The Joint Hierarchical Structure of Psychopathology and Dysfunctional Personality Domain Indicators Among Community-Dwelling Adults

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Abstract

To examine the hierarchical structure of psychopathology and dysfunctional personality domains, 2,416 Italian community-dwelling adult volunteers were administered a set of psychometrically-sound psychopathology measures and the Personality Inventory for *DSM-5* Brief Form+ (PID-5-BF+). Parallel analysis, minimum average partial, and very simple structure results suggested that 1-6 principal component (PCs) should be retained. Goldberg's bass-ackwards model of the joint psychopathology measure and PID-5-BF+ ipsatized domain scale correlation matrix evidenced a hierarchical structure that was consistent with the working model proposed by the Hierarchical Taxonomy of Psychopathology (HiTOP) consortium. Hierarchical agglomerative cluster analysis around latent variables of the psychopathology indicators and PID-5-BF+ domain scales recovered four latent dimensions, which were akin to the corresponding bass-ackwards components and nicely reproduced the HiTOP Internalizing, Externalizing, Thought Disorder, and Eating Pathology dimensions.

Keywords: HiTOP; Personality Inventory for *DSM-5*; Alternative Model of Personality Disorders; psychopathology; dimensional models.

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Domain Indicators Among Community-Dwelling Adults

Traditional categorical diagnostic systems for mental disorders have been showed to suffer from many flaws (e.g., Chmielewski, Clark, Bagby, & Watson, 2015; Clark, 2007; Krueger & Markon, 2006, 2011; Widiger & Clark, 2000; Widiger & Crego, 2018), with extensive research on comorbidity and on the distributions and covariation of signs and symptoms showing that psychopathology is dimensional rather than categorical (e.g., Haslam, McGrath, Viechtbauer, & Kuppens, 2020). The problems and limitations of the categorical model of classification are not, of course, confined to clinical syndromes; the many problems with the *Diagnostic and Statistical Manual of Mental Disorders-IV Edition* (*DSM–IV*; American Psychiatric Association [APA], 2000) personality disorder (PD) diagnostic categories (e.g., excessive diagnostic cooccurrence, heterogeneity among person sharing the same diagnosis) have been well documented (Clark, 2007; Krueger & Eaton, 2010; Livesley, 2001; Verheul, 2005; Widiger & Trull, 2007).

A major step toward a conceptualization of personality disorders from the perspective of the general personality structure occurred with *DSM–5* (APA, 2013a). Indeed, a dimensional trait model was included in the Alternative Model of Personality Disorders (AMPD; APA, 2013a). This model consists of the five broad domains of Negative Affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism, that align with the Five Factor Model of personality domains of neuroticism, low extraversion, low agreeableness, low conscientiousness, and openness, respectively (e.g., Suzuki, Griffin, & Samuel, 2017; Wright, Pahlen, & Krueger, 2017), with perhaps the exception of openness to experience vs. Psychoticism (Suzuki, Samuel, Pahlen, & Krueger, 2015). Similarly, in the *International Classification of Diseases*, 11th Revision (*ICD-11*; World Health Organization, 2018) the diagnosis of personality disorder has been shifted to a dimensional model. Notably,

the *ICD-11* personality disorders model did not include a domain of oddity (i.e.,

Psychoticism in the AMPD) and, in turn, includes an anankastic (or compulsivity) dimension

that assess the tendency to show a narrow focus on one's rigid standard of perfection and of

right and wrong, and on controlling one's own and others' behavior and controlling situations

to ensure conformity to these standards.

A proposed solution to the shortcomings of the traditional taxonomies is represented

by empirically based organization of psychopathology (e.g., Achenbach, 2020; Clark &

Watson, 2008; Forbush & Watson, 2013; Kotov et al., 2011; Krueger & Markon, 2006;

Lahey et al., 2008). Rather than being constructed in a top-down manner, this quantitative

nosology is emerging from the independent work of different research groups seeking to

understand the organization of psychopathology (Krueger et al., 2018). Interestingly, a large

consortium of researchers has recently proposed the Hierarchical Taxonomy of

Psychopathology (HiTOP) as an alternative to traditional categorical classifications (Kotov et

al., 2017). The core of the HiTOP system consists of six spectra: internalizing, thought

disorder, disinhibited externalizing, antagonistic externalizing, detachment, and a provisional

somatoform spectrum (Kotov et al., 2017). These spectra align with the five domains of the

AMPD dimensional trait model as well with the five domains of the personality structure

(Kotov et al., 2017; Widiger et al., 2019). Notably, these factors resulted from joint factor

analytic studies of symptoms of the clinical syndromes and symptoms of personality

disorders (e.g., Markon, 2010; Wright & Simms, 2015). Moreover, based on reviews of

structural evidence on the correlations between the spectra (e.g., Achenbach & Rescorla,

2003; Kotov, Chang, et al., 2011; Krueger & Markon, 2006; Markon, 2010; Røysamb et al.,

2011), it seems that they can be sub-subsumed into extremely broad superspectra (e.g., a

general psychopathology factor; Caspi et al., 2014; Lahey et al., 2011, 2012). Finally, each

spectrum subsumes narrower subfactors and syndromes, and at the bottom of the hierarchy,

HiTOP incorporates a large number of symptom and trait dimensions (Forbes et al., 2021; Kotov et al., 2017).

Because the HiTOP framework could be conceived as a dimensional joint structure of personality and psychopathology (Kotelnikova, Weaver, & Clark, 2019; Kotov et al. 2017), examining the relationships between psychopathology and personality represents a relevant issue (DeYoung et al., 2020; Widiger et al., 2019). Up to now, few studies examined the joint structure of psychopathology and dysfunctional personality domains (e.g., Kotelnikova et al., 2019; Rosenström et al., 2019; Sellbom, Carragher, Sunderland, Calear, & Batterham, 2020), and available evidence stressed the importance of further examination of transdiagnostic models of psychopathology and personality traits (e.g., Kotov et al., 2017).

The Present Study

In the work reported here, our goal was to extend research on the joint structure of maladaptive personality and psychopathology in two key directions. First, research to date has been conducted mostly in English-speaking countries (i.e., samples from United States and Australia; e.g., Forbes et al., 2021; Kotelnikova, Weaver, & Clark, 2019), or countries in Northern Europe (e.g., Rosenström et al., 2019). Although cross-cultural robustness has demonstrated for the internalizing and disinhibited externalizing spectra (e.g., Krueger et al., 2003), a cross-cultural extension of the HiTOP dimensions in Southern Europe has not been explored in research to date. Against this background, the present study aimed at evaluating the role of dysfunctional personality domains in shaping structural models of psychopathology in a sample ($N = 2,416$) of Italian community-dwelling adult volunteers. Specifically, our study aimed at providing additional support for the HiTOP framework at the level of spectra (and subfactors) extending available data (e.g., Kotelnikova et al., 2019; Rosenström et al., 2019) on the joint structure of psychopathology and dysfunctional personality dimensions in a different cultural context (i.e., Italy).

Secondly, additional research is needed to confirm the placement in the HiTOP model of syndromes which have received relatively limited support (Kotov et al., 2017). To this aim, we relied on an extended set of psychopathology indicators including measures of depression, anxiety, anger, somatic symptoms, obsessive-compulsive symptoms, eating disorder symptoms, drug and alcohol use, conduct disorder and antisocial behavior, dissociation, mania and hypomania, subclinical psychotic experiences, as well as dysfunctional personality domains. Specifically, we considered measures of psychopathology dimensions whose placement in the HiTOP model is still controversial (e.g., dissociation, somatoform symptoms, and mania).

Based on previous findings (e.g., Kotelnikova et al., 2019; Rosenström et al., 2019), and on HiTOP cross-walk between major dimensions of clinical and personality domains (Kotov et al., 2017), we hypothesized to that an Internalizing latent dimensions would include Negative Affectivity, an Externalizing Dimension would comprise Antagonism and possibly Disinhibition, and a Thought Disorders latent dimensions would incorporate Psychoticism; finally, the presence of a Detachment latent dimension was expected.

Method

Participants

An original sample of 2,454 Italian community dwelling adults (69.8% female; mean age was 33.35 years, *SD* = 14.57 years) volunteered to take part in an online study on psychopathology. In order to identify potential non-compliance to the study we considered the time spent completing the survey and excluded participants who spent less than 20 min. completing the questionnaires; moreover, questionnaires were considered incomplete if more than 10% of the items in any given scale were not answered. Thirty-eight participants (1.5%) spent less than 20 min. for completing the questionnaires or did not report complete data on

the any measure. A detailed description of missing data is provided in the Online Supplemental Material.

The final sample was composed of 2,416 Italian community-dwelling adult participants, with a mean age of 33.26 years (SD = 14.54 years; age range: 18 years – 88 years); nearly all participants (99.1%) were Caucasian (0.9% Black, Asian and Other). In our sample 1,687 (69.8%) participants were female and 699 (28.9%) participants were male, 13 (0.5%) participants identified their gender outside the gender binary, whereas 17 (0.7%) participants refused to disclose their gender. One thousand five hundred fifty-six (64.4%) participants were unmarried, 715 (29.6%) were married, 93 (3.8%) participants were divorced, and 18 (0.7%) participants were widow/-er; 34 (1.4%) participants refused to disclose their civil status. One hundred fifty-eight (6.6%) participants had junior high school degree, 1081 (44.7%) participants had high school degree, 986 (40.8%) participants had university degree, and 172 (7.7%) participants had doctoral degree; 19 (0.8%) participants refused to disclose their educational level.

Procedures

Participants completed the study online using Online Surveys Jisc, an online survey tool designed for academic research (https://www.onlinesurveys.ac.uk/); participants volunteered to take part in the study receiving no economic incentive or academic credit for their participation. To be included in the sample, participants had to document that they were of adult age (i.e., 18 years of age or older), and to agree to online written informed consent in which the study was extensively described. Institutional Review Board approval was obtained. All questionnaires were scored by an independent group of graduate research assistants who were blind to the aim of the study.

Measures

A detailed description of the measures used in the present study, as well as of their psychometric properties is provided in the Online Supplementary Material.

DSM-5 Level 2 Depression – Adult (APA, 2013b). The *DSM-5* Level 2 Depression assesses the domain of depression in individuals age 18 and older. The Italian translation (Fossati et al., 2015a) of the *DSM-5* Level 2 Depression has been published (Somma et al., 2021).

DSM-5 Level 2 Anxiety– Adult (APA, 2013c). The *DSM-5* Level 2 Anxiety was designed to assess anxiety in subjects of age 18 and older. The *DSM-5* Level 2 Anxiety measure has been published in its Italian translation (Fossati et al., 2015b; Somma et al., 2021**).**

DSM-5 Level 2 – Anger – Adult (APA, 2013d). The *DSM-5* Level 2-Anger-Adult measure assesses the pure domain of anger in individuals age 18 and older. The *DSM-5* Level 2 Anger measure has been published in its Italian translation (Fossati et al., 2015c). Factor analysis results and reliability index estimates of the *DSM-5* Level 2-Somatic Symptom-Adult measure are provided as Supplemental Material (Table S1).

DSM-5 Level 2 – Somatic Symptom – Adult Patient (APA, 2013e). The *DSM-5* Level 2-Somatic Symptom-Adult measure measures somatic symptoms. The *DSM-5* Level 2 Somatic Symptom-Adult measure has been published in its Italian translation (Fossati et al., 2015d). Factor analysis results and reliability index estimates of the *DSM-5* Level 2-Somatic Symptom-Adult measure are provided as Supplemental Material (Table S2).

DSM-5 Severity of Dissociative Symptoms (APA, 2013f). The *DSM-5* Severity of Dissociative Symptoms (Brief Dissociative Experiences Scale-Modified) assesses the severity of dissociative experiences in individuals age 18 and older. The *DSM-5* Severity of Dissociative Symptoms has been published in its Italian translation (Fossati, Borroni, Del Corno, 2015e), and its psychometric properties were tested (Somma et al., 2021).

Brief Obsessive-Compulsive Scale (BOCS; Bejerot et al., 2014). The BOCS consists of a 15-item checklist and a six-item severity scale assessing obsessive-compulsive symptoms and

associated severity. Previous data showed that the BOCS was provided with adequate psychometric properties (Bejerot et al., 2014). In the present study, we relied on an Obsession sub-scale (BOCS item 1, 3, 4, 5, 7, 9, 10, and 14), on a Compulsion sub-scale (BOCS item 2, 6, 8, 11, 12, 13, and 15), and on the BOCS Severity scale. Factor analysis results and reliability index estimates for the BOCS Obsession sub-scale (Table S3), and BOCS Compulsion sub-scale (Table S4) are provided as Supplemental Material.

Eating Attitudes Test-26 (EAT-26; Garner et al., 1982). The EAT-26 assesses aspects related to dieting, bulimia and food preoccupation, and oral control. The EAT-26 showed adequate psychometric properties (Garner et al., 1982), also in its Italian translation (Dotti & Lazzari, 1998).

Drug Use Disorders Identification Test (DUDIT; Berman, Bergman, Palmstierna, & Schlyter, 2005). The DUDIT is a 11-item self-report measure developed to assess an individual's illicit drug use and related consequences. Factor analysis results and reliability index estimates of the DUDIT measure are provided as Supplemental Material (Table S5).

Mood Disorder Questionnaire (MDQ; Hirschfeld et al., 2000). The MDQ assesses the macro-area of mood, a lifetime history of a manic or hypomanic syndrome, placing particular emphasis on irritability, activity, sociability, sleep, libido, thoughts, attention, energy, behavior. Previous studies showed that the MDQ was provided with adequate psychometric properties (e.g., Hirschfeld et al., 2000), also in its Italian translation (Hardoy et al., 2005).

Personality Diagnostic Questionnaire-4+ Antisocial Personality Disorder Scale (PDQ-4+ ASPD; Hyler, 1994). The PDQ-4+ ASPD scale is a self-report measure of the symptoms of Conduct Disorder and ASPD. The translation procedure, internal consistency reliability estimates, and construct validity of the Italian translation of the PDQ-4+ were previously published (Fossati et al., 1998).

Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993). The AUDIT is a 10-item self-report measure developed to assess alcohol use. Previous studies showed that the AUDIT was provided with adequate psychometric properties (e.g., Conigrave et al., 1995; Maisto et al., 2000), also in its Italian translation (e.g., Cosenza, Matarazzo, Ciccarelli, & Nigro, 2020).

Community Assessment of Psychic Experiences-42 (CAPE-42; Konings, Bak, Hanssen, Van Os, & Krabbendam, 2006). The CAPE-42 measures the frequencies and distress of positive, negative and depressive subclinical psychotic experiences (Mark & Toulopoulou, 2016). In the present study, we relied on the Italian translation of the CAPE-42 which has been previously validated (Daneluzzo et al., 2008).

Prodromal Questionnaire (PQ-16; Ising et al., 2012). The PQ-16 assess attenuated symptoms of psychosis syndrome. The PQ-16 showed adequate psychometric properties (e.g., Ising et al., 2012) also in its Italian translation (Cioncolini, Semrov, & Raballo, 2018).

Somatoform Dissociation Questionnaire (SDQ-20; Nijenhuis et al., 1996). The SDQ-20 assesses the severity of somatoform dissociation. The SDQ-20 showed adequate psychometric properties (Nijenhuis et al., 1996) also in its Italian translation (Dotti & Lazzari, 1998). in the present study we assessed the factor structure and reliability index estimates of the SDQ-20 are provided as Supplemental Material (Table S6).

Personality Inventory for DSM-5-Brief Form+ Modified (PID-5-BF+; Bach et al., 2020). The PID-5-BF+ is a 36-item self-report instrument developed by Bach and colleagues (2020) to assess the combined *DSM-5* and *ICD-11* domains (i.e., negative affectivity, detachment, antagonism, disinhibition, anankastia, and psychoticism). The PID-5-BF+ psychometric properties have been tested in an international collaborative study, which includes the Italian translation of the PID-5-36 (Bach et al., 2020).

Level of Personality Functioning Scale-Brief Form 2.0 (LPFS-BF; Hutsebaut et al., 2016).

In the present study, we relied on the LPFS-BF to assess the relationships between personality dysfunction and the PID-5-BF+ domain scale scores and general factor scores (see Table S14), as well as its relationships with the first principal component (PC) of the Pearson *r* coefficient matrix of the 20 psychopathology scale scores that were administered in the present study (see Table S16). Because the LPFS-BF scores were used for preliminary analyses, a detailed description of the LPFS-BF is presented in Part II of our Supplementary Material.

Data analysis

A detailed description of the data analytic strategy that was used to assess the factor structure of the measures used in the present study is detailed in the Online Supplementary Material. Because self-report Likert-scales may be influenced by response style (e.g., Böckenholt, 2017), which can in turn distort relationships between latent dimensions (e.g., Böckenholt & Meiser, 2017), in the present study we formally assessed if the response process of each scale was affected by response style relying upon item response tree (IRTree; Jeon & DeBoeck, 2016). Specifically, for each construct measured on a polytomous Likert-type scale, we formally compared the goodness-of-fit of a IRTree model with the fit of a graded response model (Samejima, 1969) to evaluate if response styles were present in the data. IRTree for three-, four- and five-point Likert item responses were based on Jeon and DeBoeck' (2016) models. Extensive analyses on the best approach to control for possible measurement-related factors are presented in the Online Supplementary Material.

In the present study, we relied on two methods to examine the joint hierarchical structure of the psychopathology measures and personality domain scales. Firstly, we relied on Goldberg (2006) bass-ackwards method as extended by Forbes and colleagues (2021) using varimax rotation. Secondly, to reduce confirmation bias in determining which PCs

represented artifacts in the structure, we relied on hierarchical agglomerative cluster analysis of variables. In particular, the Clustering of Variables Around Latent Variable algorithm (ClustVarLV; Vigneau, Chen, & Cariou, 2020) was used. A detailed description of the data analytic approach is detailed in the Online Supplementary Material.

Results

Preliminary Analyses

In line with Oltmanns and colleagues' (2018) study, the findings presented in Part II of the Online Supplementary Material (see Tables S7-S20) showed that the PID-5-BF+ item general factor scores showed significant and large association with the general psychopathology principal component score, suggesting that general personality impairment may be strongly correlated with a general psychopathology component (see Part II of the Supplementary Material). Moreover, the individual PID-5-BF+ domain scale scores were substantially, positively, and significantly associated with the general psychopathology principal component score (median r value = .57; see Table S16). Similarly, row median r values computed across the six PID-5-BF+ dimensions for each specific psychopathology dimension were also positive and non-trivial (i.e., $r \geq .20$; see Table S17 and Table S18), suggesting that each specific psychopathology dimensions showed non-negligible, positive, and significant correlations with two or more PID-5-BF+ dimensions.

Notably, as it can be observed in Table S21, IRTree models were provided with lower Akaike Information Criterion and Bayesian Information Criterion values than graded response model only for PID-5-BF+ scales, suggesting that response style affected only PID-5-BF+ items. This finding is not surprising because response styles have also been shown to vary depending on the response format (Weijters, Cabootor et al., 2010); moreover, previous data showed that differences exist between subgroups of participants in the consistency of their response styles (e.g., Wetzel, Carstensen, & Böhnke, 2013). According to the results

presented in the Online Supplemental Material and briefly summarized here, to control for

the potentially confounding effect of the PID-5-BF+ generalized item response pattern, we

decided to compute ipsative scores of the PID-5-BF+ items to remove the elevation

component from individual profiles (Chan, 2003; Primi, Santos, De Fruyt, & John, 2019).

The reliability of the ipsative score was formally assessed by computing ω coefficient (see

Table S22; median $\omega = .75$, $SD = .08$).

Extended Goldberg's Bass-Ackwards Hierarchical Joint Hierarchical Structure

The descriptive statistics and internal consistency coefficient of all psychopathology

and dysfunctional personality measures that were used in the present study are summarized in

Table S22. The psychopathology measure and PID-5-BF+ domain scale scores correlation

(i.e., Pearson r coefficient) matrix is reported in Table S23; dimensionality analysis results of

the joint Pearson r coefficient matrix are summarized in Table S24. Dimensionality analysis

results showed that the Pearson r coefficient values among psychopathology measure scores

and ipsative scores of the PID-5-BF+ dysfunctional personality domain scales could be

explained by a number of latent variables ranging from 1 principal component (very simple

structure complexity level 2) to 6 principal components (quasi-inferential parallel analysis).

The bass-ackwards joint hierarchical structure of the psychopathology measure score and

PID-5-BF+ domain scale ipsative score is reported in Figure 1; the extended bass-ackwards

(Forbes et al., 2021) joint hierarchical structure of psychopathology and dysfunctional

personality domains is depicted in Figure 2.

Varimax-rotated PC standardized loadings and communality estimates for the six-

principal component (PC) model of the joint Pearson r coefficient matrix are listed in Table

1. As it can be observed in Table 1, PC6_1 was characterized by salient loadings of self-

report measures of depression, negative symptoms, anxiety, anger, and somatic symptoms, as

well as the PID-5-BF Negative Affectivity domain scale ipsative score. Moreover, PC6_1

showed also non-negligible secondary loadings of self-report measures of dissociation, as well as of positive/prodromal symptoms. PC6_2 was characterized by salient loadings of self-report measures of prodromal symptoms, positive symptoms, and mania. In our study, antisocial personality features, alcohol use, and drug use showed their largest and positive loadings on our PC6_3, which was also uniquely and markedly characterized by the PID-5-BF+ Antagonism scale loading (as well as by a secondary loading of the Mood Disorder Questionnaire). Moreover, in our study all EAT-26 scales loaded positively and substantially only on PC6_4. In our study, PC6_5 seemed to represent a bipolar latent variable, which was characterized by substantial positive loadings of self-reports measures of obsessions and compulsions, as well as of the *ICD-11* Anankastia dysfunctional personality domain; the PID-5-BF+ Disinhibition domain scale seemed to map onto the opposite polarity of PC6_5. Finally, our PC6_6 was mainly characterized by a large negative loading of the PID-5-BF+ Detachment scales, as well as by a secondary, negative and non-trivial loadings of the CAPE Negative Symptoms scale. The Varimax-rotated PC standardized loadings and communality estimates for PC models ranging from one PC to five PCs are reported in Tables S24-S28. Factor score correlations (i.e., comparability coefficients) between Varimax-rotated solutions and Promax-rotated solutions are reported in Table S31 (median r value = .98, 25th percentile = .96, 75th percentile = .98, min. r value = .93, max r value = .99).

Hierarchical Agglomerative Cluster Analysis of Psychopathology and Dysfunctional Personality Variables

The Clustering of Variables Around Latent Variable algorithm (ClustVarLV; Vigneau, Chen, & Cariou, 2020) dendrogram is reported in Figure 3. The plot of the variation of the clustering criterion after consolidation of the partitions by means of the partitioning algorithm (Vigneau & Quannari, 2003; Chavent et al., 2012; see Figure S1, upper panel) showed a major difference when four clusters were merged into three clusters, thus

suggesting a four-cluster solution. The plot of the stability criterion for determining the optimal number of clusters is reported in Figure S1 (lower panel); as it can be observed, the line peaked at four clusters, with a second peak at six clusters; in both cases, the average adjusted Rand index (Hubert & Arabie, 1985) values were close to 1.00, and the individual adjusted Rand index showed the lowest variation (i.e., shortest vertical dashed lines). Because both criteria for selecting the optimal number of clusters converged in suggesting a four-cluster solution, we retained the four-cluster model of the joint correlation matrix of psychopathology measure scores and PID-5-BF+ domain scale ipsative scores.

Variable correlations with the central synthetic variable of the cluster (i.e., its first principal component) for the four-cluster solution are listed in Table 2. As it can be observed in Table 2, the synthetic component of Cluster 1 was substantially and positively associated with measures of positive symptoms, dissociation, prodromal symptoms, obsessive symptoms, compulsive symptoms, and overall severity of obsessive-compulsive symptoms. The PID-5-BF+ Psychoticism domain scale ipsative score showed a non-trivial positive correlation with Cluster 1 synthetic component. In our study, variable Cluster 2 synthetic component showed non-negligible positive correlations with self-report ipsative scores of the PID-5-BF+ Negative Affectivity domain, scale as well as with self-report measures of depression, negative symptoms, anxiety, anger, and somatic symptoms. In our sample, the synthetic component of variable Cluster 3 showed non-negligible positive correlations with the AUDIT, DUDIT and PDQ-4+ Antisocial Personality Disorder scale scores; moreover, it showed a substantial and negative correlation with (ipsatized) self-reports of Anankastia dysfunctional personality domain, and positive and non-trivial r coefficients with Disinhibition and Antagonism dysfunctional personality domain (ipsatized) self-reports, at least as they were operationalized in the corresponding PID-5-BF+ scales. Finally, the synthetic component of variable Cluster 4 was positively, substantially, and exclusively

correlated with the EAT-26 scale scores. Table S32 presents the correlation between each variable and its own group latent variable, and with the next nearest group latent variable, respectively. For comparison purposes, variable correlation with the central synthetic variable of the cluster for the six clusters solution is presented in Table S33.

Discussion

Confirming and extending available evidence (Kotelnikova, Weaver, & Clark, 2019; Rosenström et al., 2019) on the joint structure of psychopathology and dysfunctional personality measures, our data seemed to suggest that latent dimensions aligning both specific dysfunctional personality domains and selected psychopathology features could be observed using both top-down (i.e., bass-ackwards) and bottom-up (i.e., ClustVarLV) approaches. Indeed, we relied of two non-overlapping methods for dimension-reduction analysis. Notably, both Goldberg's (2006) bass-ackwards method and ClustVarLV approach provided evidence for a hierarchical structure in the joint psychopathology and dysfunctional personality measure correlation matrix. It should be observed that starting from level two of our bass-ackwards model hierarchy the PID-5-BF+ dysfunctional personality domain scales showed meaningful and non-trivial relationships with the extracted components; this finding seemed to support HiTOP hypothesis that psychopathology dimensions may be rooted in dysfunctional personality domains (Forbes et al., 2021; Kotov et al., 2017).

To the best of our knowledge, our study represented the first attempt at identifying the HiTOP spectra (and subfactors) while relying on an extended set of psychopathology indicators, including also self-reports of "dark materials" (i.e., dimensions whose placement currently is inconsistent or unclear, for instance, mania and dissociation; Kotov et al., 2020; Watson et al., 2022b), and on self-report measures of *DSM-5* AMPD/*ICD-11* dysfunctional personality domain measures. Moreover, although previous study on the cross-cultural replicability of the structure of psychopathology have been carried out (e.g., Krueger,

Chentsova-Dutton, Markon, Goldberg, & Ormel, 2003), we are not aware of any other study on the joint structure of psychopathology and dysfunctional personality domains in Southern Europe; thus, our findings may provide first support to the cross-cultural generalizability of the HiTOP spectra (Kotov et al., 2017).

General Psychopathology

When we relied on Goldberg's (2006) bass-ackwards method and extracted only the first PC of the joint correlation matrix, all psychopathology measures showed substantial and positive loadings on it; rather, none of the PID-5-BF+ domain scales ipsative scores seemed to be non-trivially related to PC 1_1, which seemed to represent the General Psychopathology component. This finding was consistent with our expectations because we relied on ipsative scores to remove the effect of generalized profile elevation from the individual PID-5-BF+ domain scale (as well as item) scores (see also Rosenström et al., 2019), for our structural analyses. Indeed, it should be observed that our preliminary analysis results seemed to suggest that the generalized profile elevation of the PID-5-BF+ domain scales may represent a marker of self-reported impairment in general personality functioning (see Table S14). In turn, both the PID-5-BF+ item general factor score, and the self-reported impairment in general personality functioning (i.e., LPFS-BF total) score were substantially associated with the General Psychopathology PC score (see Table S16). This result is consistent with the hypothesis that general personality impairment may be located at the highest level of the HiTOP hierarchy (Widiger et al., 2019), as well as with evidence suggesting that general personality impairment and general factors of psychopathology are likely to entail a common individual differences continuum (Oltmanns, Smith, Oltmanns, & Widiger, 2018).

In our study, the general psychopathology dimension split into two broad components, namely an Internalizing spectrum and a Non-Internalizing component, which

included indicators from both the Externalizing and the Thought disorder spectra identified in

previous studies (e.g., Forbes et al., 2021). According to our results, an Externalizing

component condensing primary loadings of substance abuse (i.e., AUDIT and DUDIT total

scores), as well as antisocial behavior (at least as it was indexed by the PDQ-4+ Antisocial

scale) and PID-5-BF+ Antagonism emerged at a lower level of the hierarchy. Similarly, a

Thought Disorder component, including primary loadings of CAPE Positive Symptoms scale,

DSM-5 Level 2 Dissociation scale, PQ-16 scores, SDQ-20 total score and PID-5-BF+

Psychoticism scores could be clearly recognized at Level 6 of our hierarchical model.

Although replications of our findings are needed, we think that the differences between our

study and available data (e.g., Forbes et al., 2021) may be related to the inclusion in our

sample of a relatively large number of measures which mapped understudied (e.g.,

dissociation), or somewhat controversial (e.g., mania) constructs. Moreover, it may be useful

to consider that our PC2_2 was similar to the Substance (and Alcohol) Use + Thought

Disorder dimension (B2) identified across two different samples by Forbes and colleagues

(2021) at Level 2 of their full traditional bass-ackward structure.

Internalizing Spectrum

According to our bass-ackwards method findings, the Internalizing spectrum seemed

to emerge early in the hierarchy. The structure of the Varimax-rotated six PCs that

represented the lowest level of our bass-ackwards hierarchical model showed that PC6_1

seemed to reproduce the HiTOP Internalizing dimension (Kotov et al., 2017), being

characterized by salient loadings of self-report measures of depression, negative symptoms,

anxiety. anger, and somatic symptoms. Interestingly, as it was expected, the PID-5-BF

Negative Affectivity domain scale ipsative score loaded substantially (standardized loading

value = .51) on PC 1. Interestingly, OCD obsessions, compulsions, and overall severity could

be identified as indicators of a separate PC at level three of the hierarchy; this OCD

component derived from the first split of the Internalizing PC.

To put it even stronger, when we relied on a hierarchical agglomerative clustering

method that was explicitly developed as an alternative to PCA to identify variable latent

structure (Vigneau et al., 2015), variable Cluster 2 closely matched the structure of the

HiTOP Internalizing spectrum (e.g., Forbes et al., 2021; Kotelnikova et al., 2019; Kotov et

al., 2011; Kotov et al., 2017).

Eating Pathology. Our bass-ackwards model results showed that eating disorders

emerged as distinct component from the Internalizing PC at level four of the hierarchy and

remained as a distinct PC across subsequent levels of extraction. Therefore, the Eating

Disorder component was originally part of the Internalizing PC. This finding was largely

consistent with de Jonge and colleagues' (2018) results from the World Mental Health

Surveys on the cross-national structure of mental disorders. Largely consistent with Forbes

and colleagues' (2021) results, in our study all EAT-26 scales loaded positively and

substantially only on PC6_4, which seemed to represent the Eating Pathology subfactor

(Kotov et al., 2017). Finally, our hierarchical agglomerative variable cluster analysis results

were consistent with previous studies that documented the existence of an Eating Pathology

dimension (de Jonge et al., 2018; Forbes et al., 2021; Forbush et al., 2010; Forbush &

Watson, 2013; Kotov et al., 2017). In line with Forbush and colleagues (2010), as well as

with our bass-ackwards method findings, inspecting the dendrogram of our hierarchical

agglomerative variable cluster analyses seemed to suggest that variable Cluster 4 was likely

to represent a sub-factor of a general Internalizing cluster, which merged Cluster 2 with

Cluster 4.

Non-Internalizing Spectrum

As mentioned above, our Level 2 of the hierarchy seemed to condense the Thought Disorder, Disinhibited Externalizing, Antagonistic Externalizing and Detachment spectra (Kotov et al., 2017) into a single Non-Internalizing spectrum. However, proceeding to the lower levels of the hierarchy, components that closely matched these dimensions progressively emerged. Indeed, at Level 5 of the Bass-Ackwards structure, the Non-Internalizing dimension split into an Obsessive-Compulsive + Thought disorder component and a Disinhibited Externalizing component which closely matched Kotov and colleagues' (2017) Disinhibited Externalizing spectrum (i.e., substance abuse and antisocial behavior). Notably, at the same level of the hierarchy, a Negative Features component emerged (i.e., PC5_5). This component perpetrated at Level 6 of the hierarchy (although factor signs were reversed) and seemed to map the Detachment spectra (Kotov et al., 2017), being characterized by the higher factor loadings of PID-5-BF+ Detachment scale and CAPE Negative Symptom scale. Specifically, this component seemed to map a relevant aspect of psychosis (e.g., Muñoz-Negro et al., 2017), such as HiTOP Detachment spectrum was conceived to include normal introversion, negative schizotypy traits, and negative symptoms of schizophrenia, ranging from sociable, and expressive behavior to apathy, disinterest in people, and blunted affect (Kotov, Jonas, Lian, Docherty and Carpenter, 2022).

Confirming and extending previous HiTOP studies (e.g., Kotov et al., 2011; Kotov et al., 2017), our bass-ackwards model PC6_2 seemed to nicely reproduce the HiTOP Thought Disorder spectrum. As it was expected, the *DSM-5* AMPD Psychoticism domain, at least as it was operationalized in the corresponding PID-5-BF+ scale, strongly characterized the Thought Disorder component (i.e., PC6_2). Although other explanations may be equally plausible, we think that the secondary loading of antisocial personality features on our PC6_2 simply represented an artifact of the non-negligible, positive correlation that was observed in

our study between mania and antisocial personality self-reports, $r = .36$, $p < .001$ (see Table S23).

Consistent with previous findings (Faure & Forbes, 2021; Forbes et al., 2021), our data suggested that OCD features might not be homogeneously associated with the Fear system (e.g., Kotov et al., 2017; Watson et al., 2022a). Indeed, the three BOCS scales showed positive and substantial loadings of roughly equal sized with different PCs. Notably, all BOCS scales showed standardized loadings >.40 on PC6_2; this finding was consistent with Faure and Forbes' (2021) study, which provided evidence for a close connection between OCD symptoms and the HiTOP Thought Disorder dimension. At the same time, BOCS Obsession and Severity scale scores showed substantial loadings on the Internalizing component (i.e., PC6_1; Kotov et al., 2017; Watson et al., 2022a).

Bottom-up analyses (i.e., ClustVarLV) provided further evidence. Indeed, confirming and extending Forbes and colleagues' (2021) findings, our variable Cluster 1 seemed to represent the Thought Disorder spectrum of the HiTOP model. Thus, according to our findings, at syndrome level the HiTOP Thought Disorder spectrum is likely to include not only psychotic positive and prodromal symptoms, but also obsessive-compulsive symptoms (Faure & Forbes, 2021; Forbes et al., 2021) and dissociative experiences, while being rooted in the *DSM-5* AMPD Psychoticism dysfunctional personality domain.

In our opinion, our Goldberg's (2006) bass-ackwards PC6_3 latent dimension closely matched the HiTOP Externalizing spectrum (Forbes et al. 2021). Similarly, in line with previous findings (Forbes et al., 2021; Kotelnikova et al., 2019; Kotov et al., 2011; Kotov et al., 2017), our variable Cluster 3 closely matched the HiTOP Externalizing spectrum. The differences that may be observed between the a priori structure of the Antagonistic Externalizing spectrum (e.g., Kotov et al., 2017) and the structure of our PC6_3 may be explained by the limited indicators of externalizing features that were included in our study.

For instance, we did not include any measure of attention-deficit/hyperactivity disorder, intermittent explosive disorder, oppositional-defiant disorder, narcissistic, histrionic, paranoid, and borderline personality disorder (Kotov et al., 2017).

Finally, PC6_5 seemed to be largely consistent with Kotelnikova and colleagues' (2019) Disinhibition vs. Constraint latent dimension and seemed to be at least partially consistent with HiTOP Disinhibition spectrum (Kotov et al., 2017).

Dissociation. According to our findings, dissociative experiences seemed to be mainly influenced by the Thought Disorder latent dimension. Indeed, similar findings were observed relying on both Goldberg's (2006) bass-ackwards method and ClustVarLV approach. For instance, variable Cluster 1, which seemed to represent the HiTOP Thought Disorder spectrum, included also dissociative experiences. These findings are consistent with Faure and Forbes' (2021) results and may be of particular interest because the placement of dissociative experiences in the HiTOP model needs to be further clarified (e.g., Kotov et al., 2020). The secondary loadings on our PC6_1 of the dissociation scales were not unexpected, since they loaded mainly on the same component at level four of the hierarchy (see Table S28). Moreover, the Internalizing spectrum consists of several subfactors, including distress, which in turn comprises post-traumatic stress disorder symptoms (e.g., Watson et al., 2022a). Although other explanations may be equally possible, we feel that the secondary loadings of the positive/prodromal symptom measures on our Internalizing component (i.e., PC6_1) are likely to represent an artifact of the correlations between measures of dissociations and measures of positive/prodroma symptoms that were observed in our sample (median *r* value = .60, min. *r* value = .44, max *r* value = .63, all *p*s <.001; see Table S23).

Mania. Because the placement of mania in the HiTOP model is still unclear (e.g., Kotov et al., 2020), in the present study we administered a measure of manic and hypomanic syndrome. Confirming and extending previous findings (Forbes et al., 2021), our bass-

ackwards hierarchical model and ClustVarLV approach results suggested that mania showed important connections to Thought Disorder. In line with previous reports suggesting that mania is an interstitial construct (e.g., Watson et al., 2022a,b), in our study mania showed secondary loadings on our PC6_3 (i.e., Externalizing) and PC6_1 (i.e., Internalizing).

Limitations

We feel that our findings should be considered in the light of several limitations. Although we relied on a quite large sample of community-dwelling adults, it was composed of adults who volunteered to participate in the study; thus, it represents a convenient study group rather than a sample representative of the Italian population. Moreover, our sample was composed of highly educated participants, mainly of female gender; these characteristics inherently limit the generalizability of our findings. However, the high rate of female participants that was observed in our study was consistent with extant research documenting a relative overabundance of women subjects participating in online studies (Gosling et al., 2004); not surprisingly the same gender distribution could be observed also in other studies (e.g., Watson et al., 2022a). Of course, these limitations suggests that care should be used in generalizing our findings.

In the present investigation, participants were adult volunteers who received no incentive for taking part in the research; moreover, we relied exclusively on self-report questionnaire, with no possibility to rely on direct observations or expert interviews/ratings. Of course, further studies based on different methods of assessment are badly needed before accepting our findings (e.g., McCrae & Costa, 2021); however, we think that self-report questionnaires may provide useful data on the joint structure of psychopathology and dysfunctional personality traits. We are aware that measure selection represents a highly relevant issue (e.g., Lahey et al., 2021; Markon, 2021; Simms et al., 2022; Stanton et al., 2020). In our study, instruments were chosen based on widespread use, construct coverage,

and good psychometric properties in Italian language. Moreover, we tried to find a balance between parsimony and comprehensiveness, and pursuing this aim, we may have overlooked some dimensions of psychopathology. Of course, relying on different measures and on another set of measures may yield different findings; this is particularly relevant for the PROMIS Emotional Distress Scales (Tarescavage, Forner, & Ben-Porath, 2021). Although the HiTOP consortium is working to develop a comprehensive assessment system that covers the entire model (e.g., Simms et al., 2022), these measures were not available at the time the study was carried out. Accordingly, before accepting our findings, replication of our results is of course needed; moreover, future studies providing coverage of a broader range of target constructs are necessary.

In the present study, we relied on PID-5-BF+ ipsative scores. We are aware that ipsatizing questionnaires scores has some limitations (e.g., ten Berge, 1999); however, we provided extensive empirical justification for our method choice in the supplementary analysis described in the Supplementary Material. Moreover, previous studies on the joint analysis of personality and psychopathology measures relied on similar approaches to control for response styles for personality measures (e.g., Rosenström et al., 2019). Finally, it should be considered that recent data showed that under different simulation conditions, both applying and failing to apply ipsatization may cause biases (Rudnev, 2021). Of course, further studies based on different measures (e.g., the 220-item version of the PID-5) needed before accepting our findings.

Conclusion

Trying to summarize our bass-ackwards method and hierarchical agglomerative clustering approach results, in our opinion the following major findings should be considered: a) our findings were largely consistent with previous studies (e.g., Markon, 2010), which provided support to the HiTOP hierarchical structure (Kotov et al., 2017); b) specific

psychopathology latent variables seemed to explain the covariation between self-reports of selected psychopathology indicators and self-reports of specific dysfunctional personality domains. These findings were strongly consistent with Kotov and colleagues' (2017) model of cross-walk between major dimensions of psychopathology and dysfunctional personality domains which hypothesized strong relationships between Internalizing and Negative Affectivity, Thought Disorders and Psychoticism, and Externalizing and Antagonism and Disinhibition domains; c) four major latent variables, closely corresponding to specific HiTOP spectra (and subfactors) seemed to be consistently reproduced across Goldberg's (2006) bass-ackwards top-down method and hierarchical agglomerative variable clustering bottom-up approach – namely, Internalizing, Externalizing, Thought Disorders, and Eating Pathology; e) further studies should be carried out to evaluate if method factors influenced our findings concerning Obsessivity and Negative Features latent dimensions.

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Table 1

Principal Component Analysis of the Psychopathology Scale Score and Personality Inventory for DSM-5 Brief Form+ Domain Scale Ipsative Score Correlation (i.e., Pearson r Coefficient) Matrix: Six-Principal Component Model Varimax-Rotated Standardized Component Loadings (N = 2,416).

Scales	PC6_1	PC6_2	PC6_3	PC6_4	PC6_5	PC6_6	h^2
DSM-5 Level 2 Anxiety Scale	**.84**	.14	.03	.12	.06	.11	.76
DSM-5 Level 2 Depression Scale	**.84**	.14	.06	.16	-.01	-.11	.77
CAPE Depressive Symptom Scale (Frequency)	**.83**	.22	.07	.13	-.01	-.06	.76
CAPE Negative Symptom Scale (Frequency)	**.68**	.25	.14	.06	-.07	**-.37**	.69
DSM-5 Level 2 Anger Scale	**.70**	.17	.11	.17	.02	.10	.56
DSM-5 Level 2 Somatic Symptoms Scale	**.63**	.26	-.08	.14	.01	.11	.51
BOCS Obsession Scale (Present)	**.43**	**.43**	.20	.13	**.40**	.11	.60
Prodromal Questionnaire-16 (Frequency)	**.39**	**.72**	.18	.10	.03	.06	.72
Psychoticism (PID-5-BF+ Ipsative Score)	-.19	**.70**	-.10	-.01	-.27	-.10	.62
Somatoform Dissociation Questionnaire-20 Total Score	**.32**	**.61**	.10	.14	.06	-.03	.51
DSM-5 Level 2 Dissociation Scale	**.40**	**.60**	.20	.16	.00	-.09	.59
CAPE Positive Symptom Scale (Frequency)	**.35**	**.60**	.26	.07	.05	.14	.58
Mood Disorder Questionnaire	.22	**.50**	**.31**	.07	-.06	.18	.43
BOCS Severity Scale	**.37**	**.41**	.17	.17	.29	.03	.45
PDQ-4+ Antisocial Scale	.12	**.33**	**.70**	.09	-.12	-.03	.63
Alcohol Use Disorder Identification Test Total Score	.11	.18	**.66**	.03	-.06	-.01	.48
Antagonism (PID-5-BF+ Ipsative Score)	-.19	-.19	**.65**	.02	.02	.17	.52
Drug Use Disorders Identification Test	.11	.20	**.61**	-.01	-.10	-.12	.45
Eating Attitude Test-26 Diet Scale	.18	.06	.05	**.86**	.02	.08	.79
Eating Attitude Test-26 Bulimia Scale	.17	.04	-.01	**.84**	-.04	-.03	.74
Eating Attitude Test-26 Oral Control Scale	.14	.19	.06	**.59**	.12	-.03	.43
BOCS Compulsion Scale (Present)	.23	**.43**	.14	.11	**.52**	.13	.56
Disinhibition (PID-5-BF+ Ipsative Score)	-.06	.14	.18	-.01	**-.68**	.11	.53
Anankastia (PID-5-BF+ Ipsative Score)	-.25	-.07	-.21	.01	**.77**	.11	.71
Negative Affectivity (PID-5-BF+ Ipsative Score)	**.51**	-.22	-.26	.00	-.04	**.57**	.71
Detachment (PID-5-BF+ Ipsative Score)	.09	-.19	-.10	-.01	-.06	**-.90**	.86
Cumulative Proportion of Variance							.613

Note. PC6: Principal component for the six-principal component model; h^2: Communality; CAPE: Community Assessment of Psychic Experience; BOCS: Brief Obsessive-Compulsive Scale; PDQ-4+: Personality Diagnostic Questionnaire-4+; EAT-26: Eating Attitude Test-26; PID-5-BF+: Personality Inventory for *DSM-5* Brief Form+. Scales are sorted by the size of the primary loading. Bold highlights loadings >|.30|.

Table 2.

Hierarchical Cluster Analysis of Psychopathology and Dysfunctional Personality Variables Four-Cluster Solution: Variable Correlations with the Cluster Central Synthetic Variable (N = 2,416).

	Four-Cluster Solution			
	CL 1	CL 2	CL 3	CL 4
Prodromal Questionnaire-16 (Frequency)	**.84**	--	--	--
CAPE Positive Symptom Scale (Frequency)	**.75**	--	--	--
DSM-5 Level 2 Dissociation Scale	**.74**	--	--	--
BOCS Obsession Scale (Present)	**.73**	--	--	--
SDQ-20 Total Score	**.70**	--	--	--
BOCS Severity Scale	**.65**	--	--	--
BOCS Compulsion Scale (Present)	**.63**	--	--	--
Mood Disorder Questionnaire	**.62**	--	--	--
Psychoticism (PID-5-BF+ Ipsative Score)	**.34**	--	--	--
Detachment (PID-5-BF+ Ipsative Score)	<u>-.23</u>	--	--	--
DSM-5 Level 2 Anxiety Scale	--	**.88**	--	--
DSM-5 Level 2 Depression Scale	--	**.88**	--	--
CAPE Depressive Symptom Scale (Frequency)	--	**.87**	--	--
DSM-5 Level 2 Anger Scale	--	**.77**	--	--
CAPE Negative Symptom Scale (Frequency)	--	**.72**	--	--
DSM-5 Level 2 Somatic Symptoms Scale	--	**.71**	--	--
Negative Affect. (PID-5-BF+ Ipsative Score)	--	**.38**	--	--
PDQ-4+ Antisocial Scale	--	--	**.77**	--
Drug Use Disorders Identification Test	--	--	**.69**	--
AUDIT Total Score	--	--	**.68**	--
Anankastia (PID-5-BF+ Ipsative Score)	--	--	**-.58**	--
Disinhibition (PID-5-BF+ Ipsative Score)	--	--	**.49**	--
Antagonism (PID-5-BF+ Ipsative Score)	--	--	**.36**	--
Eating Attitude Test-26 Diet Scale	--	--	--	**.88**
Eating Attitude Test-26 Bulimia Scale	--	--	--	**.84**
Eating Attitude Test-26 Oral Control Scale	--	--	--	**.66**

Note. CL: Cluster; CAPE: Community Assessment of Psychic Experience; AUDIT: Alcohol Use Disorder Identification Test; BOCS: Brief Obsessive-Compulsive Scale; PDQ-4+: Personality Diagnostic Questionnaire-4+; EAT-26: Eating Attitude Test-26; PDQ-4+: Personality Diagnostic Questionnaire-4+; SDQ-20: Somatoform Dissociation Questionnaire-20; Negative Affect: Negative Affectivity; PID-5-BF+: Personality Inventory for *DSM-5* Brief Form+. Bold highlights *r* values >|.30|; *r* values |.20|≤ *r* ≤|30| are underlined.

Figure 1.

Full Traditional Goldberg' (2006) Bass-Ackwards Structure (*N* = 2,416)
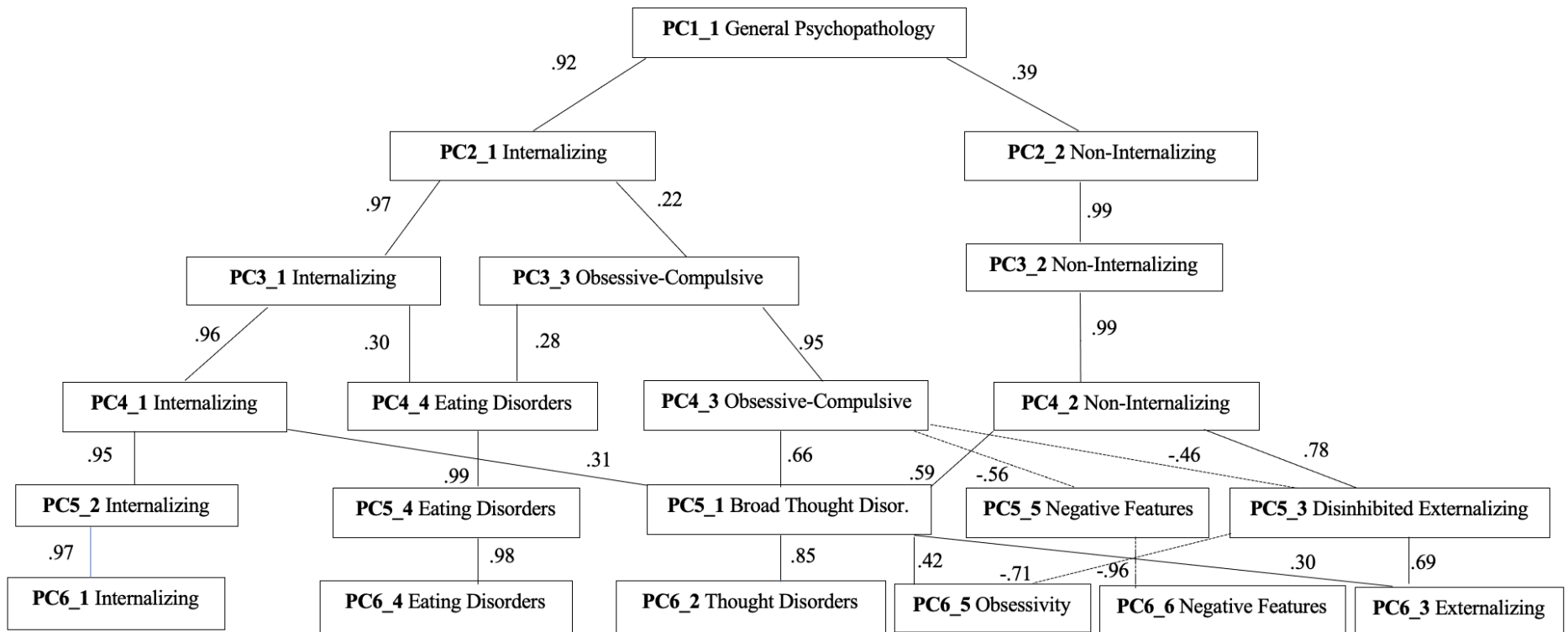
Note. PC: Principal Component; Broad Thought Disor.: Broad Thought Disorders.

Figure 2.

Extended (Forbes, 2020) Bass-Ackwards Structure (*N* = 2,416)
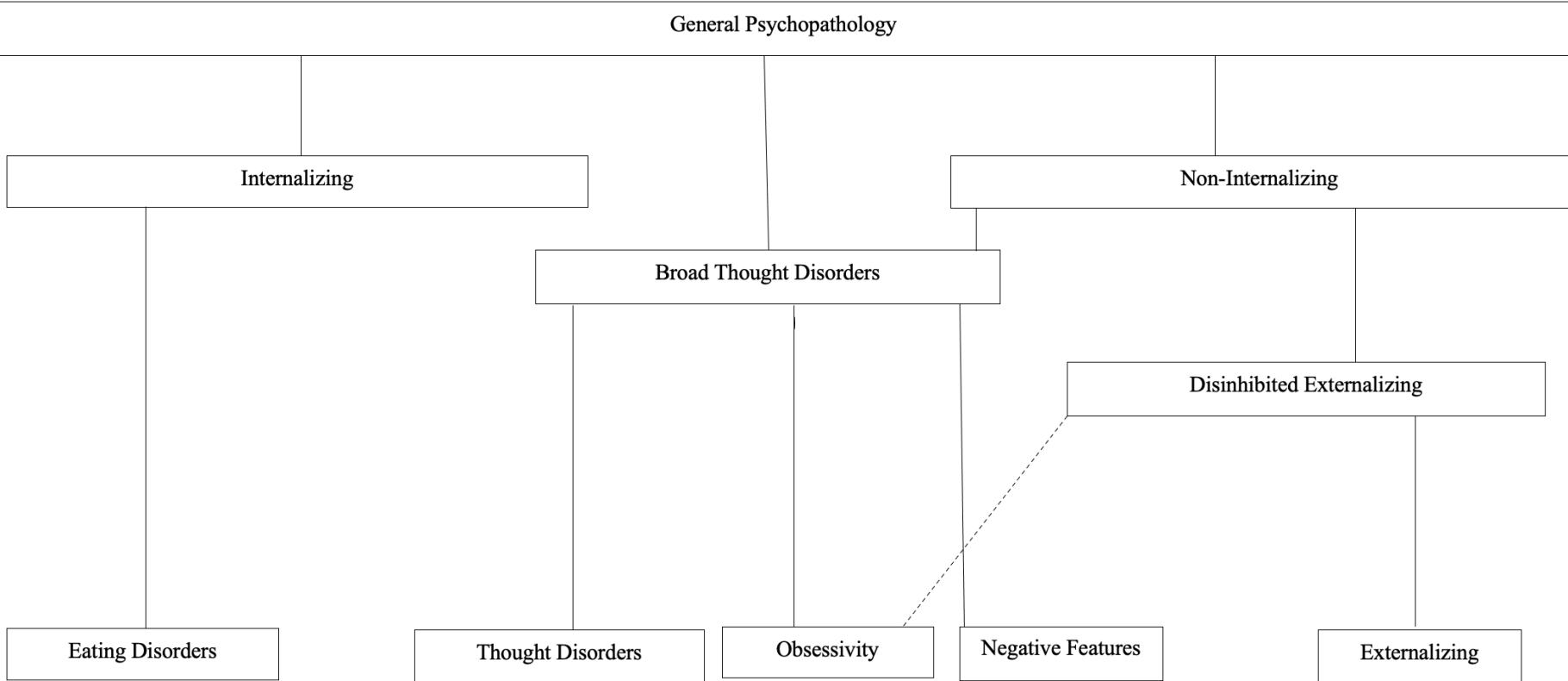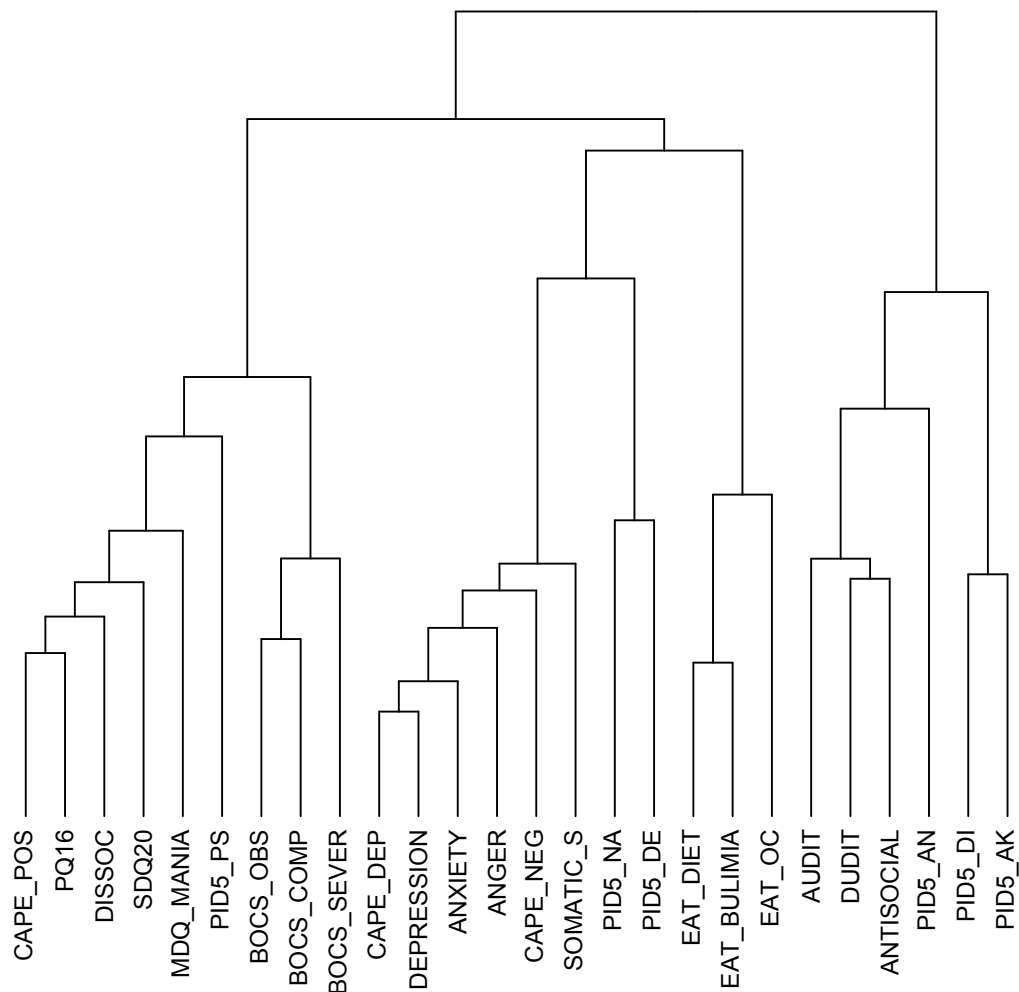
Figure 3.

Dendrogram of the Hierarchical Cluster Analysis of Psychopathology and Dysfunctional

Personality Variables (*N* = 2,416).

Note. CAPE_POS: Community Assessment of Psychic Experience Positive Symptom Scale (Frequency); PQ16: Prodromal Questionnaire-16 (Frequency); Dissoc: *DSM-5* Level 2 Dissociation Scale; SDQ20: Somatoform Dissociation Questionnaire-20; MDQ_MANIA: Mood Disorder Questionnaire; PID5_PS: Personality Inventory for *DSM-5* Brief Form+ Psychoticism; BOCS_OBS: Brief Obsessive-Compulsive Scale Obsession Scale (Present); BOCS_COMP: Brief Obsessive-Compulsive Scale Compulsion Scale (Present); BOCS_SEVER: Brief Obsessive-Compulsive Scale Severity Scale; CAPE_DEP: Community Assessment of Psychic Experience Depressive Symptom Scale; DEPRESSION: *DSM-5* Level 2 Depression Scale; ANXIETY: *DSM-5* Level 2 Anxiety Scale; ANGER: *DSM-5* Level 2 Anger Scale; CAPE_NEG: Community Assessment of Psychic Experience Negative Symptom Scale; SOMATIC_S: *DSM-5* Level 2 Somatic Symptoms Scale; PID5_NA: Personality Inventory for *DSM-5* Brief Form+ Negative Affectivity; PID5_DE: Personality Inventory for *DSM-5* Brief Form+ Detachment; EAT_DIET: Eating Attitude Test-26 Diet Scale; EAT_BULIMIA: Eating Attitude Test-26 Bulimia Scale; EAT_OC: Eating Attitude Test-26 Oral Control Scale; AUDIT: Alcohol Use Disorder Identification Test; DUDIT: Drug Use Disorders Identification Test; ANTISOCIAL: PDQ-4+: Personality Diagnostic Questionnaire-4+ Antisocial Personality Scale; PID5_AN: Personality Inventory for *DSM-5* Brief Form+ Antagonism; PID5_DI: Personality Inventory for *DSM-5* Brief Form+ Disinhibition: PID5_AK: Personality Inventory for *DSM-5* Brief Form+ Anankastia.