality disorder classification. The ICD-11 fundamentally defines personality disorders by "problems in functioning of aspects of the self (e.g., identity, self-worth, accuracy of self-view, self-direction), and/or interpersonal dysfunction (e.g., ability to develop and maintain close and mutually satisfying relationships, ability to understand others' perspectives and to manage conflict in relationships)" (8). This definition closely resembles Criterion A of the AMPD of DSM-5, which equally posits personality functioning as the sine qua non for the diagnosis of a personality disorder in general. Personality functioning in the AMPD is specified as intrapersonal (self) and interpersonal (other) functioning, which are in turn each subdivided into 2 aspects, identity and self-direction for self-functioning, as well as empathy and intimacy for interpersonal functioning (5).

Impairment in personality functioning constitutes the core component of personality disorders distinguishing it from healthy personality as well as from other forms of mental disorders, thus demarcating the "genus of personality pathology" (9). ICD-11 proposes to evaluate the severity of the impairment in personality functioning from no personality pathology through the subsyndromal condition of "personality difficulty" to mild, moderate and severe personality disorder diagnoses. The individual differences between personality disorders ("species") are then further defined by pathological personality traits. One of the central aims of the new system is to increase clinical utility with the assessment of severity of impairment informing clinical prognosis and treatment intensity, while specific pathological personality traits might help to inform the focus of treatment efforts (10).

This article focuses on a discussion of the newly introduced severity measurement of the ICD-11 classification of personality disorder from a psychodynamic viewpoint and compares it with established psychodynamic assessment instruments and their underlying concepts. A comprehensive analysis of the advantages and limitations of the complete ICD-11 system including a discussion of the complex issue of pathological personality traits is beyond the scope of this article.

PSYCHOANALYTIC PERSPECTIVES

The focus on self and interpersonal functioning as the central tenet of personality pathology is shared by many theoretical orientations and evidence-based treatments for personality disorders (9). Notably, this approach converges with long-standing conceptualizations of personality psychology offered by the psychoanalytic/psychodynamic tradition. In a certain sense, the proposition of self- and interpersonal functioning as core features of personality pathology constitutes a re-introduction of psychoanalytic considerations into the diagnostic systems after the "Neo-Kraepelian revolution" associated with the arrival of DSM-III (11).

Personality functioning as defined in the ICD-11 and DSM-5 is related to the psychoanalytic notion of personality structure or organization (these terms are often used synonymously in the psychoanalytic tradition). Personality structure or organization are theoretical concepts characterizing the fundamental "operating system" or underlying, stable configuration of personality, which in turn manifests itself in specific modes of personality functioning which can be phenomenologically observed and assessed. The precursors of the modern psychoanalytic understanding of personality structure can be found in Freud's "structural theory" of the psyche as composed of Id, Ego, and Super-ego and the analysis of the interaction between these entities in psychic functioning (12). Another genealogy links the contemporary concept with the notion of "character neurosis" (cf. Abraham, Reich) as opposed to "symptom neurosis" and the concomitant focus on underlying personality configurations instead of only analyzing specific symptomatic manifestations (13).

Arguably, the most important contemporary psychoanalytic model of personality structure was developed by Otto Kernberg et al. over the past decades (14–16). Kernberg's object-relation model of personality organization integrates findings from developmental psychology, attachment theory, neurobiology as well as classic psychoanalytic clinical theory (17). Early experiences of interactions between infant and caregiver, which are charged by intensive affects, are gradually internalized as "object-relations dyads" of self- and other representations and provide the fundamental building blocks of personality organization. Initially, these object-relation dyads are undifferentiated (clear demarcations between self and other are not yet established) and split between ideally good and persecutory bad experiences. In normal development they gradually become more differentiated and integrated corresponding to the formation of a healthy personality structure including a stable personal identity and a capacity for emotionally satisfying reciprocal object relations. Pathological psychic functioning as, e.g., observed in borderline personality organization corresponds to the presence of unintegrated and split object-relation dyads leading to identity disturbances (identity diffusion) and dysfunctional interpersonal relations (18).

Kernberg's model constitutes one of the cornerstones of the Psychodynamic Diagnostic Manual (PDM-2), a collaborative effort for the comprehensive, psychodynamically informed assessment of personality, (19–21). The PDM-2 gives due weight to empirical as well as the rich clinical knowledge gathered during the last decades and aims to supplement the primarily descriptive psychiatric nosologies in terms of combining nomothetic and idiographic approaches. Specifically, the PDM-2 for adults suggests to assess an individual's (1) level of personality organization and (2) the specific personality style or type. While these organizing principles broadly correspond to the ICD-11 proposal, there are important differences on a deeper level (11, 20). Many of these issues concern the contention that the reliance on isolated symptoms for diagnosis or the use of personality trait models derived from academic psychology do not provide a clinically meaningful description of the personality problems faced by practicing therapists and thus the PDM-2 intends to expand the clinical utility *via* an assessment of personality styles based on underlying dynamic themes and

conflicts (19, 22, 23). Regarding the focus of this article, severity of personality disturbance, the PDM-2 closely follows Kernberg's model in differentiating between a normal, neurotic, borderline, and psychotic level of personality organization (19).

In the German-speaking world, the most important psychodynamic model for the assessment of personality structure is provided by the Operationalized Psychodynamic Diagnosis (OPD-2) (24). Conceptually, the OPD model is rooted in psychoanalytic theory (mainly ego-psychological perspectives) as well as in attachment theory and developmental psychology. It represents a comprehensive diagnostic system based on a clinical interview and contains five axes, of which one is dedicated to the assessment of personality structure and covers very similar aspects of personality functioning as ICD-11 and DSM-5. The OPD has been developed from a purely diagnostic system to include a set of tools and procedures for treatment planning and for measuring change, as well as for determining the appropriate main focuses of treatment and developing suitable treatment strategies.

DISCUSSION OF CENTRAL ASPECTS OF THE ICD-11 PERSONALITY DISORDER CLASSIFICATION

Domains of Functioning

There is considerable overlap between the domains of personality functioning deemed relevant by the ICD-11 and psychoanalytic conceptualizations of personality. **Table 1** shows the domains and subdomains capturing the central aspects of self- and interpersonal functioning in ICD-11, DSM-5, object relations theory and the OPD-2. Notably, the centrality of disturbances in the area of identity for personality pathology has been a hallmark of Kernberg's system from the 1960s, building upon the foundational work of Erik Erikson and Edith Jacobson. The syndrome of identity diffusion with the persistence of an unintegrated view of oneself and others and a corresponding split between idealized and persecutory internalized experiences with others represents the most important indicator of the severity of a personality disorder (25).

Besides considering the domains of self- and interpersonal functioning for the evaluation of personality disorder severity, the ICD-11 also takes into account emotional, cognitive, and behavioral manifestations of personality dysfunction. This includes the "Accuracy of situational and interpersonal appraisals, especially under stress," which ranges from adequate reality testing to dissociative or psychotic-like perceptions and beliefs in the most severe cases. The capacity for reality testing also constitutes a core element of the level of personality organization as developed by Kernberg, with impairment in reality testing being the hallmark of a psychotic functioning, and a propensity for paranoid reaction with otherwise intact reality testing being indicative of borderline personality organization (14, 26, 27). From an object-relations perspective, impairment in reality testing corresponds to a refusion of self and object representations leading to de-differentiation and confusion between self and non-self as well as psychic and external reality (28). Arguably, this inclusion in ICD-11 of reality testing as a central dimension of personality disorder severity is more aligned with psychodynamic conceptualizations than the AMPD model of DSM-5, which aims to assess impairment in reality testing with the "Psychoticism" trait.

Despite the significant similarities there are also noteworthy differences. Generally, the psychodynamic models encompass a broader definition of personality functioning and consider several further dimensions essential for the accurate appraisal of personality organization. Some of these domains of psychodynamic personality functioning are evaluated in the trait section of ICD-11, including aggression against self and others. Other dimensions are not represented in the ICD-11, notably including the predominant quality of defense mechanisms and the level of moral functioning. The mechanisms used by an individual to defend against unbearable feelings and mental states range from mature and adaptive processes like intellectualization and repression to primitive and maladaptive ones such as splitting and projective identification. These immature mechanisms are deemed pathognomonic for personality pathology and provide clinically relevant information for appropriate treatment planning and therapeutic technique (29, 30). Additionally, an individual's capacity for guilt and adherence to common norms of interpersonal behavior in the sense of moral functioning is considered to be another key domain of personality functioning. Consistent and integrated moral functioning is a characteristic of normal personality functioning, while distortions and deficits such as lying, stealing or other antisocial behavior is associated with impairment in personality organization. Again, the assessment of moral functioning is crucial for differential treatment planning and prognostic considerations (31).

Another remarkable facet is the almost complete absence of any mention of sexuality in the ICD-11 guidelines. From a psychoanalytic point of view, sexuality constitutes a highly relevant dimension of object relations/interpersonal functioning and difficulties in the establishing mutually gratifying sexual relationships are considered to be core features of personality pathology and should be part of a comprehensive assessment. The ability to integrate intimacy and sexuality in a trusting relationship is one of the cornerstones of a healthy personality (32).

Atheoretical Description vs. Systematic Theoretical Background

One of the key differences between a psychoanalytic approach to personality disorder assessment and the ICD-11 proposal is that the first one is grounded in a comprehensive theoretical system as opposed to the atheoretical, predominantly descriptive ICD-11 system (33, 34). Object relations theory incorporates findings from psychoanalytic clinical experience, developmental psychology, as well as neurobiology and integrates them into a complex and unified theoretical model of healthy and pathological personality functioning (17, 31). Therefore, object relations theory is not only able to identify the different domains that are shown to be relevant for diagnostic and treatment

TABLE 1 | Domains of self- and interpersonal functioning in ICD-11, DSM-5, object relations theory (STIPO) and OPD.

ICD-11		DSM-5		STIPO		OPD	
Domain	**Sub-domain**	**Domain**	**Sub-domain**	**Domain**	**Sub-domain**	**Domain**	**Sub-domain**
Self-functioning	Identity Self-worth Accuracy of self-view Self-direction	Self-functioning	Identity Self-direction	Identity	Capacity to invest in work/studies and recreation Sense of self Sense of others	Self	Self-perception Self-regulation Internal communication Attachment to internal objects
Interpersonal functioning	Interest in engaging in relationships with others Ability to develop and maintain close and mutually satisfying relationships Ability to understand others' perspectives Ability to manage conflict in relationships	Interpersonal Functioning	Empathy Intimacy	Object relations	Interpersonal relations Intimate relationships and sexuality Internal working model of relationships	Object	Object-perception Regulation of object relationship Communication with the external world Attachment to external objects

purposes, but also to provide a framework to understand the relations and links between these different domains. This is of special significance with regard to the crucial question of how to meaningfully integrate the severity rating of the ICD-11 with the proposed trait dimensions, but this issue is beyond the scope of the present article focusing on personality functioning. But also for the core components of the new classification system, a psychoanalytic viewpoint is able to contribute to a deeper understanding. For object relations theory, the development of capacities for self- and interpersonal functioning are inextricably intertwined, since both are rooted in the early experiences of interactions between self and other empowered by strong negative or positive affects. Therefore, the inclusion of the domain of self-functioning in the final version of the ICD-11 personality disorder classification was a definitive improvement over the first proposal of the ICD-11 working group, which exclusively focused on interpersonal–social dysfunction as the core of personality disturbance (7, 35, 36).

Severity

From a psychodynamic viewpoint, the inclusion of severity of impairment as the core feature of personality disorder classification represents a major improvement over previous classification systems. Multiple studies have confirmed global severity as the single most important predictor for current and future dysfunction (37–39). The consideration of the severity of personality pathology also has been a central component of psychodynamic approaches to personality pathology for decades. Kernberg was one of the first to present a systematic conceptualization of personality disorders located on a spectrum of severity differentiating between four broad levels of personality organization: normal; neurotic; borderline; psychotic (15). Each level of personality organization is characterized by specific impairments in the above mentioned domains. The more recent OPD-2 follows a similar structure and defines seven levels of impairment in personality functioning.

The general description of the different levels of personality functioning are very similar between the ICD-11 system and psychodynamic diagnostic approaches providing convergent validity to the model. However, as noted above, the ICD-11 system provides a purely descriptive approach and in line with its overarching goals does not include any information of etiology and pathogenesis for the different levels of personality pathology. It has been suggested that this atheoretical approach leads to an overemphasis on readily observable behavioral symptoms while somewhat neglecting the intrapsychic dimension which psychodynamic approaches deem crucial for personality pathology. Compared to the DSM-5, it has been noted that the ICD-11 personality classification system predominantly focuses on externalizing behavior and the "dangerous patient" as a criterion for the assessment of personality pathology (40, 41). Arguably, this could in turn lead to an unintended increase in stigmatization associated with a diagnosis of severe personality disorder due to the association of personality pathology with violence and dangerousness. Furthermore, without careful and detailed examination of the internal psychic functioning of the patient there is a danger of a superficial use of a global impression to assess the level of personality pathology severity; patients with a predominantly internalizing personality type might be assessed better than they actually are.

Psychodynamic approaches consider the intrapsychic dimension an irreducible aspect of personality functioning which is reflected in the detailed assessment strategies of the presented models. They each provide a theoretical framework for understanding the developmental pathways leading to the different levels of personality organization and thus go beyond a purely descriptive approach. Notably, object relations theory sees Borderline personality organization as the outcome of the predominance of excessive splitting mechanisms, which impede the development of an integrated view of oneself and significant others, leading to the observable deficits in self- and interpersonal functioning. The predominance of these

splitting mechanisms is in turn associated with constitutive (genetic) factors linked to excessive levels of aggression and to environmental containment deficits of primary attachment figures. In normal development, splitting mechanisms gradually diminish and more mature modes of defense mechanisms (e.g., repression) take center stage leading to increased identity integration (25). Therefore, Kernberg's levels of personality organization are not only descriptive categories of symptom severity, but also designate qualitatively distinct modes of psychic functioning. This understanding contains important information for differential treatment planning purposes and guides clinical psychotherapeutic work with patients (15, 31).

Clinical Utility

One of the central purposes of a diagnostic classification system is to inform clinical decision making including risk assessment and differential treatment planning (42). The ICD and DSM classification systems with their focus on reliability and generalizability have frequently been contested for their limited meaningfulness to the treating clinician, especially in the field of personality pathology (21, 43, 44). The focus on the severity of self- and interpersonal dysfunction represents a considerable step forward in making personality disorder diagnoses clinically meaningful (37). Bach and Simonsen (45) have recently shown that the ICD-11 system can provide a conceptual umbrella for various treatment models targeting key areas of personality functioning, including Schema-Focused Therapy, Mentalization-Based Therapy, and Transference-focused Psychotherapy. Generally, patients with more severe disturbances in personality functioning require more highly structured treatment settings and frequently the establishment of a formal treatment contract is necessary in order to minimize destructive attacks against self, others and the treatment. Furthermore, therapists often need to incorporate supportive elements in their treatment approach in order to counterbalance deficits in personality functioning of the patients. Major treatment objectives include control and resolution of destructive behavior and over time greater stability in self and interpersonal functioning. On the other hand, patients with less severe personality disturbance are able to benefit from less structured treatment modalities and therapists can more readily focus on explorative interventions such as confrontations and interpretations. There is little risk for destructive acting out and treatment goals include a greater depth of experience of self and others as well as more flexible functioning (31, 33, 45).

However, ICD-11 remains at its core an atheoretical (or pantheoretical) and predominantly descriptive diagnostic system, therefore arguably reducing its immediate clinical utility (21). In contrast, the assessment of the severity of impairment in personality functioning has been a cornerstone of psychodynamic diagnostic considerations with clear implications for treatment planning. Object relations theory provides an integrated system for diagnosis, treatment planning, as well as the therapeutic process itself. Transference-Focused Psychotherapy (TFP), the therapeutic approach developed by Kernberg et al. in the last decades (46), is intrinsically related to the diagnostic considerations and to the developmental model outline above. TFP specifically targets deficits in self- and interpersonal functioning by focusing on the analysis of currently activated dyads between therapist and patient and the predominant affect by means of clarification, confrontation and interpretation, thereby enhancing the capacity for reflective functioning and identity integration (31, 46).

Furthermore, the more comprehensive nature of the dimensions of personality functioning assessed in object relations theory and OPD consequently provide more extensive clinically relevant information. For example, the level of moral functioning is considered to be a crucial factor for prognosis and treatment choice with antisocial personality functioning indicating a particularly poor prognosis. Equally, the predominance of immature defense mechanisms will have an impact on all stages of treatment and its assessment will help the clinician to better understand the often rapidly shifting and apparently chaotic behavior of patients suffering from severe personality disorder.

Notably, the assessment of the severity of personality disturbance constitutes only one step of the ICD-11 diagnostic procedure, and careful consideration needs to be given to the aptitude of the supplementing trait model to provide a clinically meaningful picture of the individual personality style or type of a patient (10, 47). Many psychodynamically oriented researchers and practitioners are critical of the ability of trait-based models mainly derived from self-report questionnaires to reflect the complexity and functional interrelatedness of psychological characteristics and the crucial importance of the experiential dimension of meaning for an adequate and clinically valuable assessment of an individual patient (20, 33, 48).

Of course, the most important objection to a more comprehensive model of personality functioning is the limited time available in daily clinical practice. This was a major focus of the ICD-11 working group in developing the new system and it certainly is a crucial factor (1). But the necessity for easy and time-saving diagnostic systems needs to be balanced against the danger of superficial or uncritical use of categories and labels. This seems especially relevant in the field of personality pathology, where careful assessment and the often difficult differential diagnosis require an adequate amount of time and training. Furthermore, patients with personality disorders frequently evoke strong countertransference reactions in others and while these communications can provide invaluable information to the clinician, there is a danger that these emotions are disavowed and unconsciously influence the diagnostic procedure, if not adequately noticed and reflected (49).

Assessment Instruments

While a number of self-report and interview-based instruments have already been developed for the AMPD of DSM-5 (6), no official instrument to assess the level of impairment in self- and interpersonal functioning according to ICD-11 has been published up to now, which complicates the evaluation of the proposed system. The Standardized Assessment of Severity of Personality Disorder (SASPD), a brief self-report questionnaire (9 items), was developed as a screening tool for an earlier draft of the ICD-11 personality disorders model, but is now outdated

TABLE 2 | STIPO-R domains and subdomains.

Domain	Subdomain
Identity	Capacity to invest in work/studies and recreation
	Sense of self
	Sense of others
Object relations	Interpersonal relations
	Intimate relationships and sexuality
	Internal working model of relationships
Defenses	Lower-level, primitive defenses
	Higher-level defenses
Aggression	Self-directed aggression
	Other-directed aggression
Moral values	Experience of guilt
	Moral and immoral behavior

TABLE 3 | OPD-2 structural domains and facets.

Self	Object
Cognitive ability: self-perception	Cognitive ability: object perception
Self-reflection	Self/object differentiation
Affect differentiation	Whole object perception
Identity	Realistic object perception
Capacity for regulation: self-regulation	Capacity for regulation: regulation of object relationship
Impulse control	Protecting relationships
Affect tolerance	Balancing of interests
Self-worth regulation	Anticipation
Emotional ability: internal communication	Emotional ability: communication with the external world
Experiencing affects	Making contact
Use of fantasies	Communication of affect
Bodily self	Empathy
Attachment capacity: internal objects	Attachment capacity: external objects
Internalization	Ability to make attachments
Use of introjects	Accepting help
Variable attachments	Severing attachments

with the arrival of the final model (50). New measures for the official new system are currently developed and until then the use of established psychodynamic instruments can provide a pragmatic solution.

Both psychodynamic approaches covered here, object relations theory and OPD, provide both, self-report and interviewer-based assessment instruments. The Structured Interview for Personality Organization [STIPO; (51); Revised version, STIPO-R: (52)] is the structured version for research purposes of the clinical Structural Interview originally developed by Kernberg to assess the level of personality organization (53). In its revised version it consists of 55 items and covers five domains (see **Table 2**). The evaluation of the domains yields an overall rating of five different levels of personality organization (i.e., personality functioning) (1) normal, (2) neurotic; (3) borderline 1, (4) borderline 2, and (5) borderline 3. There also exists a self-report measure (57 items), the Inventory of Personality Organization [IPO; (26)] as well as a 16-item short version of the questionnaire [IPO-16; (54)].

The Operationalized Psychodynamic Diagnosis (OPD-2) (24) represents a comprehensive diagnostic system and contains five axes: (I) experience of illness and prerequisites for treatment, (II) interpersonal relations, (III) conflict, (IV) structure, and (V) mental and psychosomatic disorders (according to ICD or DSM). The rating is performed after a partly structured and predominantly unstructured psychodynamic initial interview. The OPD-2 structure axis covers eight domains with 3 structural facets each (see **Table 3**). As a diagnostic instrument, the OPD-2 structure axis has been used in a large number of empirical studies involving personality functioning and has demonstrated good reliability as well as concurrent and discriminant validity (55, 56) and can thus be recommended for clinical use and research purposes. For research purposes, a video-taping of the interview and a rating by two independent raters is demanded. The clinical rating can be done by the interviewer him-/herself; compared to more structured interview approaches, the OPD-2 interview reveals a lot of clinical information beyond the quantifying rating, that is useful for treatment planning. Moreover, the assessment of all five axes mentioned above allows for a complete case formulation (24, 57). The full clinical OPD interview takes 1–2 h. A corresponding 95-item questionnaire (OPD-SQ) has been developed and validated (58) including a one-dimensional short-form of 12 items [OPD-SQS; (59)].

Due to the scarcity of published instruments specifically designed for the ICD-11, there is only limited direct empirical evidence available on the validity and utility of the ICD-11 definition of personality functioning to date. The—now outdated—SASPD has shown good predictive ability for the presence of mild or moderate personality pathology severity with limited ability to discriminate severe personality pathology (50). A number of studies empirically compared ICD-11 (SASPD) and DSM-5 (Level of Personality Functioning Scale, LPFS) (40, 41, 60), generally showing good convergence between these measures of personality pathology severity. But the results also show that the SASPD predominantly captures externalizing, interpersonal difficulties, while somewhat neglecting the area of self-functioning and internal distress. Additionally, Zimmermann et al. (39) raised concern about the reliability of the SASPD to measure personality pathology severity when compared to 5 other self-report instruments derived from DSM-5 (LPFS—Brief Form 2.0, LPFS—Self Report, Personality Inventory for DSM-5—Brief Form Plus) and the psychodynamic tradition (IPO-16, OPD-SQS), arguably equally due to its lack of incorporation of items assessing the self-related dimension of personality functioning. Accordingly, the authors found a stronger correlation between the psychodynamic instruments and the AMPD of DSM-5 than with the ICD-11 system (39). Similar results were provided by Oltmanns and Widiger, who found a significantly higher correlation between the IPO and LPFS than between these two and the SASPD (41).

These findings most likely reflect the specific construction of the SASPD, which was based on an earlier draft version of the ICD-11 personality disorders classification and are therefore not

representative of the final official ICD-11 system. Therefore, the development of carefully designed new instruments to adequately capture all facets of the official new system is essential [Bach and Simonsen recently reported significant advances on this topic (45)]. Especially, there is a need for expert-rated instruments and (semi-)structured interviews of personality functioning according to the ICD-11 framework in order to confront the well-known challenges of self-report instruments in personality disorder research.

CONCLUSION

The influence of contemporary psychoanalytic object-relations theory, most prominently advocated by Kernberg et al., on the development on the AMPD of DSM-5 has been frequently highlighted (37). While this influence is not explicitly stated in the reports of the ICD-11 working group for the reclassification of personality disorders, the final version of the classification system is highly compatible with a psychoanalytic framework of personality pathology (45), but the focus on self and interpersonal functioning for the assessment of personality pathology constitutes a pantheoretical approach and is not limited to the psychoanalytic tradition. Arguably, personality functioning can be considered to be the current "common ground" for the assessment of personality disorders and therefore constitutes a considerable step forward in the effort to provide a foundation for a field with a long history of rivaling schools of thought often deemed to be incommensurable.

AUTHOR CONTRIBUTIONS

VB and SD conceptualized the manuscript. VB wrote the first draft of the manuscript. SD substantially revised the initial draft. Both authors contributed to the article and approved the submitted version.

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The Utility of ICD-11 and DSM-5 Traits for Differentiating Patients With Personality Disorders From Other Clinical Groups

Rute Pires[1,2]*, *Joana Henriques-Calado*[1,2], *Ana Sousa Ferreira*[1,3], *Bo Bach*[4], *Marco Paulino*[1,5], *João Gama Marques*[6,7], *Ana Ribeiro Moreira*[8], *Jaime Grácio*[9,10,11] and *Bruno Gonçalves*[1,2]

[1] Faculdade de Psicologia, Universidade de Lisboa, Lisbon, Portugal, [2] CICPSI, Faculdade de Psicologia, Universidade de Lisboa, Lisbon, Portugal, [3] Instituto Universitário de Lisboa - Business Research Unit (BRU-IUL), Lisbon, Portugal, [4] Center for Personality Disorder Research, Psychiatric Research Unit, Slagelse, Denmark, [5] Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, [6] Clínica de Psiquiatria Geral e Transcultural, Hospital Júlio de Matos, Centro Hospitalar Psiquiátrico de Lisboa, Lisbon, Portugal, [7] Clínica Universitária de Psiquiatra e Psicologia Médica, Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, [8] Centro Hospitalar de Lisboa Ocidental, Hospital de Egas Moniz, Lisbon, Portugal, [9] Champalimaud Clinical Centre, Champalimaud Centre for the Unknown, Champalimaud Foundation, Lisbon, Portugal, [10] Champalimaud Research, Champalimaud Centre for the Unknown, Champalimaud Foundation, Lisbon, Portugal, [11] NOVA Medical School/Faculdade de Ciências Médicas, Universidade Nova de Lisboa, Lisbon, Portugal

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***Correspondence:**
Rute Pires
rpires@psicologia.ulisboa.pt

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The ICD-11 Classification of Personality Disorders delineates five trait domain qualifiers (i.e., negative affectivity, detachment, dissociality, disinhibition, and anankastia), whereas the DSM-5 Alternative Model of Personality Disorders also delineates a separate domain of psychoticism. These six combined traits not only characterize individual stylistic features, but also the severity of their maladaptive expressions. It was, therefore, the aim of this study to investigate the utility of ICD-11 and DSM-5 trait domains to differentiate patients with personality disorders (PD) from patients with other mental disorders (non-PD). The Personality Inventory for DSM-5 Brief Form Plus (PID5BF+M) was administered to a sample of patients diagnosed with a personality disorder ($N = 124$, $M_{age} = 42.21$, 42.7% females) along with a sample of patients diagnosed with other mental disorders ($N = 335$, $M_{age} = 44.83$, 46.6% females). Group differences were explored using the independent sample *t* test or the Mann–Whitney *U* test for independent samples, and discriminant factor analysis was used to maximize group differences for each trait domain and facet score. The PD group showed significantly higher scores for the total PID5BF+M composite score, for the trait domains of negative affectivity, antagonism/dissociality, and disinhibition and for the trait facets of emotional lability, manipulativeness, deceitfulness, and impulsivity. The trait domains of disinhibition, negative affectivity, and antagonism/dissociality as well as the trait facets of impulsivity, deceitfulness, emotional lability, and manipulativeness were the best discriminators between PD and non-PD patients. The global PID5BF+M composite score was also one of the best discriminators supporting its potential as a global severity index for detecting personality dysfunction. Finally, high scores in three or more of the 18 PID5BF+M facets suggested the possible presence of a PD diagnosis. Despite some limitations, our findings

suggest that the ICD-11 and DSM-5 traits have the potential to specifically describe the stylistic features that characterize individuals with PD, including the severity of their maladaptive expressions.

Keywords: ICD-11 classification of personality disorders, DSM-5 alternative model for personality disorders, personality disorders, severity, personality traits, PID5BF+M

INTRODUCTION

There is broad consensus within the scientific community as to the supremacy of dimensional classification models over categorical models in the diagnosis of personality disorders (PD) (1, 2). Moreover, a growing body of research suggests that the global severity of personality dysfunction should be central for PD diagnosis (3–5) while individual maladaptive expressions are best described in terms of specific traits (6, 7). A PD classification system based on severity is expected to simplify the diagnostic process and is far more beneficial to clinical practice, allowing for a clear identification of those who are more disturbed and require a more intensive intervention (e.g., hospitalization vs. outpatient treatment). However, the stylistic manifestations of personality dysfunction may reveal specific areas of difficulty and are, therefore, also important to identify. Style indicates the likely expression of the pathology and gears the clinician toward the most appropriate type of intervention (3, 6, 8).

Reflecting this trend, the recently released ICD-11 Classification of Personality Disorders (9) and the DSM-5 Alternative Model of Personality Disorders (AMPD) (10) consider impairments in self and interpersonal functioning as the core feature of PD and delineate levels of dysfunction. As mentioned, personality dysfunction may have different phenotypic manifestations with implications for treatment and outcomes. Therefore, both classification systems use pathological traits to characterize the stylistic expression of personality dysfunction. In the ICD-11 model, the traits are specifiers of personality dysfunction (i.e., severe personality dysfunction is expected to be associated with several pathological traits) while the DSM-5 model defines constellations of traits that characterize six personality disorders (e.g., for the diagnosis of borderline personality disorder, in addition to moderate or greater personality dysfunction, four or more of seven pathological traits must be present and at least one must be impulsivity, risk taking, or hostility) (9, 10). The trait domains considered in both models are negative affectivity, detachment, antagonism/dissociality, and disinhibition. The two models particularly differ in terms of the psychoticism domain, which is not considered a personality trait domain in the ICD-11, and in terms of the anankastia domain, whose equivalent in the DSM-5 (compulsivity) was not retained in the final AMPD model for reasons of parsimony (9, 10). Additionally, the DSM-5 recognizes facets within each trait domain, and the ICD-11 does not. Both models have made efforts to operationalize these specific trait features. The Personality Inventory for ICD-11 (11) and the Personality Inventory for DSM-5 (PID5) (12) have proven to efficiently assess the maladaptive traits of each model, helping clinicians to easily capture the most salient traits in each patient.

Considering the similarity of both classification systems, it would be helpful to clinicians if these two systems were harmonized (13, 14). In fact, as previously mentioned, the preliminary versions of the DSM-5 included a compulsivity domain, akin to anankastia (15). Currently, the DSM-5 addresses compulsivity/anankastia in terms of a low score in the disinhibition domain (i.e., rigid perfectionism) and a high score in perseveration (10). However, experts stress that rigid perfectionism and perseveration do not capture the complexity of the compulsivity dimension (16, 17), and research findings support a distinct compulsivity/anankastia domain (13, 14, 18). In contrast to the DSM-5, the ICD-11 does not consider psychoticism as a personality feature as it describes mental functioning (bizarre behavior, unusual thoughts, and experiences) that characterizes schizophrenic spectrum disorders. Nonetheless, the DSM-5 psychoticism domain captures features of schizotypy that are close to normal functioning (i.e., unconventionality in appearance and thinking), therefore ranging from atypical normal functioning to more extreme schizophrenic-like features.

Recently, Kerber et al. (19) developed the Personality Inventory for the DSM-5—Brief Form Plus (PID5BF+), an algorithm that assesses the DSM-5 and ICD-11 six trait domains (negative affectivity, detachment, antagonism/dissociality, disinhibition, anankastia, and psychoticism) and 17 facets. In the PID5BF+, the anankastia domain aligns with the DSM-5 algorithm and consists of the rigid perfectionism and perseveration facets. To better capture the features of the ICD-11 domain of anankastia, Bach et al. (14) developed a modified version of the PID5BF+, the PID5BF+M, in which the perseveration facet, which contributes to the negative affectivity domain, was excluded and the orderliness, rigidity, and perfectionism sub-facets of the original rigid perfectionism facet were added. These three new anankastia facets are in keeping with the initial 37-facet version of the DSM-5 trait model that included the compulsivity domain (15). Apart from these changes in the composition of the anankastia domain, the other PID5BF+ domains have remained unchanged. Therefore, each PID5BF+M domain is composed of three facets, and each facet is composed of two items. The PID5BF+M was validated with international PID5 data. Although the ICD-11 classification system does not describe personality at a facet level, research with the PID5BF+M (14) reveals that the ICD-11 trait domain may be adequately characterized by means of DSM-5 trait facets.

According to the ICD-11 approach, global PD severity rather than specific trait qualifiers are meant to differentiate PD

from non-PD patients. Nevertheless, it is well-established that severity represents the global quality ("g-factor") that links all maladaptive personality features (3, 6, 8, 20). Moreover, the ICD-11 PD classification states that individuals with more severe personality disturbance tend to have a greater number of prominent trait domains (9). This implies higher scores across the trait domains, thus indicating more complexity, which, in turn, indicates PD severity. Therefore, the number, complexity, and severity of maladaptive traits indicate the global severity of personality dysfunction (3). This is also consistent with the official PID5 user's guide, which literally instructs users to calculate the overall personality dysfunction score (i.e., total and individual PID5 scores) to track changes in the severity of the individual's personality dysfunction over time (10). Moreover, research supports the understanding that PID-5 traits are substantially related to measures of functional impairment (21).

The current study sought to investigate the utility of the PID5BF+M total score along with specific domain and facet scores in differentiating patients with PDs from other psychiatric patients. The use of the PID5BF+ as a proxy of severity is particularly supported in a comparative study by Zimmermann et al. (22), which found the total PID5BF+ score to align well with a number of PD severity measures.

MATERIALS AND METHODS

Participants and Procedures

The sample of patients with PD consisted of 124 patients aged between 18 and 68 years (M_{age} = 42.21 years, SD = 11.76 years, 57.3% males, 42.7% females), 64.5% of whom had a cluster B diagnosis (56.6% had borderline personality disorder). In the PD sample, 56.5% of the patients had comorbid psychopathology. The most common comorbid disorders included substance-related and addictive (22.6%), depressive (17.7%), and bipolar disorders (10.5%).

The sample of patients with other diagnoses (39.1% depressive, 29.6% substance-related and addictive, and 15.5% bipolar and related disorders) was composed of 335 patients, aged 18 to 76 years (M_{age} = 44.83 years, SD = 12.59 years, 53.4% males, 46.6% females). Individuals with a comorbid PD were excluded from this sample.

Data collection was carried out within the scope of the adaptation of the PID5 (12) for Portugal. The study design was approved by the ethics committees of the affiliated and host institutions, and the research protocol consisted of a sociodemographic questionnaire and four personality tests, one of which was the PID5. At the time of data collection, the patients were having treatment at mental health units. In each affiliated mental health institution, a psychiatrist or psychologist (co-authors of this paper) coordinated the sampling procedures. Patients were selected according to their DSM-5 diagnosis and the study's inclusion and exclusion criteria. The study inclusion criteria were adults above 18 years undergoing treatment at mental health units. Diagnoses of intellectual disability, schizophrenia, and major and mild neurocognitive disorders were the exclusion criteria. Some of the patients responded to the research protocol during brief hospitalization periods (for conditions such as eating or affective disorders). Others were outpatients, admitted sequentially in the sample whenever they had a follow-up consultation. Patients were informed that participation in the study was voluntary, that they could withdraw their participation at any time, that no identifying information would be asked, and that the data would be used exclusively in a scientific study.

Instruments

PID5BF+M: The Modified Version of the PID5BF+ (14). The PID5BF+ (19) is a 34-item self-report that was developed to combine DSM-5 and ICD-11 traits within six domains (negative affectivity, detachment, antagonism/dissociality, disinhibition, anankastia, and psychoticism). The selection of items from the original PID5 item pool was carried out by means of ant colony optimization algorithms [see details in Kerber et al. (19)]. In the PID5BF+M (14), the anankastia domain was revised, and the changes in its operationalization were empirically validated [see details in Bach et al. (14)]. The PID5BF+M comprises 36 items that delineate 18 facets in the six trait domains (three facets per domain). High scores indicate greater dysfunction in a specific trait facet or domain (14). Following the procedure of Zimmermann et al. (22) for the PID5BF+, a total PID5BF+M score was also computed as a global index of personality dysfunction. Our PID5BF+M data was derived from complete PID5 data.

Data Analysis

Analyses were undertaken with *IBM SPSS Statistics* (v.25, SPSS Inc., Chicago, IL). Descriptive statistics for the facets, domains, and total PID5BF+M score were obtained, and the domains' and total PID5BF+M score reliability was examined through Cronbach's alphas in both PD and non-PD samples. To explore the normality of the scales' distributions, the following criteria were used: skewness, kurtosis, Kolmogorov–Smirnov goodness-of-fit test ($N > 30$), steam and leaf diagrams, and Q-Q plots. Group differences were explored using the independent sample t test whenever the PID5BF+M scales followed a normal distribution. Effect sizes were tested through Cohen's *d,* in which the effect size was considered small when $d \leq 2.0$, medium when $0.20 < d \leq 0.50$, large when $0.50 < d \leq 1.0$, and very large when $d > 1.0$. The Mann–Whitney U test for independent samples was used when the PID5BF+M scales did not follow a normal distribution. Effect sizes were tested through $r = Z/\sqrt{N}$, $N = n_{PD} + n_{non-PD}$, in which the effect size was considered small when $0.10 \leq r < 0.30$, medium when: $0.30 \leq r < 0.50$, and large when: $r \geq 0.50$. Discriminant factor analysis was used to maximize group differences in each PID5BF+M trait domain and facet. Finally, the minimum number of facets with high rates [>2 (23)] that differentiate PD from non-PD diagnosis was examined.

RESULTS

Cronbach's alphas for the six PID5BF+M domains were moderate although slightly higher in the non-PD sample. In the PD sample, the mean Cronbach's alpha was 0.70, ranging from 0.65 at the lowest level for detachment to 0.76 for psychoticism.

TABLE 1 | PID5BF+M scales' means (*M*), standard deviations (*SD*), *t* tests (*t*) and effect sizes *(d)* in the personality disorder (PD) and non-personality disorder (non-PD) samples.

	PD (*N* = 124)		Non-PD (*N* = 335)				
	M	*SD*	*M*	*SD*	*t*	*p*	*d*
Emotional lability	1.85	0.87	1.65	0.85	2.26	0.012	0.23
Anxiety	1.98	0.87	1.92	0.88	0.74	0.231	
Separation insecurity	1.53	0.89	1.38	0.87	1.62	0.054	
Withdrawal	1.14	0.83	1.13	0.84	0.15	0.443	
Anhedonia	1.30	0.86	1.18	0.83	1.32	0.100	
Intimacy avoidance	0.88	0.86	1.02	0.88	−1.56	0.060	
Manipulativeness	0.75	0.83	0.58	0.77	2.07	0.020	0.21
Deceitfulness	1.26	0.87	1.06	0.78	2.30	0.011	0.25
Grandiosity	0.88	0.82	0.86	0.81	0.28	0.389	
Irresponsibility	0.83	0.80	0.73	0.78	1.21	0.114	
Impulsivity	1.69	0.81	1.42	0.80	3.20	0.000	0.34
Distractibility	1.71	0.79	1.60	0.76	1.41	0.079	
Unusual beliefs & experiences	1.21	0.87	1.12	0.87	1.01	0.156	
Eccentricity	1.15	0.90	1.03	0.84	1.33	0.093	
Perceptual dysregulation	0.80	0.86	0.75	0.77	0.64	0.261	
Perfectionism	1.50	0.85	1.48	0.85	0.09	0.463	
Rigidity	1.91	0.71	1.83	0.75	1.09	0.138	
Orderliness	1.05	0.76	1.06	0.83	−0.12	0.455	
Negative affectivity	1.79	0.63	1.65	0.60	2.19	0.015	0.23
Detachment	1.11	0.60	1.11	0.64	−0.078	0.469	
Antagonism	0.96	0.64	0.83	0.62	2.05	0.021	0.21
Disinhibition	1.41	0.60	1.25	0.58	2.62	0.005	0.26
Psychoticism	1.05	0.69	0.96	0.68	1.28	0.101	
Anankastia	1.48	0.59	1.46	0.65	0.435	0.332	
Total PID5BF+M	1.30	0.40	1.21	0.43	2.03	0.022	0.21

Small effect: d ≤ 2.0, medium effect: 0.20 < d ≤ 0.50, large effect: 0.50 < d ≤ 1.0, and very large effect: d > 1.0.

Regarding the non-PD sample, the mean Cronbach's alpha was 0.72, ranging from 0.66 at the lowest level for negative affectivity to 0.77 for psychoticism. As for the total PID5BF+M score, in the PD sample the alpha was 0.86, and in the non-PD sample the alpha was 0.89.

Table 1 presents the descriptive statistics, *t* tests, and effect sizes for all the PID5BF+M scales although seven scales (anxiety, withdrawal, intimacy avoidance, manipulativeness, unusual beliefs and experiences, eccentricity, and orderliness) did not lean toward normality. Considering the robustness of parametric statistics against non-normality variables and for the sake of clarity in the results' presentation, the option was taken to present the *t* test results, discussing eventual discrepancies with the Mann–Whitney *U* results whenever necessary.

The PD group showed significantly higher scores for the PID5BF+M total score, the trait domains of negative affectivity, antagonism, and disinhibition, and for the trait facets of emotional lability, manipulativeness, deceitfulness and impulsivity. A small effect size was found for manipulativeness with the Mann–Whitney U ($Z = -2.189$, $p = 0.015$, $r = 0.10$), whereas effect sizes tested through Cohen's d were medium for the total score and all the trait facets and domains.

Discriminant factor analysis results for the PID5BF+M domains and total are displayed in **Table 2**. **Table 3** shows the 10 more discriminative PID5BF+M traits (PID5BF+M facets and total).

The trait domains of disinhibition, negative affectivity, and antagonism were the best discriminators among patients with PD and patients with other diagnoses. The antagonism domain (i.e., ICD-11 dissociality) showed the best predictive capacity (57.1%). The PID5BF+M total score discriminated better than the remaining trait domains among PD and non-PD patients.

The trait facets of impulsivity, deceitfulness, emotional lability, manipulativeness, separation insecurity, intimacy avoidance, distractibility, eccentricity, and anhedonia were the best discriminators among patients with PD vs. patients with other diagnoses. Of these, the manipulativeness facet showed the best predictive capacity (60.8%). The PID5BF+M total was the fifth best discriminator among the two groups.

Table 4 presents the number and percentage of individuals with a PD diagnosis or other diagnosis scoring above 2 in the 18 PID5BF+M facets and in the seven traits that significantly differentiated the groups (i.e., negative affectivity, antagonism,

TABLE 2 | Discriminant factor analysis for the PID5BF+M trait domains and total in the personality disorder (PD) and non-personality disorder (non-PD) samples.

Rank	Most discriminative variable	Mean PD (*N* = 124)	Mean Non-PD (*N* = 335)	Percentage of well classified[b]
1	4 Disinhibition	1.41	1.25	52.5%
2	1 Negative affectivity	1.79	1.65	54.9%
3	3 Antagonism[a]	0.96	0.83	57.1%
4	7 Total PID5BF+M	1.30	1.21	54.0%
5	5 Psychoticism	1.05	.96	52.1%
6	6 Anankastia	1.48	1.46	50.3%
7	2 Detachment	1.11	1.11	50.1%

[a] *Best predictive capacity.*
[b] *Two-fold cross-validation.*

TABLE 3 | Discriminant factor analysis for the PID5BF+M facets and total in the personality disorder (PD) and non-personality disorder (non-PD) samples.

Rank	Most discriminative variable	Mean PD (*N* = 124)	Mean non-PD (*N* = 335)	Percentage of well-classified[b]
1	11 Impulsivity	1.69	1.42	49.0%
2	8 Deceitfulness	1.26	1.06	57.5%
3	1 Emotional lability	1.85	1.65	52.5%
4	7 Manipulativeness[a]	0.75	0.58	60.8%
5	19 Total PID5BF+M	1.30	1.21	54.0%
6	3 Separation insecurity	1.53	1.38	50.1%
7	6 Intimacy avoidance	0.88	1.02	54.2%
8	12 Distractibility	1.71	1.60	55.1%
9	14 Eccentricity	1.15	1.03	56.6%
10	5 Anhedonia	1.30	1.18	50.1%

[a] *Best predictive capacity.*
[b] *Twofold cross-validation.*

disinhibition, emotional lability, manipulativeness, deceitfulness, and impulsivity).

Elevated scores in three or more of the 18 PID5BF+M facets differentiate the PD group from the other diagnoses group ($\chi^2 = 11.124$, $p = 0.011$). Considering the seven facets of the PID5BF+M that differentiate the group with PD from the other group, it is sufficient to obtain high results in two or more traits to be assigned to the PD group ($\chi^2 = 24.098$, $p = 0.001$).

DISCUSSION

The current study sought to investigate the utility of the PID5BF+M in differentiating patients with PD from other psychiatric patients. A dimensional approach to identifying PD based on severity is proposed by several authors (3, 24, 25), and PD severity is the real differentiator between PD and non-PD in the ICD-11 (9). Although the PID5BF+M addresses trait qualifiers and not the level of PD severity in itself, Zimmermann et al. (22) find that the PID5BF+, from which the PID5BF+M derives, can be used for assessing the severity of PD. This finding is in line with the ICD-11 conceptualization that the number, complexity, and pervasiveness of pathological traits may be an indicator of severity (26) and also with the notion that the AMPD trait model may be used as a measure of severity by summing the number of pathological traits presented (27). Moreover, there is evidence to support the view that severity represents the global quality (g-factor) linking all the maladaptive personality features (6, 8, 20, 21). Therefore, it seems reasonable to predict that maladaptive traits should be more prominent in those with more severe personality dysfunction (i.e., PD). Thus, in this study, the PID5BF+M total score along with the specific domain and facet scores were expected to differentiate PD patients from other psychiatric patients.

The internal consistency of the PID5BF+M six domains and of the total PID5BF+M score in both samples was addressed. Mean Cronbach's alphas ranging from 0.70 in the PD sample to 0.72 in the other mental disorders sample were obtained. The small number of items per domain (each domain is composed of three facets, each with two items) may have accounted for these moderate alphas and supported the decision of not calculating the facets' alphas. However, the total PID5BF+M score showed high internal consistency in both samples, 0.86 in the PD sample and 0.89 in the non-PD sample, thus revealing the reliability of this score in addressing personality dysfunction.

Regarding the samples' descriptives and group differences, all the scales except intimacy avoidance revealed higher means in the PD sample. The PD sample showed significantly higher scores for the total PID5BF+M score, for the trait domains of negative affectivity, antagonism, and disinhibition, and for the trait facets of emotional lability, manipulativeness, deceitfulness, and impulsivity. A small effect size was found for manipulativeness; however, medium effect sizes were obtained for the other traits in which significant differences between the groups were found.

Discriminant factor analysis results were in line with the aforementioned group differences. The best discriminators among patients with personality disorders vs. patients with other diagnoses included the domains of disinhibition, negative affectivity, and antagonism and the facets of impulsivity, deceitfulness, emotional lability, and manipulativeness. The PID5BF+M total score was also one of the best discriminators between the groups (fourth in the domain-level analysis and fifth in the facet-level analysis) confirming the potential utility of this indicator for detecting significant levels of personality dysfunction.

Finally, bearing in mind that the literature on the PID-5 suggests that ratings of 2 (sometimes true) or 3 (very true) have clinical relevance (23), our results indicate that individuals with rates above 2 in three or more of the 18 PID5BF+M facets may have a PD diagnosis. Considering the seven traits that significantly differentiate the groups (negative affectivity, antagonism, disinhibition, emotional lability, manipulativeness, deceitfulness, and impulsivity), two of these traits with rates above 2 are sufficient to distinguish the PD group from the non-PD group.

TABLE 4 | Number and percentage of individuals from the personality disorder (PD) and non-personality disorder (non-PD) samples with scores above 2 in the 18 PID5BF+M facets and in the seven PID5BF+M facets that differentiate the groups.

		18 PID5BF+M facets				
		>2 in 0 traits	>2 in 1 traits	>2 in 2 traits	>2 in 3 or more traits	Total
PD	Count	21	19	18	66	124
	% within PD	16.9%	15.3%	**14.5%**	**53.2%**	100.0%
Other diagnosis	Count	87	74	48	123	332
	% within PD	**26.2%**	**22.3%**	**14.5%**	37.0%	100.0%
Total	Count	108	93	66	189	456
	% within PD	23.7%	20.4%	14.5%	41.4%	100.0%

		7 PID5BF+M facets								
		>2 in 0 traits	>2 in 1 traits	>2 in 2 traits	>2 in 3 or more traits	>2 in 4 or more traits	>2 in 5 or more traits	>2 in 6 or more traits	>2 in 7 or more traits	Total
PD	Count	47	25	26	18	7	1	0	0	124
	% within PD	37.9%	20.2%	**21.0%**	**14.5%**	**5.6%**	**0.8%**	0.0%	0.0%	100.0%
Other diagnosis	Count	184	72	51	19	4	2	1	1	334
	% within PD	**55.1%**	**21.6%**	15.3%	5.7%	1.2%	0.6%	0.3%	0.3%	100.0%
Total	Count	231	97	77	37	11	3	1	1	458
	% within PD	50.4%	21.2%	16.8%	8.1%	2.4%	0.7%	0.2%	0.2%	100.0%

Bold values highlight the number of traits that distinguish the PD group from the non-PD group and above which a PD diagnosis is suggested.

The prominence of maladaptive traits, particularly the presence of elevated scores in three or more facets in the PD group, mirroring the severity of personality dysfunction (6, 8, 20, 21), appears to support the ability of the PID5BF+M to differentiate PD from non-PD patients. Moreover, considering that the PD group was largely composed of borderline PD, characterized by the presence of facets from the negative affectivity, antagonism, and disinhibition domains in the AMPD, the results of the current study suggest that the PID5BF+M also has the potential to describe the specific traits that characterize the stylistic manifestations of PD. Therefore, although more research is needed, the current study appears to support the validity of the PID5BF+M as a global measure of personality dysfunction severity beyond just characterizing specific PD trait expressions.

The absence of other instruments' data to establish the convergent validity of the PID5BF+M, the heterogeneity of the clinical samples' composition and the small number of participants are limitations of this study. In particular, the fact that the PD sample has other diagnoses in comorbidity may overshadow the differences found. However, the study supports usage of the PID5BF+M for PD assessment, stressing its potential to identify patients with more severe personality dysfunction, that is, those who have higher scores in most of the maladaptive traits, and also highlighting the specific stylistic manifestations of the personality dysfunction. Moreover, considering that the PID5BF+M traits encompass traits described in both the ICD-11 PD classification system and the DSM-5 AMPD, it is plausible to expect that the current study, along with previous studies (14, 22), may contribute to future developments of the DSM-5, namely by bringing it closer to the ICD-11, the WHO authoritative mental disorders classification system. Finally, for clinical practice and the diagnostic process, it would be incommensurably fruitful to have a diagnostic tool with fewer items, which is less time consuming and bridges the ICD-11 and the DSM-5 personality disorders classification systems.

DATA AVAILABILITY STATEMENT

The data analyzed in this study is subject to the following licenses/restrictions: Our PID5BF+M data was derived from complete PID-5 data. To obtain the dataset analyzed for this study, please contact ruteoliveirapires@gmail.com or rpires@psicologia.ulisboa.pt.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics committee of the Faculdade de Psicologia—Universidade de Lisboa. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

RP designed the study, provided state of the art revision, supervised the research project and data collection, performed the data analysis and its interpretation, and wrote the first draft of the manuscript. JH-C collaborated in the study design, supervised the research project and data collection, and provided

critical revisions. AS performed and supervised the data analysis and interpretation. BB designed the study, provided state of the art revision, and provided critical revisions. MP, JG, AR, and JG supervised the data collection and provided critical revisions. BG collaborated in the study design, coordinated the research project and data collection, and provided critical revisions. All authors contributed to and have approved the final manuscript.

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MINI REVIEW
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ICD-11 Personality Disorders: Utility and Implications of the New Model

*Roger T. Mulder**

Department of Psychological Medicine, University of Otago, Christchurch, New Zealand

The ICD-11 classification of personality disorders represents a paradigm shift in diagnosis. This was felt necessary because previous personality disorder classifications had major problems. These included unnecessary complexity, inconsistency with data on normal personality traits, and minimal consideration of severity despite this being shown to be the major predictor of outcome. The ICD-11 classification abolishes all categories of personality disorder except for a general description of personality disorder. This diagnosis can be further specified as "mild," "moderate," or "severe." Patient behavior can be described using one or more of five personality trait domains; negative affectivity, dissociality, anankastia, detachment, and disinhibition. Clinicians may also specify a borderline pattern qualifier. The ICD-11 shows considerable alignment with the DSM-5 Alternative Model for Personality Disorders. Early evidence around the reliability and validity of the new model appear promising, although at present there is still limited specific evidence due to the model being so recently finalized. However, for the model to be successful, it needs to be embraced by clinicians and used widely in normal clinical practice.

Keywords: personality disorder, classification, domains, diagnosis, ICD-11

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Virginia Commonwealth University,
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Alireza Farnam,
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Andrew Skodol,
University of Arizona, United States

***Correspondence:**
Roger T. Mulder
roger.mulder@otago.ac.nz

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INTRODUCTION

When the ICD-11 working group for the revision of the classification of personality disorders was established in 2010 there was a great deal of dissatisfaction with the current ICD-10 (1) and DSM IV (2) classifications. First, the system was too complex with around 80 criteria, some of which overlapped, and 10 separate categories based on no coherent model or theory. The descriptions appear to have evolved from historical precedents, clinical experience, and committee consensus. Some categories had their origins in Galen's temperaments described over 2,000 years ago, while others, such as Borderline Personality Disorder, appeared in 1980. Clinicians responded logically; they largely ignored the whole concept of personality disorder, resulting in rates of diagnoses being less than one quarter of that reported in systematic reviews (3). When clinicians did make a personality disorder diagnosis, they generally used two of the 10 official categories, borderline and antisocial, as well as the catch all "personality disorders not otherwise specified" (PD NOS). In addition, the complexity of personality disorder nosology resulted in any interest being confined to the specialist few, with the general clinician becoming even less involved.

Second, the classification was inconsistent with what data was available, with most evidence suggesting personality abnormality was distributed along a dimension (4). These dimensional constructs were similar to dimensions of personality which have been reported in the general population. Probably not surprisingly, normal and abnormal personality are, at least to some extent,

related to each other (5). The question of whether using a dimensional model of personality to understand personality disorders can work has been subject to significant scrutiny. Generally, there is empirical support for such a dimensional conceptualization. Four meta-analyses using a total of 52 independent samples involving 13,640 individuals concluded that personality pathology can be adequately represented as constellations of extreme scores on normal personality models, most notably the five-factor model (6). However, a dimensional approach has been slow to be accepted by those involved in the classification of personality pathology. While a number of authors had suggested that a dimensional approach to personality disorders was most appropriate by the early 90s (7, 8), little agreement existed on what direction progress should take.

Third, there is consistent evidence that the severity rather than the type of personality pathology is the major predictor of the individual's suffering and dysfunction (9). The total number of diagnosed personality disorders or the number of traits explains more variability in functioning than specific personality disorders alone (10). Those with more severe personality disturbance are more likely to self-harm (11), to have a greater degree of co-morbidity and suicide risk (12), and to have a higher risk of treatment drop-out (13). The argument can also be made that prioritizing severity helps re-focus on the core management around self and interpersonal difficulties rather than emphasizing behavioral descriptions.

DISCUSSION

The ICD-11 Proposal

Severity of Personality Disturbance

Therefore, it is not surprising that when the ICD-11 personality disorder classification committee met in 2010, they felt that a paradigm shift was necessary. Changing the symptoms within categories or changing the number of categories would be insufficient. Tinkering around the margins would not address the fundamental problems with the ICD-10 classification system. Led by Peter Tyrer, the initial proposal for the ICD-11 classification set out to abolish all categories of personality disorder except for the general description of a personality disorder. Personality disorder was conceptualized along a dimension of severity. So, to qualify for a diagnosis of personality disorder, general diagnostic features such as problems in interpersonal relationships and impaired functioning must be present. The diagnosis could then be further specified as "mild," "moderate," or "severe" based upon descriptions of degrees of severity. Assessment of severity was based on the prominence of the abnormal traits and their impact on the individual's social and occupational functioning, as well as the risk to themselves or others. Although some description details have been changed since the initial formulation, particularly an increased emphasis on aspects of self-functioning, the fundamental concept has remained and is now embedded in ICD-11 [the final definitions of severity are outlined in the World Health Organization's ICD-11 website (2018)].

Personality Difficulty

What is new, however, is the concept of personality difficulty which, while not a disorder, is described as "problems associated with interpersonal interactions." More specifically, the definition refers to "pronounced personality characteristics that may affect treatment or health services but do not rise to the level of severity to merit a diagnosis of personality disorder." In contrast to personality disorders, personality difficulty is manifested in "cognitive and emotional experience and expression only intermittently or at low intensity" (14). There is some existing data suggesting that the concept of personality difficulty may be clinically useful. The UK National Morbidity Survey assessed 8,400 individuals for personality status and mental health. When personality difficulty was defined as a score of one operational criterion less than personality disorder on a SCID-II nearly half the respondents (48.3%) fulfilled criteria. Having this diagnosis was not trivial; they were significantly more likely to consult their general practitioners, be admitted to a mental hospital, attend a community medical center or see a mental health worker (15). Some are concerned that the term will lead to over-medicalisation of behavior and become referred to as a diagnosis even though it is explicitly stated that it is not one. However, the concept has potential use in the general medical and general practice sphere where clinicians often note that patients with the same physical diagnoses may require quite different treatment approaches due to personality quirks.

Personality Trait Domains

With regard to the descriptions of personality pathology, the ICD-11 proposal was quite radical. Rather than compromising by retaining some diagnostic categories, as the DSM-5 proposal did, the model included replacement of all ICD-10 diagnostic categories. This significant shift toward a dimensional descriptive framework was guided by literature review (3) and subsequently informed by field trails (16–18). The field trails produced mixed findings; while the anankastia and detached domains appeared reasonably robust, the negative affectivity and dissocial were less so. Two of the analyses suggested that five trait domains were a better fit for the data (17). While the initial model had four traits which were (a) negative affectivity, (b) dissociality, (c) anankastia, and (d) detachment, after considerable debate, disinhibition was later added. As we shall see, its inclusion may have led to as many problems as it seemed to solve.

Despite being derived independently, the five personality trait domains are similar to the DSM-5 Alternative Model for Personality Disorders (AMPD); the major difference being the anankastia domain in ICD-11 vs. the DSM-5 psychotic domain. This similarity is reassuring as well as allowing DSM AMPD domains to be translated to ICD-11 domains, notably by Bach et al. (19, 20).

The proposal received mixed feedback; most clinicians appeared to like it, but some personality disorder researchers considered it too minimalist and feared dropping established categories (21–23). While most experts believed that personality pathology was dimensional in nature, a majority preferred a hybrid model (a mixture of dimension and categories) (4). Just

before the WHO final approval of the ICD-11 representatives from the European, International, and North American Societies for the Study of Personality Disorders expressed their strong concerns (24). The central issue was the loss of Borderline Personality Disorder. Further discussion between some ICD-11 working group members and representatives from the Societies reached a compromise (25, 26). This included specifying a borderline pattern qualifier (which is very similar to the DSM-5 Borderline Personality Disorder diagnosis) and the general definition having more focus on self as well as interpersonal functioning. For a more detailed overview of the process see Tyrer et al. (27).

The Validity and Utility of ICD-11 Personality Disorders

Severity of Personality Disorder

One problem with such a radical change in the classification system is that the findings of previous studies cannot always be directly translated into the new system. There is, therefore, limited specific evidence of the utility and validity of the ICD-11 classification at this time. Fortunately, the DSM-5 AMPD, which despite not being the official DSM-5 classification has been the most used in recent personality disorder research studies (28), and can be reasonably translated into the ICD-11 system. The similarities are important in allowing the large body of work supporting the DSM-5 AMPD model to be generalized to the ICD-11 personality disorder model. **Table 1** shows the alignment between the two models.

TABLE 1 | Alignment between ICD-11 and DSM-5 alternative model for personality disorders models.

ICD-11 severity of personality dysfunction	**DSM-5 criterion A: level of personality functioning**
None	0) No impairment (Healthy Functioning)
Personality difficulty	1) Some impairment
Mild personality disorder	2) Moderate impairment
Moderate personality disorder	3) Severe impairment
Severe personality disorder	4) Extreme impairment
ICD-11 trait domain qualifiers	**DSM-5 criterion B: trait domains**
Negative affectivity	Negative affectivity
Detachment	Detachment
Disinhibition	Disinhibition
Dissociality	Antagonism
Anankastia	(Rigid perfectionism)
(Schizotypal disorder)	Psychoticism
Continuity with clinical practice	**Hybrid types**
Borderline pattern qualifier	Antisocial, Avoidant, Borderline, Narcissistic, Obsessive-Compulsive, Schizotypal, Trait-Specified

While the ICD-11 levels of severity compliment the DSM-5 impairment levels of personality functioning, they also add to them. ICD-11 provides a separate list of explicit emotional, cognitive, and behavioral manifestations to help determine the severity of an individual personality disorder (29). Therefore, severe personality disorder may include stress-related distortions in an individual's situational and interpersonal beliefs which could lead to psychotic-like perceptions. The system also explicitly includes risk of harm to self and others as part of determining personality disorder severity. Finally, the model includes the complexity and pervasiveness of the disturbance as a determinant of severity. Severe personality disorder by definition, affects most, if not all, areas of personality functioning, while mild personality disorder will only involve some areas.

Personality Trait Domains

The ICD-11 trait domains also have the advantage of being conceptually aligned with the AMPD trait domains. There is now consistent evidence that both systems converge and largely capture the same descriptive features (20, 30, 31) so that the extensive research on AMPD traits (with the obvious exception of psychoticism) may be generalized to ICD-11 trait domains when it comes to clinical information and guidelines. Bach et al. (19) developed an algorithm to delineate the five ICD-11 trait domains (including anankastia) using the well-established Personality Inventory for DSM-5 (PiD) (32). The ICD-11 five factor structure was supported across US and Danish data. Other populations, including Iranian and Brazilian samples, have replicated the five factor structure (33, 34). Sellbom et al. (35) reported that the ICD-11 traits demonstrated expected associations with categorical personality disorder symptom scores and five factor traits in a sample of Canadian psychiatric patients.

Oltmanns and Widiger (30) produced a scale specifically developed for the ICD-11 trait domains—the Personality Inventory for ICD-11 (PiCD). Evaluation in several studies generally supports the validity of the ICD-11 trait domains. Importantly, the domains converged predictably with external criteria, notably the five factor model. As predicted, negative affectivity is associated with neuroticism, detachment with low extraversion, dissociality with low agreeableness, anankastia with high orderliness, and disinhibition with low orderliness (36). Crego and Widiger (37) used a sample of 323 patients in mental health treatment and reported meaningful and expected convergence of the ICD-11 domains with SNAP and DAPP-BQ. The anankastia domain was noted to have strong predictable relationships with compulsivity measures on both scales, which were not present in the PID-5.

There is limited evidence on the utility of the trait domains. A study by Hansen et al. (38) reported that clinicians rated the ICD-11 slightly more useful than the ICD-10 classification. The final definitions of the ICD trait domains were produced in 2018 so specific evidence of their utility is not available yet. However, the predicted relationships with other measures of personality suggest they may prove useful in clinical practice.

The Anankastia Domain Qualifier

This trait domain has been discussed more than the other domains for two reasons. The first is that it is not a domain in DSM-5 AMPD model. The second is that some studies suggest it is not a separate domain but part of a bipolar disinhibition-anankastia factor. Regarding the first reason; compulsivity, which is roughly equal to anankastia, was originally proposed as a distinct domain in the DSM-5 trait model (39). It was abandoned for reasons which are not clear. The generated list of 37 facets for the DSM-5 AMPD included (lack of) orderliness, (lack of) perfectionism, and (lack of) rigidity, which are aligned with an anankastia or compulsivity domain. However, these facets were subsumed into the disinhibited domain (32). Our review (3) found that anankastia or something similar was reported in most analyses which looked for it, while a disinhibition dimension was less consistently found.

That said, there are legitimate concerns about the relationship of the disinhibited and anankastia domains in the ICD-11 classification. Two studies have reported a four factor solution including a bipolar disinhibition-anankastia domain (30, 31). However, other studies support a five factor solution in which anankastia and disinhibition are two distinct domains (17, 19, 35). The clinical reality may be that complex personality disorder patterns can be characterized by both disinhibition and anankastia (40).

Given the consistency of an anankastia domain, or something like it, in the literature, it may be that the disinhibited domain deserves more scrutiny. Disinhibition may be a more general trait which renders personality pathology, and possibly other psychopathology, more obvious across a variety of disorders. The behaviors associated with rigid perfectionism exist and it is not intuitive for clinicians to diagnose "low disinhibition" or "lack of disinhibition" as a personality description. In the end, clinical utility will probably determine whether both the anankastia and disinhibited domains are helpful, or whether one should be dropped.

Borderline Pattern Qualifier

The ICD-11 classification allows clinicians to specify a borderline pattern qualifier, which essentially consists of the nine DSM-5 diagnostic features. This coding was a pragmatic solution to objections from many senior researchers around the loss of this historically important construct (24). Nevertheless, the ICD-11 working group felt that the severity and trait model could fully account for the borderline pattern (27). The borderline pattern qualifier appears closely linked to the overall severity of the personality pathology and may be a redundant addition to the classification (41). It is hoped that research will reveal whether the borderline pattern qualifier provides useful or distinct information beyond that provided by the trait domains (26).

CONCLUSION

The ICD-11 personality disorder classification is now official and will be required to be used in many countries from January 2022. It is hoped that its use will lead to greater understanding of the concept of personality disorder and better clinical care. It moves from an unnecessarily complicated classification system, most categories of which were never used, to a simpler, more evidence-based model. However, the radical change and novelty in the new classification mean that most of the evidence around utility and validity are indirect and based on other measures of personality pathology, since the new model was not fully described until 2018.

The ICD-11 severity diagnosis relies on research consistently indicating that the level of personality functioning and personality disorder complexity are the most important clinical and prognostic factors. The ICD-11 personality trait domain qualifiers are an attempt to distill personality descriptions into meaningful dimensions. Their empirical foundation is largely shared with the DSM-5 AMPD model and other well-established models describing personality, including the five factor model. The trait domain qualifiers can now be evaluated using different measures and algorithms as well as specifically developed instruments.

The changes in ICD-11 personality disorder classification represent a paradigm shift in diagnosis. But for it to be successful, it needs to be embraced by clinicians and used in practice in a way that has never been done before. To aid this, brief self-report questionnaires and clinical interviews are being developed. If further studies show, as I believe, that personality can now be recorded reliably with relative ease, and is useful in planning and predicting the outcome of treatment in most mental disorders, then clinicians may realize the advantage of bringing personality disorders to the forefront of their thinking, instead of the afterthought so often in present day clinical practice.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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Conflict of Interest: RM was a member of the ICD-11 Personality Disorder Classification Committee.

frontiers in Psychiatry

ORIGINAL RESEARCH
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Psychometric Properties of the Independent 36-Item PID5BF+M for ICD-11 in the Czech-Speaking Community Sample

Karel D. Riegel[1]*, *Albert J. Ksinan*[2] and *Lucia Schlosserova*[1]

[1] Department of Addictology, General University Hospital in Prague and 1st Faculty of Medicine, Charles University, Prague, Czechia, [2] Research Centre for Toxic Compounds in the Environment (RECETOX), Faculty of Science, Masaryk University, Brno, Czechia

Background: Empirical soundness and international robustness of the PID5BF+M, a shortened version of the PID-5 developed for simultaneous evaluation of maladaptive personality traits in the DSM-5 AMPD and ICD-11 models for personality disorders, was recently confirmed in 16 samples from different countries. Because the modified PID5BF+ scale (36 items) was extracted from the complete 220-item PID-5, an independent evaluation of psychometric properties of a stand-alone PID5BF+M is still missing.

Objectives: The present study evaluated the validity and reliability of the 36-item PID5BF+M in comparison with the extracted version from the original PID-5. It also assessed associations between the Borderline Pattern qualifier and trait domain qualifiers.

Methods: Two non-clinical samples meeting the inclusion criteria were employed in the study. Sample 1 (n = 614) completed the 220-item PID-5; Sample 2 (n = 1,040) completed the independent 36-item PID5BF+M. Participants were from all 14 regions of the Czech Republic. The Borderline Pattern qualifier was evaluated using a shortened IPDEQ screener.

Results: The proposed latent structure of the independent PID5BF+M was confirmed, with an exception of the Disinhibition domain. The results confirmed good internal consistency and test-retest reliability of the measure, as well as some support for the measurement invariance of the independent PID5BF+M in comparison with the extracted version from the original PID-5. Significant associations between the Negative affectivity, Disinhibition, and Psychoticism qualifiers and the IPDEQ items for the emotionally unstable personality disorder of both impulsive and borderline types confirmed good predictive validity of the PID5BF+M in pursuing borderline psychopathology within the ICD-11 model.

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Bo Bach,
Psychiatry Region Zealand, Denmark

Reviewed by:
Włodzimierz Andrzej Strus,
Cardinal Stefan Wyszyński University, Poland
Jens Thimm,
University of Bergen, Norway

***Correspondence:**
Karel D. Riegel
kareldobroslav.riegel@vfn.cz

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Conclusions: The independent PID5BF+M was found to be a valid and reliable tool for evaluation of the ICD-11 trait model. However, the Disinhibition domain deserves further investigation in clinical samples as well as in international community samples.

Keywords: ICD-11, DSM-5 AMPD, personality disorder classification, PID5BF+M, trait diagnosis, borderline pattern qualifier

INTRODUCTION

Both the Model for Personality Disorders (PDs) in the 11th edition of the International Classification of Diseases (ICD-11) and the Alternative DSM-5 Model for Personality Disorders (AMPD) use personality trait domains to specify individual manifestations of personality psychopathology beyond the evaluation of the overall personality impairment severity (1). The trait qualifiers in ICD-11 not only offer empirically-informed and homogeneous basis for personality psychopathology convergent with other empirically derived dimensional models (2) and AMPD (3), but they also contribute clinical information necessary for the selection of the type and the focus of psychotherapy (4). In addition, the significant overlap between ICD-11 and the AMPD dimensional models of personality traits allows the instruments originally developed for AMPD, namely the Personality Inventory for the DSM-5 (PID-5) (5), to be used for the operationalization of both models. So far, the original 220-item PID-5 has served as a methodological basis from which several shortened versions were derived (6–8). At the same time, the PID-5 was used to assess the criterion validity of the newly emerging measures for assessing the personality trait qualifiers in ICD-11 (9, 10).

Although both ICD-11 and AMPD include Negative affectivity, Detachment, Antagonism/Dissociality, and Disinhibition among the five domains of personality traits, some differences can be noted between these models that make it impossible for a clinician to switch seamlessly between the two nomenclatures when describing a patient. In contrast to AMPD, the main differences in ICD-11 include the omission of personality traits qualifiers in relation to schizotypy and psychoticism; the inclusion of the Anankastia qualifier; and the absence of specific trait facets delineating individual qualifiers (11). Another difference between the two models is the preservation of the ICD-10 criteria for emotionally unstable PD in the form of a Borderline Pattern qualifier in ICD-11 (12). This step reflects that research studies into borderline PD have far outnumbered those for other categorical diagnoses (13). From the clinical perspective, it can be used to explain behaviors such as self-harm, to exclude patients from the standard treatments for other diagnoses, to offer treatments for the condition itself, and to recruit patients to research trials or services because it is so prevalent, and it has a sufficiently robust intervention base to allow insurance companies to issue contracts for treatment (14). Generally speaking, there is an evidence that many clinical professionals in many respects prefer the AMPD dimensional model of personality traits to the current categorical approach to PDs (15). Synchronization of both dimensional conceptualizations would therefore seem to be a meaningful step in the further development of the ICD-11 model, which would reflect the needs of both the mental health professionals in terms of clinical applicability and researchers in terms of empirical validity and comparability with AMPD.

In an effort to synchronize these two models, an algorithm has recently been developed to evaluate the combined AMPD and ICD-11 personality traits model based on six higher-order domains (i.e., Negative affectivity, Detachment, Antagonism, Disinhibition, Anankastia and Psychoticism), covering 17 of the lower-order facets, and featuring a total number of 34 items. This algorithm is captured by the Personality Inventory for DSM-5 - Brief Form Plus (PID-5BF+) (16). Authors applied Ant colony optimization algorithms to select a set of items that maximizes the reliability and validity of the trait domain and facet scales while providing a good model fit of the measurement model as well as cross-cultural measurement invariance. While latent structure, reliability, and criterion validity were ascertained in three different German- and English-speaking samples and in two separate German-speaking validation samples and the measure was able to discriminate personality disorders from other diagnoses in a clinical subsample, results suggested further modifications for capturing ICD-11 Anankastia. The operationalization of the Anankastia domain in PID-5BF+ based on the PID-5 facets of Rigid Perfectionism and Perseveration is consistent with an empirically derived crosswalk between the AMPD and ICD-11 personality trait domains (3, 4). However, this approach does not capture the anankastic features (i.e., the features resembling, among other things, the conceptualization of the anal character in the traditional psychoanalytic thinking) in their clinical entirety, as it omits the feature of Orderliness (17). For this reason, a modified 36-item version of the PID-5BF+ (PID5BF+M) was developed. Consistently with the initial 37-facet version of the DSM-5 trait model (5), Bach et al. (11) extracted subfacets of orderliness, rigidity, and perfectionism from the composite facet of rigid perfectionism in order to further adapt the PID5BF+ to efficiently capture the primary facets represented in the ICD-11 domain of Anankastia. Moreover, in this modified version of PID5BF+ authors omitted perseveration as a primary feature of Anankastia because this facet was originally intended to capture features of Negative affectivity as reflected by its expected loadings on the Negative affectivity domain (18). Recent findings generally supported the empirical soundness and international robustness of the 6 PID5BF+M domains across 16 samples from different countries, regions, and populations, as well as meaningful associations with familiar interview-rated PD types (11). Nevertheless, these datasets were extracted from the original 220-item version of

PID-5. Bearing in mind, the similarity of correlations of the original PID-5 scales and the PID5BF+M scales with other measures are likely to be inflated when the PID5BF+M scales are derived from the original PID-5 (19). For this reason, it is important to examine the PID5BF+M as a standalone measure as compared to extracting its items from the original PID-5.

The aim of this study was to verify the psychometric properties of the independent 36-item version of PID5BF+M and to compare them with the extracted PID5BF+M version from the original PID-5 by testing them for invariance. Given that the focus of the study was to primarily verify the general factor structure of the independent version of the measure, a thorough analysis of the validity of the separate Anankastia domain was not among the main aims of this study. At the same time, we examined the associations between the Borderline Pattern qualifier and the qualifiers of personality traits with respect to the proven continuity of PID5BF+M with specific diagnoses of PDs (11). We hypothesize that there would be a substantial relationship between the ICD-10 criteria for emotionally unstable PD based on self-assessment and the PID5BF+M domains of Negative affectivity and Disinhibition. This hypothesis is in line with the proposed trait associations for borderline PD in the DSM-5 as well as with empirical findings on the association of PID-5 traits and borderline PD (16, 20).

METHODS

Samples and Procedures

Two samples of volunteers from the general population were used. They consisted of university students from various fields of study, working volunteers and pensioners. To be included in the study, volunteers in both groups needed to fulfill the criterion of being ≥ 18 years of age. Participation in the study was voluntary and anonymous for all respondents, and all participants were asked to give their informed consent to participate in the study, which they had the opportunity to withdraw at any time without stating the reason. Participants were not rewarded for their participation in the study; however, if they were interested in feedback, they could provide us with their email address. The ethics committee of the General university Hospital in Prague approved the study protocol and the informed consent form.

After removing participants based on their PID-5 Response Inconsistency Scale (PID-5-RIS) score ($n = 12$; see Plan of analysis), Sample 1 ($n = 614$) was used to compare the psychometric properties of PID5BF+M extracted from the 220-item PID-5 with the Sample 2, in which the independent PID5BF+M was administered. The group consisted of respondents included in the international study by Bach et al. (11) ($n = 372$), extended by a subgroup of candidates applying to join the Police of the Czech Republic ($n = 254$). Gender representation was balanced: there were slightly more women ($n = 313$, 51.0%) than men ($n = 301$, 49.0%). Age range was 18–84 years ($M = 30.63$, $SD = 11.09$). Distribution according to the highest attained level of education in this group was as follows: primary education 0.9%; secondary education 56.5%, some college 4.0%, undergraduate degree 17.6%, graduate degree 21.0%.

After removing individuals with patterned responses ($n = 22$, see Plan of analysis) Sample 2 included $n = 1{,}040$ individuals. Gender representation was unbalanced, as there were more women ($n = 700$, 67.3%) than men ($n = 340$, 32.7%). Age range was 18–87 years ($M = 35.15$, $SD = 12.18$). Distribution according to the highest attained level of education in the group was as follows: primary education 2.0%; secondary education 36.5%; some college 3.6%; undergraduate degree 18.2%; graduate degree 39.7%. The group consisted of respondents from all 14 regions of the Czech Republic, however, the representation was not uniform (min/max number of respondents per region = 18/224). Overall, 16.3% of respondents ($n = 169$) reported experience with psychiatric treatment in the past. This approximately corresponds to the estimated 21.9% prevalence of various mental disorders in the general Czech population (21).

Questionnaires were administered to Sample 2 individually, to be filled either by the paper-and-pencil method or online. In the case of paper-and-pencil administration, respondents were asked to carefully read the instructions before starting the questionnaire. Trained administrators were present during the administration to respond to the possible technical queries of respondents. Online data collection was limited to 3 months. During this period, respondents were addressed anonymously through adverts on social media and relevant websites. They would complete the questionnaires upon accessing a link provided in the advert and were asked to answer all items. Some respondents ($n = 201$) were asked to fill in the questionnaire twice to verify the test-retest reliability. The time interval between the first and second administration ranged from 1 to 15 weeks ($M = 46.5$ days, median = 42 days, min/max = 8/102 days). Data collection for Sample 1 was similar, for more detailed information please refer to the studies by Riegel et al. (8, 22). The Police applicants subgroup completed the questionnaires individually by the paper-and-pencil method.

Given that Sample 1 and Sample 2 were drafted from different populations, they showed differences when compared on the demographic characteristics. Specifically, the samples differed on sex, as the proportion of females was higher in Sample 2 than in Sample 1 (67 vs. 51%), $\chi^2_{(1)} = 42.69$, $p < 0.001$. Sample 2 was also older on average ($M = 35.15$ years vs. 30.63 years), $t_{(1383.6)} = 7.80$, $p < 0.001$. Finally, Sample 2 had higher level of attained education, as Sample 1 was predominantly high school graduates (81%) given that it included the subgroup of Police applicants, $\chi^2_{(4)} = 324.90$, $p < 0.001$.

Instruments

We used the self-report PID5BF+M to operationalize the ICD-11 and DSM-5 domains of personality traits. The complete PID5BF+M consists of 18 facets assessed through 36 items (2 items per facet), rated on a 4-point Likert scale (0 = very untrue or often untrue; 1 = sometimes or somewhat untrue; 2 = sometimes or somewhat true; and 3 = very true or often true). The 6 domains have been calculated based on the average scores of the three primary facets of each particular domain: Negative affectivity has been calculated from the average scores of the facets of emotional lability, anxiousness, separation insecurity; Detachment from the facets of withdrawal,

anhedonia, intimacy avoidance; Antagonism from the facets of manipulativeness, deceitfulness, grandiosity; Disinhibition from the facets of irresponsibility, impulsivity, distractibility; Psychoticism from the facets of unusual beliefs and experiences, eccentricity, perceptual dysregulation; and Anankastia from the facets of perfectionism, rigidity, and orderliness. An independent version of the PID5BF+M was administered to Sample 2, while Sample 1 assessment included the PID5BF+M extracted from the 220-item version of PID-5, in accordance with previous studies (11, 16). For more information on the translation and validation of the Czech version of PID-5, please refer to the relevant studies (8, 22).

We administered selected items of the self-reported International Personality Disorder Examination Questionnaire (IPDEQ) (23) in Sample 2 to assess the associations between the Borderline Pattern qualifier and other PID5BF+M personality trait qualifiers. IPDEQ is a screener for ICD-10 PDs consisting of 59 yes/no items. For the purpose of this study we employed 10 items related to the ICD-10 criteria for emotionally unstable PD and, in accordance with the ICD-11 Borderline Pattern qualifier (4), corresponding to the features of borderline psychopathology.

Plan of Analysis

To ensure the validity of data in Sample 1, we used the PID-5-RIS developed by Keeley et al. (24), which has proven successful in detecting random responses in the original version of PID-5 and has been verified by a number of recent studies (25–27). In line with these studies, we excluded respondents with a PID-5-RIS score ≥ 17. In Sample 2, we excluded respondents who answered 90% or more of the PID5BF+M items with the same value, i.e., the same value in >32 items.

As the first step, we estimated the fit of the six-factor model in Sample 1, which was administered the full 220-item version of the PID-5, using exploratory structural equation modeling (ESEM). This was first estimated in a multigroup model to evaluate whether there were any differences in the subgroups, i.e., the Police applicants and the community sample. As no substantial differences were found, we merged the subgroups into a single group to increase the sample size. Subsequently, the model was re-evaluated in terms of model fit, and the pattern of factor loadings.

In the next step, we fit the model in Sample 2, which was administered the independent 36-item PID5BF+M. Again, this was first assessed as a multigroup model to evaluate the differences in the methods of administration (paper-pencil vs. online). These methods have been previously found to be invariant in Sample 1 (22). As no differences were found across the modes of administration, the subgroups were merged, and the model fit and factor loadings were examined. We also tested the independent PID5BF+M in a five-domain model, excluding Psychoticism to be consistent with ICD-11 trait domain qualifiers.

Subsequently, we estimated the internal consistency of each facet using polychoric correlations (as there are only two items per facet) and McDonald's omega for the reliability of the domain scores. We also examined the test-retest reliability in Sample 2. The convergent validity of the shortened 36-item version extracted from the full version was assessed by comparing correlations of 15 facets and 5 domains defined by the 220-item version in Sample 1 (we omitted the Anankastia domain and its relevant facets of perfectionism, rigidity, and orderliness, which was not part of the original PID-5).

Moreover, we directly compared the model fit of the extracted and the independent version PID5BF+M by combining Sample 1 and 2 in a multigroup model and testing whether there was support for measurement invariance. Finally, the predictive validity of the independent 36-item PID5BF+M was tested by examining the associations of the six hypothesized domains and the two types of emotionally unstable PDs (i.e., borderline and impulsive) indexed by the IPDEQ, as well as of the emotionally unstable PD as a whole.

All ESEM models were estimated in Mplus 8 (28) with GEOMIN rotation and maximum likelihood with robust standard errors (MLR) as the estimator. To compare nested models (for measurement invariance testing), we used a Satorra-Bentler corrected chi-square difference test, as well as relative differences in additional fit indices, as chi-square difference testing is known to be affected by larger sample size so that it is more likely to be significant in larger samples (29). For absolute model fit, the cut-off values of CFI > 0.90 and RMSEA < 0.08 were considered, as well as 90% confidence intervals of RMSEA. According to Cheung and Rensvold (30), nested models can be considered invariant if the difference in CFI is < 0.01, and < 0.01 in RMSEA.

RESULTS

Model Fit and Latent Structure

First, we compared the model fit of the community and the Police applicants subsamples, comprising Sample 1. The six-factor ESEM extracted from the original 220-item PID-5 was estimated in a multigroup model within each group. There were minimal differences between the configural (loadings and intercepts freely estimated in each group) and the scalar (loadings and intercepts fixed to equality across groups) model, S-B $\Delta\chi^2_{(84)} = 113.68$, $p = 0.017$, ΔCFI $= -0.011$, ΔRMSEA $= < -0.0001$. This suggests that the model fit is not substantially different across the community and the Police applicants subsamples. For this reason, we decided to merge the groups to increase the sample size and the statistical power. The fit of the 6-factor ESEM model in Sample 1 was good, $\chi^2_{(60)} = 80.84$, $p = 0.038$, CFI $=$ 0.992, RMSEA $= 0.024$, 90% RMSEA CI [0.01, 0.04]. The pattern of standardized loadings of the 18 facets is shown in **Table 1**. All the facets showed the highest loadings on their respective factors, indicating that the six domains are mostly well-defined by three facets each. There were two exceptions: irresponsibility, which showed the highest loading ($\lambda = 0.37$) on the Psychoticism domain instead of its proposed primary domain of Disinhibition ($\lambda = 0.36$); and separation insecurity, which showed the highest loading ($\lambda = 0.33$) on Disinhibition instead of its proposed primary domain of Negative affectivity ($\lambda = 0.31$).

In the next step, we tested the same model for individuals who were administered the independent 36-item PID5BF+M.

TABLE 1 | Loadings patterns of the facets derived from the extracted version of PID5BF+M.

	Negative affectivity	Detachment	Antagonism	Disinhibition	Anankastia	Psychoticism
Emotional lability	**0.44**	−0.04	0.01	0.29	0.06	0.14
Anxiousness	**0.88**	0.11	0.03	−0.04	0.00	0.03
Separation insecurity	**0.31**	0.00	0.06	*0.33*	0.16	−0.06
Withdrawal	0.12	**0.70**	0.05	−0.12	−0.01	0.08
Anhedonia	0.09	**0.52**	0.09	0.27	0.04	−0.10
Intimacy avoidance	−0.07	**0.42**	0.04	0.05	0.20	0.07
Manipulativeness	0.00	0.09	**0.83**	−0.04	−0.05	0.07
Deceitfulness	0.10	0.01	**0.55**	0.22	0.10	0.02
Grandiosity	0.12	0.08	**0.38**	−0.01	0.18	0.17
Irresponsibility	−0.06	0.14	0.23	**0.36**	−0.11	*0.37*
Impulsivity	0.05	0.03	0.07	**0.69**	0.01	0.07
Distractibility	0.25	0.21	−0.07	**0.36**	−0.10	0.27
Perfectionism	−0.01	0.03	−0.01	0.04	**0.74**	0.05
Rigidity	0.02	0.09	0.07	−0.10	**0.53**	0.03
Orderliness	0.19	0.06	0.03	0.02	**0.53**	0.02
Unusual beliefs and experiences	0.10	0.05	0.17	−0.01	0.05	**0.56**
Eccentricity	0.08	0.07	0.08	0.04	0.07	**0.67**
Perceptual dysregulation	0.06	0.05	0.09	0.21	0.15	**0.29**

Bolded are expected primary loadings of the facets (all of their loadings significant at p < 0.001). Italicized are non-primary loadings > |0.30|.

First, we tested whether the type of administration (paper-and-pencil vs. online) affected the results in a multigroup model. The results for the multigroup model showed a minimal difference between the configural and the scalar model, S-B $\Delta\chi^2_{(84)} = 117.91$, $p = 0.009$, ΔCFI $= -0.004$, ΔRMSEA $= 0.009$, suggesting that the type of administration did not substantially alter the model structure, facet loadings, or item intercepts. In the next step, we estimated the fit of the model using the full sample. The fit of the 6-factor ESEM model in this group was good, $\chi^2_{(60)} = 179.96$, $p < 0.001$, CFI $= 0.971$, RMSEA $= 0.044$, 90% RMSEA CI [0.036, 0.051]. The pattern of standardized loadings of the 18 facets is shown in **Table 2**. Five out of six domains, namely Negative affectivity, Detachment, Antagonism, Anankastia and Psychoticism showed expected patterns of loadings. However, the Disinhibition domain was not well-defined, as the loadings of the respective facets (i.e., irresponsibility, impulsivity, distractibility) were rather low and, in the case of the irresponsibility facet, not statistically significant ($p = 0.053$). Instead, this domain was better defined by the separation insecurity facet ($\lambda = 0.56$), followed by substantial loadings by anhedonia, grandiosity, anxiousness. and orderliness[1]. Interestingly, separation insecurity loaded primarily on Disinhibition and only secondarily on Negative affectivity.

Given that the six-factor solution of the independent version was less stable due to the lack of substantial facet loadings for the Disinhibition domain, we decided to explore this issue further by estimating exploratory factor analyses with varying number of factors (from one to eight) to see whether a different factor solution would provide a clearer pattern. The solutions with fewer than five factors showed poor model fit, suggesting that such factor structures did not accurately represent the data. The five-factor solution provided a clearer factor solution with regards to facet loadings then the six-factor version for the five PID domains sans Disinhibition while the facets of the Disinhibition domain loaded on other domains (impulsivity and withdrawal on Negative affectivity, irresponsibility on Antagonism). The seven- and eight-factor solutions provided an incremental improvement in model fit; however, they have not provided a clearer factor solution with regards to the pattern of facet loadings then the five- or six-factor solutions. The loading patterns for the five-, seven-, and eight-factor solutions and their model fit indices are provided in **Appendixes 1–3**.

Furthermore, we estimated a five-domain model in accordance with the five domains qualifiers defined in ICD-11. The fit of the model was good, $\chi^2_{(40)} = 162.41$, $p < 0.001$, CFI $= 0.961$, RMSEA $= 0.054$, 90% RMSEA CI [0.046, 0.063]. The standardized loadings are shown in **Table 3**. The pattern of the loadings is similar to the six-factor PIDBF+M, again showing low (and not statistically significant) loadings for the facets of the Disinhibition domain, with separation insecurity showing high primary loading on this domain ($\lambda = 0.78$), with a non-significant loading on its primary facet ($\lambda = 0.08$).

Reliability

Internal reliabilities of the PID5BF+M scales in both samples are shown in **Table 4**. In the case of the PID5BF+M extracted from the 220-item version of the PID-5, the internal consistency

[1]In the remaining part of the manuscript, we employed the label "Disinhibition" and used its original facets (i.e., impulsivity, irresponsibility, distractibility) to compute this domain score in the subsequent analyses. This decision was made for the purpose of consistency and comparison. However, we acknowledge that this domain was not well-defined by its respective three facets in Sample 2 (see more in Discussion).

TABLE 2 | Loadings patterns of the facets derived from the independent version of PID5BF+M.

	Negative affectivity	Detachment	Antagonism	Disinhibition*	Anankastia	Psychoticism
Emotional lability	**0.80**	0.01	0.01	0.02	0.07	0.05
Anxiousness	**0.38**	0.29	−0.05	0.28	0.07	−0.02
Separation insecurity	**0.23**	−0.14	0.07	*0.56*	0.04	−0.07
Withdrawal	0.05	**0.77**	0.04	−0.13	0.07	0.01
Anhedonia	−0.08	**0.43**	0.08	0.29	−0.05	−0.07
Intimacy avoidance	−0.09	**0.38**	0.00	0.20	0.03	0.18
Manipulativeness	−0.03	0.02	**0.62**	−0.01	0.01	0.11
Deceitfulness	0.12	0.06	**0.70**	0.05	0.05	−0.02
Grandiosity	−0.03	0.04	**0.36**	*0.33*	0.12	0.06
Irresponsibility	−0.02	0.09	0.28	**0.16**	*-0.31*	0.27
Impulsivity	0.45	0.00	0.20	**0.17**	−0.05	0.09
Distractibility	0.24	0.19	0.11	**0.20**	−0.19	0.25
Perfectionism	0.08	0.04	0.08	0.03	**0.71**	0.08
Rigidity	0.04	0.11	0.05	−0.02	**0.59**	0.03
Orderliness	0.00	0.06	−0.07	*0.31*	**0.48**	0.17
Unusual beliefs and experiences	0.20	0.05	0.10	−0.08	0.07	**0.58**
Eccentricity	0.03	0.05	0.10	0.04	0.14	**0.68**
Perceptual dysregulation	0.04	0.07	−0.01	0.26	0.02	**0.45**

Bolded are expected primary loadings of the facets [all of their loadings significant at $p < 0.001$ with the exception of Irresponsbility ($p = 0.053$), Impulsivity ($p = 0.004$), and Distractibility ($p = 0.020$)]. Italicized are non-primary loadings > |0.30|.
**For the sake of consistency, we used the original PID5BF+M label for this domain.*

TABLE 3 | Loadings patterns of a 5-factor ICD-11 structure derived from the independent version of PID5BF+M.

	Negative affectivity	Detachment	Antagonism	Disinhibition	Anankastia
Emotional lability	**0.72**	−0.04	−0.04	0.12	0.10
Anxiousness	**0.35**	*0.32*	−0.11	0.27	0.07
Separation insecurity	**0.08**	−0.09	−0.01	*0.78*	−0.01
Withdrawal	0.09	**0.64**	0.04	−0.16	0.13
Anhedonia	−0.10	**0.52**	0.05	0.21	−0.05
Intimacy avoidance	−0.01	**0.47**	0.07	0.07	0.08
Manipulativeness	0.00	0.01	**0.66**	0.02	0.05
Deceitfulness	0.14	0.03	**0.62**	0.08	0.07
Grandiosity	−0.04	0.10	**0.38**	*0.33*	0.14
Irresponsibility	0.10	0.18	0.40	**0.07**	−0.24
Impulsivity	*0.54*	−0.01	0.21	**0.14**	0.00
Distractibility	*0.37*	0.26	0.20	**0.09**	−0.12
Perfectionism	0.07	0.00	0.06	0.04	**0.77**
Rigidity	0.04	0.07	0.02	−0.01	**0.60**
Orderliness	0.05	0.15	0.02	0.20	**0.50**

Bolded are expected primary loadings of the facets [all of their loadings significant at $p < 0.001$ with the exception of Separation insecurity ($p = 0.245$), Irresponsibility ($p = 0.339$), Impulsivity ($p = 0.017$), and Distractibility ($p = 0.143$)]. Italicized are non-primary loadings > |0.30|.

was generally adequate, apart from low correlations for intimacy avoidance, irresponsibility, impulsivity, and rigidity. All domain reliabilities were satisfactory, with the average domain trait scores reliability of 0.71. The reliability of domains was as follows: Negative affectivity ($\omega = 0.72$), Detachment ($\omega = 0.66$), Antagonism ($\omega = 0.74$), Disinhibition ($\omega = 0.73$), Anankastia ($\omega = 0.69$), and Psychoticism ($\omega = 0.74$).

For the independent 36-item version, lower correlations were found for more facets than in the extracted version; these included separation insecurity, deceitfulness, grandiosity, irresponsibility, impulsivity, and unusual beliefs and experiences.

TABLE 4 | Internal reliabilities of PID-5 facets and domains across two versions of PID5BF+M.

Domain	Facet	Reliability 220-item version		Reliability 36-item version	
Negative affectivity	Emotional lability	0.59	0.72	0.54	0.67
	Anxiousness	0.86		0.78	
	Separation insecurity	0.57		0.49	
Detachment	Withdrawal	0.60	0.66	0.51	0.59
	Anhedonia	0.51		0.54	
	Intimacy avoidance	0.44		0.57	
Antagonism	Manipulativeness	0.71	0.74	0.68	0.70
	Deceitfulness	0.64		0.49	
	Grandiosity	0.54		0.32	
Disinhibition	Irresponsibility	0.49	0.73	0.40	0.65
	Impulsivity	0.48		0.47	
	Distractibility	0.53		0.60	
Anankastia	Perfectionism	0.58	0.69	0.50	0.72
	Rigidity	0.49		0.57	
	Orderliness	0.58		0.64	
Psychoticism	Unusual beliefs and experiences	0.54	0.74	0.49	0.75
	Eccentricity	0.68		0.54	
	Perceptual dysregulation	0.58		0.53	
	Average reliability	0.58	0.71	0.54	0.68

Reliability indexed by McDonald's ω.

In the case of the independent 36-item version of PID5BF+M, all domain reliabilities were satisfactory. The reliability of domains was as follows: Negative affectivity ($\omega = 0.67$), Detachment ($\omega = 0.59$), Antagonism ($\omega = 0.70$), Disinhibition ($\omega = 0.65$), Anankastia ($\omega = 0.72$), and Psychoticism ($\omega = 0.75$), with the average domain trait scores reliability of 0.68.

The results also showed good test-retest reliability of the underlying domains of the independent 36-item PID5BF+M: Negative affectivity $r = 0.83$, Detachment $r = 0.73$, Antagonism $r = 0.79$, Disinhibition $r = 0.71$, Anankastia $r = 0.77$, Psychoticism $r = 0.81$ (all $p < 0.001$). The test-retest correlations of facets ranged from $r = 0.50$ for irresponsibility to $r = 0.82$ for manipulativeness (all $p < 0.001$). Bivariate correlations for facets and domains across the two timepoints can be found in **Appendix 4**.

Validity

Convergent Validity

The correlations between the facets derived from the original 220-item PID-5 and the facets defined by PID5BF+M are shown in **Table 5**. The correlations were high, ranging from $r = 0.70$ to $r = 0.94$, with an average of $r = 0.81$. The correlations between the five domains of the PID-5 and the extracted version of the PID5BF+M were also high, ranging from $r = 0.86$ to $r = 0.93$, with an average of $r = 0.90$.

In order to test the similarity of both versions of PID5BF+M, the Sample 1 with the extracted version and the Sample 2 with the independent 36-item version were combined in a multigroup model. The fit of the configural model was $\chi^2_{(120)} = 255.89$, $p < 0.001$, CFI = 0.979, RMSEA = 0.037, 90% RMSEA CI [0.031, 0.043], while the fit of the most constrained scalar model was $\chi^2_{(204)} = 438.18$, $p < 0.001$, CFI = 0.965, RMSEA = 0.037, 90% RMSEA CI [0.032, 0.042]. The difference between the models was S-B $\Delta\chi^2_{(84)} = 182.02$, $p < 0.001$, ΔCFI = −0.015, ΔRMSEA = < -0.0001. Thus, there was partial evidence that the fit of the PID5BF+M extracted from the full 220-item PID-5 and its independent 36-item version was not dissimilar.

Predictive Validity

We tested the predictive validity of the independent 36-item PID5BF+M to determine borderline pathology according to ICD-11 by assessing associations with the IPDEQ criteria for emotionally unstable PDs of both types (i.e., borderline, and impulsive). The results showed that the highest positive correlation for the borderline personality subdomain was found with Negative affectivity ($r = 0.51$), while for the impulsive subdomain it was with Disinhibition ($r = 0.47$, both $p < 0.001$). The correlations were lower for other domains (e.g., correlation of the borderline type with Anankastia $r = 0.12$, correlation of the impulsive type with Anankastia $r = 0.11$, both $p < 0.001$). In line with the definition of the ICD-11 Borderline Pattern qualifier, the highest positive correlations for the emotionally unstable PD as such were found with Negative affectivity ($r = 0.55$) and Disinhibition ($r = 0.53$, both $p < 0.001$). These associations are shown in **Table 6**.

DISCUSSION

The current study aimed to assess the validity of the shortened version of PID-5, the PIDBF+M, using two non-clinical Czech samples. The validity of the measure was assessed in two forms: first, as extracted from the original 220-item PID-5;

TABLE 5 | Correlations of selected facets and domains between the 220-item and the 36-item PID-5.

		220-item version																			
		EMO	**ANX**	**SEP**	**WIT**	**ANH**	**INT**	**MAN**	**DEC**	**GRAN**	**IRR**	**IMP**	**DIST**	**UNU**	**ECC**	**PCD**	**NA**	**DE**	**AN**	**DI**	**PS**
36-item version	EMO Emotional lability	0.77	0.58	0.39	0.25	0.22	0.06	0.25	0.33	0.23	0.29	0.46	0.48	0.33	0.45	0.54	0.71	0.23	0.31	0.50	0.50
	ANX Anxiousness	0.59	0.88	0.41	0.38	0.40	0.11	0.21	0.33	0.24	0.22	0.31	0.52	0.30	0.46	0.52	0.76	0.37	0.30	0.44	0.49
	SEP Separation insecurity	0.43	0.47	0.82	0.17	0.35	0.11	0.22	0.27	0.19	0.29	0.36	0.39	0.24	0.34	0.38	0.69	0.25	0.26	0.42	0.36
	WIT Withdrawal	0.26	0.44	0.07	0.81	0.45	0.33	0.24	0.31	0.23	0.23	0.17	0.38	0.21	0.39	0.34	0.31	0.69	0.31	0.32	0.37
	ANH Anhedonia	0.36	0.44	0.30	0.51	0.75	0.26	0.25	0.36	0.21	0.36	0.36	0.53	0.26	0.38	0.43	0.45	0.63	0.32	0.51	0.41
	INT Intimacy avoidance	0.18	0.23	0.12	0.42	0.34	0.78	0.22	0.26	0.24	0.23	0.18	0.28	0.22	0.29	0.35	0.21	0.65	0.28	0.28	0.32
	MAN Manipulativeness	0.24	0.27	0.16	0.34	0.25	0.17	0.82	0.75	0.49	0.48	0.29	0.31	0.39	0.43	0.41	0.27	0.33	0.80	0.41	0.47
	DEC Deceitfulness	0.36	0.37	0.31	0.32	0.26	0.14	0.63	0.81	0.43	0.51	0.37	0.44	0.38	0.44	0.45	0.42	0.31	0.73	0.52	0.48
	GRAN Grandiosity	0.30	0.37	0.23	0.32	0.28	0.21	0.44	0.49	0.79	0.37	0.27	0.31	0.40	0.41	0.40	0.36	0.34	0.67	0.37	0.46
	IRR Irresponsibility	0.41	0.34	0.25	0.35	0.28	0.18	0.42	0.52	0.39	0.76	0.53	0.57	0.42	0.56	0.52	0.41	0.35	0.52	0.72	0.58
	IMP Impulsivity	0.53	0.40	0.39	0.27	0.32	0.10	0.31	0.42	0.27	0.47	0.94	0.55	0.30	0.46	0.49	0.54	0.29	0.39	0.80	0.48
	DIST Distractibility	0.54	0.54	0.28	0.39	0.35	0.11	0.23	0.36	0.20	0.45	0.50	0.84	0.29	0.55	0.54	0.55	0.36	0.31	0.73	0.54
	UNU Unusual Beliefs and experiences	0.39	0.40	0.21	0.28	0.23	0.18	0.40	0.44	0.38	0.38	0.30	0.40	0.80	0.61	0.60	0.41	0.30	0.48	0.43	0.76
	ECC Eccentricity	0.43	0.44	0.25	0.38	0.27	0.17	0.38	0.45	0.41	0.47	0.39	0.49	0.49	0.87	0.60	0.45	0.35	0.48	0.53	0.78
	PCD Perceptual dysregulation	0.34	0.34	0.23	0.32	0.32	0.30	0.30	0.37	0.33	0.37	0.39	0.39	0.49	0.47	0.70	0.37	0.39	0.39	0.46	0.61
	NA Negative affectivity	0.75	0.81	0.67	0.33	0.40	0.11	0.29	0.39	0.28	0.34	0.48	0.58	0.37	0.52	0.60	0.91	0.35	0.37	0.57	0.57
	DE Detachment	0.35	0.49	0.21	0.77	0.67	0.58	0.31	0.40	0.30	0.36	0.31	0.52	0.30	0.47	0.48	0.43	0.86	0.39	0.48	0.48
	AN Antagonism	0.37	0.41	0.30	0.40	0.32	0.21	0.77	0.85	0.69	0.56	0.39	0.45	0.47	0.53	0.51	0.44	0.39	0.90	0.55	0.58
	DI Disinhibition	0.62	0.53	0.38	0.41	0.39	0.15	0.38	0.53	0.35	0.67	0.82	0.81	0.41	0.64	0.64	0.62	0.40	0.49	0.93	0.65
	PS Psychoticism	0.48	0.50	0.29	0.41	0.34	0.26	0.46	0.52	0.47	0.52	0.44	0.53	0.75	0.83	0.78	0.51	0.42	0.57	0.59	0.91

Coefficients with r > 0.30 are marked in gray with an increase in darkness reflecting the strength of the association. All coefficients > 0.10 significant at p < 0.05, coefficients > 0.11 significant at p < 0.01, coefficients > 0.12 significant at p < 0.001.

TABLE 6 | Correlations of 36-item PID5BF+M domains and IPDE-defined emotionally unstable PD.

	IPDE BP	IPDE IMP	IPDE combined
Negative affectivity	0.51	0.42	0.55
Detachment	0.35	0.20	0.33
Antagonism	0.32	0.39	0.42
Disinhibition	0.42	0.47	0.53
Ananakastia	0.12	0.11	0.14
Psychoticism	0.37	0.36	0.43

BP, borderline subtype; IMP, impulsive subtype. All correlations significant at $p < 0.001$.

second, when the PIDBF+M was administered as a stand-alone measure. Evaluation of psychometric properties of the independent PID5BF+M seems to be an important step toward disseminating the dimensional diagnostic approach to a broad range of clinicians who, with international adaptations of ICD-11, urgently need short but reliable instruments for PD diagnostics within the new system (16).

Factor Structure and the Model Fit

In terms of maintaining continuity with the previous research (11, 16), our first goal in the current study was the validation of the factor structure of PID5BF+M, extracted from the original 220-item PID-5. The presented 6-factor model, combining the ICD-11 and DSM-5 domains of personality traits (i.e., Negative affectivity, Detachment, Antagonism, Disinhibition, Anankastia, and Psychoticism), was validated using a sample of respondents from the general population. A good model fit for the 6-factor ESEM model suggested that the proposed structure of three facets per domain fit our data well. This confirms findings from the previous study (11) and further demonstrates the utility of employing the shorter version of PID-5 instead of the full one.

However, we noted some problems with the Disinhibition domain that deserve a more detailed comment. First, there was the issue of irresponsibility facet loading primarily on Psychoticism and only secondarily on Disinhibition, its respective domain. Although there was a relatively small difference between loadings found in this study ($\lambda = 0.37$ vs. $\lambda = 0.36$), it can be seen as further evidence of proneness of the irresponsibility factor to cross-loadings, previously demonstrated in the extracted PID5BF+M by other studies using the original 220-item version of PID-5 [e.g., (31, 32)]. It should be noted that these studies mostly employed samples from the general population or mixed samples with a predominance of respondents from the general population (11). Since PID-5 is a tool primarily intended for the evaluation of personality psychopathology (33), there is a presumption of the greater stability of individual factors within the clinical population. From the perspective of common clinical practice, a primary loading of the separation insecurity facet on Disinhibition instead of Negative affectivity also seems justified. Since in this case, too, the difference between the primary and secondary loadings was only minor ($\lambda = 0.33$ vs. $\lambda = 0.31$), it can be interpreted in the context of the close interconnection between the two domains in relation to borderline psychopathology in AMPD (34), as well as in the traditional descriptive concept of borderline PD according to DSM-5 Section II (3, 11) and also of the emotionally unstable PD according to ICD-10 (35).

Despite the fact that the separation insecurity facet from the extracted PID5BF+M showed a substantial primary loading on the Negative affectivity domain across international samples (11), including the mixed Czech sample (8), the problematic primary loading of this facet in the current study was even more pronounced in the case of the independent PID5BF+M. While a weakening of the separation insecurity factor loading on Negative affectivity can be attributed to the reduction of items in the independent version of the measure, the large size of its factor loading on Disinhibition domain is rather unexpected given the current knowledge about the internal structure of PID-5 (18). It is possible that this finding stems from different perception of the relevant items in both Czech samples due to translation and, as such, might be idiosyncratic to the current samples and not constitute a meaningful factor on its own.

The proposed 6-factor structure of PID5BF+M was also replicated in the 36-item independent version. Nevertheless, the issue of problematic loadings of the three primary facets of the Disinhibition domain was even more prominent in this version. Although our results confirmed the existence of negative cross-loading of the irresponsibility facet on the Anankastia domain and the cross-loading of distractibility on the Negative affectivity and Psychoticism domains (11), the Disinhibition domain virtually disintegrated in the independent version. This fact is evidenced, among other things, by the primary loading of the impulsivity facet on the Negative affectivity and only the tertiary loading on Disinhibition. Although this is an issue previously discussed in the context of personality trait models in both DSM-5 (18) and ICD-11 (36), the question is to what extent the disintegration of the Disinhibition domain might be ascribed to the shorter version of the inventory where each facet is defined only by two items. One can hypothesize that the context in which the selected items are presented might affect the respondent. The randomized order of items in the original version of PID-5 (5) can, due to its length, strengthen the respondent's ability to differentiate between the latent meanings of individual statements. However, this hypothesis could not be verified in this study because the independent version of PID5BF+M was administered to a different sample of respondents than the version extracted from the original PID-5. Nevertheless, the definition of the Disinhibition domain in the current study via primary facet loading of separation insecurity and other substantial facet loadings of anhedonia, grandiosity, anxiousness and orderliness is of particular clinical interest, as it is somewhat reminiscent of the thin-skinned narcissism (37). According to Bateman (38), such patients experience discomfort, shame, and anxiety when feeling rejected. In response, they seek complete agreement with the object, thereby denying all differences between themselves and the other. However, due to the differences in factor loadings between the samples in the Disinhibition domain, these conclusions need to be handled with caution, as they deserve more thorough evaluation in the clinical population.

The loading pattern in the 5-factor ICD-11 version was very similar to the original, six-factor version of the PID5BF+M, suggesting that the above-mentioned issues with low loadings especially for the Disinhibition domain were not alleviated by the omission of the Psychoticism domain.

Reliability

Although the obtained values of internal consistency are significantly lower in comparison with the original version of PID-5 for both versions of PID-5BF+M, they were still largely satisfactory, both at the level of trait domains and the majority of individual trait facets. This indicates good reliability of the measure despite the substantial reduction in the number of items compared to the previously performed studies [e.g., (5, 39, 40)]. On the domain level, the only exception is Detachment, which showed the lowest reliability in both samples. This result is quite surprising, as this domain generally achieves good internal consistency values in the original version of PID-5 [e.g., (41, 42)] and its shortened versions PID-5-BF (43) and PID5BF+ (16). In addition, McDonald's omega should be a less ambiguous indicator of internal consistency than Cronbach's alpha, which is, to a large extent, a function of the number of test items and the mean of inter-item correlation (44–47). Compared to PID5BF+, however, PID5BF+M in both our samples demonstrated satisfactory internal consistency of the Anankastia domain, which provides support for solving the issue of the rigid perfectionism facet and the perseveration facet overlap (48) by dividing rigid perfectionism into rigidity and perfectionism, and adding a separate facet of orderliness within PID5BF+M (11).

Regarding the stability of the independent version of PID5BF+M over time, although the test-retest period in our study varied (ranging from 1 to 15 weeks), the average test-retest interval of ∼1.5 months seems to be sufficient compared to other studies [e.g., (21, 44, 49)] when we consider the total number of participants in the retest ($n = 201$). The values of the coefficient r indicate good consistency of scores for all domains and facets of the independent version PID5BF+M over an average period of 1.5 months. These results can be considered as probably the first confirmation of PID5BF+M as a stand-alone measure in terms of temporal stability and occasional specificity.

Convergent Validity

In assessing the convergent validity of PID5BF+M, we compared the facets and domains of the 36-item version of the questionnaire with the 220-item PID-5 in this study. Because we administered the full version of PID-5 only to Sample 1, an independent version of PID5BF+M could not be included in these analyses. Another issue was the Anankastia domain, which is defined in PID5BF+M by a modified triplet of facets-namely by rigidity, perfectionism and orderliness-unlike PID5BF+, where Anankastia is defined by the facets of rigid perfectionism and perseveration, i.e., facets included in the original version of the PID-5. Given the fact that Anankastia is an integral part of the personality trait model in ICD-11, a more thorough assessment of the convergent and predictive validity of this domain would be appropriate. Nevertheless, the average correlations of 0.81 at the facet level of five of the original PID-5 domains (i.e., Negative affectivity, Disinhibition, Detachment, Antagonism, and Psychoticism) and 0.90 at the domain level confirmed good convergent validity in line with previous studies with PID5BF+ (16) and PID-5 (50).

In terms of using PID5BF+M as an independent 36-item measure in a routine clinical practice, an important step was to verify the potential differences between the independent and the extracted version of the measure. In our study, the two models were largely invariant, as we found minimal differences in terms of model fit between the configural and the scalar model (all loadings and intercepts constrained to be equal across the samples). However, given that the two samples came from different populations, we urge caution in interpreting this finding as a definite proof of the invariance of the two measures (see Limitations for further discussion of this issue). What our study indicates is that the 220-item version and the 36-item version of PID5BF+M, each estimated in a specific sample, were not dissimilar in terms of factor structure, item loadings, and item intercepts, at least based on change in relative model fit indices.

These results support the consideration of an independent version of the 36-item PID5BF+M as a valid diagnostic tool for assessing maladaptive personality traits according to both DSM-5 and ICD-11. Although this conclusion is consistent with the clinicians' demand for short and valid tools that minimize the patient burden while providing reliable data, it should be borne in mind that the 220-item PID-5 was designed to achieve the most detailed description of patient's strengths and weaknesses (33). The potentially negative effect of item reduction on the validity of PID-5 has also been discussed in the case of PID-5-BF (44). Psychodynamically oriented authors perceive the operationalization of the model of personality traits in ICD-11 and AMPD based on self-assessment as a procedure more suitable for research rather than for daily clinical practice (51). This somewhat contrasts with the predominance of self-assessment tools that have emerged since the publication of PID-5 in 2012 (52). Based on our findings, having in mind the problematic factor loading of the Disinhibition domain in case of the independent version, we recommend perceiving the independent 36-item PID5BF+M as a screening tool, whose results can inform the clinician's decision regarding the administration of other diagnostic methods.

Predictive Validity

The main goal of introducing the Borderline Pattern qualifier within the ICD-11 model for PDs, which virtually reflects the diagnostic criteria for the borderline PD in DSM-5 section II, was to maintain diagnostic continuity between the categorical and dimensional models while ensuring the smallest possible overlap of borderline PD with other PDs (53, 54). Although the inclusion of this qualifier can be considered a controversial step considering the purely dimensional ICD-11 model (14), it becomes meaningful when assessing the evidence for a psychotherapeutic effect on the treatment of borderline PD. The ability of the independent version of PID5BF+M to predict emotionally unstable psychopathology defined by the ICD-10 criteria was confirmed in our study via strong correlations in

the expected direction of Negative affectivity and Disinhibition domains. These domains are primary domains for defining borderline PD based on both, the ICD-11 personality trait qualifiers (11, 16, 20) and IPDEQ self-assessment. To some extent, the tertiary correlation of both types of emotionally unstable PD (i.e., borderline and impulsive) on the Psychoticism domain confirms the clinical experience with the quasi-psychotic phenomena and transient dissociative states in this group of patients (55, 56).

Limits and Future Directions

The results of our study contribute to the current state of knowledge in several ways. First, we have confirmed the independent 36-item PID5BF+M as a reliable and valid tool to generally assess personality psychopathology, in accordance with the proposed dimensional model of maladaptive personality traits according to ICD-11, as well as DSM-5 AMPD. We have also demonstrated the predictive validity of this measure in relation to the assessment of borderline psychopathology in line with the transition from categorical to a dimensional diagnosis of PDs. Nevertheless, our findings need to be considered with respect to certain limitations that may inspire future research. We consider the absence of a clinical group of patients to be the main limitation of this study. The inclusion of a clinical cohort could have helped answer the question of the problematic factor loading of the Disinhibition domain. In addition, the disintegration of this domain in the case of the PID5BF+M independent version makes it impossible to establish normative values. Relatedly, instead of "Disinhibition," the pattern of loadings for this domain in the 36-item extracted version could have warranted using a different label. However, it is not clear whether this finding truly reflects a different factor structure or whether this finding is idiosyncratic to the current data. In this respect, the independent version of the tool should be further examined in international samples to verify the possible impact of translation or cultural specificity. It is also necessary to point out that Sample 1 and Sample 2 differed in terms of sex ratio, average age, or highest attained education, as they were convenience samples drafted from different populations. As such, we cannot rule out the possibility that the lack of substantial differences between the independent and the extracted version of PID5BF+M might be due to differences in the characteristics of these samples. However, past research on the PID5BF+M does not suggest that these characteristics would substantially affect the structure of the model (11). Although some authors point to the possible effect of validity bias due to gender imbalance (16), in our view, the essential invariance found when comparing these two heterogeneous samples suggests that the PID5BF+M model might be robust to the effect of the demographic variables. From the point of view of convergent validity, another limitation is the restricted possibility to verify the validity of the newly defined Anankastia domain in PID5BF+M, which is not part of the original version of PID-5. In this regard, we consider it appropriate to explore the convergence with other tools for the ICD-11 trait model, such as Personality Inventory for ICD-11 (PiCD) (9). From the point of view of predictive validity, the exclusive use of the IPDEQ scale for emotionally unstable PD can be considered another limitation of our study. Although the selected items correspond relatively accurately to the criteria of the ICD-11 Borderline Pattern qualifier, their limited number (i.e., one item = one criterion) may reduce its predictive power to some extent. Future research could therefore use one of the more comprehensive tools for assessing the borderline PD based on self-assessment, such as the Borderline Personality Questionnaire (BPQ) (57). Finally, a broad range of the test-retest interval might be another limitation of the study.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics Committee of the General University Hospital in Prague Na Bojišti 1, 128 08 Prague 2. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

KR drafted this paper and was responsible for its final version. AK conducted all data analyses. LS was responsible for data collection. All authors contributed to the article and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2021.643270/full#supplementary-material

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BRIEF RESEARCH REPORT
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Differential Effects of Psychological Interventions in Online and Face-to-Face Settings on DSM-5 and ICD-11 Maladaptive Trait Domains: An Exploratory Pilot Study

André Kerber[1], Carmen Schaeuffele[1], Tobias Krieger[2], Antoine Urech[2,3], Heleen Riper[4,5], Thomas Berger[2], Johanna Boettcher[5,6] and Christine Knaevelsrud[1]*

[1] Division of Clinical Psychological Intervention, Department of Education and Psychology, Freie Universität Berlin, Berlin, Germany, [2] Department of Clinical Psychology and Psychotherapy, University of Bern, Bern, Switzerland, [3] Department of Neurology, Inselspital Bern, Bern University Hospital, Bern, Switzerland, [4] Department of Clinical, Neuro and Developmental Psychology, Vrije Universiteit, Amsterdam, Netherlands, [5] Department of Research and Innovation, GGZ in Geest/Amsterdam University Medical Center, VU University Medical Center, Amsterdam, Netherlands, [6] Psychologische Hochschule Berlin, Berlin, Germany

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***Correspondence:**
André Kerber
andre.kerber@fu-berlin.de

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While mental health treatments have proven to be effective for a range of mental health problems, there is comparably little research on its effects on personality disorders or difficulty (PD). New dimensional conceptualizations of PD such as the ICD-11 PD model enable the cost- and time-effective dimensional assessment of severity and style of PD. Furthermore, they constitute a promising tool to investigate PD, not only as a treatment endpoint but also as a predictive or influencing factor for mental health treatments. In this study, we investigated the effects in two different mental health treatment settings [online ($N = 38$); face-to-face and blended [FTF/blended] ($N = 35$)] on the reduction of maladaptive personality traits as well as the interaction between maladaptive personality patterns and the response on primary endpoints (i.e., mental distress). Results indicate that both treatment settings have comparable within-group effects on the reduction of distress symptoms, while the treatment in the FTF/blended setting seems to have a stronger impact on the reduction of maladaptive traits. Further, reduction of maladaptive trait expressions was a reliable predictor of treatment response in the FTF/blended setting while explaining less variance in the online setting. Beyond the promising findings on the utility of maladaptive trait change as an outcome measure, we discuss possible applications as an information source for treatment decisions.

Keywords: PID5BF+, maladaptive traits, internet-based interventions for mental health, psychotherapy, DSM-5 AMPD, ICD-11 personality disorders

INTRODUCTION

The ICD-11 includes a dimensional model for personality disorders (PD) comprising an assessment of severity of personality dysfunction and maladaptive personality traits or patterns (1). In the current and stable release, the ICD-11 defines five maladaptive personality trait domains: *Negative Affectivity* with core features such as emotional lability and poor emotion regulation, *Detachment*

comprising limited emotional expression and intimacy avoidance, *Disinhibition*, e.g., impulsivity and irresponsibility, *Dissociality* centrally defined by self-centeredness and lack of empathy and *Anankastia* defined by perfectionism and rigidity. The ICD-11 PD model largely corresponds to the Alternative DSM-5 Model for Personality Disorders (DSM-5 AMPD) with respect to the 2-fold assessment of severity and style of PD, but somewhat differs in the definitions of maladaptive traits. While four of the five trait domains largely parallel (2), the DSM-5 model includes the domain of Psychoticism but lacks a separate trait domain for Anankastia. Recent studies therefore proposed measures assessing 6 maladaptive trait domains ensuring compatibility with both systems (3, 4). The DSM-5 AMPD has already accumulated a large body of research (5). This research not only endorses the reliability and utility of dimensional assessments of personality disorders but increasingly indicates that maladaptive personality patterns may constitute an important transdiagnostic factor for general psychopathology. Research showed moderate to strong associations of maladaptive personality patterns with a range of other mental disorders, e.g., anxiety and depression (6), internalizing and externalizing disorders (7), psychotic disorders (8), substance-related disorders (9), and posttraumatic stress disorder (10). They have also been shown to be related to transdiagnostic variables, such as interpersonal problems (11), childhood maltreatment (12), maladaptive schemas (13), pathological beliefs (14), emotion dysregulation (15) or attachment anxiety and avoidance (16).

These findings suggest that maladaptive personality patterns not only coincide with psychopathology but seem to play a central role as a perpetuating factor. This is in line with a longitudinal study that found a mutual reinforcement between neuroticism, negative life events, and (low) quality of life over the course of 16 years (17). Neuroticism is a personality trait highly correlated with ICD-11 Negative Affectivity and personality dysfunction [e.g., (18)]. Recent dimensional models of psychopathology go even further postulating that "the only systematic difference between symptoms and traits … is one of time frame" (19) with traits corresponding to more persistent features of psychopathology and symptoms being psychopathology features only manifest during specific time periods.

At the same time, personality traits seem to be amenable to change through clinical interventions. A recent meta-analysis investigated changes in personality traits across 207 clinical trials (20). The authors concluded that personality traits, most notably neuroticism and (low) extraversion, change through interventions with small to moderate effect sizes, and that these changes can already be achieved after 8 weeks of treatment. Due to considerable evidence that DSM-5 AMPD maladaptive traits can be conceived of as maladaptive variants of general personality traits (21), these may also be amenable through clinical intervention. Furthermore, the amount of change in maladaptive personality functioning seems to predict the long-term outcome of psychotherapy for depression (22) through a stronger resilience to negative life events. Recent theories of personality dysfunction therefore conceptualize PD as a "lack of resilience" (23). In line with the conceptualization of PD and personality problems as a lack of resilience is the high genetic, environmental and conceptual overlap between PD and insecure, disorganized or ambivalent attachment styles (24, 25). Both are centrally defined by enduring (dysfunctional) intra- and interpersonal regulation patterns and have a strong impact on general mental health (26, 27). Changes in these intra- and interpersonal regulation patterns through intervention may lead to better emotion regulation and disrupt the above described mutual reinforcement of psychopathology and negative life events.

Additionally, personality traits also seem to influence the course and outcome of mental health treatments, with more maladaptive expressions having a worse prognosis. In their review across 99 studies, Bucher et al. (28) found personality traits to be systematically related to psychotherapy outcomes with lower levels of neuroticism and higher levels of extraversion and agreeableness having the strongest impact, both on general improvement and the moderation of process variables such as working alliance. Similar findings were reported by Constantinou et al. (29), who found general and specific personality disorder factors to be differentially related to therapy course and outcome, with antisocial traits (low agreeableness) having the worst prognosis.

Taken together, maladaptive personality expressions seem to constitute a transdiagnostic and perpetuating factor for mental health issues, while at the same time being a predictive factor for treatment response and being amenable to change through clinical intervention.

This exploratory research study investigated the mutual interference of maladaptive personality patterns with two different settings of psychological treatments (online and face-to-face setting). We aim to explore the following questions: Are maladaptive personality patterns according to DSM-5 and ICD-11 amenable in the treatment settings investigated in this study? If so, how is this change associated with symptom response to psychological treatment? Are there differences regarding effects on maladaptive personality patterns between interventions in the online and face-to-face setting? Are certain maladaptive personality patterns predictive of treatment response in a given setting?

To these aims, we investigated indicators for maladaptive personality patterns according to DSM-5 and ICD-11 together with indicators for psychological distress at baseline and post-intervention measurement points in two different mental health settings.

MATERIALS AND METHODS

Recruitment and Participants

Online Treatment Setting

For the internet-based treatment sample, data were collected within a randomized controlled trial on the efficacy of an internet-based version of the Unified Protocol (UP), a transdiagnostic intervention for internalizing disorders focused on emotion regulation processes, for patients with primary anxiety, depressive, or somatic symptom disorders (30). Participants received a 10-week therapist-guided internet-delivered intervention based on the UP, working self-paced

through 10 modules with asynchronous (text-based) guidance once a week. This internet-based adapted version of the UP included all core interventions to target negative reactions toward emotions (understanding emotions, mindfulness, cognitive flexibility, countering emotional behaviors, and interoceptive, in sensu as well as *in vivo* exposures). The final sample consisted of 38 participants who completed treatment and had available data at baseline and post-treatment, i.e., 10 or 14 weeks post-randomization. For the subsequent analyses, we used the post-measurement in week 14, with missing data obtained by available data from week 10. Average age was 44.6 years (SD = 13.2, range = 23–66) with 24 (63%) participants being female.

Face-to-Face and Blended Treatment Setting

The second sample consisted of participants of the Swiss trial of the E-Compared study (31) comparing blended treatment, i.e., combining FTF sessions with an online tool, with treatment-as-usual (TAU). The TAU group received traditional FTF cognitive behavioral therapy [CBT; see (31)]. All participants were diagnosed by means of a MINI interview with a Major Depression Disorder (MDD). For the aims of the present study, participants from the two groups were combined since all participants were treated in outpatient departments of specialized mental health care settings. The final sample consisted of 35 participants with available data regarding measures under investigation at baseline and at 16 weeks post-randomization. Mean age of the sample was 40.1 years (*SD* = 15.5, range = 20–70), and 23 (65.7%) of the participants were female.

Assessment Instruments

Maladaptive Trait Domains

Personality Inventory for DSM-5–Brief Form Plus

In the online setting, the PID5BF+ was assessed. The PID5BF+ is a 34-item self-report instrument based on the Personality Inventory for DSM-5 (PID-5), augmented with the ICD-11 personality trait domain Anankastia. The PID-5 is the official, 220-item self-report measure for the evaluation of maladaptive personality traits in five superordinate domains and 25 facets according to the DSM-5 AMPD (32, 33). The PID-5 has been extensively tested in clinical and non-clinical samples and has demonstrated adequate psychometric properties (5). DSM-5 AMPD maladaptive trait domains are compatible with 4 of the 5 maladaptive trait domains in the ICD-11 (34). The PID5BF+ assesses 17 maladaptive trait facets on a four-point Likert scale ranging from 0 = very false to 3 = very true that can be aggregated into 6 maladaptive trait domain scores—Negative Affectivity, Detachment, Antagonism, Disinhibition, Psychoticism (DSM-5 AMPD) and Anankastia (ICD-11 PD model). It is therefore compatible with both ICD-11 and DSM-5. Internal consistencies of PID5BF+ domain scale scores have been demonstrated to be adequate to high (4). For our subsequent analyses, we calculated the six maladaptive trait domain scores from the 17 averaged trait facet scores according to the scoring algorithm provided by Rek et al. (37). The average score of these six maladaptive trait domains can be used as an indicator for severity of personality dysfunction (subsequently PD severity) according to the DSM-5 section III and the ICD-11 PD model (35). The PID5BF+ was assessed in the online setting before and after the treatment.

Personality Inventory for DSM-5—Short Form

In the FTF/blended setting, the PID-5-SF was used. The PID-5-SF is an abbreviated 100-item version of the PID-5 with nearly identical psychometric properties (36). As above, for our subsequent analyses, we calculated the six maladaptive trait domain scores from 17 averaged trait facet scores according to the scoring algorithm provided by Rek et al. (37). The PID-5-SF was assessed in the FTF/blended treatment setting at baseline and at 16 weeks post-randomization. In a recent study, Rek et al. (37) found the PID5BF+ and PID-5-SF averaged domain scores to largely correspond to the same T-norms using multiple-group item response theory based on data of a nation-wide representative German population sample ($N = 4{,}727$).

Mental Distress

Brief Symptom Inventory

In the online setting, mental distress was assessed with the 18-item Brief Symptom Inventory [BSI-18; (38)], a valid and reliable self-report instrument of mental health symptom distress (39), rated on a 5-point-Likert scale assessing symptom burden ranging from "not at all" to "extremely." The BSI-18 was assessed before and after the treatment.

Quick Inventory of Depressive Symptomatology

In the FTF/blended setting, mental distress was assessed with the Quick Inventory of Depressive Symptomatology [QIDS, (40)]. The QIDS is a reliable and valid 16-item self-report measure of the DSM-IV symptom criteria of MDD. Each item of the QIDS is scored from 0 to 3. The total score ranges from 0 to 27 because only the highest score is used from items that are components of a single DSM-IV criterion. The QIDS has demonstrated high levels of reliability and has been shown to be sensitive to change in several controlled studies. For the present study, we used the QIDS-scores assessed at 16 weeks post-randomization.

To assure comparability of the two different measures for mental distress, we calculated average instead of sum scores as both scales have a natural zero point and comparable descriptives in the two samples [BSI mean = 1.07 (range = 0–2.5) vs. QIDS mean = 1.28 (range = 0.11–2.67)].

Notably, average scores on baseline maladaptive traits and mental distress were not significantly different between participants with and without available post-treatment data in both samples except for Disinhibition in the online sample with non-completers having higher scores ($d = 0.85$ [CI = 0.31–1.38]).

Statistical Analyses

Treatment Effects and Mean Differences of Maladaptive Trait Domains Between Treatment Conditions

To investigate whether maladaptive traits and mental distress changed over the course of treatment, we calculated Bonferroni-corrected paired *t*-tests. To assess the size of the difference

effects, we calculated Cohen's *d* and 95%-confidence intervals of standardized mean differences using pooled standard deviations. To assess differences in maladaptive trait expressions and mental distress between the treatments at both measurement points, we calculated Bonferroni-corrected *t*-tests between trait domain and mental distress scores at the baseline and post measurement points.

Effects of Change in Maladaptive Trait Domain Expressions on Mental Distress

To investigate whether changes in maladaptive traits predicted post-treatment mental distress, we calculated regularized LASSO-regression (Least Absolute Shrinkage and Selection Operator) models with the baseline to post differences in 6 maladaptive traits plus PD severity and baseline mental distress score as independent variables and the post-assessment mental distress score as dependent variable using the *glmnet* R package (41). We calculated separate models for both settings to investigate whether the prediction of changes in maladaptive traits differed between both treatments.

Regularized or penalized regression models, such as LASSO-regression allow to account for high collinearity, i.e., non-independence of predictor variables. This seemed a suitable approach for 8 predictors of which seven are correlated maladaptive trait domains and one is the total average score of these maladaptive trait expressions. In their review including a comparison of methods to deal with collinearity, Dormann et al. (42) found LASSO regression to outperform other methods such as partial least squares regression in a dataset of 21 highly correlated predictor variables. Although regularized regression techniques such as LASSO existed already for decades in other disciplines, their utility for selecting predictor variables in the behavioral sciences gained visibility only recently (43).

In a second step, to ensure interpretability and comparability of the regression coefficients, we calculated a multiple regression model with post-treatment mental distress as the dependent variable including only predictors that yielded regularized regression coefficients differing from 0, i.e., that were > 0.001.

Maladaptive Trait Domains as Predictors of Treatment Response

To evaluate whether maladaptive trait expression at baseline may be a useful information source for decisions concerning the selection of treatment modalities, we calculated multivariate LASSO-regression models with the reduction of mental distress in either of the two treatments, i.e., two standardized pre-to-post difference scores, one per treatment, as dependent variables. As above, in a second step, we calculated a multiple regression model only including predictors that survived the LASSO regression procedure.

RESULTS

Treatment Effects and Mean Differences of Maladaptive Trait Domains Between Treatment Conditions

Figure 1 depicts mean differences of maladaptive traits and mental distress at baseline and post-treatment measurement-points for both settings.

Mental distress levels were comparable both at the beginning and the end of the treatments but with differences in the assessment measures impeding the interpretation of significance

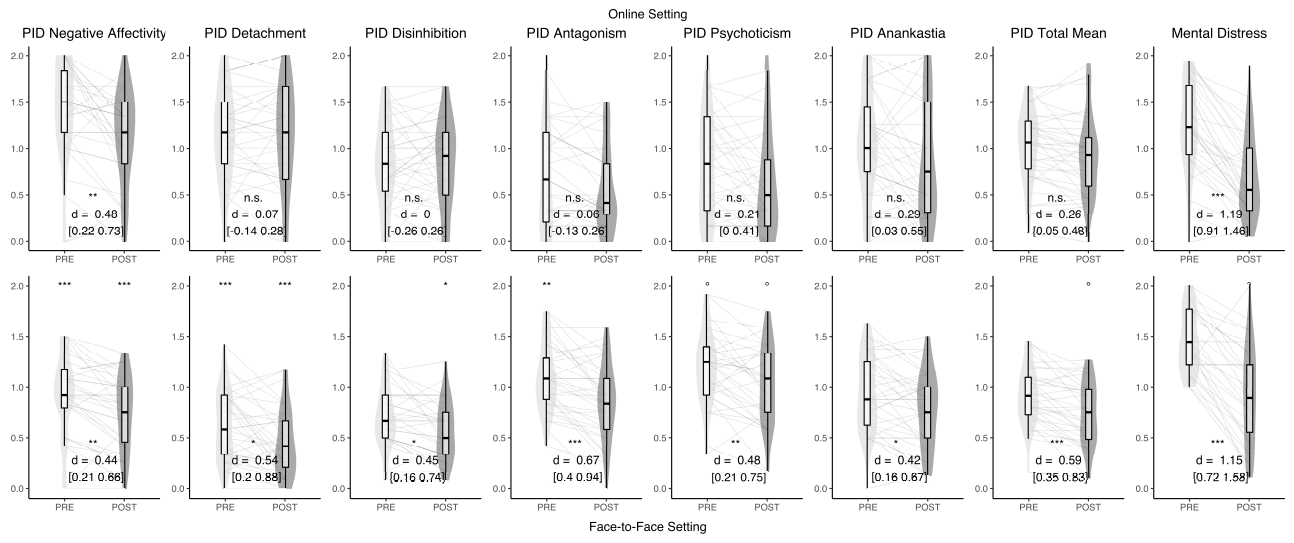

FIGURE 1 | Combined violin- and boxplots depicting distribution, median and standard deviations of maladaptive personality traits and mental distress. Gray lines are individual data. The upper row depicts data from the online mental health treatment condition, the lower row depicts data from the face-to-face/blended. Signs between the upper and lower row indicate significance of between-treatment differences, signs between boxplots represent within-treatment pre-post differences. °uncorrected $p < 0.05$, *Bonferroni corrected $p < 0.05$, **Bonferroni corrected $p < 0.01$, ***Bonferroni corrected $p < 0.001$.

tests. Both treatments had comparably strong pre-to-post effects on psychological symptomatology.

In the online setting, a pre-to-post difference in maladaptive trait domain expressions was only found for Negative Affectivity. Conversely, all 6 maladaptive trait domains as well as the total average score showed significant change in the FTF/blended setting.

Maladaptive trait domain expressions at the beginning of the treatments were found to be significantly higher for Negative Affectivity, $d = 1.18$ [1.05–2.43] and Detachment, $d = 1.22$ [0.99–2.25] in the online setting, while Antagonism, $d = 0.82$ [0.47–1.75], was significantly higher in the FTF/blended setting. At post-treatment, Negative Affectivity, $d = 0.99$ [0.74–2.07], Detachment, $d = 1.51$ [1.40–2.68] and Disinhibition, $d = 0.68$ [0.24–1.30] were still higher in the online setting. Psychoticism was moderately higher in the FTF/blended setting at baseline ($d = 0.64$ [0.17–1.11]) with a smaller difference at post-treatment ($d = 0.49$ [0.01–0.96]) but in both cases with significance not surviving Bonferroni correction.

At the beginning of treatment, the personality dysfunction severity was comparable in both settings. In the online setting, the mean of 1.03 corresponds to a T-Score of 58.2 (35), in the FTF/blended setting, the mean of 0.92 corresponds to a *T*-Score of 55.6. After treatment, there were moderate but not statistically significant differences in total average maladaptive trait scores between the treatment conditions with 0.92 [$T = 55.6$] in the online setting and 0.73 [$T = 53.5$] in the FTF/blended setting, corresponding to $d = 0.48$ [0.01–0.95].

Effects of Change of Maladaptive Trait Domain Expressions on Mental Distress

For both settings, the results of the regularized LASSO-regression revealed only the pre-to-post difference in PD severity and the baseline mental distress score to account for a significant proportion of variance (see **Table 1**). Accordingly, we omitted the remaining difference scores in trait domains from the subsequent multiple linear regression model.

The multiple linear regression model predicting post-treatment mental distress in the online setting by the pre-to-post change in PD severity and the baseline mental distress score revealed both indicators to have a significant impact on the post-treatment mental distress level [$F_{(2,35)} = 19.8$, $p < 0.001$, $R^2 = 0.53$], with the baseline mental distress score explaining a larger proportion of the post mental distress variance ($R^2 = 0.42$) than the PD severity difference ($R^2 = 0.10$).

Predicting the post-treatment mental distress score in the FTF/blended setting by the pre-to-post difference in PD severity and the baseline mental distress score, revealed both indicators having a strong impact on post-treatment mental distress [$F_{(2,32)} = 19.8$, $p < 0.001$, $R^2 = 0.55$]. Here, the pre-to-post difference in personality dysfunction explained the larger proportion of post-treatment mental distress reduction ($R^2 = 0.49$) in comparison to the baseline mental distress score ($R^2 = 0.16$).

Maladaptive Trait Domains as Predictors of Treatment Response

The LASSO-regularized multivariate regression model predicting treatment response to one of the two treatments based on baseline maladaptive trait expressions yielded Negative Affectivity, Detachment, Antagonism and baseline mental distress levels to be differentially predictive of treatment response in the two treatment settings (see **Table 1**). Multiple linear regression predicting post-treatment mental distress in the online setting by baseline scores on these predictors revealed higher Negative Affectivity and Detachment levels and lower Antagonism scores to be predictive for a larger reduction of mental distress in the online setting [$F_{(4,68)} = 8.4$, $p < 0.001$, $R^2 = 0.33$]. In the FTF/blended setting, multiple linear regression predicted a stronger reduction of post-treatment mental distress for lower Negative Affectivity and higher mental distress at baseline [$F_{(4,68)} = 6.7$, $p < 0.001$, $R_2 = 0.28$].

DISCUSSION

The exploratory results of the present study showed that both treatments had comparably large within-group effects on the reduction of mental distress while differing in their effects on maladaptive personality traits. More precisely, change in maladaptive trait domains through mental health treatment seems to be possible in both settings, at least with respect to the self-reported maladaptive traits scores in the two study samples. In the online setting, only Negative Affectivity showed a significant change. This is in line with a central postulation of the used treatment rationale of the Unified Protocol which was explicitly developed to target neuroticism and has been shown to elicit changes on neuroticism (44). Furthermore, the result is comparable to Johansson et al. (45) also investigating personality trait change in an internet-based intervention, who found significant effects only for neuroticism. In the FTF/blended setting, despite the depression-focused and CBT-based treatment rationale, all six maladaptive trait domains as well as PD severity, showed significant change. While the severity of personality dysfunction was comparable in the two settings at baseline, the between-treatment difference was larger when comparing the post-treatment measurements. While changes on all trait dimensions are in line with previous research on personality trait change through clinical interventions, in contrast to Roberts et al. (20), effect sizes in the FTF/blended setting were comparable for all trait domains in the present study.

Secondly, most predictive for treatment response was not the change in single trait domains such as Negative Affectivity but the reduction of total PD severity. This finding is in line with previous research findings that severity of personality dysfunction seems to predict future comorbidity better than specific PD styles, i.e., maladaptive traits (46). Furthermore, the reduction of the total personality dysfunction score was a more central predictor of post-treatment mental distress reduction in the FTF/blended (49% ΔR^2) than in the online (10% ΔR^2) treatment setting. Change in maladaptive trait domains seems therefore to be differentially intertwined with reduction in mental distress depending on the treatment setting. Although the results of this exploratory study must be interpreted with caution, an explanation for these treatment-bound differing impact factors and the stronger reduction of maladaptive personality patterns in the FTF/blended setting could be the inherently interpersonal nature of both traditional FTF psychotherapy

TABLE 1 | Results of LASSO regularization and multiple regression models.

		Post treatment mental distress score							Treatment response (Δ mental distress baseline to post treatment)					
		Internet-based setting			FTF/blended setting				Internet-based setting			FTF/blended setting		
		LASSO regression	Multiple regression		LASSO regression	Multiple regression			Mutivariate LASSO regression	Multiple regression		Multivariate LASSO regression	Multiple regression	
Predictor	**Score**	**Regularized coefficient**	**β**	**ΔR^2**	**Regularized coefficient**	**β**	**ΔR^2**	**Score**	**Regularized coefficient**	**β**	**ΔR^2**	**Regularized coefficient**	**β**	**ΔR^2**
Negative affectivity	Δ	–	–		–	–		PRE	0.117	0.25**	0.08	−0.078	−0.29**	0.10
Detachment	Δ	–	–		–	–		PRE	0.032	0.20*	0.05	−0.018	−0.10	0.01
Disinhibition	Δ	–	–		–	–		PRE	–	–		–	–	
Antagonism	Δ	–	–		–	–		PRE	−0.005	−0.20*	0.06	0.008	0.16	0.03
Psychoticism	Δ	–	–		–	–		PRE	–	–		–	–	
Anankastia	Δ	–	–		–	–		PRE	–	–		–	–	
PID total mean	Δ	−0.012	−0.41**	0.10	−0.534	−1.29***	0.49	PRE	–	–		–	–	
Mental distress	PRE	0.284	0.54***	0.42	–	0.52	0.16	PRE	0.013	0.11	0.02	0.032	0.31**	0.11
R^2		–	53.0%		–	55.3%			–	33.0%			28.3%	

$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$, two-tailed. Standardized regression coefficient (β). Change in R^2 if predictor is removed from the regression (ΔR^2). Change between baseline and post-treatment assessments (Δ). Baseline assessment (PRE). Least Absolute Shrinkage and Selection Operator (LASSO). Regularized LASSO-Regression coefficients were calculated using cross-validation to find optimal λ value for the most regularized model such that error is within one standard error of the minimum. Treatment response was calculated for each treatment separately.

and maladaptive personality patterns. Maladaptive personality traits are consistently associated with generalized interpersonal dysfunction (11) and etiologically closely related to attachment experiences (25). Traditional FTF psychotherapy seems to have a strong impact on interpersonal problems (47), independent of the theoretical orientation, with the therapist's interpersonal skills being a reliable predictor for treatment outcome (48). Following these previous findings, it seems more likely that maladaptive (interpersonal) personality patterns, e.g., devaluating others to regulate self-worth, restricting affect communication and intimacy to avoid rejection, or being extremely clingy to avoid separation, often leading to recurring adverse life events, social reinforcement loss and distress, need process-based interactional experiences to change. Another important issue for further research may therefore be to find ways to quantify the centrality of interpersonal dysfunction in individual psychopathologies, as only individuals with interpersonal dysfunction centrally perpetuating their psychopathology may need those direct-interactional-focused treatments. Besides interactional treatment components, targeting "functional mechanisms through which an individual's personality confers risk for psychopathology" with specific CBT techniques and interventions seems to be a promising and effective way for future (internet-based) treatment conceptualizations (49).

Thirdly, while baseline scores of Negative Affectivity were positively associated with the reduction of mental distress in the online setting, this association was negative for mental distress reduction in the FTF/blended setting. This finding may partly be explained by the specific neuroticism-addressing emotion-regulation components of the internet-based UP treatment making it more suitable for individuals with high negative affectivity. On the other hand, baseline Antagonism scores were negatively associated with mental distress reduction in the online setting and higher baseline mental distress levels were only positively associated with mental distress reduction in the FTF/blended setting. An explanation for this finding may be that personality factors associated with worse outcome such as disagreeableness (28) can be addressed more specifically in FTF settings, as more individualized treatment settings seem to lead to better treatment outcomes, especially for individuals with more symptom severity (50). Another likely explanation may be a selection bias in the two samples due to the lack of randomization. This latter explanation is also in line with the findings concerning Detachment. While higher Detachment scores were positively associated with response in the online treatment condition, individuals seeking online treatment had on average significant higher scores in Detachment compared to individuals in the FTF/blended treatment condition. Though it is likely that interventions in a pure online setting may be more attractive for people avoiding intimacy and/or social contacts, the question if there is a self-selection bias of individuals with higher Detachment in online interventions needs to be answered in future research.

The present study has several limitations. First, our results and conclusions should be interpreted with caution due to small sample sizes. Sample sizes in both settings, as well as the combined sample, are too small for reliable inferences considering the mostly moderate effect sizes. Additionally, allocation to treatment settings was not randomized implying selection-bias concerning baseline scores. Second, both mental distress and maladaptive traits were assessed differently in the two samples leading to systematically differing variances impeding between-treatment comparisons. Variables were assessed in different ways in the two samples because they originate in larger previous studies that were planned and implemented independently. Third, we only analyzed the completer sample, implying a further selection effect, though baseline-differences between completers and non-completers were negligible. Fourth, we had no follow-up data to investigate if reduction in maladaptive personality patterns leads to a better prognosis for long-term remission. Fifth, in the FTF/blended setting, average treatment duration was 16 weeks compared to 10 weeks in the online setting. Consequently, the difference in personality pattern changes may also only be due to a longer treatment.

Despite these limitations, our results preliminarily substantiate previous research identifying maladaptive personality patterns to play an important role, both as transdiagnostic factors as well as for the prognosis and indication of mental health treatments. Assessing the severity and style of personality dysfunction according to ICD-11 may therefore not only be a valid instrument for the diagnosis of PD but also an indicator of the degree and duration of process-based interactional experiences that an individual patient may need to profit in the long-term of a treatment. However, the question whether individuals with certain maladaptive traits such as Antagonism benefit more from treatments in the FTF setting than in an online setting is a question for further research. Future research also needs to address whether change in personality functioning leads to higher resilience and a reduced risk for relapse in the long-term.

DATA AVAILABILITY STATEMENT

The data analyzed in this study is subject to the following licenses/restrictions: Data can be obtained upon reasonable request from the corresponding author. Requests to access these datasets should be directed to andre.kerber@fu-berlin.de.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethikkommission des Fachbereiches Erziehungswissenschaft und Psychologie, Freie Universität Berlin and Kantonale Ethikkommission Bern. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

AK analyzed the data and wrote the initial draft, which was then edited and reviewed by CS, TK, AU, HR, TB, JB, and CK. TK, TB, AU, and HR were responsible for the data acquisition in

Switzerland. CS, JB, CK, and AK were responsible for the data acquisition in Germany. All authors contributed to the article and approved the submitted version.

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Preliminary Scales for *ICD-11* Personality Disorder: Self and Interpersonal Dysfunction Plus Five Personality Disorder Trait Domains

Lee Anna Clark, Alejandro Corona-Espinosa, Shereen Khoo, Yuliya Kotelnikova, Holly F. Levin-Aspenson, Greg Serapio-García and David Watson*

Department of Psychology, University of Notre Dame, Notre Dame, IN, United States

The *ICD-11* personality disorder model is the first fully dimensional assessment of personality pathology. It consists of a personality disorder (PD) dysfunction-severity dimension, which encompasses both self- and interpersonal dysfunction, and six optional qualifiers for five prominent personality traits—Negative Affectivity (NA), Detachment (DET), Dissociality (DSL), Disinhibition (DSN), and Anankastia (ANK)—plus a borderline pattern that is defined by the criteria of *DSM-IV* borderline PD. This article reports on the development of a new self-report measure to assess self- and interpersonal dysfunction and the five trait qualifiers. It is the first comprehensive measure of the *ICD-11* PD model in that (a) it is the only one to include both PD dysfunction-severity as well as trait scales and because (b) it is based on the Clinical Description and Diagnostic Guidelines, which are more detailed than the "statistical" model description that is currently on the *ICD-11* website. The authors wrote 992 items and then reduced the pool to 300 items by eliminating redundancy and selecting the consensus best few items for each subconstruct. Data were collected using an online sample of 383 Prolific workers. Using exploratory factor analysis, seven domain scales were developed, each of which contained two to four scales assessing components of the domain. These preliminary scales' psychometrics were excellent, as were the domains' and their components' convergent and discriminant validity, with a few generally minor exceptions. Structural analyses at the component level revealed a three-factor structure consisting of two moderately correlated Internalizing factors, one centered on Self Dysfunction with two NA components and a DSN component (Distractibility) and the other on Interpersonal Dysfunction with DET and ANK components; as well as an Externalizing factor with DSL and a DSN component (Reckless Impulsivity) that was uncorrelated with the other two factors. Two aspects of the results in particular are striking: (1) ANK was not the opposite end of a DSN dimension, but rather contributed to an Internalizing Interpersonal Dysfunction dimension and (2) DSN had both an Internalizing and an Externalizing component. Implications of the findings and study limitations are discussed.

Keywords: *ICD-11* (International Classification of Diseases), personality disorder (PD), scale development, psychometric evaluation, assessment, personality functioning, personality traits

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Bo Bach,
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Joshua Oltmanns,
Stony Brook University, United States
Matt DeLisi,
Iowa State University, United States
Martin Sellbom,
University of Otago, New Zealand

****Correspondence:***
Lee Anna Clark
la.clark@nd.edu

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INTRODUCTION

Diagnosis of Personality Disorder in the ICD-11

In May of 2019, the World Health Organization (WHO) published the eleventh edition of the International Classification of Diseases (*ICD-11*), which contained the first fully dimensional model for the diagnosis of personality pathology. The new version abandoned the nine specific personality disorders included in *ICD-10* and replaced them with simply "personality disorder" (PD), characterized by "problems in functioning of aspects of the *self* (e.g., identity, accuracy of self-view), and/or interpersonal dysfunction (e.g., desire and ability to develop and maintain close and mutually satisfying relationships, ability to understand others' perspectives, and to manage conflict in relationships) that have persisted over an extended period of time" (World Health Organization, 2020d). The disorder can be diagnosed at three levels of severity (mild, moderate, severe; plus a "severity unspecified" option), as well as described in more detail using a set of qualifiers "to describe the characteristics of the individual's personality that are most prominent." The qualifiers are five personality trait dimensions— Negative Affectivity (NA), Detachment (DET), Dissociality (DSL), Disinhibition (DSN), and Anankastia (ANK), basic definitions of which are available on the WHO website—and a Borderline pattern (World Health Organization, 2020e) that is based directly on borderline PD in the *Diagnostic and Statistical Manual, 4th Edition* (*DSM-IV*; American Psychiatric Association, 1994), the criteria for which were reproduced verbatim in Section II of *DSM-5* (American Psychiatric Association, 2013).

Personality disorder in *ICD-11* shares many characteristics with the Alternative Model of Personality Disorders (AMPD) in Section III of *DSM-5*, but also differs in several ways. Most importantly, the AMPD is a hybrid dimensional-categorical model in contrast to the ICD's purely dimensional one. Specifically, although the two models share a dimensional core requirement of impairment in personality—self and/or interpersonal—functioning, and both have a dimensional trait system for further specification, the AMPD requires the latter, whereas the *ICD-11* trait and pattern qualifiers are optional. Moreover, the AMPD defines six specific PDs that are the primary diagnoses of the model. These categories are retained from earlier *DSM* editions, albeit they are now diagnosed using personality impairment and pathological trait dimensions rather than specific criteria. Moreover, the manual dictates: "Individuals who have a pattern of impairment in personality functioning and maladaptive traits that matches one of the six defined personality disorders should be diagnosed with that personality disorder" (p. 771).

A seventh AMPD diagnosis, PD-Trait Specified (PD-TS), is the closest counterpart to the *ICD-11* PD diagnosis. The PD-TS diagnosis "allows clinicians to tailor the description of each individual's personality disorder profile, considering all five broad domains of personality trait variation and drawing on the descriptive features of these domains as needed to characterize the individual" (p. 770). Again, however, the *DSM-5* dictates that PD-TS should be used only if an individual's "personality functioning or trait pattern is substantially different from that of any of the six specific personality disorders" (p. 771) whereas in *ICD-11*, a PD diagnosis is essentially the same as PD-TS.

Unlike the DSM, the *ICD-11* is published in several versions. As of this writing, the version on the WHO website is the "statistical" version, which provides the codes for WHO member-states to use for reporting health statistics as required by international agreement. In addition to the codes, the "Mental and Behavioral Disorder" chapter provides a general description of PD and of each of the five PD trait specifiers plus the borderline pattern specifier (World Health Organization, 2020d,e).

For general clinical, educational, and service use, the WHO develops "Clinical Descriptions and Diagnostic Guidelines" (CDDG) that describe "the main clinical and associated features of each mental-disorder category, followed by more operationalized diagnostic guidelines to assist clinicians in making diagnoses" (Clark et al., 2017, p. 80). Even so, the CDDG provides flexible guidance, that is, more prototypic descriptions than the DSM with its lists of specific criteria, and more formalized subcomponents of disorder definitions. The CDDG are published later than the statistical version to conduct "feasibility" studies to ensure that they are sufficiently clear and detailed to be useful for their intended purpose. As of this writing, the CDDG are being used in training sessions and these feasibility studies are ongoing.

The current study used the CDDG as the basis for writing items to assess the core construct and the trait specifiers[1]. We used the CDDG's content components to guide item writing for both personality dysfunction and the trait specifiers. Although these components are akin to facets in the AMPD, they differ considerably in that they are not specific terms with formal definitions, but rationally based narrative paragraphs with content subcomponents, which can be somewhat overlapping. For example, the phrases "putting oneself and others at physical risk" and "put them or others in physical danger" appear as separate subcomponents of trait DSN. Nonetheless, for the purpose of organizing item writing, the first author developed an outline based on the CDDG, which is provided in **Supplementary Table 1**.

Existing Measures of the ICD-11 Personality Disorder Model

When *DSM-5* was published, the AMPD included a clinician rating form to assess personality dysfunction, and a trait measure—the Personality Inventory for *DSM-5*—was included in both self-report and informant formats; however, no parallel instruments were developed in conjunction with the *ICD-11* PD model. To fill this gap, a number of measures of the *ICD-11* model have emerged. Two of these measures assess the only required element of the model: a designation of whether the personality disorder is mild, moderate, or severe. The Standardized Assessment of Severity of Personality

[1]The copy of the CDDG to which the authors have access is labeled "Internal WHO Document for research use only; not for citation or distribution." Thus, our descriptions of it follow the spirit of that statement.

Disorder (SASPD; Olajide et al., 2018), which was adapted from the Standardized Assessment of Personality–Abbreviated Scale (Moran et al., 2003), assesses PD severity via level of disability (minimal to none, mild, moderate, and severe) in nine areas of personality and psychosocial functioning—four that have an interpersonal focus (i.e., friendships; and being with, trusting, and caring about other people) and five that are more intrapsychic/behavioral (i.e., two items concerning affect and/or emotion regulation and three items assessing acting on impulse, being organized, and self-reliance, respectively). In contrast, Bach et al. (2021) developed the *ICD-11* Personality Disorder Severity Scale (PDS-*ICD-11*), a 14-item measure to assess aspects of personality functioning that contribute to *ICD-11* PD severity, based on the *ICD-11* CDDG, which include four aspects of self dysfunction (e.g., ability to maintain an overall positive and stable sense of self-worth), four aspects of interpersonal dysfunction (e.g., interest in engaging in relations with others), three domains in which personality dysfunction is manifested (i.e., emotional, cognitive, and behavioral) and, finally, the extent to which the dysfunction is associated with distress or disability in important areas of functioning (e.g., social, occupational).

The nine other measures of which we are aware all assess the optional qualifiers, with all but one focused solely on the trait qualifiers. Oltmanns and Widiger developed two of the nine:

(1) The 60-item Personality Inventory for *ICD-11* (P*ICD-11*; Oltmanns and Widiger, 2018), was based on brief draft descriptions of the *ICD-11* trait qualifiers provided in Tyrer et al. (2015) which are similar, but not identical to those of the approved statistical version. This measure has been translated into multiple languages, and the Italian (Somma et al., 2020) and Spanish (Gutiérrez et al., 2021) versions have been published. It also has an informant version (Oltmanns and Widiger, 2021) that has been used to study clinician ratings (Bach et al., 2020a).
(2) Oltmanns and Widiger (2020) developed the 121-item Five-Factor Personality Inventory for *ICD-11* (FFiCD), a 20-facet measure of the *ICD-11* qualifiers, by selecting facets of the Five-Factor Model Personality Disorder Scales (FFMPD) (Widiger et al., 2012) to measure both the traits—based, again, on the brief, draft descriptions provided in Tyrer et al. (2015)—and the borderline pattern qualifier.

The remaining seven instruments were developed using existing measures of personality traits in the maladaptive range, including five versions based on the Personality Inventory for *DSM*-5 (PID-5; Krueger et al., 2012; see **Supplementary Table 2**):

(1) A 143-item measure developed in both Danish and English that uses 16 PID-5 trait facets (Bach et al., 2017). The measure also has been used in both a Brazilian Portuguese (Lugo et al., 2019) and a Persian (Lotfi et al., 2018) version.
(2) A 158-item measure (Sellbom et al., 2020), which added two PID-5 facets (Suspiciousness and Attention Seeking) to those of Bach et al. (2017), based on updates in the *ICD-11* trait descriptions.
(3) The 34-item PID-5-Brief Form-Plus (PID-5-BF+, Kerber et al., 2020; most unfortunately titled because it is not based on the official 25-item PID-5-BF [American Psychiatric Association, 2013], with which it has only 8 items in common), which assesses the *ICD-11* PD model using two items each from 17 facets of the PID-5.
(4) A 36-item modified version of the PID-5-BF+ (Bach et al., 2020b), which assesses the *ICD-11* PD model using 18 PID-5 facets (and also the Psychoticism domain of the AMPD by adding its three PID-5 facets), differing from the Kerber et al. measure in that it omits the Perseveration facet from ANK and adds facets Orderliness and Rigidity, each also containing two items. This version was developed by an international group and has 12 different versions in various European languages plus Brazilian Portuguese.
(5) Bach and El Abiddine (2020) translated American Psychiatric Association (2013) 25-item PID-5-BF into Algerian to assess both models in a sample of Algerian college students. In broad outline, all five domains of the *ICD-11* PD model and also AMPD Psychoticism could be found, but a number of items did not perform as expected. It is unknown whether these represent cultural differences or translation-based problems, indicate that the PID-5 facets they tap are not central to their respective domains, or some combination of these factors. The results are consistent with some, but not all, other studies, so further research is needed.

Finally, Tyrer (2017) developed a 40-item measure based on the Personality Assessment Schedule (PAS; Tyrer and Alexander, 1979), the PAS *ICD-11*. This measure was then used as the basis for developing a 17-item, self-report, Korean version, the Personality Assessment Questionnaire for *ICD-11* (PAQ-11; Kim et al., 2020).

Rationale for a New Measure of the ICD-11 Personality Disorder Model

Given this proliferation of measures of the *ICD-11* personality disorder model, it is reasonable to question the added value of yet another measure. However, there are three interrelated aspects of the preliminary measure presented in this article that collectively provide the rationale for its development. Specifically, the measure's items were written (1) expressly to tap the *ICD-11* PD model, (2) based on the CDDG, and (3) to assess both PD severity and the five trait qualifiers. We discuss each of these in turn.

First, that the items were written expressly to tap the *ICD-11* PD model is a strength compared to measures using items that were developed for a similar, but not identical, model (e.g., the various measures that draw items from the PID-5 or that are based on the PAS). To be sure, there is a great deal of similarity between the AMPD and the *ICD-11* model of personality disorder, such that examining their interrelations is informative. At the same time, there are aspects of the AMPD that are not directly relevant to the *ICD-11* model (e.g., the specificity of the four Criterion A components and the 25 Criterion B facets), as well as vice versa. For example,

personality disturbance in *ICD-11* is intended to reflect a single overarching dimension of impairment (which does not mean that it does not have various aspects to consider in making an overall determination of severity; e.g., Crawford et al., 2011; Tyrer et al., 2011; Olajide et al., 2018). In contrast, there remains considerable debate regarding whether AMPD Criterion A is similarly intended to reflect a single dimension (Morey, 2017; Hopwood et al., 2018), or a hierarchical model with either one (self and interpersonal) or two lower levels, with the self- and interpersonal-dysfunction components each breaking down into two subcomponents-respectively, identity and self-direction, and empathy and intimacy (see Sleep et al., 2019, for a discussion).

Perhaps the most critical limitation of measures based on the PID-5 is that the AMPD conceptualizes ANK as the opposite end of the DSN domain, and thus has limited content to assess the ANK domain, whereas in the *ICD-11* PD model, ANK is a distinct dimension that is theoretically unrelated to DSN (see McCabe and Widiger, 2020a, for a discussion of this issue). Accordingly, for the measure described in this article, care was taken to ensure that items written to assess these two domains were based on theoretically independent descriptions. We also aimed to make them empirically independent; for example, in developing the scales, items that distinguished the dimensions were preferenced over those that did not.

The second strength of the measure described in this article is that it is the only instrument to date that is based on the *ICD-11* PD CDDG descriptions of both PD severity and the trait qualifiers. This is advantageous because the CDDG are more extensive than the descriptions in the statistical version currently on the WHO website and more up-to-date than the descriptions in Tyrer et al. (2015). In particular, the descriptions are sufficiently elaborated that they can be subdivided into components for which subscales can be developed and tested for their coherence within the broader domains. Although a brief, domain-focused measure eventually will be needed for many clinical purposes in which limited time and resources prohibit use of an extensive measure of the *ICD-11* PD model, the initial development of a more expansive measure for the purpose of explicating the essential nature of the domains is an important step in establishing its construct validity and also towards developing a briefer measure that has strong psychometric properties and validly reflects the key properties of the constructs it assesses.

Third, as mentioned, the measure was developed to assess both PD severity and the trait qualifiers, whereas all other measures that were developed for *ICD-11* to date assess only one of these two components, but not the other. This is a strength for, again, three reasons. First, given that the sole requirement for diagnosing PD in the *ICD-11* is a determination that there is mild, moderate, or severe impairment in personality functioning, it is not clear how measures that assess only the optional trait qualifiers would be used clinically. Second, there is empirical support both for (e.g., Hopwood et al., 2011) and against (e.g., Sleep et al., 2019, 2020) the need for a severity criterion in the AMPD—which shares many features with the *ICD-11* PD model—in which case theoretical considerations must also be considered. Sharp and Wall (2021) have recently argued eloquently from a theoretical perspective for the importance of the severity dimension (see also Pincus et al., 2020). Echoing Livesley and Jang (2005), they defined personality impairment as "a general adaptive failure of a subjective intrapsychic system needed to fulfill adult life tasks" (p. 1). Sharp and Wall (2021) discuss the AMPD Criterion A's connections to psychodynamic perspectives, but lest this aspect of the AMPD be a concern for any "hard-core empirical" PD researchers, we hasten to note that Livesley and Jang's formulation was based on Allport (1937); Cantor (1990), and Plutchik (1980), particularly Plutchik's evolutionary perspective, *not* on the psychodynamic literature. Co-development of measures of both major aspects of the *ICD-11* PD model provides an opportunity to consider theoretical issues regarding relations between them as part of the measure-development process (cf. Loevinger, 1957).

Third, it is well known that there is considerable overlap—both theoretical and empirical—between the general PD-severity dimension and personality trait dimensions that span the adaptive-maladaptive range (e.g., Widiger et al., 2019). However, *ICD-11* measures that were developed to assess only the general severity dimension or only the trait and pattern qualifiers were not able to consider the interrelatedness of these two diagnostic components in the development process. As a result they presumably did not ask such questions as—to use Allport's terminology—do our item sets appropriately distinguish between what personality *is* (i.e., describe more stable and situation-general characteristics) and what personality *does* (i.e., assess how the person functions in the world)? In contrast, an important advantage of co-developing scales to assess these two aspects of personality pathology is that it facilitates study of the areas of overlap between them before the measures have been finalized, providing an opportunity to consider the "ideal" level of overlap from a theoretical perspective and potentially to shape the measures accordingly. To provide a specific example, particular aspects of interpersonal dysfunction may be more likely to overlap with DET and other aspects with DSL. If the scales are developed as part of the same measure, this can be studied directly and addressed within the scale development process, for example, by considering the balance between these two components of interpersonal dysfunction in the measure.

To be sure, a number of scales have been developed to assess the AMPD's Criterion A and there are studies of their overlap with AMPD trait measures (e.g., Few et al., 2013; Hopwood et al., 2018; Sleep et al., 2019, 2020; McCabe and Widiger, 2020b), as well as parallel studies of *ICD-11* PD-severity measures and trait qualifiers (e.g., McCabe and Widiger, 2020a,b; Gutiérrez et al., 2021). These studies provide important information on existing scales, but their authors have little to no allowance for revising the measures to address problems that the studies reveal. To reiterate, the current measure is the only one that was developed expressly to assess directly both the *ICD-11* PD model's primary dimension of PD severity and the trait qualifiers, as described fully in the CDDG, including consideration of their interrelations.[2]

[2]It is important to note that our measure is not an official WHO measure. Moreover, given its preliminary status, we have not named it, but will do so when we finalize it.

In addition to these three main points (and their subpoints), a final strength of the current measure was the linguistic diversity of the item-development team. Besides five native speakers of English, the eight-person team[3] included a native speaker of Spanish, Russian, and Malay, respectively. Because the *ICD-11* is used around the world, the translatability of items into each of these languages was an important consideration in item selection. Although these four languages represent a tiny subsample of world languages, they are from different language families, and thus provide a good starting point for developing an internationally useful measure.

METHOD

Participants and Procedure

All study procedures were approved by the Institutional Review Board of the University of Notre Dame. Participants were 383 community adults recruited via Prolific, an online crowdsourcing site. Eligibility requirements included at least 18 years of age, residence in an English-speaking country, and current or past history of mental-illness treatment. Participants gave informed consent as part of the online protocol.

Sample Characteristics

Participants were mostly from the United Kingdom (60%) or the United States (31%), and English was the native language of 97.4% of participants. Only 9 (2.3%) participants did not specify gender; of those who did, 52.1% identified as female and 47.9% as male. Mean age was 32.9 (SD = 11.3). Fifteen participants (5.8%) did not specify race, ethnicity, or both; of those who did, 92.7% identified as White, and the remainder as Asian (4.3%), Black (2.2%), or American Indian (< 1%); 3.2% identified as Hispanic. Despite the eligibility requirement, 22.4% reported no history of mental-health treatment; 56.8% had a past history only and 20.8% were currently in treatment, 1.3% for the first time. The eligibility criteria are controlled by Prolific, so the reason for the discrepancy between participants' responses to Prolific's and our question regarding history of mental-health treatment is unknown. One possibility is that the questions were phrased in different ways such that they could be answered differently for legitimate reasons; others are that it represents misrepresentation in one or the other context, random error, or a mix of these factors. A quarter (24.7%) of the sample were students, 35.5% were employed full-time and 22.7% part-time.

Preliminary Scale Development Process

Definition of Constructs

As mentioned earlier, we used the CDDG to guide item writing. Specifically, the first author used the rationally based, narrative, prototypic descriptions of personality dysfunction and trait domains to develop structured, more formalized subcomponents of disorder definitions. Because the measure described herein is based on empirical responses to a particular set of items, items' final organization may differ somewhat from that of the CDDG. Finally, we decided not to write items to assess the borderline pattern specifier because the description of that construct is simply a listing of the *DSM-IV* (and, therefore, *DSM-5*, Section II) criteria, for which multiple measures already exist.

Item Pool Development

Eight members of the Center for Advanced Measurement of Personality and Psychopathology (CAMPP), including both lab Directors, a postdoctoral scholar, three advanced graduate students, and two advanced undergraduate students met regularly to develop the item pool. Meetings were used to discuss construct—including component and subcomponent—definitions, and to select items from larger pools that had been written by rotating pairs of lab members between meetings. Using the outline derived by the first author from the *ICD-11* PD CDDG, items were written for each component/subcomponent of the PD-severity dimension and those of the five trait domains, yielding an initial pool of 992 items, which was then reduced by group selection of the preferred option among highly similar items. Finally, team members rated items within the various subcomponents of the dimensions and the top-rated items in each area were selected for inclusion. The final test pool was 300 items, ranging from 33 items for Self Dysfunction to 52 items for each of DET and DSL.

Data Collection

After indicating informed consent, participants were asked to provide demographic data and to rate how well each of the 300 items described them, using a 4-point scale ranging from Very or often False to Very or often True. The item set was administered together with items for an unrelated project for efficiency, so we report only on the *ICD-11* relevant measure. Participants were compensated for their time (averaging ∼30 min) and effort using Prolific's recommended pay scale (which was $3.75 in this case). Of the 421 individuals who completed the study, 383 (91%) passed all four validity checks and provided sufficient data (< 5% missing) to impute. Validity checks consisted of items instructing participants to perform a certain action (e.g., Rate this item "Very or Often True") or for which the correct answer is obvious (e.g., "I swim across the Atlantic Ocean every day"). Imputation was done at the item level using SAS Proc MI.

RESULTS

Data Analytic Strategy

The primary goal of data analysis was to create preliminary scales for further testing and development in additional samples. We also wanted to examine the psychometric structure of the *ICD-11* model to determine its viability—specifically whether five distinct PD trait domains would emerge and also be relatively distinct from the two PD-severity dimensions, which were expected to be moderately highly correlated, consistent with their reflecting an overall dimension of PD severity.

For each domain, interitem correlations were examined, and if two or more items correlated ≥ 0.70, one was selected to

[3]One team member left the project midway and so is not included among the authors. We thank Sierria Gillon for her contributions.

represent their common content. An exploratory one-factor principal factor analysis (PFA) was then run on the items of each domain, and items that loaded < 0.30 were flagged for potential removal. Component scales were created for each empirical subdomain and examined for internal consistency. Items correlating < 0.30 with other items in the same component were flagged for potential removal.

Next, PFAs with promax rotation were run, extracting a successive number of factors until reaching either (a) the point at which there was an "elbow" in the plot of the eigenvalues or (b) fewer than 4 items defined the factor. These analyses indicated there were two primary components for each domain, with two exceptions: (1) For self-pathology, two of the four components emerged clearly, whereas the other two components' items intermixed in two factors that were distinguished by keyed direction. Neither the two- nor three-factor solution provided more clarity, so as an interim solution, the rational component scales were retained. (2) For negative affectivity, a similar situation obtained, with two of four component scales emerging clearly and the other two intermixing on two separate factors. However, these components correlated ∼0.80, so they were combined. Factor analyses were then run on the items of each component to ensure that they formed a single factor, which they did. Finally, weaker items—those with loadings < 0.30 in both their respective domain and component scale analyses were removed. **Table 1** lists the preliminary components for each domain, and, where applicable, their rationally based content areas.

TABLE 1 | Preliminary empirically derived domain and component scales of the ICD-11 personality disorder model.

Domain	Component (# items)	Sample content
Self Dysfunction (30)	Identity Problems (8)	Puzzled by own behavior
	Low Self-accuracy (7)	Often misjudge own abilities
	Low Self-worth (8)	Difficulty maintaining positive self-image
	Low Self-direction (7)	Life lacks direction, goals
Interpersonal Dysfunction (35)	Relationship Difficulties (21)	Difficulty understanding others' viewpoints
		Difficulty managing relationship conflict
		Difficulty developing/maintaining relationships
	Dysfunctional Engagement (14)	Little to no interest in developing relationships
		Will do anything to keep relationships from ending
		Think friends take too much time/effort
Negative Affectivity (30)	Emotional Lability (8)	Unpredictable emotions and moods; constant worry
	Negative Outlook (15)	View own life as a failure; expect the worst
	Mistrust (7)	Distrustful of others
Detachment (42)	Social Detachment (21)	Avoid social interactions; don't enjoy social events
		Emotionally distant; keep to self even around others
		Have no close relationships
	Emotional Detachment (21)	Little reaction to positive or negative events
		Don't get emotional; keep feelings to self
		Low or no interest in much of anything
Dissociality (46)	Low Empathy (30)	Deceive people to get what they wants
		No sympathy for others' suffering
		Bully others; get violent easily
		Not bothered when hurt others or their feelings
Dissociality	Entitled Superiority (Self-centeredness) (16)	Expect special treatment; believe they deserve whatever is wanted
		Believe own needs more important than others'
		Believe oneself superior to others and that have done and/or will do great things
		Act to get attention; expect to be noticed, admired
Disinhibition (32)	Distractibility (19)	Easily distracted; struggle to stay on task
		Fail to complete tasks; don't finish on time
		Like to keep options open; goals provide direction (R)

(Continued)

Psychometric Properties

Descriptive Statistics

Descriptive statistics for the seven domain scales and their component scales are shown in **Table 2**. Of the possible range from 1 to 4, domain-level means ranged from 1.62 (DSL) to 2.64 (NA), M = 2.32, slightly below the midpoint of the range. Standard deviations were all within a small range (0.40 to 0.62; M = 0.51); indicating similar within-scale variability across domains. Within domains, participant scores ranged from 1 to 3.93 (of 4); the smallest range was 1.85 (DSL; from 1 to 2.85) and the largest was 2.91 (DET; from 1.02 to 3.93), M = 2.42. Similarly, component-level means ranged from 1.55 (Entitled Superiority) to 3.02 (Low Self-worth), M = 2.36. Participant scores ranged from 1 to 4 on five component scales, all of which were from either Self Dysfunction or NA, indicating that the full range of possible scores were represented in these domains. Interpersonal Dysfunction's Relationship Difficulties scale and the two DSL component scales had the lowest maximum values (3.44 to 3.48), and the former had the smallest range (2.43), but even that is 81% of the possible range, indicating that the sample's personality impairment and maladaptive trait levels were generally broadly diverse.

Internal consistency estimates (McDonald's omega) for the domain scales ranged from 0.89 (32-item DSN) to 0.95 (42-item DET); median = 0.91. For the component scales, the omega range was from 0.72 (7-item Low Self-accuracy) to 0.94 (21-item Social Detachment and 30-item Low Empathy); median = 0.86.

TABLE 1 | Continued

Domain	Component (# items)	Sample content
	Impulsive Recklessness (13)	Want desired things right away
		Don't consider consequences; blurt things out
		Enjoy risky activities; don't turn down chances for fun
Anankastia (31)	Hypercontrol (19)	Avoid activities if outcome uncertain; hypercautious
		Weigh all possibilities before decision-making
		Refuse to change routine; others notice inflexibility
	Perfectionism (12)	Must meet all standards of perfection, especially own
		Work must be perfect in all details; expect same high standards of everyone
		Home must be perfectly neat, with everything in its proper place

ICD-11, International Classification of Diseases, 11th Ed. (World Health Organization, 2020).

The only other component scale with omega < 0.80 was 5-item NA Mistrust (0.79). For the domain scales, average interitem correlations (AICs) ranged from 0.20 (35-item Interpersonal Dysfunction) to 0.31 (42-item DET); M = 0.25, indicating that the domain scales assess coherent, but relatively broad constructs. For the component scales, the AIC range was from 0.26 (13-item Reckless Impulsivity and 19-item Hypercontrol) to 0.43 (5-item Mistrust and 21-item Social Detachment), M = 0.34. In all cases, the component scales' AICs were higher than their respective domain scales' AICs, indicating that the component scales assess narrower constructs than their corresponding domain scales, although the differences were quite small in a few cases (e.g., Self-dysfunction's AIC was 0.25 and its component Low Self-accuracy's AIC was 0.27). Overall, domain and component scales had good to excellent internal consistency reliability.

Interscale Correlations

Domains

Correlations among the seven domain scales are shown in **Table 3**. The self- and interpersonal pathology domain scales correlated 0.45, which is fairly close to the mid-point of the range seen in existing AMPD measures of these constructs. For example, in separate community adult and undergraduate samples, Corona-Espinosa et al. (2021) found that interscale correlations among the subscales of six measures of AMPD Criterion A ranged from 0.34 to 0.75 (median = 0.53). The wide range of correlations reflects ongoing theoretical debate regarding the degree to which self- and interpersonal dysfunction are correlated versus distinct constructs.

Correlations among the PD trait-domain scales ranged from −0.04 between DSN and ANK to 0.58 between NA and DET (overall mean $|r|$[4] = 0.30). This is comparable to the mean 0.31 correlation reported by Oltmanns and Widiger (2018) for their PiCD, and lower than the mean 0.43 correlation reported by Bach et al. (2018) among *ICD-11* PD trait domain scores using the 16-facet Bach et al. (2017) measure. However,

TABLE 2 | Descriptive statistics for the domain and component scales of the ICD-11 PD model.

Scale	# items	Mean	*SD*	*Range*	*Omega*	*AIC*
Self Dysfunction	30	2.60	0.46	1.13 – 3.73	0.91	0.25
Identity Problems	8	2.41	0.58	1.00 – 4.00	0.80	0.33
Low Self-worth	8	3.02	0.62	1.00 – 4.00	0.85	0.41
Low Self-accuracy	7	2.40	0.48	1.00 – 3.57	0.72	0.27
Low Self-directedness	7	2.56	0.62	1.00 – 4.00	0.83	0.39
Interpersonal Dysfunction	35	2.22	0.41	1.29 – 3.29	0.90	0.20
Relationship Difficulties	21	2.26	0.47	1.05 – 3.48	0.88	0.26
Dysfunctional Engagement	14	2.15	0.50	1.00 – 3.86	0.86	0.29
Negative Affectivity	30	2.64	0.49	1.00 – 3.73	0.92	0.28
Negative Outlook	15	2.51	0.58	1.00 – 3.87	0.89	0.35
Emotional Lability	10	2.85	0.54	1.00 – 4.00	0.83	0.33
Mistrust	5	2.58	0.61	1.00 – 4.00	0.79	0.43
Detachment	42	2.45	0.53	1.02 – 3.93	0.95	0.31
Social Detachment	21	2.62	0.60	1.05 – 3.95	0.94	0.43
Emotional Detachment	21	2.27	0.57	1.00 – 3.90	0.92	0.35
Dissociality	46	1.62	0.40	1.00 – 2.85	0.94	0.25
Low Empathy	30	1.66	0.44	1.00 – 3.47	0.93	0.31
Entitled Superiority	16	1.55	0.48	1.00 – 3.44	0.91	0.36
Disinhibition	32	2.25	0.43	1.28 – 3.66	0.89	0.23
Distractibility	19	2.50	0.54	1.05 – 3.89	0.91	0.35
Reckless Impulsivity	13	1.88	0.49	1.08 – 3.62	0.83	0.26
Anankastia	31	2.45	0.44	1.26 – 3.74	0.90	0.23
Hypercontrol	19	2.46	0.46	1.21 – 3.74	0.87	0.26
Perfectionism	12	2.42	0.57	1.08 – 3.83	0.86	0.34

N = 383 community adults. ICD-11, International Classification of Diseases, 11th Ed. (World Health Organization, 2020); PD, Personality Disorder; SD, Standard deviation. AIC, Average interitem correlation.

TABLE 3 | ICD-11 personality disorder-severity and trait domain scale intercorrelations.

	1	2	3	4	5	6	7
Functioning Domains							
1. Self Dysfunction	(0.91)						
2. Interpersonal Dysfunction	**0.45**	(0.90)					
Trait Domains							
3. Negative Affectivity	**0.83**	**0.58**	(0.92)				
4. Detachment	**0.45**	**0.77**	**0.58**	(0.95)			
5. Dissociality	−0.01	*0.32*	0.12	0.14	(0.94)		
6. Disinhibition	**0.57**	*0.38*	**0.49**	0.29	*0.37*	(0.89)	
7. Anankastia	0.25	*0.33*	**0.44**	*0.35*	0.06	−0.04	(0.90)

*N = 383 community adults. ICD-11, International Classification of Diseases, 11th Ed. (World Health Organization, 2020). McDonald's omega are in the diagonal. Correlations ≥ 0.40 are **bolded**; those < 0.40 and ≥ 0.30 are italicized.*

[4]Using the absolute value of the coefficients, as the degree rather than direction of overlap is what matters in computing discriminant validity.

the convergent/discriminant pattern differed across measures. Specifically, in the current measure, three $|r|$ s were > 0.40, including one > 0.50, and all involved NA; other $|r|$ s were all ≤ 0.37 and only DSL had no $|r| \geq 0.40$. In Oltmanns and Widiger (2018), four $|r|$ s were ≥ 0.40 and none were ≥ 0.50; other $|r|$ s were all ≤ 0.32) and all scales had at least one $|r| > 0.40$. In Bach et al. (2018), seven of the 10 $|r|$ s were ≥ 0.40, including one > 0.50; other $|r|$ s were all < 0.40) and all scales had at least one $|r| > 0.40$. In any case, these results indicate that the current measure could be improved by revising the NA scale to lower its higher discriminant correlations.

Turning to relations between the PD-severity and trait-qualifier dimensions, as shown in **Table 4**, the Self and Interpersonal Dysfunction scales both have strong relations with the trait-domain scales. Specifically, Self Dysfunction correlated moderately to strongly with three trait domains—NA ($r = 0.83$), followed by DSN ($r = 0.57$), and DET ($r = 0.45$)—whereas Interpersonal Dysfunction correlated strongly with DET (0.77) and moderately strongly with NA (0.58). In contrast, DSL correlated −0.01 and 0.32, and ANK correlated 0.25 and 0.33 with Self and Interpersonal Dysfunction, respectively. These relations are consistent with those reported by Clark and Ro (2014) using then-existing measures of PD severity and traits before either the *DSM-5* AMPD or *ICD-11* models as developed (see their **Table 4**). Because both the PD-severity and trait-domain scales have component scales, these data can be used to examine the nature of the overlap between these two aspects of personality pathology.

TABLE 4 | ICD-11 personality disorder-severity component scales: Correlations among them and with PD-trait component scales.

	1	2	3	4	5	6
Personality-Severity Components						
1. SD Identity	(0.80)					
2. SD Low Self-worth	**0.51**	(0.85)				
3. SD Low Self-accuracy	**0.63**	**0.45**	(0.72)			
4. SD Low Self-directedness	**0.61**	**0.53**	**0.46**	(0.83)		
5. ID Relationship Difficulties	**0.50**	**0.43**	*0.39*	**0.45**	(0.88)	
6. ID Dysfunctional Engagement	0.16	0.10	−0.02	0.21	**0.46**	(0.86)
PD-Trait Components						
7. NA Negative Outlook	**0.67***	**0.75*†**	**0.53***	**0.73**	**0.57***	0.21
8. NA Emotional Lability	**0.52**	**0.72†**	**0.40**	**0.45**	**0.58***	0.15
9. NA Mistrust	*0.34*	*0.37*	0.27	*0.32*	**0.56†**	*0.39*
10. DET Social Detachment	*0.33*	**0.40**	0.15	**0.43**	**0.58***	**0.75*†**
11. DET Emotional Detachment	*0.38*	*0.31*	0.22	**0.42**	**0.56†**	**0.55†**
12. DSL Low Empathy	0.16	−0.09	0.11	0.13	**0.41†**	0.26
13. DSL Entitled Superiority	−0.12	−0.21	0.00	−0.23†	0.14	−0.07
14. DSN Distractibility	**0.50**	**0.41**	**0.41**	**0.76*†**	**0.47**	0.23
15. DSN Reckless Impulsivity	0.26	−0.10	0.29†	0.23	0.23	−0.06
16. ANK Hypercontrol	0.27	**0.47†**	0.20	0.21	**0.40**	0.22
17. ANK Perfectionism	−0.01	0.18	0.00	−0.10	0.20†	0.06

*N = 383 community adults. ICD-11, International Classification of Diseases, 11th Ed. (World Health Organization, 2020); PD, Personality Disorder; SD, Self Dysfunction; ID, Interpersonal Dysfunction; NA, Negative Affectivity; DET, Detachment; DSL, Dissociality; DSN, Disinhibition; ANK, Anankastia. For the personality-severity components, McDonald's omegas are in the diagonal and convergent (i.e., within-domain) correlations are underlined. Correlations ≥ 0.40 are **bolded**; those < 0.40 and ≥ 0.30 are italicized.*Highest correlation in each column. †Highest correlation in each row.*

Components

Table 4 presents correlations among the PD-severity component scales and also their correlations with the trait-component scales. Overall, the PD-severity component scales showed a good convergent-discriminant pattern, with the averages of the respective Self- and Interpersonal Dysfunction component scales each correlating significantly higher within subdomain (0.54 and 0.46, respectively) than across subdomains (0.29; all ps < 0.05). However, the correlation of Relationship Difficulties with Identity (0.50) was higher than its 0.46 correlation with Dysfunctional Engagement (the other Interpersonal Dysfunction component), as well as higher than two of the six correlations among the Self Dysfunction components, although none of these differences was statistically significant. Thus, 80% of the component scale correlations were consistent with expectation, which is promising, while also indicating room for improvement.

Regarding relations between the PD-severity and trait components, correlations ranged from −0.23 to 0.76 ($M = 0.32$); ignoring sign, the range was from 0.00 to 0.76 ($M = 0.35$), indicating a wide range of relations between these two broad aspects of personality pathology. Relationship Difficulties stood out as particularly strongly correlated across the two aspects of personality pathology: It correlated > 0.50 with all NA and DET components, as well as > 0.40 with Low Empathy, Distractibility, and Hypercontrol. Conversely, three PD-trait components correlated moderately to strongly with five of the six PD-severity components: Specifically, Negative Outlook, Emotional Lability, and Distractibility correlated > 0.40 with all PD-severity components except Dysfunctional Engagement, including four correlations > 0.70. We discuss the significance of these patterns later in the paper.

Finally, **Table 5** presents correlations among the PD-trait components, which generally exhibited good convergent-discriminant patterns. Specifically, the mean convergent (i.e., within-domain) component correlations were higher than the mean discriminant (i.e., cross-domain) component correlations—with three notable exceptions: Two were the discriminant correlations of DSN's Distractibility component with NA's Negative Outlook and Emotional Lability components—rs = 0.63 and 0.46—which were significantly higher ($p < 0.02$) than its convergent correlation of 0.33 with DSN Reckless Impulsivity[5]. The Distractibility–Negative Outlook discriminant correlation was also significantly higher than Negative Outlook's convergent correlation with Mistrust

[5]The 0.46–0.33 comparison is not statistically significant if Bonferroni corrected for the total of 9 correlational comparisons we report in this article.

TABLE 5 | Intercorrelations among ICD-11 personality disorder PD-trait component scales.

		1	2	3	4	5	6	7	8	9	10	11
1. NA	Negative Outlook	*0.89*										
2. NA	Emotional Lability	***0.66***	*0.83*									
3. NA	Mistrust	***0.47***	***0.41***	*0.79*								
4. DET	Social Detachment	**0.51**	**0.40**	**0.53**	*0.94*							
5. DET	Emotional Detachment	**0.46**	**0.26**	**0.47**	***0.67***	*0.92*						
6. DSL	Low Empathy	0.15	0.16	0.29	0.19	*0.34*	*0.93*					
7. DSL	Entitled Superiority	−0.14	0.00	0.06	−0.20	−0.08	***0.51***	*0.91*				
8. DSN	Distractibility	**0.63**	**0.46**	0.28	*0.38*	*0.34*	0.24	−0.08	*0.91*			
9. DSN	Reckless Impulsivity	0.10	0.03	0.10	−0.11	0.07	**0.56**	**0.40**	*0.33*	*0.83*		
10. ANK	Hypercontrol	**0.51**	**0.49**	*0.33*	**0.46**	*0.38*	0.04	−0.08	0.21	−0.27	*0.87*	
11. ANK	Perfectionism	0.07	0.21	0.24	0.11	0.10	0.06	0.18	−0.09	−0.14	***0.50***	*0.86*

N = 383 community adults. ICD-11, International Classification of Diseases, 11th Ed. (World Health Organization, 2020). NA, Negative Affectivity; DET, Detachment; DSL, Dissociality; DSN, Disinhibition; ANK, Anankastia. McDonald's omegas are in the diagonal. Correlations > 0.40 are ***bolded****; those < 0.40 and > 0.30 are italicized. Convergent correlations are underlined.*

(r = 0.47); no other comparisons with the convergent correlations of these two NA components were significant.

The third exception was that the discriminant correlation between DSN's Reckless Impulsivity component and DSL's Low Empathy component (r = 0.56) was significantly higher than the former's, but not the latter's convergent correlation (rs = 0.33 and 0.51, respectively). Note that all of these unexpected outcomes involved DSN components, whose 0.33 correlation was surprisingly low. We discuss this issue later.

Structural Analyses

Preliminary Analyses

Parallel analyses were run on the (1) PD-severity components, (2) PD-trait components, and (3) combined PD-severity and trait components and indicated two, three, and four factors respectively. Promax-rotated principal factors analyses were run on each set of component scales, extracting from one factor up to the maximum number of factors indicated by parallel analyses, and then examined for viability (e.g., number of marker variables) and interpretability. For the PD-severity analysis, the two-factor solution was optimally interpretable and is presented in the upper half of **Table 6**. For the PD-trait analysis, both the two- and three-factor solutions were interpretable, but one ANK component had a low loading on both factors in the two-factor solution, so the three-factor solution is presented in the lower half of **Table 6**.

For the combined analyses, the three-factor solution was again optimally interpretable and is presented in **Table 7**. An argument can be made for the four-factor solution, but several variables in this solution did not mark any factor at 0.40 or higher, plus the fourth factor was marked only by the two ANK components, so the solution seems overextracted. Therefore, the three-factor solution was selected. The results of all other solutions run are provided in **Supplementary Tables 3–7**.

Structures of PD Severity and PD Traits

As shown in the upper portion of **Table 6**, the Self- and Interpersonal Dysfunction scales formed clear, distinct factors, with the only notable cross loading being 0.36 (Relationship Difficulties on Self Dysfunction). The factors correlated 0.47, indicating that together they reflect a higher order dimension of personality pathology.

The three factors of the PD-trait structure shown in the lower portion of **Table 6** can be labeled Internalizing, Externalizing, and Anankastia. The first (Internalizing) factor consisted of the three NA components, both DET components, and DSN Distractibility, with a strong (0.48) cross-loading by ANK Hypercontrol. The second (Externalizing) factor consisted of both DSL components and DSN Reckless Impulsivity. Finally, the two ANK components loaded on the third factor, with moderate cross loadings of −0.32 and −0.30 by the two DSN components. Thus, as foreshadowed in the correlational analyses, DSN—whose components are only moderately correlated (r = 0.33)—contains both an Internalizing (Distractibility) and an Externalizing (Reckless Impulsivity) aspect, both of which cross load on the Anankastia factor. The three factors are largely independent of each other, with correlations of only 0.17 (Internalizing with Anankastia) 0.09 (Internalizing with Externalizing) and −0.14 (Externalizing with Anankastia).

Combined Structure of PD Severity and Traits

Finally, **Table 7** shows the joint three-factor structure of PD severity and traits. It has two Internalizing-pathology dimensions—one each centered on Self Dysfunction and Interpersonal Dysfunction, respectively—and an Externalizing-pathology dimension. The Internalizing Self Dysfunction factor is marked by all four Self Dysfunction components, two of the three NA components (Negative Outlook and Emotional Lability), and DSN's Distractibility, with cross-loadings of 0.37 and 0.31 by Interpersonal Dysfunction's Relationship Difficulties component and the other DSN component, Reckless Impulsivity. The Internalizing Interpersonal Dysfunction factor is marked by all of the DET and Interpersonal Dysfunction components, NA's Mistrust component, and ANK's Hypercontrol component. Finally, the Externalizing factor is marked by both DSL components and DSN's Reckless Impulsivity component, with cross-loadings of −0.36 and −0.30 by

TABLE 6 | Promax-rotated principal axis factor analyses of ICD-11 PD-severity and PD-trait component scales, respectively.

Domain component		PD severity	
		Self Dysfunction	**Interpersonal Dysfunction**
SD	Identity	**0.79**	0.02
SD	Low Self-accuracy	**0.79**	−0.18
SD	Low Self-directedness	**0.65**	0.13
SD	Low Self-worth	**0.63**	0.04
ID	Dysfunctional engagement	−0.12	**0.64**
ID	Relationship Difficulties	*0.36*	**0.50**
		PD traits	
		Internalizing	**Externalizing**	**Anankastia**
NA	Negative Outlook	**0.85**	−0.06	−0.07
DET	Social Detachment	**0.73**	−0.12	**0.10**
DSN	Distractibility	**0.70**	**0.08**	*−0.32*
DET	Emotional Detachment	**0.64**	0.08	**0.08**
NA	Emotional Lability	**0.63**	**0.02**	0.14
NA	Mistrust	**0.54**	0.17	**0.22**
DSL	Low Empathy	0.21	**0.74**	0.07
DSL	Entitled Superiority	−0.24	**0.69**	0.25
DSN	Reckless Impulsivity	0.10	**0.67**	*−0.30*
ANK	Perfectionism	0.01	0.12	**0.66**
ANK	Hypercontrol	**0.48**	−0.14	**0.54**

N = 383 community adults. ICD-11, International Classification of Diseases, 11th Ed. (World Health Organization, 2020); PD, Personality Disorder; SD, Self Dysfunction; ID, Interpersonal Dysfunction; NA, Negative Affectivity; DET, Detachment; DSN, Disinhibition; DSL, Dissociality; ANK, Anankastia.
*Factor loadings ≥ 0.40 are **bolded**; those < 0.40 and ≥ 0.30 are italicized. The two PD severity factors correlate 0.47, whereas the three PD trait factors' correlations are 0.09 (Internalizing-Externalizing), 0.17 (Internalizing-Anankastia), −0.14 (Externalizing-Anankastia).*

TABLE 7 | Promax-rotated three-factor principal axis factor analysis of ICD-11 personality disorder-severity and trait component scales.

Domain component		Internalizing Self Dysfunction	Internalizing interpersonal Dysfunction	Externalizing
SD	Self-directedness	**0.84**	−0.06	0.02
NA	Negative Outlook	**0.84**	0.14	−0.11
SD	Identity Problems	**0.79**	−0.05	0.06
DSN	Distractibility	**0.73**	−0.03	0.16
SD	Self-accuracy	**0.73**	−0.19	0.09
SD	Self-worth	**0.73**	0.10	*−0.36*
NA	Emotional Lability	**0.63**	0.19	−0.11
DET	Social Detachment	0.09	**0.82**	−0.07
ID	Dysfunctional Engagement	−0.19	**0.80**	0.11
DET	Emotional Detachment	0.14	**0.64**	0.13
ANK	Hypercontrol	0.18	**0.53**	*−0.30*
NA	Mistrust	0.20	**0.51**	0.12
ID	Relationship Difficulties	*0.37*	**0.50**	0.26
ANK	Perfectionism	−0.15	**0.41**	−0.09
DSL	Lack of Empathy	−0.02	0.29	**0.74**
DSN	Reckless Impulsivity	*0.31*	−0.27	**0.74**
DSL	Entitled Superiority	−0.20	0.04	**0.59**

*N = 383 community adults. ICD-11, International Classification of Diseases, 11th Ed. (World Health Organization, 2020); SD, Self Dysfunction; NA, Negative Affectivity; DSN, Disinhibition; DET, Detachment; ID, Interpersonal Dysfunction; ANK, Anankastia; DSL, Dissociality. Factor loadings ≥ 0.40 are **bolded**; those < 0.40 and ≥ 0.30 are italicized. The three factors' correlations are 0.47 (Internalizing- Self and Interpersonal Dysfunction), 0.09 (Internalizing Self Dysfunction and Externalizing), and 0.04 (Internalizing Interpersonal Dysfunction and Externalizing).*

Self Dysfunction's Low Self-worth and ANK's Hypercontrol components, respectively.

The joint PD-severity and traits analysis yields a somewhat different trait organization from the separate analyses. Specifically, the NA and DET components load together in the three-factor trait structure but split into two factors in the three-factor combined severity-trait structure with two of the NA and all of the Self Dysfunction components factoring together and the DET and Interpersonal Dysfunction components factoring together. This makes sense because although the NA and DET components correlate moderately strongly (*M r* = 0.44), each is more strongly correlated with its respective PD-severity counterpart (*M r*s of NA–Self Dysfunction and of DET–Interpersonal Dysfunction components = 0.53 and 0.62, respectively).

It is noteworthy that co-factoring PD severity and traits also affects the inter-factor correlations: In the trait-only structure, the three factors are almost entirely independent, whereas in the combined structure the two Internalizing factors correlate 0.47—reflecting the interrelation of the two (Self- and Interpersonal) personality-functioning impairment domains, as well as the moderately strong correlations between the NA and DET component scales. Both Internalizing factors remained unrelated to the Externalizing factor (factor correlations were 0.09 and 0.04 with the Internalizing Self- and Interpersonal Dysfunction factors, respectively).

DISCUSSION

As far as we are aware, there are no structural studies of *ICD-11* PD severity or the joint structure of *ICD-11* PD-severity and PD traits to date, other than the current study, in part because existing *ICD-11* PD-severity measures are global measures that are not well suited for analyses of their components. Moreover, most studies of the trait-structure of the *ICD-11* PD model have been based largely on either the PID-5, which lacks an anankastic scale, or on early brief descriptions of the traits, which are less well elaborated than the CDDG. Thus, the only instruments with which the current measure is comparable assess the AMPD. To date, joint studies of AMPD Criterion A and B measures have revealed a high degree of overlap and based on the analyses presented herein, it appears that the same may be true of the *ICD-11* PD model, which we now discuss in more detail.

Implications of Results

Basic Scale Properties

Two particular findings are noteworthy: First, the number of items per component scale ranged widely from 5 to 30 items, which suggests that either (a) the measure might benefit from further factoring of some of the longer scales or (2) the longer scales should be further pruned, which would result in a tighter measure with fewer items. It is arguably appropriate to pursue both approaches, with the first leading to a more differentiated structure that would facilitate research delving more deeply into the nature of the constructs, whereas the latter would be helpful from a clinical perspective, that is, yielding a shorter measure that would provide an overview of patients' personality pathology.

Second, the scales' psychometrics generally indicated that participants used almost the whole range of item ratings across scales. However, the maximum value on the DSL domain and component scales suggests that externalizing pathology may have been somewhat underrepresented in the sample. Conversely, that the full range of 1 to 4 was used for three Self Dysfunction component scales and two NA component scales suggests that internalizing pathology may have been relatively overrepresented. Thus, it will be important to examine the measure's performance in samples with greater representation of externalizing relative to internalizing pathology.

Convergent and Discriminant Validity of PD-Severity Scales

Regarding convergent validity, the two functioning-severity scales correlated 0.45, indicating a shared higher order dimension with clearly distinct components. These data thus contribute to the debate regarding the extent to which personality pathology is a single dimension versus has a hierarchical structure (see Sleep et al., 2019, discussion) by adding support for a hierarchical conceptualization.

Second, considering the component scales, those of Self Dysfunction were moderately (mid-0.40s) to moderately strongly (low-0.60s) intercorrelated, and those for Interpersonal Dysfunction correlated 0.46, in both cases showing an appropriate level of convergent validity for components of a broader construct (although it is important to remember that, different from the AMPD, they do not represent formal facets). However, Relationship Difficulties had essentially the same average correlation with the Self Dysfunction component scales (0.44) as it did with its counterpart, Dysfunctional Engagement (0.46), whereas the latter was largely independent of Self Dysfunction (average r = 0.11). Inspection of the item content suggests that this may be because Relationship Difficulties assesses various aspects of self-other interactions (e.g., conflicts, differences of opinion or in perspectives, becoming and being close to others), whereas Dysfunctional Engagement is focused on one's general interest in having—and desire for being in—relationships. Thus Relationship Difficulties focuses more on "who one is" or "what one(self) is like in relationships," thereby leading to a higher correlation with Self Dysfunction.

Convergent and Discriminant Validity of PD-Trait Scales

Trait-trait correlations at the domain level were also quite uneven, ranging in absolute value from 0.04 to 0.58, with an overall mean r of 0.30 (median r = 0.26). The three strongest correlations all involved NA, which correlated moderately strongly (r = 0.44 to 0.57) with all but DSL (r = 0.12), whereas the other trait-domain scale correlations were all negligible to moderate (range = 0.04 to 0.37; mean = 0.20). Thus, the trait scales were well-differentiated, for the most part, but the overlap of NA with three of the four other traits, and particularly DET warrants further investigation.

One other trait domain did not behave as expected: DSN. Most importantly, its two components related only moderately (r = 0.33) and, given this correlation, it is not surprising that the two components had different correlational patterns with other trait components: Distractibility correlated moderately strongly to strongly with two NA components, whereas Reckless Impulsivity correlated moderately strongly with the two Dissocial components. These results bring to mind the situation that existed with regard to trait impulsivity in the 1990s and early 2000s (e.g.,. Whiteside and Lynam, 2001; Whiteside et al., 2005; Sharma et al., 2013, 2014). Previously, impulsivity had been conceptualized as a single construct, even though research repeatedly showed that the term was used to characterize a heterogeneous set of dimensions. Whiteside and Lynam (2001) offered a conceptualization of "impulsive behaviors," with distinct motivational factors underlying each of several groups.

The PID-5 literature also provides considerable support for the notion that Disinhibition may similarly characterize at least two quasi-independent aspects, one each reflecting more internalizing (e.g., difficulty concentrating) versus more externalizing (e.g., acting without consideration of consequences) forms of personality pathology. For example, PID-5 Disinhibition, particularly Distractibility, has been shown to correlate as strongly with NA as with FFM (low) Conscientiousness (e.g., Watson et al., 2013; Watson and Clark, 2020), to load on the NA/Neuroticism factor in both three-factor (Watson et al., 2013) and FFM (Thomas et al., 2013; Watson and Clark, 2020) frameworks, to correlate $\geq$ 0.40 with all six NEO-PI-3 (McCrae et al., 2005) facets (Watson and Clark, 2020), to correlate more strongly with PSY-5 Negative Emotionality than Disconstraint (Anderson et al., 2013), and to correlate with multiple scales of the Personality Assessment Inventory (PAI; Morey, 2007) that assess NA-related constructs. Despite the considerable support for splitting Distractibility off from Disinhibition—or at least considering it an interstitial dimension between Disinhibition and NA, the idea has not yet taken hold in the literature on the structure of maladaptive traits. Perhaps its time has come.

PD-severity–Trait Overlap

Having considered the convergent/discriminant patterns within each of the two major aspects of *ICD-11* PD—PD-severity and its trait qualifiers—we turn now to the important issue of PD-severity–trait overlap. The joint factor analysis of PD-severity and trait scales revealed considerable overlap of these two domains.

The first two factors both had strong loadings from both PD-severity and trait component scales, with Self Dysfunction and NA dominating the first factor with a notable contribution from DSN Distractibility, whereas the second factor was marked most strongly by DET and Interpersonal Dysfunction components, followed by those of Anankastia, plus NA Mistrust. Finally, the third factor, in contrast to the first two, was essentially a pure trait factor, marked by both DSL components plus DSN Reckless Impulsivity, albeit with a modest cross-loading by PD-severity component Relationship Difficulties.

That Mistrust loads on the Internalizing Interpersonal Dysfunction factor makes sense because at the trait component level, Mistrust correlates more strongly with the two DET components than with the other two NA components (0.50 vs. 0.44). Although this difference is not statistically significant, it apparently is large enough to "pull Mistrust away" from loading with the other NA facets, suggesting that Mistrust may be an interstitial dimension. Support for this notion can be found in the PID-5 literature. For example, PID-5 Suspiciousness correlated at roughly the same magnitude with Neuroticism and Agreeableness factor scores in both Watson et al. (2013); 0.42 and −0.48, respectively) and Watson and Clark (2020); 0.51 and −0.53, respectively); loaded comparably on N, E, and low A when factored with either the NEO-PI-3 (0.35, 0.30, and 0.30, respectively; De Fruyt et al., 2013) or the Five-Factor Model Rating Form (Mullins-Sweatt et al., 2006; 0.30, 0.25, and 0.30, respectively; Thomas et al., 2013); and equally with the Negative Emotionality and Psychoticism scales of the PSY-5 (Harkness et al., 1995) (0.40 and 0.41, respectively, Anderson et al., 2013).

The most important point to discuss regarding this factor analysis is the intertwining of the PD-severity and trait scales, which warrants close consideration. One approach to understanding the considerable overlap between the PD-severity and trait domains would be to review the items of the scales that were particularly strongly correlated (and thus driving the factor structure) to determine whether they appropriately reflect their target constructs—that is, respectively, *functioning*—the "doing" aspect of personality—and *traits*, the "being" aspect of personality. That is, perhaps the scales' items are not properly placed, are not clearly written, or reflect functioning-trait blends, such that the scales are inadvertently interstitial.

Relatedly, we might ask whether one (or both) of the strongly correlated components appropriately reflect aspects of the domain in which they currently are placed. For example, Self Dysfunction's "Low Self-worth" component scale correlated more strongly (> 0.70) with two NA-component scales than with other Self Dysfunction component scales (*r*s ranged 0.45 to 0.53), so might it be more appropriately conceptualized as reflecting primarily NA rather than Self Dysfunction and therefore better placed within the former rather than within the latter? This seems to be the basis for the conclusion that McCabe et al. (2021) drew when they co-factored the Identity scales of various existing measures of AMPD Criterion A with traits and found that the Identity scales invariably marked the NA factor. Specifically, they stated that their study "suggests that the Criterion A self-identity scale can be understood as a maladaptive variant of FFM neuroticism" (p. 826).

A third possibility is to consider these results from a theoretical perspective and ask whether there may be certain inherently strong connections between PD severity and traits that are accurately reflected by these scales. Of note, the *ICD-11* description of PD severity includes "self-worth" among the "aspects of the self" that can manifest "problems in functioning" and the description of NA includes "low self-esteem" (World Health Organization, 2020c). Due to this shared quality, it is not surprising to find that Self Dysfunction and NA are strongly correlated. Digging down into the components of these domains, their descriptions have similar elements: The CDDG for PD-severity include "ability to maintain an overall positive and stable sense of self-worth" whereas those for NA include "exhibit low self-esteem and self-confidence." Thus, perhaps self-worth/self-esteem and other such correlated constructs are truly interstitial, such that items written to reflect them in different domains will naturally be correlated and jointly determinant of a factor; in other words, perhaps self-worth is an inherently interstitial construct that links Self Dysfunction with NA. Put yet a fourth way, perhaps "being" and "doing" are themselves interconnected, such that certain PD-severity and trait components reflect *both* severity *and* trait variance to a considerable degree. In other words, perhaps it is better to conceptualize these components as reflecting "general PD pathology" rather than *either* PD-severity *or* trait variance.

Another example of the same idea can be found for interpersonal dysfunction and trait DET: the *ICD-11* CDDG description of (1) PD-severity includes "interpersonal dysfunction [in the] ability to develop and maintain close and mutually satisfying relationships" and (2) the trait qualifier Detachment states that its core feature "is the tendency to maintain interpersonal distance (social detachment) and emotional distance (emotional detachment)" (World Health Organization, 2020a). Given the near impossibility of developing close, satisfying relationships with others while maintaining interpersonal and emotional distance, Interpersonal Dysfunction and DET will necessarily correlate. And again, turning to the component level, Dysfunctional Engagement (e.g., not having satisfying relationships) and Social Detachment (e.g., not liking closeness with others) are also more strongly correlated with each other ($r = 0.75$) than either is with any other component scale.

The current data cannot adjudicate between the various possible interpretations described above; rather, they represent related theoretical interpretations and arguably are simply different ways of expressing the same basic idea. Our leaning is toward the last interpretation—the overlaps reflect general PD variance—as it seems the most parsimonious and does not require a dichotomous decision regarding whether certain scales assess dysfunction or trait variance. This perspective yields the conclusion that some characteristics of PD severity and traits are shared due to being general PD variance and others are at least somewhat more independent of each other (e.g., only one of the 12 correlations between the DSL and the PD-severity components reached 0.40—namely, DSL Low Empathy with Relationship Difficulties). Sharp et al. (2015) drew a similar conclusion (i.e., that personality pathology has both common and unique factors) in their bifactor analysis of *DSM-IV* PD

criteria. This view does raise the question of why there is greater saturation of general PD pathology in some aspects of PD pathology than others, but answers to that question may not be simple, requiring more in-depth analyses at more specific levels of inquiry. This should not be surprising, given that we know already that the scope of some traits (e.g., NA) is broader than that of others (e.g., ANK); thus, it perhaps would be even more surprising if there were exactly the same degree of overlap among all PD-severity and trait constructs.

Conversely, it is surprising that Interpersonal Dysfunction did not correlate more strongly with DSL, given that its core feature is "disregard for the rights and feelings of others" (World Health Organization, 2020b), suggesting that more work may be needed on one or the other or both of these domains to reflect more clearly that interpersonal dysfunction necessarily includes disregard for the rights and feelings of others and that DSL necessarily involves interpersonal dysfunction, that is, that one cannot have good interpersonal functioning without having respect for the rights and feelings of others. For example, one description of PD-severity is "appropriateness of behavior responses to intense emotions and stressful circumstances (e.g., propensity to self-harm or violence" (World Health Organization, 2018, CDDG Draft Guidelines, p. 4) and this may not be adequately represented in our item pool. Alternatively, individuals high in DSL may have varying degrees of insight into the appropriateness of their behavioral response and, therefore, may not response "accurately" to relevant items if considered from the perspective of an objective observer.

In any case, the questions "How large is the 'true' degree of overlap between the PD-severity and PD-trait domains?" and "What is the nature of that overlap?" raise critical issues that have not yet been fully addressed. This is, in part, because most research on dimensional approaches to assessing personality pathology has not even included a separate measure of PD severity, and many of those that did used measures that were developed prior to the publication of the *DSM-5* AMPD or *ICD-11* (e.g., Berghuis et al., 2014). Further, to our knowledge, the current measure is the first for which PD-severity and trait scales have been co-developed. This is critical because separate development impedes the ability to consider such important questions as whether various qualities should be considered aspects of dysfunction severity, of traits, of both, or of a more general factor than either alone.

Limitations

The discussion above raises questions about the structure of the PD domain in the current study, including why the PD-trait analyses did not yield five factors and, relatedly, why the joint PD-severity and trait analyses did not yield at least five factors (i.e., five trait-based factors with Self- and Interpersonal Pathology component scales loading on those factors marked by the trait components with which they correlate).

One reason may be that, unlike the AMPD, the *ICD-11* PD-severity and traits are not formally faceted systems. For example, the AMPD PD-traits has 25 facets forming five domains, whereas the *ICD-11* PD-traits CDDG has 16 facet-like components (see **Supplementary Table 1**), and our preliminary analyses further reduced that number to 11 (see **Table 1**). There are several possible reasons for this and we highlight two of them here. First, in our attempt to limit the number of items administered, we may have "over-culled" the item pool, such that the pool that was administered had too few items for the various lower order components of the traits to form a robust set of constructs, thereby forcing them to form fewer, broader components. For example, per the CDDG description, we considered DET to have two main components—Social Detachment and Emotional Detachment—each of which had several subcomponents for which we wrote items, pruning these to the best 3-5 exemplars of each for administration. Had we retained more items per subcomponent, perhaps a more elaborated structure would have emerged. This limitation exists across domains, with only Self Dysfunction and NA ending up with more than two components.

Second, our criteria for retaining items at the data-analytic phase may have been too stringent, such that a more comprehensive, even if less clean, solution would have emerged had we been more lenient. For example, with very few exceptions, we used a 0.35 cut point for retaining items on a factor, and removed items with non-negligible cross-loadings. In some cases this meant eliminating too many items in a subfacet to retain it as such, resulting in a cleaner but less comprehensive structure. These decisions were made, in part, because we were mindful of reducing patient burden (i.e., being asked to complete a lengthy inventory), but this may have had unintended and unwanted structural consequences. Thus, just as the *ICD-11* has different versions for basic primary care settings, particularly in low- and middle-income countries, for use in mental-health-care settings, and for research, it is worth considering developing different versions of this measure of the *ICD-11* personality disorder model.

Another limitation of the current study is that it is based on a single online community sample of mostly white (> 90%) adults living in English-speaking countries, at least 75% of whom had been or were in mental-health treatment, and thus has not been cross-validated and also has somewhat limited generalizability. After revising the scales along the lines discussed above (e.g., using less stringent criteria for excluding items in an attempt to create a broader structure), it will be important to collect more data in a diversity of samples. Relatedly, the fact that the article reports on preliminary scales limits its contribution. In addition, the lack of external validity data also needs to be addressed in future research.

When the measure has been cross-validated, both in terms of its psychometric and structural properties and its convergent and discriminant validity with other measures of personality pathology, it will be important to translate it into multiple languages for international use, which we anticipated from the outset, so items were written with "translatability" in mind. These types of studies are in the planning stages.

CONCLUSION

Despite these limitations, we believe that the current measure development project has promise for assessing the new *ICD-11*

Personality Disorder model. Given the considerable differences between this model and those in previous *ICD* editions, having an instrument that can be used clinically as well as in research on the new model will be of considerable utility.

In sum, the *ICD-11* PD model represents a significant, one might say revolutionary, change in the conceptualization of personality pathology in two major ways. The first is the change from a set of discrete categories to a fully dimensional perspective. The second change is related yet importantly distinct, and that is to thinking of personality pathology as having two components. The first core and fundamental component is impairment in personality functioning—one might say in one's personhood itself—that is, a general failure to mature adaptively and to develop the capacity to live successfully in one's world. The second component, again related yet importantly distinct, is the more specific ways in which personality impairment is manifest, that is, an individual's basic maladaptive-range personality traits. Each of these components contributes, in overlapping yet also distinct ways, to individuals' specific patterns of emotional experience and expression, cognitive processes and beliefs, and behavioral manifestations of their personality. Like any conceptualization at its outset, the *ICD-11* PD model is a theory that needs to be tested empirically. To do so, we must be able to measure the components of the theory, and this project's aim is to develop a measurement method specifically for that purpose.

AUTHOR'S NOTE

YK is now at Concordia University in Edmonton, Canada. HFLA is now at Brown University. GSG is now at the University of Cambridge.

DATA AVAILABILITY STATEMENT

The dataset presented in this article are available only upon request for the purpose of verifying that the results reported are veridical. Requests to access the dataset should be directed to LAC, la.clark@nd.edu.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by University of Notre Dame Institutional Review Board. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

LAC participated in data cleaning, analyzed the data, and wrote the first draft of the manuscript. SK wrote the initial draft of the IRB proposal and oversaw the data cleaning. DW participated in data cleaning, and reviewed and edited both the IRB proposal and the manuscript. ACE, HFLA, and GSG helped edit the manuscript. All authors participated in item writing and item selection.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2021.668724/full#supplementary-material

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The Construct Validity of the ICD-11 Severity of Personality Dysfunction Under Scrutiny of Object-Relations Theory

Amin Nazari[1], *Steven K. Huprich*[2,3], *Azad Hemmati*[1]* *and Farzin Rezaei*[4]

[1] Department of Psychology, University of Kurdistan, Sanandaj, Iran, [2] Department of Psychology, University of Detroit Mercy, Detroit, MI, United States, [3] Department of Psychiatry and Behavioral Sciences, College of Human Medicine, Michigan State University, Lansing, MI, United States, [4] Neurosciences Research Center, Research Institute for Health Development, Kurdistan University of Medical Sciences, Sanandaj, Iran

The current classification of personality disorder in ICD-11 includes a description of personality functioning, derived from a number of theoretical paradigms, but most notably consistent with the psychodynamic approach. Concurrently, an object-relations model of personality functioning in a dimensional assessment of severity is provided in the Structured Interview of Personality Organization-Revised (STIPO-R). To date, there are no published measures of International Classification of Diseases-11 (ICD-11) personality severity, though the construct is very comparable to the concepts assessed in the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) levels of personality functioning concept, which is measured by the Level of Personality Functioning Scale-Self-Report (LPFS-SR). This study examined the validity of ICD-11 personality functioning, as measured by the LPFS-SR, by evaluating its associations with the STIPO-R in Kurdistan region. The samples included 231 University students and 419 inpatient participants across four hospitals (267 with a diagnosed personality disorder). All the components of LPFS-SR and STIPO-R were positively and significantly intercorrelated. The components of each measure discriminated PD and non-PD patients from a University, non-clinical group adequately. Despite slightly better performance of the STIPO-R in this discrimination, the measures had a high congruence in predicting personality dysfunction. Overall, the findings of the present study support the validity of ICD-11 construct for evaluating personality functioning.

Keywords: ICD-11, severity of personality dysfunction, object-relations theory, STIPO-R, LPFS-SR

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Virginia Commonwealth University,
United States

Reviewed by:
Tore Buer Christensen,
University of Oslo, Norway
Abby Mulay,
Medical University of South Carolina,
United States

***Correspondence:**
Azad Hemmati
a.hemmati@uok.ac.ir

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INTRODUCTION

Personality disorder includes impairments in functioning of aspects of the self (i.e., identity, accuracy of self-view, self-worth, self-direction), and problems in interpersonal functioning (e.g., parent–child, romantic relationships, school/work, family, friendships, peer contexts) (1). The level of severity of personality disorder was recently incorporated into International Classification of Diseases (ICD-11) as a means of classifying personality functioning and assigning patients a personality disorder diagnosis (2). The level of personality functioning has been derived from multiple frameworks (2, 3), including psychodynamic, interpersonal, and personological. These three paradigms have consistently stressed the dynamics of the intrapersonal and interpersonal (3).

The International Classification of Diseases-10 (ICD-10) and the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) had no account of severity of dysfunction (4). By contrast, The ICD-11 model of personality disorder puts the severity level at the first line of personality disorder diagnosis, which has been theoretically and empirically central in understanding a patient's overall level of functioning (5–9). The degree of severity of personality pathology, in both diagnostic systems of DSM-5 AMPD and the ICD-11 is defined similarly and can be evaluated by measures like LPFS-SR (1, 10). By including severity in the conceptualization and diagnosis of personality disorder, studies have found that researchers and clinicians have more adequate prediction and prognosis in the assessment of personality disorder (5, 6, 9, 11).

The ICD-11 levels of severity of personality disorder are congruent with personality organization in the psychodynamic approaches (1, 12–18). Waugh et al. (19) stated that the concept of "psycho-structural level" contained within the psychodynamic model (20) shows many parallels with the Level of Personality Functioning Scale-Self-Report (LPFS) as described in Criterion A of DSM-5 Alternative Model of Personality Disorder (AMPD) assessment, which refers to levels of personality functioning as assessed across the domains of self and interpersonal relatedness. Ferrer et al. (21) also claimed that LPFS dimensions could be traced back to Kernberg model of personality organization (PO) (14, 22). Even prior to the publication of the DSM-5 and ICD-11, Huprich (23) argued object relations theory and psychodynamic models ought to be considered for future models of personality pathology, given their appealing clinical utility, integration with other models of psychological functioning, and empirical support in the literature.

Object relations theory (21) is probably the first theoretical approach in psychology that considered a dimensional view toward personality in its classification of personality disturbances from psychosis to borderline and neurotic. According to this framework, neurotic personality organization (produced from repression-based defense mechanisms) is the highest level of functioning and approximates what might be considered "normal personality." Borderline personality organization (BPO), which mainly includes most personality disorder features, describes mental conditions of immature people with a lower level of integrated and complex representations of self and other. BPO is presented in Kernberg's model (13, 21), through two dimensional continuums of severity and introversion-extroversion. Unlike psychotic levels of organization, and as the greatest difference between the two classes of mental disturbance, patients with BPO do not lose their reality testing. They organize the relational patterns, and their inflexibility and immaturity lead to self and interpersonal dysfunctioning.

The Structured Interview of Personality Organization (STIPO) (24) was developed from object relations theory as a dimensional assessment tool to assess severity of personality pathology. The STIPO organizes three levels for personality organization (PO) within a continuum of severity, from psychotic to borderline (with high and low levels) and neurotic, and from internalizing to externalizing (14, 18). Clarkin et al. (25) provided a revised version (STIPO-R) to achieve a structural diagnosis by thoroughly evaluating the essential concepts of identity, object-relations (ORs), defenses (primitive and higher-level), aggression, moral values and narcissism (18, 25). Among these critical concepts, identity (as the main definition of self) and aggression (as the principal part of interpersonal conflicts) have the main role in self and interpersonal aspects of personality; especially in personality disorder. Through an objective and standard method of collecting information about the severity of personality pathology, the STIPO-R also provides valuable data about the probability of dropping out of treatment (26), comorbidities (27, 28), the prognosis of treatment, and an adjustment in treatment planning based upon the level of personality organization (29). The STIPO has also been evaluated for its reliability and validity, which has received solid empirical support (13, 30, 31).

Recent studies (20, 22, 30) have explored the congruence of the levels of personality functioning construct (i.e., criterion A of AMPD) with the STIPO, which is very similar to the ICD-11 model of personality functioning. Especially, Ferrer et al. (21) and Hörz-Sagstetter et al. (29) suggested STIPO was a valid instrument for the evaluation of personality functioning for further studies. Kampe et al. (32) also demonstrated a close correspondence between the approach to assessing personality pathology adopted in the LPFS (operationalized by the SCID-AMPD) and that used in the psychodynamic concept of personality organization (operationalized by the STIPO).

Given that there have been demonstrated empirical relationships between the LPFS and the STIPO-R, the present study was conducted to confirm what has been published in past studies, but also to lay out the groundwork for the value and utility of the levels of personality functioning framework that has been articulated in ICD-11. The present study extends the literature by evaluating these relationships in large Iranian samples of patients and University students. Since past studies have found strong correspondence of the personality functioning concept with the STIPO-R, the present study would extend the empirical support for the psychodynamic underpinnings of this concept.

METHOD

Participants

This study included both University and clinical samples. The University sample included 347 students attending University of Kurdistan, who voluntarily consented to participate. The inclusion criteria for this sample were voluntary participation and age $\geq$18. The exclusion criteria were having a diagnosed mental disorder and/or abusing substances or medications, for which 64 students were excluded. The clinical participants involved 739 inpatients, who were previously assigned psychiatric disorder diagnoses, except for psychotic disorders, by experienced psychiatrists through structured diagnostic interviews based on DSM-5 criteria. These patients were hospitalized at four psychiatric hospitals. The inclusion criteria for the clinical sample were voluntary participation, age $\geq$18, and a diagnosis of a psychiatric disorder except for psychotic disorders. The researchers did not have access to information

about potential comorbidities (particularly substance and/or alcohol use disorders).

Per preliminary data screenings, protocols which were invalid (e.g., similar responses to all items, not responding to one of the measures) and/or included more than 10% non-response items were eliminated to avoid biased statistical analyses (33). A total of 650 valid final protocols were identified. Among the University sample, 231 protocols were determined to be valid for the final analysis phase, of which 138 (59.7%) were female and 92 (39.8%) were male. The final valid clinical sample included 419 hospitalized participants, who assigned into groups: the patients with personality disorders (PDs; $n = 267$) and patients with psychiatric disorders except PDs ($n = 152$). The predominant PD diagnosis among the clinical group was Borderline PD (198 patients). **Figure 1** presents the flow diagram for processes of the enrollment, and exclusion/inclusion of participants for analysis. **Supplementary Table 1** presents the demographic data for all the participants and elaborates the detail information about clinical samples. The Research Ethics Committee of the University of Kurdistan approved this study (IR.UOK.REC.1397.014), and all respondents provided written informed consent prior to data collection.

Measures

Structured Interview of Personality Organization-Revised (STIPO-R) (25)—Persian Version

The STIPO-R is a semi-structured interview constructed to evaluate the structural domains of personality functioning that are central to understanding the individual from an object relations model of personality and personality pathology based on Kernberg's psychodynamic personality organization concept (22, 34). The STIPO-R contains 55 items covering five domains of functioning: identity, object relations, defenses, aggression, and moral values, for measuring personality organization through seven dimensions of personality: identity integration, quality of object relations, use of primitive defenses, quality and nature of aggression, adaptive coping versus character rigidity, moral values, and reality testing (18, 25). The STIPO-R also has scoring for a narcissism dimension. This interview provides the clinician and researcher with dimensional scores on key domains of personality functioning. The severity of dysfunction in each domain can be used by the clinician for treatment planning and by the researcher for selection of subjects and measurement of change in relation to treatment interventions. The standardized format and scoring system allow the interviewer to rate the subject's responses (0 = absent; 1 = subthreshold; or 2 = present) at the individual item level as the interview proceeds. Once the interview is completed, the scores at the individual item level are summed within each domain to give a total domain score. For the rating procedure, satisfactory inter-rater reliability has been found (30, 31). The STIPO has demonstrated satisfactory psychometric properties for the domains of object relations theory in different clinical samples (13, 30, 35, 36), which can be reliably used in both genders and culturally diverse contexts (12, 29, 36). Preti et al. (26) also reported a significant association between STIPO structural characteristics and DSM diagnoses. In this study, Cronbach's alphas for the seven domains were 0.80 (identity), 0.87 (object-relations), 0.72 (primitive defenses), 0.41 (high-level defenses), 0.85 (aggression), 0.86 (moral values), 0.70 (narcissism), and 0.90 (total score).

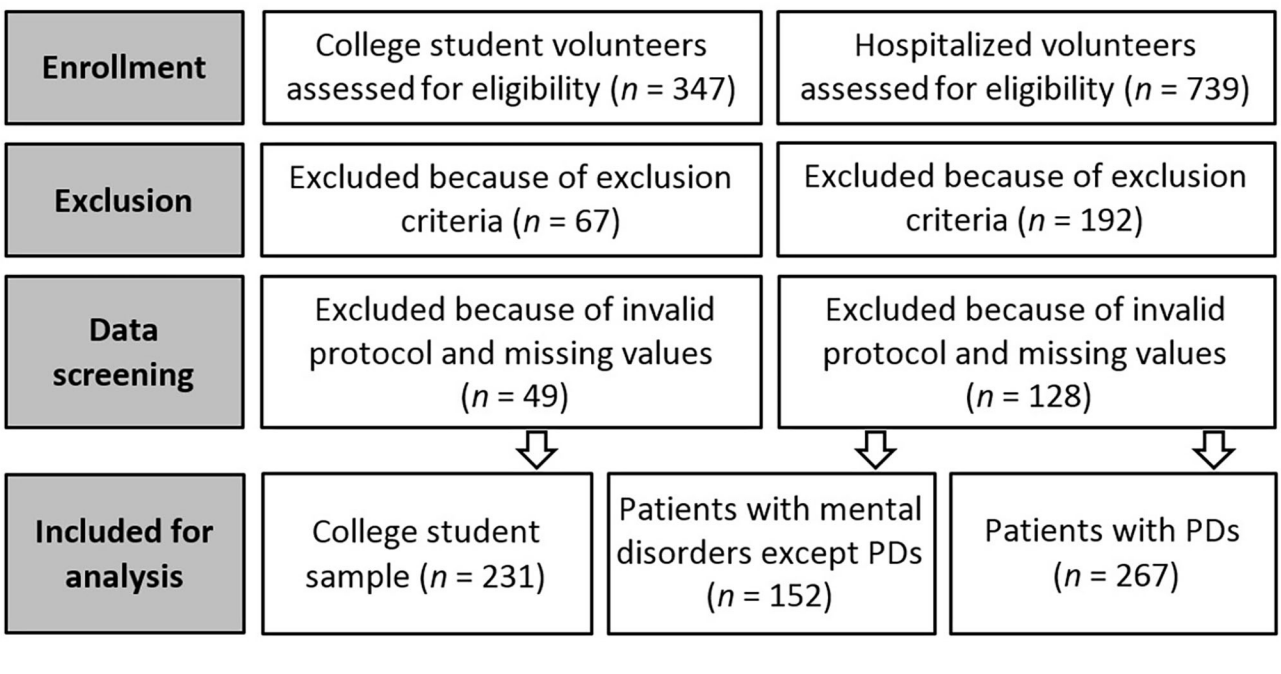

FIGURE 1 | Flow diagram for processes of the enrollment, exclusion and inclusion of samples for analysis.

TABLE 1 | Bivariate correlations of LPFS-SR and STIPO-R components ($n = 650$).

Measures	1	2	3	4	5	6	7	8	9	10
STIPO-R										
1. Identity										
2. Object-relations	0.67									
3. Lower-level-defenses	0.67	0.60								
4. Higher-level-defenses	0.49	0.47	0.58							
5. Aggression	0.71	0.62	0.70	0.51						
6. Moral values	0.55	0.58	0.56	0.42	0.75					
7. Narcissism	0.67	0.67	0.71	0.52	0.57	0.52				
LPFS-SR										
8. Identity	0.62	0.47	0.64	0.46	0.60	0.47	0.53			
9. Self-direction	0.64	0.47	0.61	0.44	0.61	0.47	0.49	0.86		
10. Empathy	0.61	0.48	0.58	0.42	0.58	0.47	0.48	0.83	0.84	
11. Intimacy	0.62	0.50	0.61	0.40	0.59	0.46	0.51	0.86	0.84	0.88

All values are significant at $p < 0.001$.

TABLE 2 | Independent Samples *T*-tests and one-way ANOVAs comparing means of the LPFS-SR, STIPO-R components between groups.

Measures	PD vs. non-clinical			BPD vs. non BPD patients			PD, Non-PD and non-clinical	
	Mean difference	*t*	Cohen's *d*	Mean difference	*t*	Cohen's *d*	F	Partial Eta squared
STIPO-R								
Identity	10.06	25.30	2.24	3.96	8.73	0.85	328.95	0.50
Object-Relations	6.23	17.78	1.73	1.83	4.18	0.41	152.33	0.32
Lower-Level-Defenses	3.81	16.86	1.50	1.75	6.44	0.63	139.88	0.30
Higher-Level-Defenses	2.03	12.72	1.15	0.60	3.14**	0.31	77.93	0.19
Aggression	6.90	22.71	1.99	4.20	10.72	1.05	239.99	0.43
Moral Values	3.49	14.18	1.24	1.61	4.97	0.49	99.43	0.24
Narcissism	4.62	14.53	1.29	2.01	5.52	0.54	110.69	0.25
LPFS-SR								
Identity	31.81	14.66	1.37	12.72	5.35	0.56	122.09	0.30
Self-Direction	29.14	15.97	1.49	9.85	4.64	0.48	143.30	0.33
Empathy	20.86	16.09	1.50	4.27	2.81**	0.30	142.68	0.33
Intimacy	30.68	16.14	1.50	7.06	3.17**	0.33	145.93	0.33

All values are significant at $p < 0.001$, but three flagged values that are significant at $p < 0.01$. PD patients ($n = 267$), Non-PD patients ($n = 152$) and non-clinical ($n = 231$).

Translation Procedure

The translation from English to Persian was performed according to advised procedures (37, 38). Equivalence with the original intended meaning of the items was the guiding principle in the translation process. First, the STIPO-R items were independently translated into Persian by a four-member team, including an English language specialist, a psychiatrist (the fourth author), a psychologist, and a psychometrics specialist (the third author). The preliminary Persian version of the STIPO-R was given to a professional translator, blinded to the original English version, for back-translation to English. The English back-translation was then sent to the owners of the STIPO-R (25) for review. Finally, 11 items deemed to be semantically different from the English original were modified under supervision of the authors of the STIPO-R. The final confirmed Persian translation of the STIPO-R was presented as a pilot implementation to five interviewers, and the items were determined to be clear and comprehensible.

Level of Personality Functioning Scale-Self-Report (LPFS-SR)-Persian Version

The LPFS-SR (39) is an 80-item self-report instrument that assesses disturbances in self and interpersonal functioning on a global severity continuum, representing Criterion A of the AMPD of DSM-5 Section Results. The LPFS-SR comprises four personality function components, including Identity (21 items) and Self-Direction (16 items) as subsets of self-functioning, and Empathy (23 items) and Intimacy (20 items) as subsets of interpersonal functioning. The measure utilizes a four-point response scale (1 = *Totally False, not at all True*; 2 = *Slightly*

True; 3 = *Mainly True*; and *4* = *Very True*). The current study used the algorithm provided by Morey (39) for weighting item scores [weights ranging from −0.5 for Level 0 [*"little or no impairment"*] items to +3.5 for Level 4 [*"extreme impairment"*] items]. Hemmati et al. (40), in a validation study of Persian translation of LPFS-SR, confirmed its high internal consistency and found that it significantly discriminated between the non-clinical and clinical samples. Additionally, Morey et al. (39) found support for a single factor structure of personality dysfunction. In the current study, Cronbach's alphas for the four domains were 0.86 (Identity), 0.86 (Self-Direction), 0.81 (Empathy), 0.85 (Intimacy), and 0.96 (total score).

Statistical Analyses

Zero-order correlations were calculated for evaluating the association between each of the LPFS-SR and STIPO-R components (**Table 1**). Independent samples *t*-tests and one-way analysis of variance (ANOVA) along with the Cohen's *d* (41) were applied for comparing the means of LPFS-SR and STIPO-R components among the groups (**Table 2**). Binomial (**Table 3**) and Multinomial (**Table 4**) logistic regression analyses were conducted with LPFS-SR and STIPO-R components as the independent variables, and group membership (PD, Borderline PD, non-PD patients, and non-clinical subjects) as the dependent variables. All statistical analyses were performed through the IBM-SPSS©-24 software.

RESULTS

As **Table 1** shows, all dimensions of LPFS-SR and STIPO-R components were meaningfully correlated. The inter-component correlations for STIPO-R varies from 0.42 to 0.71, while the inter-component correlates for the LPFS-SR were 0.83 to 0.88. These high inter-component correlations for the LPFS-SR dimensions are indicative of the unitary nature of the LPFS-SR (42). Among seven components of STIPO-R, identity (ranging from 0.61 to 0.64), primitive defenses (ranging from 0.58 to 0.64), and aggression (ranging from 0.58 to 0.61) had the highest associations with the LPFS-SR components. Otherwise, all the LPFS-SR components had similar patterns of correlation coefficients with the STIPO-R components (values within the mid −0.40 range).

Overall, as **Table 2** to illustrates, the discriminative capacities of the STIPO-R components (Cohen's *d* from 1.15 to 2.24) and the LPFS-SR dimensions (Cohen's *d* from 1.37 to 1.50) are considerable for differentiating PD patients from non-clinical participants. Mean differences are prominently high in Identity ($d = 2.24$) and Aggression ($d = 1.99$) of STIPO-R. The effect sizes for the other components are not as strong, though still in the medium to large range, for both STIPO-R (Cohen's *d* from.31 to 1.05) and the LPFS-SR (Cohen's *d* from.33 to.56) in discriminating BPD and non-BPD patients (all other patients with and without a PD). However, Aggression ($d = 1.05$) has still a sizeable effect in differentiating these groups. Furthermore, the results for comparing the means of three groups of PD, non-PD patients, and non-clinical subjects indicate the relatively lower effect sizes for the STIPO-R (partial eta-squared values ranging

TABLE 3 | Binomial logistic regression analysis of group membership predicted by LPFS-SR and STIPO-R components.

	Model	Predictor	*B (S.E.)*	*Wald*	*Exp. B (C.I.)*	Sensitivity	Specificity	Overall model significance			*Phi (Φ)*
								χ^2 (d.f.)	Nagelkerke R^2	Cox & Snell R^2	
PD vs. Non-clinical	Model 1; STIPO-R	Identity	−0.35 (0.05)	46.70***	0.70 (0.63–0.78)	87%	90 %	427.53*** (7)	0.77	0.58	0.60***
		Object-relations	−0.15 (0.06)	6.75**	0.86 (0.77–0.97)						
		Lower-level-defenses	0.05 (0.09)	0.32	1.05 (0.88–1.27)						
		Higher-level-defenses	−0.04 (0.10)	0.16	0.96 (0.79–1.17)						
		Aggression	−0.34 (0.07)	20.91***	0.71 (0.62–0.83)						
		Moral values	0.11 (0.09)	1.52	1.11 (0.94–1.32)						
		Narcissism	0.08 (0.07)	1.11	1.08 (0.94–1.25)						
	Model 2; LPFS-SR	Identity	0.00 (0.01)	0.05	1.00 (0.98–1.02)	78 %	79 %	215.83*** (4)	0.50	0.38	
		Self-direction	−0.03 (0.01)	6.05*	0.97 (0.95–0.99)						
		Empathy	−0.03 (0.02)	4.66*	0.97 (0.94–1.00)						
		Intimacy	−0.03 (0.01)	5.92*	0.97 (0.95–0.99)						

*Exp. B, Exponential B (These are the odds ratios for the predictors); *p < 0.05. **p < 0.01. ***p < 0.001. Phi (Φ) correlation of the models' group membership.*

TABLE 4 | Multinomial logistic regression analysis of group membership predicted by LPFS-SR and STIPO-R components.

Model	Predictor	Likelihood ratio tests						Overall model significance		
		PD vs. Non-clinical			Axis I vs. Non-clinical			Φ^2 (d.f.)	Nagelkerke R^2	Cox & Snell R^2
		B (S.E.)	*Wald* (d.f. = 1)	*Exp. B (C.I.)*	*B (S.E.)*	*Wald* (d.f. = 1)	*Exp. B (C.I.)*			
Model 1; STIPO-R	Identity	0.40 (0.05)	68.57***	1.49 (1.36–1.64)	0.37 (0.05)	62.61***	1.44 (1.32–1.58)	540.65*** (14)	0.64	0.57
	Object-relations	0.14 (0.05)	7.12**	1.15 (1.04–1.27)	0.13 (0.05)	6.65**	1.14 (1.03–1.26)			
	Lower defenses	0.03 (0.09)	0.08	1.03 (0.87–1.21)	0.01 (0.08)	0.03	1.01 (0.86–1.19)			
	Higher defenses	0.02 (0.09)	0.07	1.02 (0.86–1.21)	0.14 (0.08)	3.02	1.15 (0.98–1.35)			
	Aggression	0.35 (0.07)	25.84***	1.42 (1.24–1.62)	0.17 (0.07)	6.11*	1.18 (1.04–1.35)			
	Moral values	−0.12 (0.08)	2.24	0.88 (0.75–1.04)	−0.15 (0.08)	3.25	0.86 (0.74–1.01)			
	Narcissism	−0.06 (0.07)	0.71	0.94 (0.83–1.08)	−0.11 (0.07)	2.70	0.90 (0.79–1.02)			
Model 2; LPFS-SR	Identity	0.00 (0.01)	0.08	1.00 (0.98–1.02)	−0.01 (0.01)	0.80	0.99 (0.97–1.01)	254.94*** (8)	0.40	0.35
	Self-direction	0.03 (0.01)	7.34**	1.03 (1.01–1.05)	0.04 (0.01)	9.19**	1.04 (1.01–1.06)			
	Empathy	0.03 (0.02)	3.30	1.03 (1.00–1.06)	0.03 (0.02)	2.25	1.03 (0.99–1.06)			
	Intimacy	0.03 (0.01)	6.57*	1.03 (1.01–1.05)	0.03 (0.01)	4.44*	1.03 (1.00–1.05)			
Phi (Φ) correlation of the models' group membership	0.51***									

*Exp B, Exponential B (These are the odds ratios for the predictors); *$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.*

between 0.19 and 0.50) and the LPFS-SR (partial eta-squared values ranging between 0.30 and 0.33). Notably, Identity and Aggression had large effect sizes.

Two binomial logistic regression models were performed to compare the relative effects of the STIPO-R and LPFS-SR components on predicting the likelihood of group membership (PD vs. non-clinical). Model 1 contained the STIPO-R components as the predictor variables, which was significant, $\chi 2$ (7, $N = 398$) = 427.53, $p < 0.001$, indicating the model's ability in distinguishing PD from non-clinical groups. This model explained between 58% (Cox and Snell R^2) and 77% (Nagelkerke R^2) of the variance in predicting PD presence and had very solid sensitivity (0.87) and specificity (0.90). Model 2 with LPFS-SR components as the predictor variables was also significant, $\chi 2$ (4, $N = 398$) = 215.83, $p < 0.001$, indicating the model's ability in distinguishing PD from non-clinical groups. This model, with solid sensitivity (0.78) and specificity (0.79), explained between 38% (Cox and Snell R^2) and 50% (Nagelkerke R^2) of the variance in predicting PD likelihood. The Phi coefficient ($\phi = 0.60$) indicated a high contingency between predicted group membership by the models.

The relative effects of the STIPO-R and LPFS-SR components were compared through multinomial logistic regression models for distinguishing PD and non-PD patients from non-clinical groups. According to **Table 4**, model 1 contained the STIPO-R components as the predictor variables, and significantly [$\chi 2$ (14, $n = 650$) = 540.65, $p < 0.001$] predicted the likelihood of group membership (PD, non-PD patients, and non-clinical subjects) with 57% (Cox and Snell R^2) and 64% (Nagelkerke R^2) ability to explain the variances. Model 2 evaluate the LPFS-SR's ability to differentiate the same groups. Results indicate that the model was able to explain 35% (Cox and Snell R^2) and 40% (Nagelkerke R^2) of the variances, which was statistically significant [$\chi 2$ (8, $n = 650$) = 254.94, $p < 0.001$]. Specifically, the model distinguished PD and non-PD patients from non-clinical groups. The Phi coefficient ($\phi = 0.51$) indicated a high contingency between predicted group membership by the models.

DISCUSSION

Object-relations psychodynamic models of personality have posited that those with a personality structure that is composed of a strong sense of self (by way of self-esteem, identity, purpose, and overall agency) and one's ability to relate optimally to others (by way of being understanding and empathic, developing cooperation, respect, and closeness) is central to adaptive human functioning and an overall good quality of life. It also is the case that the affective and motivational bonds between others must preserve one's own needs as well as the needs of others, even when such needs come in conflict. When self, other, and affect (broadly defined) are performing in non-integrated, non-mutually informative ways, the individual is likely to have difficulties, thus leading to poor functioning. Such ideas are embedded in Kernberg's model of personality (43) and ideas of personality organization, and were central in the development of the STIPO-R.

It is thus gratifying to those who practice from the psychodynamic perspective to see the AMPD and ICD-11 incorporate central ideas of object relations theory and personality organization into the assessment and diagnosis of personality pathology. More so, it is especially helpful to recognize that when self, other, and affective/motivational aspects of this dyad operate in suboptimal ways, the more pathological a person will appear and the poorer their functioning will be. The present study lends support to these ideas.

Overall, we found that those with poor levels of personality functioning, as assessed by various components of the STIPO-R and LPFS, tend to have personality disorder diagnosis. Even without a personality disorder diagnosis, poor levels of personality functioning were associated with psychopathology in a wide range of patients, thus demonstrating the centrality of object relations and personality organization as a core component of overall personality functioning.

When comparing group mean differences, the largest effect sizes were seen for the STIPO-R Identity and Aggression components. However, all STIPO-R and LPFS-SR dimensions were able to successfully differentiate the PD patients, non-PD patients, and University student controls. Looking more specifically at pairwise group differences, it appears all STIPO-R and LPFS-SR dimensions yielded large effect sizes, clearly demonstrating the utility of both measures in differentiating patients of various levels of psychopathology. However, the strongest effects in these comparisons, as well as in the comparison of Borderline PD and non-Borderline PD patients, were observed in the STIPO-R Identity and Aggression dimensions. These dimensions can be seen as central to an object relations model of personality, as delineated by Kernberg (43). Specifically, Identity is that part of the self-representation that illuminates individuals' ideas about who they are, and Aggression is an emotional and behavioral manifestation of the quality of interpersonal relationships. When there are problems in the clarity of one's identity, coupled with problems in the expression of aggression, a person is likely to have difficulties in personality functioning, namely by way of severity of problems.

Interestingly, the decrease in magnitude of the effect sizes seemed to change consistently when moving from a University control group to a non-PD patient control group (as compared to the PD group). These findings demonstrate that that uniform changes across levels of psychopathology are associated with changes in personality functioning and, more broadly, personality organization. Thus, personality organization that is more integrated, structured, and nuanced has less severity and psychopathology. However, it would be noted that the largest magnitude of differentiation across groups occurred with the STIPO-R when compared with the LPFS-SR. There are likely two reasons for this. First, the STIPO-R assesses a broader range of functioning than the LPFS-SR. While the latter focuses exclusively upon self and other representations, the STIPO-R assesses defenses, the implementation of moral values, and narcissism, in addition to identity and object relations (which are components of the LPFS-SR). Second, the STIPO-R is an interview-based measure, which relies on the clinical expertise of trained interviewers, whereas the LPFS-SR is a self-report instrument that participants complete. Given the limitations of self-report measures (44), an interview-based measure is more likely to detect problems in psychological functioning that may not be assessed in an individual's self-report (45).

The current study also tried to extend the findings of the relation between the STIPO-R and the personality functioning operationalized by ICD-11 model of PD in a culturally different and large clinical and non-clinical sample. Given the use of the STIPO-R and LPFS-SR primarily in North American and European samples, the replication of past findings in this sample demonstrates the generalizability of previous findings and the utility of studying personality functioning in diverse, worldwide samples. Ongoing international efforts are needed in order to maximize the clinical utility of the ICD-11.

LIMITATIONS

The most significant limitation to the present study is that the LPFS-SR was used as an approximation of the ICD-11 concept of personality functioning and severity. As the LPFS-SR is by its nature a measure of personality severity, it is an obvious candidate measure to help validate ICD-11 personality functioning. Another possible limitation is the comparison of the STIPO-R with the LPFS-SR. While the measures are correlated and produced similar findings for group comparisons, their components do not completely overlap. For instance, the Identity components across both measures correlate at $r = 0.62$. Similarly, the STIPO-R Object Relations component correlates between *r*s of 0.47–0.50 with the LPFS-SR scales, which ostensibly are aspects of object relations. The moderate degree of correlation may reflect methodological differences, as method effects are known to attenuate the degree of correlation between two similar constructs. Alternatively, these scales partially overlap in content, indicating that there are aspects of one scale that might be associated with clinically relevant outcomes that are not found in the other scale. Though it is beyond the scope of this paper, a factor analysis of this data might prove useful to determine if the shared variance among scales can be attributed to isolated factors, or whether the various scales cross-load on other factors thus demonstrating their heterogeneity.

CONCLUSION

The current study sought to validate the ICD-11 conceptualization of personality functioning by evaluating the relationship of the LPFS-SR with the STIPO-R. Overall, the LPFS-SR scales were correlated with all of the STIPO-R dimensions. Additionally, both the STIPO-R and LPFS-SR scales differentiated patients with PDs, patients without PDs, and University controls, with higher levels of impairment on the LPFS-SR and STIPO-R being associated with more pervasive levels of pathology (i.e., the presence of a personality disorder). Assessing levels of personality functioning in the diagnostic manuals appears to be gaining more ecological validity, particularly as such findings appear to replicate cross-culturally.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by The Research Ethics Committee of the University of Kurdistan (IR.UOK.REC.1397.014). The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

AN: study conceptualization, data collection, and data preparation. AH: study conceptualization, data collection, data analysis, and report writing. SH: report writing and final proofreading. All authors contributed to the article and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2021.648427/full#supplementary-material

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Anankastia or Psychoticism? Which One Is Better Suited for the Fifth Trait in the Pathological Big Five: Insight From the Circumplex of Personality Metatraits Perspective

Włodzimierz Strus[1]*, *Patryk Łakuta*[1] and *Jan Cieciuch*[1,2]

[1] Institute of Psychology, Cardinal Stefan Wyszyński University in Warsaw, Warsaw, Poland, [2] University Research Priority Program Social Networks, University of Zurich, Zurich, Switzerland

Both the ICD-11 and the DSM-5 (Section III) classification systems introduced dimensional models of personality disorders, with five broad domains called *the Pathological Big Five*. Nevertheless, despite large congruence between the two models, there are also substantial differences between them, with the most evident being the conceptualization of the fifth dimension: Anankastia in the ICD-11 vs. Psychoticism in the DSM-5. The current paper seeks an answer to the question of which domain is structurally better justified as the fifth trait in the dimensional model of personality disorders. For this purpose, we provided both a conceptual and empirical comparison of the ICD-11 and the DSM-5 models, adopting the Circumplex of Personality Metatraits—a comprehensive model of personality structure built on the basis of the higher-order factors of the Big Five—as a reference framework. Two studies were conducted: the first on a sample of 242 adults (52.9% female; $M_{age} = 30.63$, $SD_{age} = 11.82$ years), and the second on a sample of 355 adults (50.1% female; $M_{age} = 29.97$, $SD_{age} = 12.26$ years) from the non-clinical population. The Personality Inventory for ICD-11 (PiCD), the Personality Inventory for DSM-5 (PID-5), and the Circumplex of Personality Metatraits Questionnaire–Short Form (CPM-Q-SF) were administered in both studies, together with the PID-5BF+M algorithm for measuring a common (ICD-11 + DSM-5) six-domain model. Obtained empirical findings generally support our conceptual considerations that the ICD-11 model more comprehensively covered the area of personality pathology than the DSM-5 model, with Anankastia revealed as a more specific domain of personality disorders as well as more cohesively located within the overall personality structure, in comparison to Psychoticism. Moreover, the results corroborated the bipolar relations of Anankastia vs. Disinhibition domains. These results also correspond with the pattern of relationships found in reference to the Big Five domains of normal personality, which were also included in the current research. All our findings were discussed in the context of suggestions for the content and conceptualization of pathological personality traits that flow from the CPM as a comprehensive model of personality structure including both pathological and normal poles of personality dimensions.

Keywords: ICD-11, DSM-5, Big Five, Circumplex of Personality Metatraits, personality disorders

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***Correspondence:**
Włodzimierz Strus
w.strus@uksw.edu.pl

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INTRODUCTION

Shifting from categorical models toward a dimensional approach to personality disorders represents a historically significant step toward building an empirically driven (and theoretically justified) diagnostic system. That transformation can be seen in both public-health-focused authoritative classification systems—the fifth edition of the American Psychiatric Association's (APA) Diagnostic and Statistical Manual of Mental Disorders [DSM-5; (1)] with the Alternative Model of Personality Disorders (AMPD) and the 11th edition of the International Classification of Diseases (ICD-11) proposed by the World Health Organization (2). Each in its own way has made modifications to acknowledge the usefulness of dimensional features that are relevant to personality disorders and to incorporate these dimensional features into their diagnostic systems, endeavoring to improve their validity and clinical utility. Dimensionality can be argued for all mental disorders (at large), but for personality disorders, the case has a compelling rationale (3–7).

For describing personality disorders, both DSM-5 AMPD and ICD-11 propose five pathological dimensions that are related to the Big Five personality traits treated as a model of normal personality (also known as the Five-Factor Model—FFM for short). In that way, both dysfunctional models lean on a model that is extensively validated within research in the field of personality and individual differences (8). However, they differ in one point: DSM-5 AMPD distinguishes five traits that are maladaptive versions of the normal Big Five/FFM while ICD-11 includes Anankastia instead of Psychoticism, having two domains related to Conscientiousness and none related to Openness. In our paper, we seek to answer which pathological Big Five is more justified from the point of view of recent advances in research on personality structure, and especially from the Circumplex of Personality Metatraits [CPM; (9, 10)] that has been developed as the most comprehensive model in the personality traits research tradition.

Two Pathological Big Fives: Similarities and Differences Between ICD-11 and DSM-5 Dimensional Models of Personality Disorders

The AMPD was incorporated into Section III of DSM-5 for "Emerging Measures and Models" in need of further study (1), to offer a hybrid model for the diagnosis of personality disorders (PDs). Of crucial importance in the DSM-5 AMPD (hereafter called briefly the DSM-5) are two components: (1) Criterion A that refers to the overall level of personality functioning and (2) Criterion B that is constituted by the five-dimensional model of personality pathology. Moreover, both Criterion A and Criterion B are formulated together with recreated sets of criteria devised for six diagnostic categories of specific PDs. Similarly, to the DSM-5, the ICD-11 model of PDs, along with a rating of overall severity of personality dysfunction includes a five-domain dimensional model to provide an opportunity to point to where the focus of the disorder is manifested (2). An important point to recognize is that the ICD-11 has avoided a hybrid approach by not using any nosological entities (specific categories of PDs) and having a single dimension of severity for all personality dysfunctions, ranging from non-disordered personality at one end to severe personality disorder at the other (2, 11). The potential clinical utility of both multidimensional personality trait models lies in their ability to focus attention on multiple relevant areas of personality in each individual patient rather than focusing attention on the identification of a diagnostic label.

A significant origin, inspiration, and context of both DSM-5 and ICD-11 models of pathological traits is the FFM model of normal personality. Namely, pathological dimensions of DSM-5 and ICD-11 models are supposed to be the maladaptive extremes of the FFM normal personality dimensions. The DSM-5 trait model involves all five FFM domains (see **Figure 1**), namely Neuroticism, Introversion (opposite pole of Extraversion), low Conscientiousness, Antagonism (negative pole of Agreeableness) and Openness to Experience (for a review, see (12)]. Having incorporated these five prominent trait domains, the DSM-5 model links the broad literature of normal personality structure.

The same point largely applies to the ICD-11 trait model, however, with one important exception. The domain traits in the ICD-11 model have been carefully distilled from broad empirical evidence on personality disorders [for a more detailed overview, see (11)], and four of the traits are essentially the same as four of those identified by the DSM-5. The domains incorporated within the ICD-11 are likewise aligned with the FFM: Negative Affectivity with Neuroticism, Detachment with low Extraversion, Dissociality with low Agreeableness, Disinhibition with low Conscientiousness, and Anankastia with high Conscientiousness (13). Essentially, the ICD-11 trait structure can be seen then as a maladaptive variant of the FFM model of normal personality, except Openness to Experience that is not represented and, in some sense, also Conscientiousness that is represented in both of its extreme (maladaptive) poles by Disinhibition and Anankastia (see **Figure 1**).

Therefore, both models have five broad trait domains, but share only four, i.e., Negative Affectivity, Detachment, Disinhibition, and a fourth called Antagonism (in DSM-5) or Dissociality (in ICD-11). So, each model poses a fifth trait-domain that the other does not. The ICD-11 trait model does not include the Psychoticism domain, concerning proneness to eccentric or delusional behaviors, cognitions, and thought processes. In turn, the DSM-5 trait model does not include the domain of Anankastia, concerning perfectionism, rigidly sticking to the norm and obligations or emotional and behavioral constraint (e.g., inflexible control and perseveration). Psychoticism was omitted by ICD-11 not because it was seen as conceptually irrelevant, but rather, because psychotic phenomena are described in a separate part of the ICD. It is a part of a long-established history that WHO does not consider schizotypal to be a personality disorder phenomenon, and, as such, in the ICD it is classified as part of the schizophrenia spectrum disorders. Anankastia was omitted by DSM-5, although the closely related Compulsivity domain was included within the original DSM-5 proposal (14). However, in the end, this domain was deleted in favor of parsimony (15), and only two of the original trait-facets from this domain

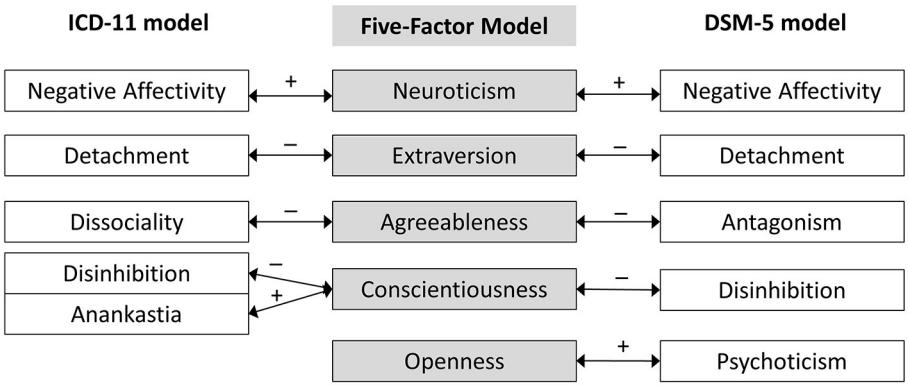

FIGURE 1 | Juxtaposition of the ICD-11 and DSM-5 models of pathological Big Five domains with the FFM model of normal personality structure.

were preserved in the final version of the DSM-5 model [i.e., rigid perfectionism and perseveration within Disinhibition and Negative Affectivity domains, respectively; (1)]. Taking into account that the obsessive-compulsive phenomenon is of crucial clinical importance due to it being the most common PD (16), these characteristics could be deemed underrepresented in the DSM-5 model, and, in general, the lack of Anankastia in the Pathological Big Five can be seen as neglecting an important domain.

Including Anankastia seems to be clinically justified and supported by analyses of this domain structure using the new ICD-11 model that produces strong support for good discrimination and validity of Anankastia across different cultural groups [discussed in more detail in (11)]. On the other hand, however, it breaks the elegant parallel to the normal FFM and the unipolar nature of dimensions differentiated in the pathological Big Five. Anankastia vs. Disinhibition seems to form a sort of one bipolarly defined dimension (at one pole by Anankastia and at the other pole by Disinhibition), which has been supported in many studies (17–20); see also (7)]. Therefore, one can say that the ICD-11 model is a model with five pathological domains, but only four pathological factors, making the bridge to the normal FFM less obvious.

Summing up, it seems that the DSM-5 model better fits the FFM of normal personality structure than the ICD-11 model (see **Figure 1**). However, on the other hand, the elegant Big Five structure of DSM-5 turned out to face some problems, including medium to large intercorrelations within the traits and problematic discriminant validity, particularly of the Psychoticism dimension (20–27). As noted by McCabe and Widiger (20), one compelling explanation can be that there is a general factor of personality disorder that saturates all measures of PD (15). However, if this is the reason for the problematic discriminant validity of the DSM-5 model then it would have also had a comparable impact on the ICD-11 dimensions, but as shown that was not the case (20). Thus, the status of Psychoticism within the Pathological Big Five remains vague. From a conceptual point of view, Psychoticism is expected to map specifically onto the FFM Openness domain (in particular onto some facets, e.g., fantasy, imagination), nonetheless many studies have shown that Psychoticism has unexpected weak relations to Openness, much weaker than its links to Agreeableness, Conscientiousness, Neuroticism, and to other DSM-5 traits [e.g., (20, 27)]. Of note is also that the metanalytical evidence (28) has shown that all three of the trait-facets from the Psychoticism domain (i.e., eccentricity, perceptual dysregulation, and unusual beliefs) reached meaningful associations with antisocial PD, although they are not part of the proposed criterion profile for this disorder (1). These findings are generally congruent with Eysenck's proposal (29) that disinhibition and psychosis fall on the same continuum, with the former indicating a progression toward the latter. A complementary concern is that the overall pattern of complex associations of Psychoticism could be in part due to its heterogeneity or non-specificity with respect to other traits in the model.

As we can see, there is a disagreement among different authority systems of PD diagnosis regarding the issue of Psychoticism or Anankastia. One can say that the simplest solution to this problem is not asking which one is better or more justified, but to integrate both Anankastia and Psychoticism within the joint six-domain model. Some such interesting efforts to harmonize the two PD systems and combined ICD-11 and DSM-5 trait domains into one model have indeed been recently made (30–32). However, on the other hand, eclecticism and integration are not always a good answer. Moreover, given that the Psychoticism vs. Anankastia problem reflects old APA vs. WHO controversy relating to the core of personality disorders, it seems to be worth asking (and search for the answers) which model of pathological dimensions—DSM-5's or ICD-11's—is more justified. We have made an attempt to answer this question from the perspective of the current state of the art in the knowledge of the structure of personality.

It is worth noting that the problematic discriminant validity obtained for the PID-5 assessment of the DSM-5 traits can be seen in some way as the FFM's heritage. Actually, the Pathological Big Five models—particularly in the DSM-5 version—suffer from similar problems as the FFM model of personality structure does (such as evidence challenging the orthogonality of five basic

dimensions). However, the past 20 years have seen the rise of a few serious alternatives to the predominant FFM that aimed to solve these problems. In this paper, we offer a change in the point of view and look at models of pathological personality dimensions from the perspective of recent advances in theory and research on personality structure.

Recent Advances in Personality Structure and the Circumplex of Personality Metatraits

The Big Five/FFM has recently been criticized for claims that the five personality dimensions are the very basic ones. There are two main lines of the critique: The first one challenges the number and proposes a sixth dimension [Honesty-Humility in HEXACO or Big Six model;(33)] while the second one challenges the orthogonality of basic dimensions and proposes two basic higher-order factors above the Big Five (34–36). Ashton and Lee (33) made a strong case for the Big Six/HEXACO model, demonstrating some advantages over the Big Five/FFM, and a better theoretical interpretation of personality variation (37–39). However, the pathological trait dimensions of the ICD-11 and DSM-5 are less congruent with the personality space of the Big Six/HEXACO than the Big Five/FFM. There is also no similarity between HEXACO and the joint (ICD-11 plus DSM-5) six-domain model of pathological traits (32) besides just the number of traits (six). In contrast, the second line of the criticism against the Big Five/FFM seems to be much more promising for the conceptualization of the pathological trait-domains. Digman (34) as well as DeYoung et al. (35) describe the highest level of personality structure as being a compound of two very broad superfactors (called metatraits) located above the Big Five: Alpha/Stability (constituted by Agreeableness, Conscientiousness, and Emotional Stability) and Beta/Plasticity [comprised of Extraversion and Intellect/Openness; see (36)]. This Two-Factor Model of personality corresponds reversely to two broad classes (or factors) of psychopathology, namely externalizing and internalizing problems (40, 41). In turn, on the basis of this model, Strus et al. (42) have developed the Circumplex of Personality Metatraits (CPM), which has already manifested a strong integrative potential (9, 36, 43) and seems to be worth trying to use in the conceptualization of the pathological traits.

Within the CPM model, Alpha/Stability and Beta/Plasticity are treated as orthogonal dimensions of the circumplex space and are complemented by two other metatraits (see **Figure 2**). The first of them is Gamma/Integration being a reflection of the General Factor of Personality (GFP), which it is no longer proposed to be located at the top of the hierarchy of personality traits but at the same level as Alpha/Stability and Beta/Plasticity in the circumplex structure. Gamma/Integration encompasses the most functional vs. most maladaptive configuration of personality traits. In turn, the last, fourth dimension fully complements the conceptual space of the circumplex—Delta/Self-Restraint is derived from high/low Stability vs. low/high Plasticity, broadly reflecting findings of research on personality structure [for an overview, see (9, 10, 43)].

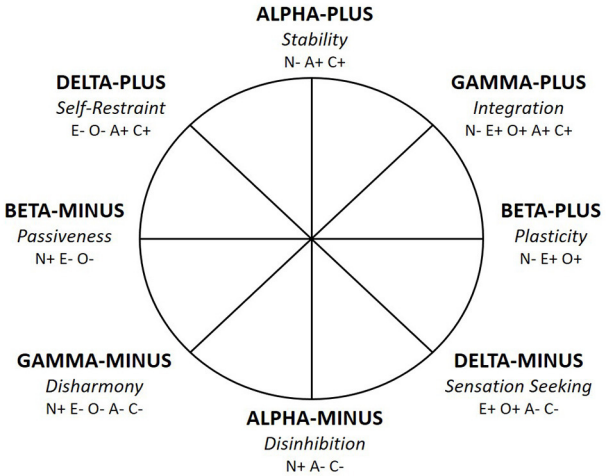

FIGURE 2 | The Circumplex of Personality Metatraits—revised (10). N, Neuroticism; E, Extraversion; O, Openness to Experience; A, Agreeableness; C, Conscientiousness; + denotes the positive pole of a trait; – denotes the negative pole of a trait.

The CPM is a holistic model of personality, combining the dynamic between health and pathology. It is worth noting in this context that recent refinement of the model brings relocation of Neuroticism from Alpha to Gamma (10). As such, the CPM clearly encompasses three main aspects of the Neuroticism domain: anxiety-based core features located centrally within Gamma-Minus; externalizing-hostile features located within Alpha-Minus; and an internalizing-self-conscious-dependent (or submissive) features within Beta-Minus. This relocation of Neuroticism enhanced the meaning of Gamma (44) as the metatrait reflecting the level of well-being and mental-health vs. psychopathology, with Gamma-Minus/Disharmony being the counterpart of the general factors of psychopathology (*p* factor) and general factor of personality disorder [g-PD; (45, 46)]. In turn, Delta (now practically unrelated to Neuroticism or related to its medium level) became the metatrait that delineates a boundary between healthy and problem prone personality, as well as determines the type of psychological problems when the low intensity of Gamma is the case. A full description of each pole of four metatraits is provided in **Table 1** (see also **Figure 2**).

The key advantage of the CPM is that it serves as a matrix for a comprehensive, wide-ranging theoretical integration and precise testing of other models. The CPM has amassed a considerable body of empirical support, including testing a broad set of constructs described by various concepts or theories of personality, emotion and motivation, mental health, and psychopathology (10, 47–50). Changing the perspective of analysis from hierarchical to circumplexical provides such a clarification framework for structural testing of constructs from the same level of personality organization

TABLE 1 | Description of the eight metatraits in the Circumplex of Personality Metatraits revised.

Metatrait	Big five configuration	Meaning
Delta-Plus (Self-Restraint)	E–, O–, A+, C+ (N_0)	Low emotionality (both negative and positive), high behavioral and emotional control, meticulousness, and perfectionistic tendencies as well as modesty, conventionality, and severe social adjustment.
Alpha-Plus (Stability)	N–, A+, C+ (E_0, O_0)	Stability in the area of emotional, motivational, and social functioning, expressed as a general social adaptation tendency, an ethical attitude toward the world, benevolence, and calmness, as well as the ability to delay gratification, diligence and perseverance.
Gamma-Plus (Integration)	N–, E+, O+, A+, C+	Well-being, a warm and prosocial attitude toward people, both intra- and interpersonal balance and harmony; serenity, openness to the world in all its richness, as well as endurance and effectiveness in attaining important goals.
Beta-Plus (Plasticity)	N–, E+, O+ (A_0, C_0)	Cognitive and behavioral openness to change and engagement to new experiences, a tendency to explore, self-confidence, initiative and invention in social relations, as well as enthusiasm, and an orientation toward personal growth.
Delta-Minus (Sensation-Seeking)	E+, O+, A–, C– (N_0)	Broadly defined impulsiveness, recklessness, emotional volatility, stimulation seeking and risk taking; self-enhancement and hedonistic tendencies as well as interpersonal dominance and expansiveness.
Alpha-Minus (Disinhibition)	N+, A–, C– (E_0, O_0)	High level of antisocial tendencies underpinned by unsustainability, low frustration tolerance, and egotism, as well as aggression and antagonism toward people, social norms, and obligations.
Gamma-Minus (Disharmony)	N+, E–, O–, A–, C–	Inaccessibility, coldness and distrust in interpersonal relations; negative affectivity and low self-worthiness; depressiveness, pessimism, and proneness to suffer from psychological problems.
Beta-Minus (Passiveness)	N+, E–, O– (A_0, C_0)	Social avoidance and timidity, together with submissiveness and dependency in close relationships; cognitive and behavioral passivity and inhibition; some type of stagnation, apathy, and tendency for anhedonia.

*For abbreviations see **Figure 2**; 0 denotes a medium level of trait intensity; + denotes a high level of trait intensity; – denotes a low level of trait intensity. Adapted and modified from Strus and Cieciuch (9, 10).*

and specifying their mutual relationships. Therefore, the CPM broad conceptual framework along with its circumplex rather than hierarchical structure enables the main pathological traits to be identified and their mutual relationships to be precisely described.

The Current Study: The Circumplex of Personality Metatraits as a Reference Frame for the Pathological Big Five Models

Building upon the CPM structure, in the present study we look at the possibility to capture the dimensional structure of both PD models in a broader conceptual perspective, especially to clarify and systematize their mutual relationships, and, therefore to enrich the discussion on potential venues for their integration or choice between them. The circumplex matrix of the CPM, which is claimed to capture very basic dimensions of personality, provides the opportunity for a thorough comparison of two catalogs of pathological personality trait domains derived from the ICD-11 and DSM−5 models. The reference frame offered by CPM especially helps to assess how comprehensively each of the two competitive Pathological Big Five models conceptualizes and captures the maladaptive side of personality.

In particular, changing the reference frames from the FFM to the CPM allows us to address the following problems: (1) intercorrelations between pathological personality dimensions can be precisely theoretically predicted due to the circumplex nature of the CPM; (2) the structural comprehensiveness of a model that differentiates some dimensions to describe a given phenomenon (in this case personality disorders) can be assessed, as the CPM can help to identify some "empty spaces" in the structure that are not captured by any dimensions differentiated in a given model; (3) redundancy or overlapping of some dimensions or, in other words, concerns with respect to discriminant validity of the dimensions distinguished in a given model can be examined. If some constructs could not be theoretically located in one specific place of the CPM model (or there are two constructs placed in the same location), there is a risk that they share their content with several dimensions, and, as such should be reconceptualized. Notably, being a reflection of the integrative potential of the CPM, correlations between traits are allowed—indeed, they are even precisely determined—providing a direct test of connections between all trait domains.

Given its circumplex structure, the CPM as a broad model of personality structure creates a system of coordinates integrating various constructs. Specifically, it enables empirical testing of hypotheses regarding precisely formulated angles and coordinates of other variables. In the current research, we delineated theoretical locations of two Pathological Big Fives models, i.e., (A) the ICD-11 model and (B) the DSM-5 model. Then, we tested our predictions examining the congruence between theoretical expectations and empirical locations of the pathological personality traits in the CPM framework additionally including (C) the conjoint six-domain model.

Figure 3 presents the theoretical location of pathological traits distinguished in the DSM-5 and ICD-11 model within the CPM. Regarding four shared by the DSM-5 and ICD-11 domains, their locations within the CPM model are analogous. Negative Affectivity domains (from both DSM-5 and ICD-11) are expected (H1) to be most strongly related to Gamma-minus, as all of them include a tendency to experience negative emotions, low self-esteem, or distrust (1, 2). Detachment (from both DSM-5 and ICD-11) is predicted (H2) to be most strongly related to

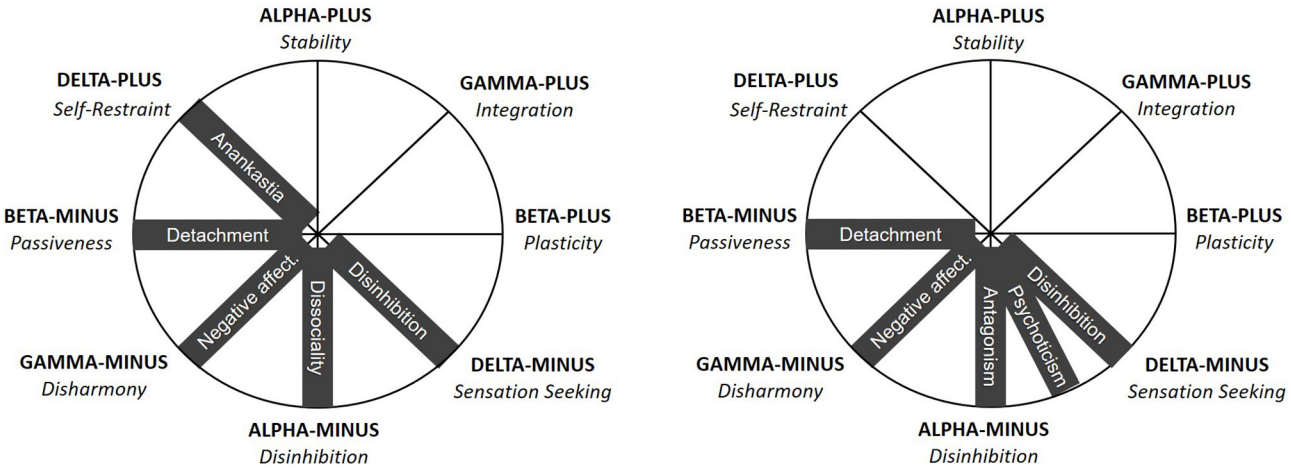

FIGURE 3 | Location of the pathological traits from the ICD-11 (on the left) and DSM-5 (on the right) models within the Circumplex of Personality Metatraits. Pathological traits are depicted on black background. The location of the Disinhibition domain in both ICD-11 and DSM-5 models within Delta-Minus/Sensation Seeking rather than Alpha-Minus/Disinhibition is justified by the meaning of these dimensions.

Beta-Minus, as all these dimensions contain social avoidance, emotional indifference, or a tendency for anhedonia (1, 2). In turn, Antagonism (in DSM-5) and Dissociality (in ICD-11) are predicted (H3) to be located in Alpha-Minus, as all of them include antisocial tendencies, aggressiveness, and self-centeredness (1, 2). Finally, Disinhibition (from both DSM-5 and ICD-11) is supposed to (H4) be placed in Delta-Minus, as these dimensions share common features of impulsivity, recklessness, and volatility [or risk taking; (1, 2)]. The latter location seems to be justified in terms of psychological meaning, despite the fact that the "disinhibition" label in the CPM model has been assigned to Alpha-Minus rather than Delta-minus (see **Figures 2**, **3**).

However, the most interesting are the location of the last, fifth dimensions of both pathological trait models. Regarding the DSM-5 model, the location of the Psychoticism domain within the CPM space seems to be ambiguous. On one hand, it is supposed to be the maladaptive variant of high Openness to Experience and one of its facets concerns eccentric behaviors, which suggests that the location of the Psychoticism domain is between Beta-Plus and Delta-Minus. On the other hand, Psychoticism is a pathological trait, which is crucial for schizotypal disorders and therefore related to Detachment/Introversion. This, together with the revealed pattern of correlations between Psychoticism and other DSM-5, as well as FFM, traits suggest its location somewhere below the Delta-Minus dimension. Considering also Eysenck's (29) proposal—relating Psychoticism with antisocial tendencies—we finally hypothesized Psychoticism (H5) as being located between Delta-Minus and Alpha-Minus. However, this location seems to be less specific or justified, which corresponds with greater heterogeneity of Psychoticism with respect to other dimensions in the DSM-5 model and suggests that Psychoticism—as concerning mainly cognitive dysregulations—could adhere to the cognitive or intellectual-ability area of functioning rather than to (maladaptive) personality traits. For example, having references to delusions [e.g., thought-control experiences; (1)] is particularly problematic, because delusions are not typically understood to be (related to) personality traits (51). In contrast, Anankastia from the ICD-11 model seems to be cohesively related (H6) to Delta-Plus, as both dimensions include such characteristics as perfectionistic tendencies, concern with following rules and norms as well as high emotional and behavioral control (2).

Therefore, according to the above conceptual consideration, the ICD-11 model demonstrates some superiority over the DSM-5 model in terms of structural validity within the theoretical integration matrix provided by the CPM model. The DSM-5 model seems to fail with the 2nd and 3rd criteria formulated above. Namely, it contains a gap in covering the whole pathological personality space, with the underrepresentation of Delta-Plus characteristics. In turn, Psychoticism reveals problems with discriminant validity, overlapping with other DSM-5 domains (in particular Disinhibition and Antagonism) and makes the section between Alpha-Minus and Delta-Minus within the CPM excessively dense or overrepresented (see **Figure 3**). In contrast, the ICD-11 trait domains seem to cover cohesively the whole space of potentially problematic personality characteristics—from Delta-Minus to clockwise for Delta-Plus—fulfilling all three criteria formulated above (see **Figure 3**). Then, the ICD-11 model also embeds the Delta-Plus pole, and such assignment of Anankastia and Disinhibition as reflecting opposite poles of Delta suggests that they constitute a bipolar dimension. This is in line with both previous research on the ICD-11 model (7, 18–20), as well as the CPM assumption that Delta is an ambiguous dimension from a health-pathology perspective; as only Delta holds possibly pathological characteristics on both of its poles, with the other three metatraits (i.e., Alpha, Beta and Gamma) containing healthy and adaptive features on one (i.e., positive) pole as the opposite of the maladaptive

characteristics located on the other (i.e., negative) one (see **Figure 2**).

Obviously, the above conceptual analyses need empirical verification, and the current research aims to provide a thorough test of these theoretical predictions. We examine the congruence between theoretical expectations and empirical locations within the CPM of the pathological personality traits from the ICD-11 and DSM-5 models, as well as from the joint six-domain model (32). As a point of departure, we verified the circumplex structure of the CPM itself, as well as the very possibility of locating each of the traits from the ICD-11, DSM-5, and six-domain models as external variables within the CPM.

Additionally, also the FFM dimensions were included in our study. The first purpose of that was to test the ICD-11 and DSM-5 Pathological Big Five models in reference to the FFM dimensions of normal personality. The second goal was to replicate previous findings concerning the CPM vs. FFM relationships, as well as to provide a comprehensive picture of relationships between all three Big Five models (FFM, DSM-5, and ICD-11) within the CPM space.

METHODS

Participants and Procedure

Two studies were conducted. The sample in Study 1 consisted of 242 adults (52.9% female; M_{age} = 30.63 years, SD_{age} = 11.82 years), whereas participants in Study 2 were 355 adults (50.1% female; M_{age} = 29.97 years, SD_{age} = 12.26 years) mostly from central Poland. The research was conducted using a self-report paper-and-pencil method, with the assistance of trained psychology students. In both studies, similar sets of questionnaires were used, namely the Personality Inventory for ICD-11, the Personality Inventory for DSM-5 and the Circumplex of Personality Metatraits Questionnaire—Short Form[1]. Additionally, in Study 1 the Big Five Inventory-2 was administered in order to assess the FFM traits. Therefore, Study 2 is a replication of Study 1. For the sake of this methodological analogy, the methods and results of both studies were presented parallel rather than in sequence.

The research complied with the recommendations of the Commission of Ethics and Bioethics at the Cardinal Stefan Wyszyński University in Warsaw. The institutional guidelines for self-report questionnaire research on adults did not require formal approval by the Commission for this study. All participants provided their oral consent.

Measures

Personality Inventory for ICD-11 (PiCD)

The PiCD [(17); Polish adaptation: (52)] is a 60-item self-report measure designed to assess the dimensional trait model proposed for the ICD-11 (2) containing five broad personality domains: Negative Affectivity, Disinhibition, Detachment, Dissociality, and Anankastia. Each domain contains 12 items rated on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). In previous studies, the PiCD has been found to show adequate psychometric properties [e.g., convergent, discriminant, and structural validity; (17, 18)]. The Cronbach's alpha coefficients for the five PiCD scales in the current samples ranged from 0.72 to 0.88 (M_α = 0.82) in Study 1, and from 0.79 to 0.86 (M_α = 0.83) in Study 2 (see **Supplementary Material**).

Personality Inventory for DSM-5 (PID-5)

The PID-5 [(15); Polish adaptation: (53)] is a 220-item self-report measure capturing 25 traits across five domains of pathological personality according to Criterion B of the DSM-5 AMPD (1): Negative Affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism. Items are rated on a 4-point Likert scale from 0 (*very false or often false*) to 3 (*very true or often true*). The PID-5 has been found to show adequate psychometric properties across clinical and non-clinical samples (15, 54, 55). The current study used only five domain-level scales (the 25 facets subscales were dropped) and these domain scores were calculated in line with the original five-factor structure of the PID-5 (15). Moreover, on the basis of the PID-5 items, we employed the algorithm with a 36-item modified PID5BF+ scoring key for the 6-domain model (6 items per domain) provided by Bach et al. (32). Reliability of original PID-5 domain scales, as measured by Cronbach's alpha coefficients, ranged from 0.87 to 0.95 (M_α = 0.93) in Study 1, and from 0.90 to 0.95 (M_α = 0.94) in Study 2. Reliabilities for the six-domain model ranged from 0.66 to 0.80 (M_α = 0.74) in Study 1, and from 0.65 to 0.77 (M_α = 0.74) in Study 2 (see **Supplementary Material**).

Circumplex of Personality Metatraits Questionnaire (CPM-Q-SF)

The CPM-Q-SF (10) is a 72-item inventory capturing a variety of human behaviors, feelings, and thoughts to assess eight metatraits according to the CPM: Alpha-Plus/Stability, Alpha-Minus/Disinhibition, Beta-Plus/Plasticity, Beta-Minus/Passiveness, Gamma-Plus/Integration, Gamma-Minus/Disharmony, Delta-Plus/Self-Restraint, and Delta-Minus/Sensation Seeking (for the meaning of the metatraits see **Table 1**). Each metatrait contains nine items rated on a 5-point Likert scale from 1 (*completely disagree*) to 5 (*completely agree*). In previous studies, the CPM-Q-SF has been found to show adequate psychometric properties (10, 49, 56). The Cronbach's alpha coefficients for the eight CPM-Q-SF scales in the current samples ranged from 0.69 to 0.86 (M_α = 0.78) in Study 1, and from 0.70 to 0.87 (M_α = 0.79) in Study 2 (see **Supplementary Material**).

The Big Five Inventory-2 (BFI-2)

The BFI-2 (57) is a revised version of the Big Five Inventory, one of the most commonly used measures of the FFM (58). The BFI-2 contains 60 items assessing Neuroticism, Extraversion, Agreeableness, Conscientiousness, and Openness as well as the total of their 15 facets. Each domain contains 12 items and each facet is measured by four items rated on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). In previous studies, the BFI-2 has been found to show adequate psychometric properties, allowing assessment of key personality traits in a

[1]Other variables measured in the samples that were not utilized in the current analyses were beyond the scope of the presented paper.

concise and comprehensible way (57). Reliability of these scales in the current sample (Study 1) ranged from 0.82 to 0.90 (M_α = 0.87) for the domain scales, and from 0.64 to 0.86 (M_α = 0.76) for the facet subscales (see **Supplementary Material**).

Statistical Approach

To provide a full test of the hypotheses regarding relationships of the ICD-11, DSM-5, and FFM traits with the CPM metatraits, we followed the three-step procedure for analysis of circumplex models (49). Importantly, each step is at the same time a prerequisite for the subsequent analyses. These three steps are: (1) verification of the CPM circumplex structure using a Structural Equation Model (SEM) based on the circular stochastic process model; (2) testing the possibility to locate external variables within the empirical circumplex of the CPM on the basis of the Structural Summary Method (SSM); and, finally, (3) testing congruence between theoretical expectations and empirical locations of whole ICD-11, DSM-5, and FFM models within the CPM structure using the Procrustes-based comparative procedure. The details of each step are fully described in Rogoza et al. (49) paper. The SEM and SSM were carried out in R in CircE (59) and circumplex (60) packages, while the Procrustes procedure was conducted in Orthosim 3 (61). To evaluate SEM, we used the commonly used criteria of good model fit: Comparative Fit Index (CFI), Tucker-Lewis Index (TLI) and Goodness of Fit Index (GFI) > 0.90, as well as Adjusted Goodness of Fit Index (AGFI) > 0.85, and Standardized Root Mean Squared Residual (SRMR) < 0.10 (62, 63), but with one exception. As the widely used Root Mean Square Error of Approximation (RMSEA) metric seems to produce artificially high estimates in circumplex models, we used a cutoff of < 0.13 as suggested by Gurtman and Pincus (64). For evaluation of SSM results, we used the commonly used criteria: model fit estimate > 0.80; elevation < 0.15 (i.e., indicating no presence of the general factor) and amplitude > 0.15 (i.e., distinctiveness of profile) that denote that an external variable can be meaningfully located within a given circumplex model (60). Finally, at the third step, analyses with the application of Procrustes rotation yield two sorts of congruence coefficients. First, overall solution congruence (i.e., does the whole model fit within the hypothesized location), and, second, specific congruence (i.e., does a specific variable fit within the hypothesized location). Congruence coefficients above 0.85 indicate an acceptable fit between the empirical and theoretical matrices, and those above 0.95 indicate excellent congruence (61, 65–67). Additionally, explained variance coefficients (R^2) were calculated for indicators of each trait and metatraits to assess their communality in the joint two-factor CPM space.

Of note, at the third step, the procedure makes it possible to compare an empirically obtained factor matrix with a theoretically predicted structure (target). In the current research, the target matrix represents the theoretically predicted locations of the CPM, ICD-11, DSM-5, and FFM variables within the CPM circumplex space (see **Figures 1**, **2**). The theoretical locations were acquired by assigning an angle to each variable as the commonly used specification of locations within circumplex models (65), and then estimating factor loadings on two factors based on a given angle. These factors represent the two major axes of the CPM space (i.e., the bipolar metatraits Alpha and Beta), with loadings being the sines and cosines of particular angles. The specification begins from Beta-Plus, which has an angle of 0° and loadings resulting from this angle: 0.00 on the first factor (Alpha) and 1.00 on the second one (Beta). Then, it is continued counterclockwise for the other seven metatraits, as well as the ICD-11, DSM-5, and FFM traits. The empirical factor matrices were obtained using Principal Axis Factoring (PAF) of a given set of jointly analyzed variables with target Procrustes rotation; in this way, two factors as the basic axes of the CPM model were extracted. The procedure of testing congruence between empirical locations and theoretical expectations within circumplex structure was run three times in each sample taking the three different sets of variables. In Study 1 it was: CPM, FFM, and ICD-11 variables (Analysis A); CPM, FFM, and DSM-5 variables (Analysis B); CPM, FFM, and joint six-domains variables (Analysis C). The same was applied for Study 2 except for the FFM variables that were not present in this study.

RESULTS

Full set of descriptive statistics (i.e., mean and standard deviation), reliability estimates for scale scores, and (inter)correlations among variables used in both Study 1 and Study 2 can be found in **Supplemental Material**.

The ICD-11, DSM-5, and Six-Domain Models of Pathological Traits in Context of the FFM Normal Personality Structure

At the outset, the correlation analysis was performed testing the ICD-11 and DSM-5 pathological domains in reference to the Big Five/FFM dimensions of normal personality. **Table 2** depicts obtained correlation coefficients additionally including six-domain algorithm scores as well as facets of the FFM domains.

The ICD-11 traits showed a clear and meaningful pattern of associations when related to the FFM traits, reflecting good convergent and discriminant validity. Namely, Negative Affectivity, Detachment, Dissociality, as well as Disinhibition vs. Anankastia domains showed medium to strong empirical convergence with Neuroticism, Extraversion, Agreeableness, and Conscientiousness, respectively. However, the correlations of Anankastia with Conscientiousness were weaker (r = 0.29), due to the low correlations between Anankastia and the most proactive facet of Conscientiousness (i.e., Productiveness), although still the strongest one compared to the other FFM domains. Moreover, attention also attracts the correlation of Disinhibition with the emotional lability facet of Neuroticism.

The DSM-5 domains also revealed a pattern of relationships with FFM traits that was relatively convergent with expectations, however, it was not as valid and clear as in the case of the ICD-11 traits. Negative Affectivity, Antagonism, and Disinhibition showed good convergent and discriminant validity, but Detachment and Psychoticism did not. As far as the strong cross-correlation with Neuroticism (and especially with its Depression facet) revealed by Detachment is understandable, given its common facets with Negative Affectivity (15),

TABLE 2 | Correlations of FFM domains and facets with ICD-11 and DSM-5 domains in Study 1 ($N = 242$).

		ICD-11 model					DSM-5 model					Common six-domain model					
		NA	**DT**	**DL**	**DN**	**AK**	**NA**	**DT**	**AN**	**DN**	**PS**	**NA**	**DT**	**AN**	**DN**	**AK**	**PS**
Domains	NEUROTICISM	0.74	0.26	−0.02	0.32	0.07	0.66	0.50	0.15	0.08	0.27	0.65	0.31	0.05	0.34	0.22	0.18
	EXTRAVERSION	−0.37	−0.63	0.27	−0.08	−0.14	−0.32	−0.54	0.21	0.10	−0.11	−0.25	−0.45	0.14	−0.12	−0.13	−0.02
	AGREEABLENESS	−0.18	−0.23	−0.56	−0.35	0.13	−0.26	−0.30	−0.53	−0.24	−0.35	−0.13	−0.29	−0.42	−0.34	−0.18	−0.27
	CONSCIENTIOUSNESS	−0.26	−0.14	−0.19	−0.66	0.29	−0.27	−0.24	−0.29	−0.53	−0.36	−0.16	−0.16	−0.23	−0.55	0.15	−0.31
	OPENNESS	−0.14	−0.30	0.08	−0.03	0.02	−0.17	−0.28	0.09	0.05	0.01	−0.14	−0.30	0.04	−0.04	−0.11	0.07
Facets	N_Anxiety	0.67	0.30	−0.10	0.16	0.19	0.55	0.46	0.06	−0.04	0.20	0.57	0.31	0.01	0.20	0.20	0.12
	N_Depression	0.66	0.38	−0.08	0.15	0.19	0.61	0.58	0.01	−0.04	0.22	0.58	0.41	−0.04	0.21	0.24	0.11
	N_Emotional Volatility	0.54	−0.04	0.12	0.51	−0.21	0.52	0.22	0.31	0.30	0.28	0.49	0.08	0.17	0.46	0.11	0.22
	E_Sociability	−0.29	−0.63	0.23	−0.01	−0.16	−0.22	−0.47	0.22	0.09	−0.06	−0.17	−0.43	0.14	−0.08	−0.11	0.01
	E_Assertiveness	−0.35	−0.45	0.36	−0.11	−0.06	−0.28	−0.38	0.28	0.06	−0.06	−0.22	−0.30	0.21	−0.15	−0.07	0.00
	E_Energy Level	−0.33	−0.59	0.09	−0.09	−0.14	−0.35	−0.58	0.04	0.11	−0.18	−0.30	−0.48	0.01	−0.07	−0.17	−0.07
	A_Compassion	0.04	−0.21	−0.52	−0.28	0.16	−0.05	−0.21	−0.44	−0.27	−0.31	0.06	−0.25	−0.36	−0.26	−0.07	−0.27
	A_Respectfulness	−0.14	−0.03	−0.42	−0.35	0.23	−0.21	−0.15	−0.43	−0.24	−0.28	−0.11	−0.12	−0.33	−0.30	−0.14	−0.20
	A_Trust	−0.32	−0.30	−0.42	−0.23	−0.06	−0.38	−0.38	−0.43	−0.09	−0.27	−0.27	−0.33	−0.34	−0.29	−0.22	−0.18
	C_Organization	−0.15	−0.11	−0.17	−0.57	0.29	−0.16	−0.14	−0.26	−0.51	−0.27	−0.07	−0.06	−0.17	−0.50	0.20	−0.24
	C_Productiveness	−0.35	−0.18	−0.08	−0.53	0.13	−0.39	−0.35	−0.23	−0.36	−0.31	−0.30	−0.26	−0.18	−0.48	0.02	−0.23
	C_Responsibility	−0.18	−0.08	−0.24	−0.61	0.33	−0.16	−0.14	−0.28	−0.48	−0.36	−0.05	−0.10	−0.27	−0.43	0.14	−0.35
	O_Intellectual Curiosity	−0.19	−0.21	0.13	0.04	−0.07	−0.18	−0.20	0.13	0.18	0.01	−0.16	−0.20	0.07	0.01	−0.18	0.05
	O_Aesthetic Sensitivity	0.02	−0.16	−0.09	−0.02	0.07	−0.03	−0.12	−0.05	−0.04	0.06	−0.02	−0.19	−0.08	0.01	−0.06	0.10
	O_Creative Imagination	−0.22	−0.39	0.21	−0.08	0.01	−0.23	−0.38	0.18	0.01	−0.07	−0.20	−0.34	0.14	−0.12	−0.03	0.00

NA, Negative Affectivity; DT, Detachment; DN, Disinhibition; DL, Dissociality; AN, Antagonism; AK, Anankastia; PS, Psychoticism; N, Neuroticism; E, Extraversion; A, Agreeableness; C, Conscientiousness; O, Openness to Experiences. Correlations > |0.12| are significant at $p < 0.05$ (two-tailed).

Psychoticism showed zero correlations with the Openness domain (which is supposed to be its counterpart), as well as with all of its three facets. Instead, Psychoticism revealed negative correlations with Conscientiousness, Agreeableness, as well as positive (although weaker) correlations with Neuroticism domains and facets. Also, the six-domain algorithm revealed some problems with convergent and discriminant validity, particularly in the case of Psychoticism and Anankastia. Regarding Psychoticism, its problems are very analogous to the above-mentioned. In turn, Anankastia showed a minor correlation with Conscientiousness, being more strongly related with Neuroticism (particularly with Depression facet) and even (negatively) with Agreeableness. Summing up, the obtained results indicated the ICD-11 model as showing a generally clearer and more theoretically cohesive pattern of relationships with the FFM model than DSM-5 and six-domain models.

ICD-11, DSM-5, and Six-Domain Models of Pathological Traits (and FFM Normal Traits) in Context of the CPM Model of Personality Structure

Step 1: Testing the CPM Structure

First, we tested whether the CPM meets the criteria of the circumplex model with equal spacing and equal communalities. The results obtained in Study 1 supported the circumplex structure of the model: $\chi^2(24) = 70.28$; $p < 0.001$; CFI = 0.948; TLI = 0.940; GFI = 0.955; AGFI = 0.932; RMSEA = 0.089; SRMR = 0.080. These results were replicated in Study 2, with the following fit indices: $\chi^2(24) = 104.61$; $p < 0.001$; CFI = 0.941; TLI = 0.931; GFI = 0.947; AGFI = 0.920; RMSEA = 0.097; SRMR = 0.086. Therefore, circumplex internal structure of the CPM model was confirmed in both studies, based on the suggestion by Gurtman and Pincus [(64); see: (49)], that for circumplex models the cutoff of RMSEA < 0.13 can be acceptable. Other model fit indicators met the usual criteria described above. Such results provide the possibility to move onto the next step – to locate external variables within the circumplex space.

Step 2: Testing Possibilities of Location of the ICD-11, DSM-5, Six-Domain, and FFM Traits Within the CPM Model

The results of the SSM obtained in Study 1 (see **Table 3**) suggest that all of the traits of the ICD-11, DSM-5, six-domain model, and FFM were well-fitted to the circumplex of the CPM model. All of the amplitude values were above 0.15, suggesting that each profile is clearly distinct, and all values of elevation were below 0.15, suggesting no or very little influence of the general factor (as CPM does not assume the presence of any sort of general factor). Also, given that model fit values for all traits were above 0.88, all of the external variables' correlation profiles were well-fitted to the cosine curve reflecting the CPM model.

These results were replicated (without FFM traits) in Study 2—besides one exception (i.e., Anankastia from the 6-domain model), all of the external variables' correlation profiles were well-fitted to the cosine curve reflecting the CPM model (see **Table 3**). All model fit values > 0.90; elevation > 0.15 (suggesting no general factor) and amplitude > 0.15 (reflecting distinctiveness of profiles) indicate that each of the external variables can be meaningfully located within the CPM. Therefore, results obtained in both studies almost fully confirmed the possibility for the analyses in step 3, that is, to precisely test the hypotheses concerning the location of all traits from the given model within the joint circumplex space. With regard to one variable that did not meet the criteria of step 2 in Study 2—i.e., Anankastia from the 6-domain model revealing low fit and distinctiveness—we decided to continue the analyses in step 3 to provide more precise insight into the level of its incongruence, although in this case we could withhold analyses on the second step.

Step 3. Testing the Congruence Between Empirical and Theoretical Locations of the ICD-11, DSM-5, Six-Domain, and FFM Models Within the CPM Space

At this stage, we applied Procrustes-based comparative analyses (described in the Statistical Approach subsection) to precisely test the hypotheses concerning the location of the ICD-11, DSM-5, and common six-domain models of pathological traits (as well as the FFM model of normal traits in Study 1) within the CPM. In Study 1 PAF led to the extraction of two factors with eigenvalues >1 and accounting for 56.8% (Analysis A: CPM, ICD-11, and FFM), 59.0% (Analysis B: CPM, DSM-5, and FFM), and 53.3% (Analysis C: CPM, six-domain model, and FFM) of the variance. The eigenvalues of the first two factors were 5.75 and 4.48 (Analysis A), 6.17 and 4.45 (Analysis B), and 5.93 and 4.19 (Analysis C). Correlation coefficients within the obtained pairs of regression-based factor scores (after Varimax rotation) were−0.01, 0.00, and 0.02 (for the first, second, and third analysis, respectively), which justifies treating them as orthogonal axes of the circumplex space.

Table 4 depicts the theoretical (target) and empirical matrices observed in three analyses, together with congruence coefficients between these matrices for overall models as well as for each specific variable (see also **Figure 4** for graphical presentation of the results). In terms of the overall model, including both major factors (axes), the congruence coefficients obtained by comparing the observed and target matrices exceeded 0.95 in Analysis A and Analysis B, whereas in Analysis C (six-domain and FFM models) these values were below 0.95, although above 0.90. Regarding CPM and FFM variables, all congruencies were 0.98 or higher and in many cases reached 1.00 (in all three analyses), which indicate an excellent fit to the theoretical assumptions. Also satisfactory in most cases, although visibly lower, were values obtained for ICD-11, DSM-5, and the six-domain model. Regarding the ICD-11 model (Analysis A), worth noting is the perfect match of the Anankastia domain. On the other hand, one domain revealed low congruence, namely Disinhibition with a coefficient below 0.85 and a deviation of 39.7°. The DSM-5 model fared somewhat worse (Analysis B), as two of its traits obtained congruence coefficients below 0.85. They were Psychoticism and Detachment with deviations of 38.3 and 39.7°, respectively. The worst congruence with the expected location revealed traits from the six-domain model in Analysis C, with a trivial fit of Anankastia (displacement of 81.3°), a low fit of Disinhibition (displacement of 45.0°), and an only slightly above 0.85 fit of

TABLE 3 | Structural summary profiles of the ICD-11, DSM-5, six-domain model, and FFM traits projected on the circumplex space of the CPM for Study 1 (left side) and Study 2 (right side).

Trait	Elevation		Amplitude		Fit	
ICD-11						
Negative Affectivity	0.05 [0.01, 0.09]	0.04 [0.01, 0.08]	0.45 [0.35, 0.55]	0.51 [0.45, 0.57]	0.959	0.969
Detachment	0.01 [−0.03, 0.04]	0.02 [−0.01, 0.05]	0.49 [0.40, 0.58]	0.46 [0.39, 0.54]	0.991	0.990
Dissociality	0.10 [0.06, 0.14]	0.07 [0.03, 0.10]	0.35 [0.27, 0.43]	0.39 [0.31, 0.46]	0.950	0.945
Disinhibition	0.03 [−0.00, 0.08]	0.00 [−0.03, 0.03]	0.46 [0.38, 0.54]	0.51 [0.44, 0.59]	0.951	0.981
Anankastia	0.05 [0.00, 0.10]	0.07 [0.04, 0.10]	0.31 [0.23, 0.40]	0.35 [0.27, 0.43]	0.883	0.935
DSM-5						
Negative Affectivity	0.10 [0.07, 0.14]	0.06 [0.03, 0.10]	0.47 [0.38, 0.56]	0.48 [0.41, 0.55]	0.976	0.977
Detachment	0.06 [0.03, 0.09]	0.04 [0.01, 0.07]	0.54 [0.46, 0.61]	0.57 [0.50, 0.63]	0.969	0.988
Antagonism	0.12 [0.08, 0.16]	0.07 [0.04, 0.10]	0.39 [0.32, 0.47]	0.44 [0.37, 0.50]	0.948	0.980
Disinhibition	0.04 [0.01, 0.08]	0.03 [−0.00, 0.05]	0.45 [0.37, 0.53]	0.49 [0.42, 0.56]	0.955	0.965
Psychoticism	0.11 [0.07, 0.14]	0.06 [0.03, 0.09]	0.32 [0.23, 0.40]	0.33 [0.26, 0.41]	0.986	0.942
Common six-domain model						
Negative Affectivity	0.07 [0.03, 0.10]	0.05 [0.02, 0.09]	0.39 [0.30, 0.49]	0.30 [0.22, 0.38]	0.968	0.933
Detachment	0.03 [0.00, 0.07]	0.05 [0.01, 0.08]	0.48 [0.39, 0.55]	0.43 [0.35, 0.50]	0.991	0.996
Antagonism	0.09 [0.05, 0.13]	0.06 [0.02, 0.09]	0.31 [0.22, 0.40]	0.34 [0.26, 0.42]	0.953	0.982
Disinhibition	0.06 [0.03, 0.10]	0.05 [0.03, 0.08]	0.38 [0.29, 0.47]	0.44 [0.37, 0.51]	0.952	0.980
Anankastia	0.11 [0.07, 0.14]	0.08 [0.05, 0.12]	0.25 [0.15, 0.34]	0.06 [0.01, 0.17]	0.928	0.655
Psychoticism	0.09 [0.06, 0.13]	0.08 [0.04, 0.11]	0.24 [0.16, 0.33]	0.26 [0.19, 0.34]	0.990	0.917
FFM						
Neuroticism	0.01 [−0.03, 0.04]	-	0.54 [0.46, 0.62]	-	0.959	-
Extraversion	0.05 [0.02, 0.08]	-	0.66 [0.59, 0.73]	-	0.988	-
Agreeableness	0.01 [−0.02, 0.04]	-	0.50 [0.43, 0.58]	-	0.972	-
Conscientiousness	0.03 [−0.01, 0.06]	-	0.45 [0.37, 0.53]	-	0.951	-
Openness	0.02 [−0.01, 0.06]	-	0.52 [0.44, 0.60]	-	0.959	-

The lower and upper 95% confidence intervals for elevation and amplitude estimates are given in parenthesis.

Detachment (displacement of 28.7°). Nevertheless, the other three traits from this model revealed satisfactory congruencies.

The above results were generally replicated in Study 2. PAF led to the extraction of two factors with eigenvalues >1 and accounting for 61.4% (Analysis A: CPM and ICD-11), 64.4% (Analysis B: CPM and DSM-5), and 54.7% (Analysis C: CPM and six-domain model) of the variance. The eigenvalues of the first two factors were 4.61 and 3.37 (Analysis A), 5.14 and 3.24 (Analysis B), and 4.57 and 3.08 (Analysis C). Correlation coefficients within the obtained pairs of regression-based factor scores (after varimax rotation) were −0.18, −0.18, and 0.35 (for the first, second, and third analysis, respectively), which seems to support treating them as orthogonal axes of the circumplex only in the first two cases.

For the results of comparison of target and empirical matrices obtained in the three analyses of Study 2, see **Table 5** and **Figure 5** (in a juxtaposition with **Figure 3**). In terms of the overall model, the congruence coefficients exceeded 0.95 in Analysis A and Analysis B, whereas in Analysis C (CPM and six-domain model) they range only between 0.85 (overall coefficient) and 0.90 (for factor 1). The CPM metatraits showed a very good fit in all cases (congruence coefficients >0.95), with no serious deviation from the expected locations. Regarding traits from the ICD-11 model (Analysis A), almost all congruence coefficients were above 0.95 indicating a very good fit of the observed structure to the theoretically predicted, with a perfect fit for Anankastia. The only exception was the Disinhibition domain, which again revealed a coefficient below 0.83 and a shift of 34.7° toward Alpha-Minus. Slightly more serious deviations were found in the case of the DSM-5 model traits (Analysis B). Namely, Detachment revealed a congruence of 0.74 and displacement of 42.7° (again toward Gamma-Minus), and only one of the other traits had a coefficient above 0.95 (i.e., Antagonism which fit perfectly). However, worth noting is that this time (i.e., in contrast to Study 1) Psychoticism showed acceptable fit with a relatively low range of displacement (i.e., 20.1°). In contrast, almost all variables from the six-domain algorithm (Analysis C) revealed congruence coefficients below 0.85 indicating a poor fit to the theoretical predictions (displacements ranged between 31.0° of Detachment to 110.5° of Anankastia). Two exceptions with very good fit were Psychoticism and Antagonism, whereas the worst fit occurred for Anankastia with a congruence −0.42, and the observed location between Gamma-Minus and Alpha-Minus rather than in Delta-Plus.

Summing up, the results obtained in both studies indicate a generally satisfactory fit of the observed variable structures to the theoretically assumed one. Therefore, the expectations regarding the location of the ICD-11 and DSM-5 models within the CPM

TABLE 4 | Target and obtained factor matrices with corresponding CPM angles, explained variances, and congruence coefficients for comparing target and obtained factor loadings of CPM metatraits, ICD-11 and DSM-5 psychopathological and FFM normal trait-domains in three analyses conducted in Study 1 ($N = 242$).

		Target matrix			Analysis A ICD-11 model					Analysis B DSM-5 model					Analysis C Common six-domains model				
		Θ	F1	F2	F1	F2	R^2	Congr.	Θ	F1	F2	R^2	Congr.	Θ	F1	F2	R^2	Congr.	Θ
CPM	Delta-Plus	135	0.71	−0.71	0.63	−0.53	0.67	1.00	129.4	0.60	−0.51	0.62	1.00	130.6	0.60	−0.52	0.64	1.00	129.0
	Alpha-Plus	90	1.00	0.00	0.85	0.10	0.73	0.99	82.5	0.81	0.12	0.66	0.99	81.9	0.82	0.12	0.70	0.99	79.7
	Gamma-Plus	45	0.71	0.71	0.50	0.64	0.66	0.99	37.3	0.50	0.65	0.68	0.99	37.8	0.50	0.66	0.68	0.99	35.5
	Beta-Plus	0	0.00	1.00	0.18	0.82	0.71	0.98	11.3	0.14	0.82	0.69	0.99	9.9	0.14	0.84	0.72	0.99	7.8
	Delta-Minus	315	−0.71	0.71	−0.51	0.59	0.60	1.00	318.4	−0.52	0.59	0.62	1.00	319.2	−0.51	0.58	0.59	1.00	317.0
	Alpha-Minus	270	−1.00	0.00	−0.81	0.03	0.65	1.00	271.1	−0.77	0.01	0.59	1.00	270.7	−0.77	0.00	0.59	1.00	267.9
	Gamma-Minus	225	−0.71	−0.71	−0.49	−0.67	0.69	0.99	215.2	−0.48	−0.69	0.71	0.98	215.2	−0.48	−0.67	0.69	0.99	214.0
	Beta-Minus	180	0.00	−1.00	0.06	−0.80	0.65	1.00	174.8	0.11	−0.80	0.65	0.99	172.7	0.10	−0.81	0.67	0.99	171.3
ICD-11/DSM-5	Negative Affectivity	225	−0.71	−0.71	−0.44	−0.41	0.36	1.00	225.8	−0.58	−0.41	0.51	0.98	235.3	−0.42	−0.36	0.31	1.00	228.0
	Detachment	180	0.00	−1.00	−0.19	−0.58	0.38	0.95	197.3	−0.46	−0.59	0.56	0.79	218.3	−0.30	−0.52	0.36	0.86	208.7
	Dissociality/Antagonism	270	−1.00	0.00	−0.46	0.21	0.25	0.91	293.4	−0.66	0.17	0.46	0.97	284.5	−0.51	0.12	0.27	0.97	281.4
	Disinhibition	315	−0.71	0.71	−0.70	0.07	0.50	0.78	275.3	−0.57	0.29	0.41	0.95	296.9	−0.63	0.02	0.39	0.73	270.0
	Anankastia	135	0.71	−0.71	0.28	−0.30	0.17	1.00	136.1						−0.21	−0.27	0.12	0.12	216.3
	Psychoticism	292.5	−0.92	0.38						−0.57	−0.11	0.34	0.83	259.4	−0.48	−0.01	0.23	0.92	267.2
FFM	Neuroticism	225	−0.71	−0.71	−0.53	−0.46	0.49	1.00	228.2	−0.52	−0.47	0.48	1.00	228.2	−0.53	−0.45	0.48	1.00	227.7
	Extraversion	0	0.00	1.00	0.11	0.83	0.71	0.99	6.5	0.07	0.81	0.66	1.00	5.5	0.08	0.80	0.65	1.00	4.0
	Agreeableness	90	1.00	0.00	0.65	0.03	0.43	1.00	86.5	0.64	0.05	0.42	1.00	86.0	0.65	0.05	0.43	1.00	83.8
	Conscientiousness	90	1.00	0.00	0.65	0.00	0.43	1.00	89.7	0.62	0.00	0.38	1.00	90.1	0.62	−0.01	0.39	1.00	89.1
	Openness	0	0.00	1.00	0.10	0.55	0.31	0.98	9.5	0.06	0.56	0.31	0.99	6.1	0.06	0.57	0.33	0.99	4.4
	Factor/Overall congruence				0.97	0.95		0.98		0.97	0.96		0.97		0.92	0.94		0.92	

The target matrix is based on the hypothesized circumplex structure shown in ***Figure 2****. Θ, angles in degrees; F1 and F2, factors; Congr., Congruence coefficients.*

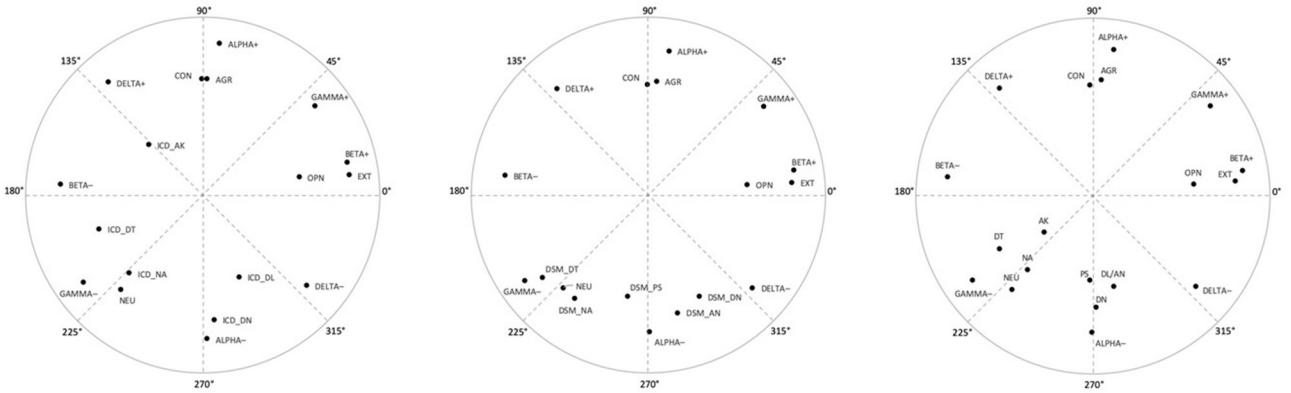

FIGURE 4 | Factor loading plots in Study 1 ($N = 242$) for: (Analysis A) CPM metatraits, FFM and ICD-11 traits; (Analysis B) CPM metatraits, FFM and DSM-5 traits; and (Analysis C) CPM metatraits, FFM and the six-domain model traits (placed at left, middle, and right, respectively). NA, Negative Affectivity; DT, Detachment; DN, Disinhibition; DL, Dissociality; AN, Antagonism; AK, Anankastia; PS, Psychoticism; NEU, Neuroticism; EXT, Extraversion; AGR, Agreeableness; CON, Conscientiousness; OPN, Openness to Experiences; + denotes the positive pole of a metatrait; – denotes the negative pole of a metatrait.

can be deemed as overall confirmed. These congruencies were definitely the best in the case of the CPM and FFM models, and visibly lower, although generally also satisfactory in the case of the ICD-11 and DSM-5 models. The ICD-11 model revealed relatively better congruence coefficients than the DSM-5 model, with a perfect fit of Anankastia in both studies and an ambiguous fit of Psychoticism (i.e., low fit in Study 1 and acceptable in Study 2) to the expected location. The six-domains model revealed the poorest and generally low coefficients, especially in Study 2. Of note are also generally lower communalities of pathological traits with CPM structure, particularly in the case of the six-domain model, but also in the case of the ICD-11. Especially low R^2 values revealed Anankastia from the six-domain model, although also Anankastia from the ICD-11 (PiCD) showed low communalities as well as lower correlations with FFM traits. However, these results are fully understandable as CPM metatraits are not directly or specifically personality disorder dimensions. The CPM is a general model of personality structure with a space for PD but also other forms of psychopathology or dysfunction (9, 48, 49, 56). Therefore, ICD-11 or DSM-5 traits are not reducible to the CPM metatraits, even though they were quite precisely located in the space defined by them, as evidenced by high congruence coefficients.

DISCUSSION

Both APA (1) and WHO (2) introduced dimensional models of PD in their newest editions of disorder classification systems (DSM-5 and ICD-11, respectively). These models are largely congruent with the crucial position of five broad domains (so-called Pathological Big Five), nevertheless, they also substantially differ in some elements. One of the most evident differences is related to the old disagreement between these two authoritative institutions, i.e., placement of schizotypic characteristics. As a result, the fifth dimension in DSM-5 is Psychoticism, while in ICD-11 it is Anankastia. Given the evidence supporting the value of both Psychoticism and Anankastia features to clinical psychological examination, and personality pathology itself, the current paper seeks to answer the question of which one is structurally better justified as the fifth trait in the Pathological Big Five. We proceeded to address this question by adopting the CPM model as a reference framework.

Circumplex of Personality Metatraits Indicates Anankastia Rather Than Psychoticism

Specifically, we made an attempt to compare the DSM-5 and ICD-11 models with the lens of the CPM, which is a comprehensive model of personality structure built on the basis of the Big Five/FFM. According to our conceptual consideration, the ICD-11 domains cohesively covered the whole palette of personality pathology characteristics within the CPM matrix, reaching from Delta-Minus to Delta-Plus, with Anankastia closing the pattern as being cohesively embedded within the latter. In contrast, the DSM-5 domains revealed a narrower and less neat picture of personality pathology, which was caused basically by the fuzzy position of Psychoticism, but also by a lack of a trait located close to Delta-Plus that serves as the border between normal and pathological personality in the CPM model. Empirical results obtained in our research roughly confirmed these theoretical considerations and predictions.

Psychoticism does not show a specific theoretical position within the CPM model, and therefore its predicted location was deemed to be not justified enough. Not surprising then, in the current research, the congruence indices between the theoretical predictions and empirical location were not satisfactory (i.e., low in Study 1, although acceptable in Study 2). Nevertheless, also the empirical relations between Psychoticism and FFM dimensions turned out to be contradictory to expectations. Namely, Psychoticism did not correlate with Openness, which is supposed to be its counterpart in the normal FFM. Instead, Psychoticism showed significant negative relations with both

TABLE 5 | Target and obtained factor matrices with corresponding CPM angles, explained variances, and congruence coefficients for comparing target and obtained factor loadings of CPM metatraits, ICD-11 and DSM-5 psychopathological trait-domains in three analyses conducted in Study 2 ($N = 355$).

		Target matrix			Analysis A ICD-11 model					Analysis B DSM-5 model					Analysis C Common six-domains model				
		Θ	F1	F2	F1	F2	R^2	Congr.	Θ	F1	F2	R^2	Congr.	Θ	F1	F2	R^2	Congr.	Θ
CPM	Delta-Plus	135	0.71	−0.71	0.69	−0.53	0.76	0.99	126.8	0.67	−0.46	0.66	0.98	125.0	0.65	−0.46	0.64	0.98	120.5
	Alpha-Plus	90	1.00	0.00	0.80	0.15	0.67	0.98	79.2	0.75	0.18	0.59	0.97	77.2	0.76	0.18	0.61	0.97	71.9
	Gamma-Plus	45	0.71	0.71	0.67	0.56	0.76	1.00	49.5	0.63	0.58	0.73	1.00	47.7	0.62	0.56	0.70	1.00	43.9
	Beta-Plus	0	0.00	1.00	0.20	0.76	0.62	0.97	14.3	0.13	0.77	0.61	0.99	9.7	0.15	0.81	0.67	0.98	5.8
	Delta-Minus	315	−0.71	0.71	−0.57	0.59	0.67	1.00	315.8	−0.59	0.58	0.68	1.00	314.8	−0.56	0.55	0.62	1.00	310.0
	Alpha-Minus	270	−1.00	0.00	−0.80	−0.02	0.63	1.00	267.7	−0.73	−0.07	0.54	1.00	265.2	−0.75	−0.07	0.56	1.00	260.5
	Gamma-Minus	225	−0.71	−0.71	−0.64	−0.58	0.74	1.00	227.3	−0.60	−0.61	0.73	1.00	224.7	−0.60	−0.59	0.71	1.00	221.2
	Beta-Minus	180	0.00	−1.00	0.08	−0.80	0.65	0.99	173.6	0.16	−0.82	0.70	0.98	169.2	0.15	−0.85	0.75	0.98	165.4
ICD-11/DSM-5	Negative Affectivity	225	−0.71	−0.71	−0.55	−0.27	0.37	0.95	243.4	−0.67	−0.27	0.53	0.92	248.3	−0.48	−0.08	0.24	0.81	256.6
	Detachment	180	0.00	−1.00	−0.17	−0.56	0.34	0.96	196.1	−0.52	−0.57	0.60	0.74	222.7	−0.33	−0.46	0.32	0.82	211.0
	Dissociality/Antagonism	270	−1.00	0.00	−0.50	0.08	0.25	0.99	278.3	−0.66	0.06	0.44	1.00	275.8	−0.54	0.08	0.30	0.99	274.4
	Disinhibition	315	−0.71	0.71	−0.70	0.13	0.50	0.83	280.3	−0.61	0.26	0.44	0.93	293.2	−0.65	0.05	0.43	0.76	269.9
	Anankastia	135	0.71	−0.71	0.36	−0.32	0.23	1.00	131.3						−0.20	−0.07	0.04	−0.42	245.5
	Psychoticism	292.5	−0.92	0.38						−0.60	0.02	0.37	0.94	272.4	−0.50	0.09	0.25	0.98	275.6
	Factor/Overall congruence				0.97	0.95		0.97		0.96	0.96		0.96		0.90	0.88		0.85	

*The target matrix is based on the hypothesized circumplex structure shown in **Figure 2**. Θ, angles in degrees; F1 and F2, factors; Congr., Congruence coefficients.*

Conscientiousness and Agreeableness. It is worth noting that such findings are in line with results observed in previous studies (20, 25–28). One explanation proposed, 1 is that Psychoticism is differentially associated with specific various aspects of Openness. In particular, Psychoticism is claimed to be a maladaptive variant of Openness that is positively related to one of its aspects (i.e., perceptual-aesthetic and imaginative) and negatively related to the other one [i.e., intellectual, e.g., (68)]. The results of our research do not support that notion. Our analysis executed on the facet-level traits evidently showed zero correlation between Psychoticism and all of the Openness facets.

In both studies, Psychoticism consistently demonstrated a shift toward Alpha-Minus, which is in accordance with its correlation to FFM dimensions. Our results are then in line with Eysenck's (29) model—relating Psychoticism with antisocial tendencies. However, another explanation can be proposed that seems to be even more justified. According to the non-specificity or heterogeneity of Psychoticism, this phenomenon can be deemed as adhering to another area than personality (disorders). Given the obtained pattern of results and suggestions from previous research, it seems that Psychoticism, which includes perceptual and cognitive dysregulations or even delusional contents (e.g., delusions of thought control), goes far beyond the conceptualization of personality traits, and as a result typically shows a less consistent correlation pattern with them or even does not correlate with personality at all (51). Thus, it seems an important point to recognize that psychotic-like features at large could be better conceptualized in terms of the general level of severity as the degree to which one's capacity for reality testing is compromised, according to the overall degree of PD severity proposed in the ICD-11 diagnostic system (2). Moreover, the absence of Psychoticism in the ICD-11 model is sound with the manner in which schizotypal personality disorder is understood by WHO (i.e., schizotypy is a variant of schizophrenia, rather than a personality disorder). In accord, in the ICD-11, personality disorders form one grouping, whereas schizophrenia, schizotypal, and delusional disorders constitute another[2]. As pointed, rather than seeing Psychoticism as a separate personality trait domain, PD severity may thoroughly encompass and reflect the presence of dissociative states or psychotic-like beliefs or perceptions, and/or highly eccentric behaviors. That approach reflecting core PD features with an emphasis on identifying the severity of personality dysfunction has received great recognition (70–72) and is more consistent with the traditional structural approach to classification of personality organization as neurotic, borderline, and psychotic levels, in which the most severe levels may involve transient psychotic states. Moreover, this also results in avoiding the amount of overlap between levels of personality disturbance (i.e., the impairment in personality functioning) and maladaptive traits [for a discussion, see (11, 55)].

[2]An important point to recognize is that a comparable proposal was actually considered for the DSM-5, in which schizotypal personality disorder would be shifted out of the PD section and into the schizophrenia section (69), however, the proposal was finally rejected.

In contrast, the current research suggested the cohesiveness, separateness, and discrimination of the ICD-11 domains in line with previous findings [e.g., (20, 21, 73); for a review, see also (11)]. Data from both our studies revealed sound and cohesive relations of Anankastia with the CPM (perfect fit to the expected location in both studies), as well as FFM domains, indicating that it is a robust and specific dimension of personality pathology. In line with previous works (11, 18, 20, 21), Anankastia showed convergence with the Conscientiousness domain and its facets (i.e., Organization and Responsibility), as well as a strong negative relation with Disinhibition (see **Supplementary Material**), providing a clear reflection of the conceptual definition of this pathological domain (2). Results were also as good regarding the overall fit of the Anankastia location within the CPM, showing excellent congruence between theoretical expectation and empirical placement. Across both studies, Anankastia showed a very good fit, with no deviation from the expected position (congruence coefficients equal to 1.00). What is more, in accordance with the conceptual perspective of the CPM model, the obtained results suggest that Anankastia should be treated as the opposite pole of the Disinhibition domain.

Bipolarity as a Consequence of Dimensional Approach—Insight From the Circumplex of Personality Metatraits

Our results concerning the bipolar relations of the Disinhibition vs. Anankastia domains are in line with prior suggestions and previous research strictly investigating the structure of the ICD-11 model (17–21). It is interesting that Tyrer et al. (11) stated that Negative Affectivity is linked with high Neuroticism, Detachment with low Extraversion, Dissociality with low Agreeableness, Disinhibition with low Conscientiousness, and Anankastia with high Conscientiousness. As such, the authors of the ICD-11 trait model do appear to recognize that Anankastia and Disinhibition are opposite to one another, but seem to not make this point explicitly (11, 74). Of note, however, the results on bipolarity do not contradict the presence of distinguishable domains. Based upon the results of analysis within the conceptual framework of the CPM, each of the two specific domains has its own substantive and specific meaning beyond simple opposition. Relatedly, they should be understood as qualitatively distinct entities, which cannot simply be reduced to their opposite characteristics. Essentially, consistent with prior suggestions (17, 73), we assert that it is most suitable (and straightforward for practitioners) to code one to five of the ICD-11 trait domain qualifiers.

However, having three domains being unipolar and the other two domains creating one bipolar dimension in the ICD-11 model might provide an intricacy that one could find a bit confusing. In other words, the ICD-11 model appears to be a five-domain, but only four-factor model. One of the major strengths of the current research is its ability to explain this problem cohesively and shed light on the issue of unipolarity vs. bipolarity of the pathological domains. One can say that the shift from the categorical to the dimensional approach—made by both

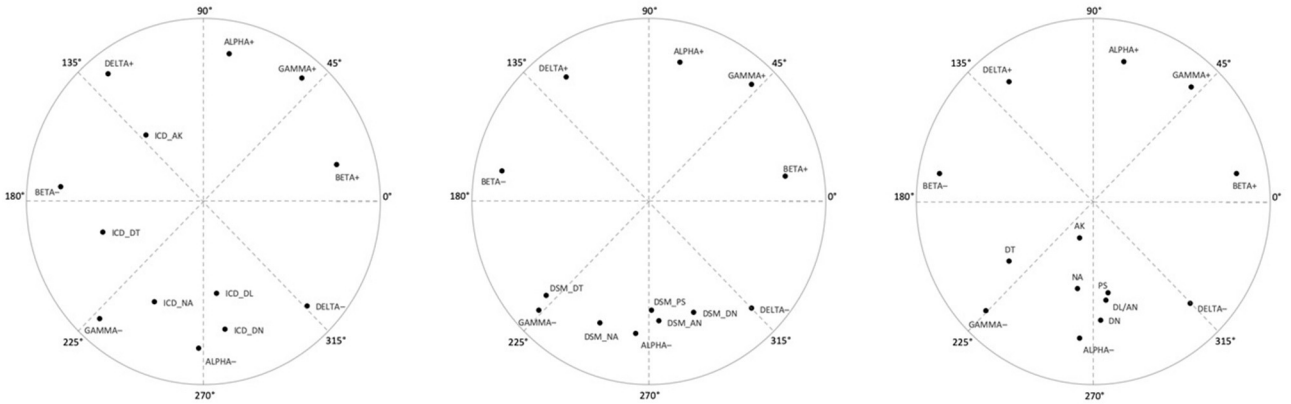

FIGURE 5 | Factor loading plots in Study 2 ($N = 355$) for: (Analysis A) CPM metatraits and ICD-11 traits; (Analysis B) CPM metatraits and DSM-5 traits; and (Analysis C) CPM metatraits and the six-domain model traits (placed at left, middle, and right, respectively). NA, Negative Affectivity; DT, Detachment; DN, Disinhibition; DL, Dissociality; AN, Antagonism; AK, Anankastia; PS, Psychoticism; + denotes the positive pole of a metatrait; – denotes the negative pole of a metatrait.

DSM-5 and ICD-11 assessment system for PD—is an important step in the right direction, albeit a somewhat incomplete one. A fully dimensional approach required bipolar rather than unipolar conceptual thinking and the CPM structure provides such framework for conceptualizing personality pathology.

According to the CPM, each of the ICD-11 domains are unipolar dimensions. However, each of them possess their opposite unipolar dimension, and Anankastia and Disinhibition domains form just a special case of such relations, because in the CPM they are located as the farthest points on the border with healthy personality characteristics, that is, Delta-Plus and Delta-Minus, respectively (see **Figures 2**, **3**). These two metatraits placed into a boundary between healthy and personality disturbance delineate a line of demarcation within the broader model of personality structure that can also enable discrimination between different types of pathology, e.g., in terms of including restraint/constraint vs. impulsivity-relevant features. As a consequence, Anankastia and Disinhibition are pathological domains with some ambiguity or functional potential. Other ICD-11 domains are more unequivocally pathological (as the CPM space below Delta can be seen as an area of personality functioning with specific manifestations of personality disturbance, see **Figure 3**) and possess healthy, unipolar dimensions as opposites. The opposite pole of Dissociality in the CPM is Stability (in social and motivational areas of functioning), while the opposite pole for Detachment is Plasticity (openness and engagement in novelty and change). Within this framework, Negative Affectivity is the core of personality pathology, with the opposite pole of Integration (well-being), as they are located on bipolar dimension of Gamma. The negative pole of Gamma is labeled Disharmony, as it includes the most maladaptive configuration of personality traits, and its positive pole (Gamma-Plus) is labeled Integration, as it encompasses all functional qualities of personality (including high emotional stability, extraversion, agreeableness, conscientiousness, and openness). Therefore, CPM Gamma reflects general psychopathology vs. general mental health proneness, and is a counterpart of the general factors of: psychopathology (*p* factor), personality disorder (g-PD), or personality [GFP; (9, 10, 43, 45, 46, 75–77)].

The assumption that all personality dysfunctions are represented within a half of the circumplex space that is confined by the Delta-Plus and Delta-Minus was broadly supported by previous studies (9), in particular by Zawadzki's (50) findings on analyses using categorical classification of personality disorders. What is more, hardly available within standard factorial models as the FFM, while inherent to a circumplex framework is the precise determining of the relationships among all distinguished dimensions. Specifically, the CPM encompasses all relations among the ICD-11 dimensions (rather than just between Anankastia vs. Disinhibition), determining the expected pattern of their intercorrelations. For example, Negative Affectivity should be more strongly related with Detachment than with Anankastia, and Detachment should be more strongly related with Anankastia, than with Dissociality, respective to their distance to each-other within the CPM model (see **Figure 3** and **Supplementary Material**). Thus, although the fit of the new ICD-11 dimensional systems of PD to the FFM factorial structure of normal personality is not fully congruent, the CPM model turned out to provide a better framework that justifies distinguished trait-domains as well as their mutual relationships in a cohesive and complete manner.

Some Measurement and Conceptual Issues. Toward Further Studies

Recently, some efforts also have been made to harmonize the two PD systems, providing the six-domain model of the combined ICD-11 and DSM-5 trait dimensions (32). However, this conjoined model is, for now, a counting algorithm rather than a theoretical proposal, built in line with a suggestion that the two PID-5 scales of Perseveration and Rigid Perfectionism may provide a proxy measure of Anankastia (30–32). On the other hand, recent studies have provided

evidence that perhaps only Rigid Perfectionism from those two traits should be used for this purpose (20). Moreover, Bach et al.'s (32) algorithm introduces strict separateness (orthogonality in fact) between Anankastia and Disinhibition, neglecting the emergence of sound scientific evidence that these traits constitute a bipolar dimension [(7, 14, 17–19)]. In our research, the six-domain algorithm showed very poor indices in regards to empirical locations within the personality structure provided by the CPM, with the largest misfit for Anankastia. What is more, unsatisfactory congruence with the conceptually-theoretical assumption was reflected in the distorted pattern of relationships with the FFM traits. The most evident was the strongest correlation of Anankastia with the Neuroticism rather than Conscientiousness domain, and with Depression on the facet level (which correspond with the location of Anankastia near Gamma-Minus). Therefore, both the previous and the current results seem to suggest that the six-domain integrating framework for the ICD-11 and DSM-5 models cannot be seen as final. It is because such integration may require some more profound reconceptualization rather than just reoperationalization or simple reclassification of the personality trait-facets and domains. Moreover, integration may not necessarily be the best solution because one model can simply be superior to another in the conceptualization of PD, as suggested by the presented study.

One more specific point is also worth recognizing. Namely, although Anankastia revealed its clear conceptual and empirical superiority over Psychoticism in terms of fit to the CPM personality structure, and empirically the DSM-5 domains cover only a half area of personality pathology (restricted between Gamma-Minus to Delta-Minus), the empirical congruencies of the overall ICD-11 model were only slightly better than in the case of the DSM-5 model. This was due to some "weak points" present in both models, i.e., domains that revealed the lowest fit. These domains are Disinhibition in the ICD-11 model and Detachment in DSM-5. Problems revealed by these domains could possibly be caused by some measurement imperfections, i.e., properties of PiCD and PID-5 inventories. However, there can also be some conceptual reasons that play a significant role in this context. Taking the CPM framework into account it becomes evident that Disinhibition's pathological domain—as located in Delta-Minus rather than Alpha-Minus—should not include purely antisocial tendencies, primarily motivated by harmful or aggressive impulses. Instead, it should possess excessive sensation seeking related with risk taking which seems to be underrepresented within the ICD-11 model (2), whereas it is present in DSM-5 (1). In turn, all antisocial tendencies should be grouped within the Dissociality/Antagonism domain, however, its characteristics related to self-centeredness, grandiosity, attention-seeking, and expectation of others' admiration should be strongly saturated by vulnerability, sense of entitlement, exploitativeness of others, rivalry and hostility. In other words, it seems that narcissistic characteristics included in Dissociality/Antagonism should possess slightly more aspects of vulnerable narcissism and narcissistic rivalry and slightly fewer aspects of grandiose narcissism and narcissistic admiration (56, 78). It became of crucial importance when the limited number of facets (e.g., three) for the domain are selected (1, 32).

Regarding the Detachment domain in the DSM-5 model, it simply should not possess tendencies to experience endogenic anxiety-based and hostile negative emotions, such as depressivity and distrust (suspiciousness). On the other hand, the selection of three out of six facets for the Detachment domain (i.e., withdrawal, intimacy avoidance, and anhedonia) introduced by APA (1) for diagnostic purposes, seems to be a promising proposal, as these three are important and basically pure elements of the domain. However, in light of the CPM framework is seems worthwhile to consider if social avoidance and distance should not be supplemented by shyness as well as submissiveness and dependency in close relationships, despite a generally small number and unwillingness for establishing the latter.

Summing up, given the conceptually sound structure of the ICD-11 trait domains and their theoretically meaningful and in general empirically confirmed pattern of relations with the CPM integrative model of whole personality structure, the ICD-11 PD model seems to surpass the DSM-5 proposal. However, it should be noted that both PD models' emphasis on personality processes and dimensionality, which contrasts with the old descriptive approach using polythetic-categorical concepts, has been well-recognized (55). What is more, both proposals should not be reduced to just the Pathological Big Five models. It is true especially for the DSM-5 which is a complex diagnostic system with also other very important elements that are unique in comparison with the ICD-11 model. Firstly, the DSM-5 contains an empirically derived catalog of 25 trait-facets of the Pathological Big Five as well as empirically confirmed model of personality functioning included in Criterion A (8). Secondly—and also in contrast to the ICD-11 model—the combination of Criterion A (disturbances in both self and interpersonal functioning) and Criterion B (maladaptive personality trait-facets) of the DSM-5 system allows to generate a hybrid categorical-dimensional diagnosis (1). Prior research has shown support for the 2-fold structure of Criterion A and its at least partial distinctiveness from the five dimensions of Criterion B (55, 79). Notably, the AMPD allows reflection on multiple personality constructs and paradigms, embracing psychodynamic, interpersonal, personological paradigms (embedded within Criterion A), and also multivariate and empirical paradigms (reflected mostly within Criterion B) to PD diagnosis (80, 81). By requiring both Criteria A and B for PD diagnosis, the DSM-5 system is reasonably theoretically comprehensive, with a pluralistic perspective. It itself requires only that a broad spectrum of constructs and paradigms be considered—but no theoretical paradigm in the DSM-5 system is favored. A clinician has the opportunity to operate from his/her own conceptual point of view. This confers scientific and practical advantages that deserve more empirical articulation from researchers in the field than they have received so far. Therefore, the DSM-5 contribution and advance within PD nosology, goes beyond the dimensionalization of diagnosis. The same is roughly true

for ICD-11, so future research should also show if the latter can take some benefits from the DSM-5 system, in particular its conceptualization of psychological functioning (Criterion A) or lower-order traits (catalog of facets of Pathological Big Five).

LIMITATIONS

Our study is not free of limitations. Although the current analyses utilized two adequately large samples with adequate score variance for the measures, our findings should be replicated and extended to other samples exhibiting a broad range of clinical symptomatology. Moreover, one should keep in mind that the data are based exclusively on self-report measures, which is different from a clinical rating made by professionals. It would be distinctly useful to replicate and extend the current findings using both informant and self-reports. Finally, further methodological research, including simulations, could also answer the question whether a different cutoff for RMSEA in case of circumplex models is justified and what exactly this cutoff should be.

CONCLUSIONS

Our research offers a direct empirical comparison of two catalogs of pathological personality trait domains derived from the ICD-11 and DSM−5 Section III AMPD diagnostic system, providing a step forward for the validation of both PD models. In respect to the current debate on the overall expected four- vs. five-factor models of personality pathology, we used the circumplex matrix delineating theoretically meaningful predicted locations of constructs to provide an evaluation and a comprehensive comparison of the ICD-11 and DSM−5 models. Building upon the CPM structure, the findings generally support that the domain of Anankastia may provide a more robust and specific domain of personality pathology, as more cohesively located within the overall structure of personality, than Psychoticism. Additionally, in line with previous research (17, 18, 20), the results corroborated the bipolar structure of the Disinhibition vs. Anankastia domains. Importantly, the notion that the traits can be plainly portrayed as a bipolar dimension cannot be seen as the reduction of these domains simply to their opposite characteristics. As shown, each of the traits has its own substantive and specific meaning beyond simple opposition. These conclusions were roughly confirmed from the perspective of the FFM results, which we also included in our study as the, to date, most often used context of normal personality structure.

In general, our research yielded a new view as provided from the circumplex perspective on personality structure to progress the debate on potential avenues for the integration of the ICD-11 and DSM-5 trait models (in line with strong similarities in the models) and speculated the superiority of one of them (in accord with some important conceptually meaningful differences). Obviously, we adopted a scientifically essential, however, not only important structural (or structuralist) perspective provided by the CPM model. Nevertheless, of crucial importance, further examination of how clinician-reported ICD-11 and DSM-5 traits are empirically organized may somewhat highlight aspects of their validity and utility for clinical practice. Ultimately, advantages for clinical practice should be decisive, but, in order for the latter to be retained, a scientific and theoretical cohesiveness seems necessary and the CPM can provide a useful perspective for achieving such purposes as we have shown in our study.

DATA AVAILABILITY STATEMENT

The datasets presented in this study can be found in online repository at Open Science Framework (Center for Open Science): https://osf.io/7pw3q/ Dimensional Models of Personality Pathology project: doi: 10.17605/OSF.IO/7PW3Q.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Commission of Ethics and Bioethics at the Cardinal Stefan Wyszyński University in Warsaw. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

WS and JC designed and conceptualized the research and revised the paper and improved it to the final version. WS collected the data and prepared the dataset. WS and PŁ ran the statistical analyses. PŁ prepared the literature review and wrote the first version of the manuscript. All authors contributed to the article and approved the submitted version.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2021.648386/full#supplementary-material

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