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# A meta-structure for DSM-5 and ICD-11 pathological traits and the differentiation of personality functioning at different trait levels in older adults

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## ABSTRACT

**Objectives:** Categorical criteria are not well suited to inform personality disorder (PD) diagnoses in older adults. More promising are the ICD-11 and DSM-5 alternative models. Both conceptualize PD by level of severity and maladaptive traits. Severity is conditional for making a PD diagnosis. Trait levels portray stylistic differences in PD expression. Yet, in older adults the hierarchical trait structure is unknown. Neither is the differentiation of the severity criterion from maladaptive traits confirmed.

**Methods:** A series of exploratory factor analyses with progressively greater numbers of factors were conducted to examine the hierarchical trait structure in 293 community dwelling older adults. The on average differentiation of a single higher order personality functioning factor from trait factors at succeeding levels of the hierarchy was estimated with Cohen *q* effect size.

**Results:** Six meaningful trait levels were identified. From the fourth trait level on the general personality functioning factor shared less than 15% variance on average with the trait factors. Trait factors at the sixth level corresponded to both DSM-5 and ICD-11 pathological traits.

**Conclusion:** A future nosology integrating DSM-5 and ICD-11 trait proposals would be applicable in older adults. Personality functioning can be differentiated from traits, so separate assessment of traits and severity is worthwhile.

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## Introduction

Insufficient attention has been given to the conceptualization of personality disorders (PDs) in later life, while PDs are quite common in older adults with prevalence rates up to 14.5% in community dwelling and even up to 57.8% in nursing home residing older adults, (Penders et al., 2020). One of possible reasons for this knowledge gap is that the current standard section II PD criteria of the Diagnostic and statistical manual for mental disorders fifth edition (DSM-5; American Psychiatric Association, 2013) are not well suited to inform PD diagnosis in older adults. PD criteria were developed in younger age groups and are not attuned to age-specific changes in older adults in behavior and interpersonal functioning (Rossi et al., 2014; Rossi et al., 2018; van Alphen et al., 2012). However, classification of PDs is currently in a transition from a categorical to a dimensional approach to be more consistent with the quantitative continuity between normal and abnormal personalities, existing heterogeneity within PD diagnoses and comorbidity among PDs (Clark, 2007; Widiger & Samuel, 2005). Both the DSM-5 (American Psychiatric Association, 2013) alternative model for PDs (AMPD) and the International statistical classification of diseases and related health problems 11th edition (ICD-11) model for PDs (ICDPD) (World Health Organization, 2019) use a twofold dimensional conceptualization that entails impairments in self and interpersonal functioning to depict severity of PD, and maladaptive personality

trait domains to portray stylistic differences in the expression of PD. Given dimensional assessments allow more fine-grained assessment of PD features (Rossi et al., 2018), the AMPD and ICDPD possibly offer new avenues for diagnosing PDs in older adults.

The dimensional AMPD and ICDPD approaches share four trait domains (i.e. Negative Affect, Detachment, Antagonism/Dissociality, Disinhibition) yet differ in the conceptualization of the fifth domain. Unique for AMPD is the Psychoticism domain and unique for ICDPD is the Anankastia domain. AMPD Psychoticism consists of three facets (American Psychiatric Association, 2013). Two facets (Cognitive and Perceptual Dysregulation and Unusual Beliefs and Experiences) include psychotic delusions. The third facet, Eccentricity, focuses on unusual and weird behavior, appearance or speech, strange and unpredictable thoughts and saying inappropriate things. The conceptualization of Psychoticism as including delusions has been debated, as some argue that there are important differences between a personality trait and a delusion (Widiger & McCabe, 2020). ICD-11 did not include Psychoticism because it considered this domain part of the schizophrenia spectrum (World Health Organization, 2019). ICD-11 instead considered rigid perfectionism, standards and control relevant PD expressions and therefore incorporated Anankastia as a trait domain. Based on first evidence both ICDPD and AMPD hold promise in older adults. Evidence for the ICDPD is currently limited to

one study examining informant and self-report trait measures (Oltmanns & Widiger, 2021). The Personality Inventory for ICD-11 (PiCD; Oltmanns & Widiger, 2018) and the Informant Personality Inventory for ICD-11 (IPiC; Oltmanns & Widiger, 2021) showed moderate self–other agreement, were associated significantly with several important life functioning areas, and had structural validity. There is more evidence for the AMPD model in later life. Age neutrality of the Personality Inventory for DSM-5 (PID-5; Krueger et al., 2012) was demonstrated with differential item functioning (DIF) analyses (Van den Broeck et al., 2013). An item exhibits DIF if younger and older adults with the same trait level do not have the same probability of endorsing the item. 85% of the PID-5 items did not show DIF, so we can consider the test to be age-neutral given the threshold of 75% or more DIF free items for the test as a whole (Penfield & Algina, 2006). The original underlying factor structure of five domains of the PID-5 was confirmed in older adults and the PID-5 correlated as expected with other relevant measures, including the Gerontological PD Scale (van Alphen et al., 2006) that was developed specifically to assess old age expressions of PD (Debast et al., 2017, 2018).

The dimensional paradigm shift also inspired a large consortium of clinical researchers to propose the Hierarchical Taxonomy of Psychopathology (HiTOP) (Conway et al., 2021; Kotov et al., 2017). Based on integrating findings from structural studies of psychopathology, HiTOP considers psychopathological dimensions representative for individual differences of variations in degree of maladaptive characteristics across the entire population. HiTOP postulates these dimensions can be organized in a hierarchy from narrowest (symptoms) to broadest at the top (superspectrum, i.e. general higher order dimension of psychopathology). Bundles of symptoms form symptom components which are positioned at the same HiTOP level as maladaptive personality traits. These symptom components and maladaptive traits are elements of syndromes (i.e. disorders) at the next level, and these syndromes are further combined into subfactors (e.g. distress) and next into spectra (e.g. internalizing), and finally into the apex of the hierarchy (the superspectrum). The conceptualization into different levels provides meaningful information to clinical practice (Kotov et al., 2017; Ruggero et al., 2019; Widiger et al., 2019). Lower levels such as maladaptive traits can help the clinician for formulating personalized profiles of exactly the traits that are present in a patient. They are thus more informative at the individual patient level than the next level of disorders and might improve case conceptualization. Moving up in the hierarchy provides the clinician with information on common and overarching processes, which are the focus of transdiagnostic treatments (for example the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders is an intervention focusing on shared vulnerability processes in the Internalizing spectrum Barlow et al. (2017)). If such a treatment does not clear up all patients problems, the clinician can cascade down in the hierarchy to lower level components as intervention targets.

The structure of maladaptive personality traits contributed to the formulation of the HiTOP model (Kotov et al., 2017; Widiger et al., 2019). The AMPD and ICDPD domains align with HiTOP spectra: Negative Affectivity with HiTOP Internalizing, Psychoticism with HiTOP Thought Disorder, Disinhibition and Anankastia (inversely) with HiTOP Disinhibited Externalizing, Antagonism/Dissociality with Antagonistic Externalizing and Detachment with HiTOP Detachment. Knowledge was used from factor analyses on PD diagnoses, research on the structure of

maladaptive personality traits (e.g. Personality Psychopathology-5 model), and studies on the joint structure of symptoms and traits (for a complete overview see Kotov et al., 2017, pp. 460–462). Of those studies only one examined the hierarchical structure of the AMPD (no studies are available on the hierarchical structure of the ICDPD). More specifically Wright and colleagues (2012) examined the hierarchical structure of the PID-5 facets in a sample of 2,961 undergraduates. Exploratory factor analyses (EFA) for one up to five factors resulted in meaningful structures for all levels of the hierarchy. At the second level internalizing and externalizing dimensions common to psychopathology (e.g. Krueger & Markon, 2006) emerged from the general personality pathology factor. The third level corresponded to the temperament “Big Three” (e.g. Clark & Watson, 2008). The fourth level was highly similar to pathological variants of the consensus “Big Four” (Widiger & Simonsen, 2005) and the fifth level corresponded to the AMPD domains.

Up-to-date the meta-structure of AMPD and ICDPD traits remains unexplored in older adults and despite evidence for the original five factor structure of the PID-5 in older adults (Debast et al., 2017) this is likely not the optimal structural organization for AMPD and ICDPD traits in older adults. The AMPD study (Debast et al., 2017) seeking to corroborate the original PID-5 factor structure in older adults found that Disinhibition facets blended with other factors. Also, it is uncertain into which trait domains the hierarchical structure will unfold. In the ICDPD study (Oltmanns & Widiger, 2021) EFA factor solutions with Geomin rotation were extracted from the items of the PiCD (Oltmanns & Widiger, 2018) and IPiC (Oltmanns & Oltmanns, 2021). Although both four and five factor solutions fitted to the data, the four-factor solution was preferred because of parsimony, and for being consistent with prior theory and research. This four-factor structure corresponds to Negative Affect, Detachment, Dissocial, and a bipolar factor defined by the opposing poles of Anankastia and Disinhibition. One could consequently pose the question if a separate Anankastia factor is needed. On the other hand, an AMPD study (Van den Broeck et al., 2014) performing a joint hierarchical factor analysis of the PID-5 and Dimensional Assessment of Personality Pathology–Basic Questionnaire (DAPP-BQ; Livesley & Jackson, 2009) found that Compulsivity and Disinhibition formed separate factors, so a separate Compulsivity–Anankastia factor seems plausible.

Having knowledge of the meaningful AMPD and ICDPD trait levels in older adults will provide clinicians with the necessary knowledge to provide a nuanced description of the patient’s personality (using a level with more narrow factors), yet at the same time shed light on shared underpinnings and common processes (by knowledge of broader overarching factors). Yet, in order to make a PD diagnosis, both AMPD and ICDPD rely on the severity criterion which is the core of personality pathology (and independent of the specific traits being present). Common to all maladaptive trait manifestations of personality pathology is the general adaptive failure in personality functioning (Sharp & Wall, 2021). This intrapsychic system of functioning was operationalized in the Level of Personality Functioning Scale (LPFS; American Psychiatric Association, 2013, pp. 775–778) in terms of self (identity and self-direction) and interpersonal (empathy and intimacy) components, yet to capture PD it was defined a unidimensional severity criterion (Morey et al., 2011). With the LPFS being rated on a scale from 0 to 4 (little or no to extreme impairment) level of personality functioning is applicable in both healthy and disordered populations (Morey et al., 2015)

and considered maladaptive from a score  $\geq 2$  (i.e. moderate impairment is conditional for a PD diagnosis). However, an AMPD review study (Zimmermann et al., 2019) came to the striking conclusion that most studies (84.8%) focused only on pathological traits (i.e. AMPD criterion B) and studies on personality functioning (i.e. AMPD criterion A) were much more scarce with 7.6% of publications focusing only on criterion A, and also 7.6% focusing on both criteria. Conceptually it is logical to capture the degree of PD severity and then describe the content or expression of the PD with maladaptive traits, as both AMPD and ICDPD propose, but can these be empirically disentangled? Available studies (Zimmermann et al., 2019) found high intercorrelations between criterion A and B measures and one can argue there is no need for separately measuring personality functioning since maladaptivity is sufficiently captured by the maladaptive traits. On the other hand, studies (e.g. Bach & Hutsebaut, 2018; Cruitt et al., 2019; Roche, 2018) also found evidence for the incremental value of the concepts, and as Zimmermann et al. (2019) pointed out incremental validity of maladaptive traits above personality functioning seemed to be more robust compared to the incremental validity of personality functioning above pathological traits which mostly resulted in small effects.

A first main objective of the current study is to examine the meta-structures of pathological traits in older adults top-down, starting from a broad general factor up to the narrowest meaningful level of factors. The PID-5 facets provide opportunities to explore the structure of both AMPD and ICDPD traits. A separate Compulsivity domain, conceptually similar to ICD-11 Anankastia was originally proposed for the AMPD, yet ultimately omitted (Krueger et al., 2012). In favor of parsimony, AMPD defines features of Anankastia/Compulsivity in terms of low Disinhibition. However, the “cross-walk” between DSM-5 trait facets and ICD-11 trait domains constructed by EFA of PID-5 facet scores, suggested that the ICD-11 trait domain Anankastia can be captured by the DSM-5 trait facets Rigid Perfectionism and Perseveration (Bach et al., 2017). The meta-structure for pathological traits will consequently be examined using the PID-5 facets.

A second main objective addresses the need for studies integrating both measures of pathological traits and personality functioning and tackles the open question if these concepts are overlapping or can be differentiated from each other. Therefore, we will examine the differentiation of personality functioning from pathological traits at succeeding levels of the trait hierarchy found in older adults, to demonstrate measuring severity is not redundant and cannot be fully accounted by maladaptive traits. This way, we aim to determine if personality functioning can be differentiated from the AMPD and ICDPD trait domains at the different levels of the trait hierarchy. If the personality functioning factor has no substantive meaning above traits and purely emerges from lower-order traits, it will not have an increment of on average differentiation from trait factors at succeeding levels of the trait hierarchy, and thus can be considered as too overlapping with the general personality pathology factor (i.e. first one-factor level of the trait structure).

## Materials and methods

### Participants

We used data from 293 Dutch-speaking community-dwelling older adults that were originally collected in Belgium to

corroborate the original PID-5 structure (Debast et al., 2017) to newly explore the hierarchical trait structure in older adults and its differentiation from personality functioning. Age ranged from 65 till 99 years old, with a mean age of 73.57 ( $SD=6.50$ ). There were more females (60.4%), which is in line with the Belgian population, as in 2021 55.7% of the older adults aged 65 or more were females (Statbel, 2021). The majority of the sample was retired (95.6%). For most participants education was limited to primary or secondary education (74.3%) and 22.3% received a college education (3.4% were missing). Most were in a relationship (65.2%). For those that were currently not in a relationship, this was mostly due to widowhood (27.5%).

### Instruments

#### PID-5

The Dutch translation of Personality Inventory for DSM-5 (PID-5; van der Heijden et al., 2014) was used to measure DSM-5 pathological traits. The measure was specifically developed to assess AMPD criterion B (Krueger et al., 2012) and has been validated in older adults (Debast et al., 2017). The PID-5 self-report version consists of 220 items answered on four point-Likert scales and has 25 primary facets loading onto five higher-order personality pathology dimensions. In the current sample, the PID-5 domain scores were internally consistent (Cronbach alpha values were Negative Affectivity .91, Detachment .88, Antagonism .92, Disinhibition .88, and Psychoticism .94).

#### SIPP-SF

The Severity Indices of Personality problems – Short Form (derived from the SIPP-118 (Verheul et al., 2008); available online at Questionnaires – GGZ De Viersprong) was used to measure personality functioning. Although developed before the launch of DSM-5 AMPD in 2013, it is a strong choice to measure personality functioning given its high content correspondence with existing criterion A AMPD measures (Waugh et al., 2021), and the instrument has been validated in older adults (Rossi et al., 2017; van Reijswoud et al., 2021). The SIPP-SF 60-item self-report questionnaire with four-point Likert scales was developed to measure the severity components of PDs and follow-up treatment improvement by means of five domains of (mal)adaptive personality functioning. Lower scores indicate more maladaptive functioning. In the current sample, the SIPP-SF domains were internally consistent (Cronbach alpha values were Self-Control .88, Social Concordance .81, Identity Integration .87, Relational Functioning .81 and Responsibility .83).

### Statistical analyses

The bass-ackwards method (Bastiaansen et al., 2016; Goldberg, 2006; Wright et al., 2012) was applied to examine the unfolding hierarchical structure of the PID-5 facets (in analogy to the study of Wright et al. (2012) in students, PID-5 facets scores were used). A series of EFA with increasing number of factors was extracted, beginning with only one, and continuing until a factor came forth, on which none of the included facets showed its highest loading with an absolute value over .40. Parallel analysis (Horn, 1965; O'Connor, 2000) was applied to cross-validate the number of factors. We used 1000 permutations of the original raw dataset, and a factor in the real dataset was only considered meaningful to be retained if its eigenvalue was larger than the mean

eigenvalue for the corresponding factor derived from the random datasets. Orthogonal varimax rotation was used because unrelated factors provide the cleanest solution of relations between cross-level paths (oblique rotations would not only capture the factors that originate from a higher level factor but also capture within-level covariation). Path coefficients were estimated by correlating regression-based factor scores from adjoining levels.

Next, a single higher order personality functioning factor was extracted, using maximum likelihood estimation and equamax rotation, from the SIPP-SF scales that are conceptually related to AMPD criterion A (self-control, identity integration, relational capacities, social concordance). EFA was thus done on the 4 SIPP-SF scales, followed by another EFA on the resulting factor score estimates, and so on until only one higher-order factor remained. The differentiation of this general personality functioning factor versus the trait factors at succeeding levels of the PID-5 trait hierarchy was evaluated. The correlations at each level between the general personality functioning factor and trait factors were averaged to obtain an index of overall overlap versus differentiation of the trait components and the personality functioning factor. When moving down the hierarchy, we expect the average correlation to decrease, implying higher overall differentiation at lower levels. To estimate the effect size of the decrease in correlation across levels  $r$ -to- $z$  transformations of each level's average correlation coefficient were done, and Cohen's  $q$  (1988) between succeeding levels was calculated. The level after which the improvement in differentiation stagnates ( $q < .10$ ), can be considered as the level after which the differentiation of the interpersonal functioning factor from trait factors does no longer increase (or in other words remains stable).

## Results

### The trait meta-structure

The hierarchy subsisted of 6 levels (at the 7th level, a factor appeared on which none of the variables had its highest loading

and parallel analysis confirmed to retain 6 factors). A visual representation of the unfolding six-level hierarchy, including the correlation of the factor with factors of the higher level (i.e. path coefficients higher than .30) is shown in Figure 1.

A general factor of Personality Pathology was on top of the hierarchy and except Risk Taking (.17) all PID-5 facets had loadings  $\geq .40$ . At the second level, an Internalizing factor (highest loadings on this factor  $\geq .40$  from Anhedonia, Anxiousness, Depressivity, Emotional Lability, Perseveration, Rigid Perfectionism, Separation Insecurity, Submissiveness, Suspiciousness, Withdrawal, Intimacy Avoidance, Distractability, Perceptual Dysregulation, Unusual Beliefs and Experiences and Impulsivity) and an Externalizing factor (highest loadings on this factor  $\geq .40$  from Hostility, Attention Seeking, Callousness, Deceitfulness, Grandiosity, Manipulativeness, Restricted Affectivity, Eccentricity and Irresponsibility) emerged. At the third level the Internalizing factor was differentiated into Negative Affect (highest loadings on this factor  $\geq .40$  from Anxiousness, Emotional Lability, Perseveration, Rigid Perfectionism, Separation Insecurity, Suspiciousness, and Distractability) and Detachment (highest loadings on this factor  $\geq .40$  from Anhedonia, Depressivity, Withdrawal, Callousness, Intimacy Avoidance and Perceptual Dysregulation). At the fourth level Negative Affect (highest loadings on this factor  $\geq .40$  from Anxiousness, Emotional Lability, Perseveration, Separation Insecurity, Suspiciousness, Distractability, Perceptual Dysregulation, Unusual Beliefs and Experiences and Impulsivity) and Rigid Perfectionism (only loading  $\geq .40$  from Rigid Perfectionism) split up. At the fifth level Externalizing separated into an Antagonism factor (highest loadings on this factor  $\geq .40$  from Hostility, Attention Seeking, Deceitfulness, Grandiosity, Manipulativeness and Irresponsibility) and a mixed Disinhibition/Psychoticism factor (highest loadings on this factor  $\geq .40$  from Eccentricity and Risk Taking). At the sixth level Psychoticism (highest loading on this factor  $\geq .40$  from Unusual Beliefs and Experiences) and Disinhibition (highest loading on this factor  $\geq .40$  from Risk Taking) became separate factors. Given Risk Taking was the only loading above .40 on this latter factor we labelled it specifically Risk Taking. Of note is that the

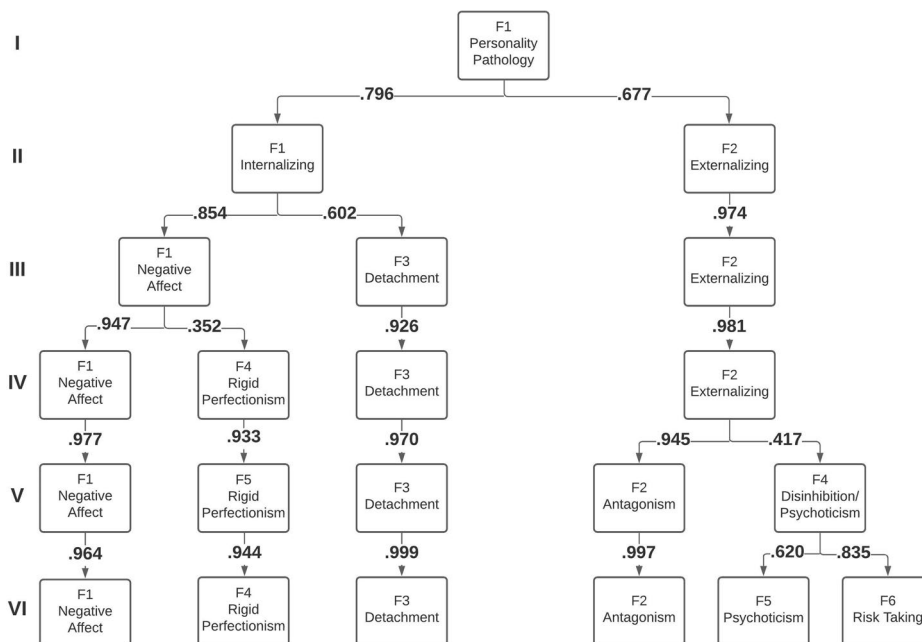


Figure 1. The trait meta-structure.

facet Perceptual Dysregulation had its highest loading on the factor Negative Affect (.55), but also loaded in the same range on the factor Psychoticism. This factor thus had loadings above .40 from both Perceptual Dysregulation (.53) and Unusual Beliefs and Experiences (.52), which we therefore continued to label as Psychoticism. So, over the apex, the general Personality Pathology factor decomposed into six factors, explaining about 71% of the variance: Negative Affect (45%), Antagonism (8%), Detachment (6%), Rigid Perfectionism (5%), Psychoticism (4%) and Risk Taking (3%).

### Differentiation of personality functioning from pathological trait factors at succeeding levels of the trait hierarchy

The differentiation of the SIPP-SF general personality functioning factor from the trait factors at succeeding levels of the PID-5 trait hierarchy was evaluated (see Table 1).

At the first level the correlation between the SIPP-SF general personality functioning factor and the Personality Pathology factor was  $-.73$ . When moving down the hierarchy, the average correlation between the SIPP-SF general personality functioning factor and the trait factors decreased, implying higher overall differentiation at lower levels. Up to the fourth level this differentiation improved (and then remained stable across following levels), as evidenced by a significant difference with the preceding level (i.e. Cohen's  $q > .10$ ). From the fifth level on Cohen's  $q$  was smaller than .10.

## Discussion

### The trait meta-structure

By exploring the unfolding hierarchical structure of pathological traits in a sample of community-dwelling older adults we could provide support for both the ICDPD and AMPD models holding promise in older adults. The trait domains at the sixth level of the meta-structure corresponded to both DSM-5 and ICD-11 pathological traits. We found the shared ICDPD and AMPD factors Negative Affect, Detachment, Antagonism/Dissocial, Disinhibition represented by Risk taking, but also the AMPD unique factor of Psychoticism, mainly represented by Unusual Beliefs and Experiences, and the ICDPD Anankastia Factor, represented by Rigid Perfectionism. These results imply that a future nosology integrating the ICD-11 and DSM-5 trait proposals would be applicable in older adults. This coincides with the recent plea for harmonization of ICD-11 and DSM-5 traits in younger adults samples (Bach et al., 2020; Kerber et al., 2022). These studies also proposed a short AMPD and ICDPD model compatible measurement possibility for pathological traits, namely the Personality Inventory for DSM-5, Brief Form Plus (PID-5BF+). Such a short instrument can be an interesting tool

to collect clinical evidence in later life, if age-neutrality and psychometric properties can be corroborated in older adult samples.

Although the study results seem supportive for an integration of the ICDPD and AMPD trait models, a few issues should be mentioned. First, the Psychoticism factor was represented solely by the facet Unusual Beliefs and Experiences having its highest loading on the factor. The facets of Eccentricity and Perceptual Dysregulation loaded higher on the factor Negative Affect (respectively .48 and .55), than on the Psychoticism factor (respectively .23 and .53). Possibly the Eccentricity facet is thus more measuring stress aspects than PD components in older adults. The Perceptual Dysregulation factor seems to cross-load on Psychoticism and Negative Affect. This is not illogical since PID-5 Perceptual Dysregulation includes features of dissociative disorders (Bach et al., 2020). Also, recent frameworks for psychopathology, like the HiTOP (Kotov et al., 2017) places stress components and dissociation in the Internalizing spectrum.

Furthermore, Anankastia/Compulsivity was only represented by Rigid Perfectionism and on contrary to the crosswalk of Bach and colleagues (2017) not by Perseveration. Perseveration loaded higher on Negative Affect. However, this is in line with results in younger adults (Kerber et al., 2022), and also corresponds to the HiTOP placement in the Internalizing spectrum (Kotov et al., 2017). Also, although HiTOP (Kotov et al., 2017) places Rigid Perfectionism in the Externalizing spectrum, Rigid Perfectionism originated from Negative Affect at the fourth level, coming from an overarching Internalizing factor. On the one hand, these results possibly indicate a more prominent presence of internalizing than externalizing pathology in our sample of older adults. This corresponds to earlier findings evaluating which PD features are more fluid across the life span (Gutiérrez et al., 2012; Segal et al., 1996; Videler et al., 2019). Generally, there is a decrease of externalizing PD symptoms in older age (compared to younger adults) whereas internalizing PD symptoms do not decline. On the other hand, results in younger adult participants also support the association with internalizing pathology (Naragon-Gainey & Simms, 2017). In their sample receiving psychiatric treatment in the past two years PID-5 Rigid Perfectionism had stronger correlations with distress and fear disorders than with externalizing disorders.

Knowledge of the meaningful hierarchical levels of the trait structure is also clinically important (Ruggero et al., 2019; Widiger et al., 2019). It provides clinicians information on what overarching factors are and can thus help explain shared underpinnings of AMPD and ICDPD trait domains. In older adults for example Negative Affect, Compulsivity (i.e. Rigid Perfectionism) and Detachment originate from an Internalizing dimension, whereas Antagonism, Psychoticism and Disinhibition (i.e. Risk Taking) originate from an Externalizing dimension. Furthermore, it gives clinicians the flexibility to focus on the most appropriate trait level for assessment or interventions. The second level can

**Table 1.** Pearson correlations between PID-5 factors and SIPP-SF general personality functioning factor.

Level	$r$ with SIPP-SF factor	Average $r$ (Fisher $z$ )
I.	F1 Personality Pathology ( $-.731^{**}$ )	$-.731$ ( $-.929$ )
II.	F1 Internalizing ( $-.682^{**}$ ), F2 Externalizing ( $-.371^{**}$ )	$-.527$ ( $-.590$ ) <sup>+</sup>
III.	F1 Negative Affect ( $-.500^{**}$ ), F2 Detachment ( $-.280^{**}$ ), F3 Externalizing ( $-.582$ )	$-.454$ ( $-.485$ ) <sup>+</sup>
IV.	F1 Negative Affect ( $-.546^{**}$ ), F2 Externalizing ( $-.292^{**}$ ), F3 Detachment ( $-.532^{**}$ ), F4 Rigid Perfectionism (.074)	$-.361$ ( $-.377$ ) <sup>+</sup>
V.	F1 Negative Affect ( $-.537^{**}$ ), F2 Antagonism ( $-.271^{**}$ ), F3 Detachment (.532), F4 Disinhibition/Psychoticism ( $-.176^{**}$ ), F5 Rigid Perfectionism (.104)	$-.324$ ( $-.332$ )
VI.	F1 Negative Affect ( $-.530^{**}$ ), F2 Antagonism ( $-.275^{**}$ ), F3 Detachment ( $-.534^{**}$ ), F4 Rigid Perfectionism ( $-.136^*$ ), F5 Psychoticism ( $-.186^{**}$ ), F6 Risk Taking ( $-.052$ )	$-.286$ ( $-.299$ )

Note.  $^{**}p < .01$ ;  $^*p < .05$ ;  $^+$  significant difference with preceding level as evidenced by Cohen's  $q > .10$ .

for example guide the decision for a transdiagnostic treatment aimed at internalizing versus one aimed at externalizing pathology. Like mentioned before, if such a treatment does not clear up all patient's problems, the clinician can cascade down in the hierarchy to lower level components as intervention targets. Also it gives clinicians the flexibility to work from different paradigms and associated theories and knowledge. If one wants to focus on temperament-based theory of personality traits, for example the third level can be used, given its correspondence to the temperament "Big Three" (Clark & Watson, 2008): Negative Affectivity aligns with Negative Temperament, Detachment with Positive Temperament reversed scored, and Externalizing with temperament Constraint reversed scored. On the other hand, for example focusing on the sixth trait level allows working from recent dimensional paradigms and to describe stylistic differences in PD expression with the AMPD and ICDPD traits.

### **Differentiation of personality functioning from pathological trait factors at succeeding levels of the trait hierarchy**

Like mentioned before, if the personality functioning factor has no substantive meaning above traits levels, the on average correlation between the personality functioning factor and the trait factors would not decrease at succeeding levels of the trait hierarchy. The differentiation between the personality functioning factor and the trait factors incremented even up to the fourth trait level (as demonstrated by a lower on average correlation at succeeding trait levels). Although the possible inclusion of personality functioning within the HiTOP-framework has been suggested (Widiger et al., 2019), HiTOP does not yet include personality functioning. The current results seem to support personality functioning deserving its own position within the HiTOP model, given the unique variance captured by our general personality functioning factor. At the fourth trait level the mean  $r$  with the general personality functioning factor was  $-.36$ , which corresponds to only 13% of shared variance. Future studies will have to further fine-tune the positioning of PDs within HiTOP.

The optimal differentiation between traits and general personality functioning was reached at the moment the levels corresponded to established trait models, namely at the fourth up to the sixth level. The fourth level corresponds to pathological variants of the consensus "Big Four" (Widiger & Simonsen, 2005). The fifth level comprised the AMPD and IDCPD trait domains, yet Disinhibition and Psychoticism were still blended. Therefore, we conclude that for personalized case conceptualisation the sixth level provides the most fine-grained assessment possibilities. At this level all AMPD and ODCPD trait domains are represented as separate factors and differentiation from personality functioning (i.e. severity criterion) is maximized.

### **Limitations and conclusion**

This study does not come without limitations. Given a unidimensional severity criterion suffices for diagnosing a PD, we limited our evidence for the differentiation of this severity criterion from traits to a general factor of personality functioning. Future research in clinical samples is needed to evaluate if the operationalization of severity into subfactors can be useful. It at least appears to be the case for treatment purposes. For example, in a study of Weekers and colleagues (2019) the

self-functioning domain ( $d = 1.22$ ) appeared to be more sensitive to change after 3 months of inpatient treatment than the interpersonal domain ( $d = 0.51$ ). Further, the current study measures were all self-report, and shared method variance can inflate correlations and result in underestimation of the differentiation of personality functioning from pathological traits. Also, data in clinical samples will result in more variance of scores than the current community-dwelling sample, which could also influence the size of correlations being found (Goodwin & Leech, 2006). Notwithstanding, we could corroborate the AMPD and ICDPD trait domains in older adults and provide a trait hierarchy with all levels having substantive meaning and demonstrated personality functioning can be differentiated from maladaptive traits. It thus seems feasible to establish a PD diagnosis based on severity (i.e. level of personality functioning), and then focus on the most appropriate trait level, for example the level AMPD and ICDPD trait facets for personalized case conceptualization, or the level of internalizing and externalizing dimensions to implement a transdiagnostic treatment focusing on common processes shared among internalizing versus externalizing disorders. Given the majority of data used to develop the HiTOP model was collected from age groups from 15 till 65 years old (Kotov et al., 2021) the current findings are also a first step towards knowledge how pathological traits and personality functioning in older adults can probably be positioned within this HiTOP model. More studies in older adults are sorely needed, especially clinical studies covering a comprehensive coverage of various symptoms of pathology to further map the joint structure of personality (disorders) and other mental disorders.

### **Disclosure statement**

No potential conflict of interest was reported by the authors.

### **Ethical declarations**

Informed consent was obtained from all individual participants included in the study. Data collection was originally done for the Debast et al. (2017) study. At the time the study was conducted research in community samples did not require ethical approval under Belgian Law, yet the study followed the principles of the Declaration of Helsinki.

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