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Personality structure evaluation: differences between clinical and non-clinical samples using the Inventory of Personality Organization (IPO)

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Introduction

Personality is a wide construct, represented in psychoanalytic theory as a dynamic integration of the totality of a person's subjective experience and behavior patterns, including both conscious and unconscious experiences and views, behavior patterns, and mental states¹. The term "structure" refers to an organization of related functions or processes that is relatively stable and enduring over time; a configuration of mental functions or processes that organize the individual's behavior and subjective experience². Most of the current categorical and dimensional classifications of personality are limited since they anchor themselves in observable behaviors (personality traits) that predominantly refer to "surface structures" of deeper underlying psychological structures. In this way, Kernberg defines the normal personality structure as a set of structural makings characterized by an integrated concept of the self and an integrated concept of significant others, an integrated identity, an integrated and mature system of internalized values, and an appropriate and satisfactory management of needs, fears, wishes, and impulses².

Kernberg's concept of personality structure includes a psychotic personality organization². It is characterized by lack of integration of the concept of self and significant others (identity diffusion), a predominance of defensive operations centering around splitting (primitive defenses), and loss of reality testing. Among these normal/pathological poles are the so-called neurotic and borderline personality organizations. While the first is distinguished from the normal personality on the basis of character rigidity, Borderline Personality Organization (BPO) is a more severe level, characterized

by pathological identity diffusion, primitive defensive operations, and varying degrees of pathology of the internalized value systems. The BPO includes all of the severe personality disorders seen in clinical practice — typically borderline, schizoid and schizotypal, paranoid, hypomanic, hypochondriacal, narcissistic (including malignant narcissism syndrome), and antisocial³.

Nosographic changes presented by the introduction of the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III)⁴, including an atheoretical definition of mental disorders and diagnoses based on polythetical operational criteria, have led to an impoverishment of the psychodynamic conception of the personality construct⁵. The operationalizing definition of borderline personality disorder in DSM, for example, is a too broadly sketched, over-inclusive category that is not defined by psychodynamic concepts, such as intrapsychic conflict, defense mechanisms, psychological deficits, object relations, transference, and countertransference⁶. Thus, the arbitrary categorization promoted by the DSM produces a heterogeneous diagnostic entity that is relatively uninformative for understanding the psychodynamic concepts of personality organization, especially in psychodynamic settings.

The consideration of personality on a psychodynamics basis allows therapists to consider that a single behavior can serve multiple functions depending on the underlying personality structure², allowing a more complex understanding of the individual beyond phenomenological simplification. The understanding of levels of normal, neurotic, borderline, and psychotic personality organization continues to allow a more comprehensive view of the



intrapsychic conflicts, defensive operations, integrity of identity, and internalized value system, which has causal implications in the processes of affective regulation, impulse control, and object relations, as well as fundamental concepts of psychodynamics and those related to the phenotypic expression of psychopathology. As a result, treatments that alter psychological structures and mental organizations can be used to identify specific pathological features of underlying psychological structures².

Although the evaluation of personality organization has traditionally been performed clinically, through an experienced psychodynamic therapist, alternative methods have been developed to make large-scale studies feasible and to facilitate the validation process of the construct. One of the methods employed is the use of self-reporting questionnaires, developed in a way that facilitates the collection of information and quickly reports on various psychodynamic characteristics of the individual, without the need for an in-depth interview. The Inventory of Personality Organization (IPO) is the questionnaire most extensively used to capture Kernberg's organizational levels⁷. The IPO has been used in several studies about personality organization and psychopathology⁸⁻¹², including changes in psychotherapy¹³, showing to be a valid and reliable instrument¹⁴⁻¹⁷. The IPO was also found to be a reliable measure of the severity of personality functioning, as well as the features connected to personality functioning, as intended by DSM-5¹⁸.

New diagnostic systems for personality disorders based on dimensional approaches as presented in DSM-5¹⁹ and ICD-11²⁰ have established the core of personality pathology by the level of impairment of personality functioning. The alternative model for personality disorders (AMPD) printed in Section III of DSM-5 has as its first criterion (Criterion A) the identification of the level of impairment of personality functioning. People identified with moderate or severe impairment in two²¹ out of four domains (identity, self-direction, empathy, and intimacy) are likely to present a personality pathology. The dimensional model underlying criterion A was established based on a review of theoretical models and scientific research that determined the main predictors of personality pathology²². Kernberg's model was included in this review, and empirical researches have demonstrated its association with criterion A²³⁻²⁹. Concerning ICD-11, the new diagnostic system also presents a dimensional approach in which the personality pathology is graded in a continuum ranging from an adaptive personality functioning to severe personality pathology²⁰. This model is theoretically close to AMPD's criterion A³⁰ and also close to Kernberg's model³¹.

One indication of the concurrent validity of the IPO was its concordance with the severity of personality disorders, suggesting that the IPO reflects personality pathology in accordance with the DSM framework in general, more than specific categories of DSM personality disorders¹⁸. The IPO total score also presented a statistically significant correlation with the ICD-11 personality severity score³¹ as operationalized by the Standardized Assessment of Severity of Personality Disorder SASPD³². These findings highlight the IPO's clinical utility and its relevance to the personality pathology field.

Originally designed to assess three factors (identity diffusion, primitive defenses, and reality testing impairments), more recently, the IPO's tripartite latent structure was questioned, and a new 4-factor measurement model was replicated in some studies, with factors representing instability of self and others, instability of goals, instability of behavior, and psychosis³³⁻³⁵. This new IPO factorial structure that was empirically established is theoretically aligned to the severity of personality functioning as described in both diagnostic systems (i.e. AMPD and ICD-11). The personality structure, as measured by the IPO, is a dimensional construct,

varying from normal to pathological valences. Thus, IPO has been used to differentiate clinical of non-clinical samples, with both Axis I and personality disorders^{34,36}. However, IPO is also associated with negative affect in non-clinical samples¹⁴, such as depressive and anxiety states, which is consistent with the Kernberg proposal², which associates problems related to the difficulties of integrating the concept of self with difficulties of the individual to contact with social and interpersonal demands, making the individual vulnerable to negative emotional states. In this way, theoretically, IPO could discriminate groups with different levels of structural personality severity, even among non-clinical groups, identifying individuals more vulnerable to distress symptoms.

Although the IPO has been shown to be a clinically useful tool for identifying psychopathology and measuring personality functioning, studies conducted considering its 4-factor structure have recruited only non-clinical samples³³ or mixed clinical samples (only outpatients in heterogeneous settings; or both outpatients and inpatients, with mixed features and settings)^{34,35}. Thus, here we aim to compare levels of personality organization using the 4-factor structure of the IPO between a non-clinical functional sample and a clinical sample with an indicator of the severity of psychopathology (psychiatric inpatients). We hypothesized that the IPO factors would differentiate levels of severity by discriminating non-clinical groups with different levels of psychopathology (using a measure of distress) from a group with severe psychopathology.

Methods

Sample and design

This was a transversal observation study. The clinical sample was recruited from a psychiatric ward of a general hospital [Hospital São Lucas da Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS), Porto Alegre, Brazil]. This ward has 21 beds and admits patients mainly for mood and personality disorders, as well as suicide attempts and suicidal ideation³⁷. Inpatients were recruited by convenience from March 2015 to April 2017, and systematically between May and August 2017. Adult patients who were able to read and understand the instruments and did not present impaired critical judgment or severe residual symptoms at the time of recruitment were invited to complete a self-report questionnaire about personality structure. At the end of these periods, 126 inpatients were recruited.

The non-clinical sample was selected by convenience among medical and nursing students from PUCRS, of ≥ 18 -years-old, between August and October of 2016. The choice for this sample for the non-clinical group was based on their good functional degree (active undergraduate students). The participants were similar to the main profile of individuals used in validation studies of the IPO^{15,17,33,38}. However, this population has been identified as having a high prevalence of psychopathology, with a prevalence of depression up to 3-times higher than in the community population³⁹. One-hundred-ninety-seven medical students and 80 nursing students were invited to participate. The students who accepted to participate in the study received the socio-demographic questionnaire and self-reports instruments of psychopathology and personality.

Instruments

Sociodemographic questionnaire (SD)

This is a self-reported questionnaire with sociodemographic and clinical data, such as gender, age, marital status, and data about medical history. For the clinical sample, in addition to the above data, medical records were collected on the psychiatric diagnosis

according to the International Classification of Diseases (ICD-10).

Inventory of Personality Organization – Brazilian version (IPO-Br)
To measure the level of personality organization, we used the Brazilian version of Inventory of Personality Organization (IPO-Br). The IPO-Br is an 83-item self-report questionnaire that was linguistically and culturally adapted, being adjusted to the Brazilian socio-cultural reality and maintaining equivalence with the original version⁴⁰. The IPO-Br had its psychometric proprieties tested and validated for the Brazilian population in its 4-factor model, nominees Instability of Self and Other (ISO), Instability of Goals (IG), Instability of Behaviors (IB), and Psychosis (PSY). The IPO-Br also includes three additional scales, with the dimensions Self-Directed Aggression (SDA), Distortion of Moral Values (DMV), and Sadistic Aggression (SA)⁴¹. The IPO-Br presents good internal consistency, with alpha coefficients of 0.94 (ISO), 0.90 (IB), 0.86 (IG), 0.84 (PSI), 0.70 (SDA), 0.74 (DMV), and 0.80 (SA). Their normative values according to sex and age group are preliminarily available for the Brazilian population³⁵. The IPO-Br was applied for both clinical and non-clinical samples, and their scores were calculated according to the recommendations of the Brazilian validation study.

Patient Health Questionnaire (PHQ-4)

To categorize the non-clinical sample into levels of psychopathology, we used a general measure of distress. PHQ-4 is a reduced version of the self-report PHQ questionnaire with two questions of the PHQ-9 (part of the instrument that measures depression) and two questions of the GAD-7 (an instrument that measures anxiety and was incorporated to the PHQ), acting as an ultra-brief depression and anxiety (distress) screening⁴². The instrument has a polytomy Likert type scale, where the subject scores his anxious and depressive symptoms in the 2 weeks prior to the test, with the range varying from 0 (not once) to 3 (almost every day). The PHQ-4 total score ranges from 0 to 12, with categories of psychological distress being none (0–2), mild (3–5), moderate (6–8), and severe (9–12). According to these thresholds, the non-clinical sample was categorized into four groups, ranging from "no symptoms" to "severe symptoms" of distress. In our sample, the instrument showed proper reliability, with Cronbach Alpha of 0.73 for the general scale, and 0.75 and 0.72 respectively for the depression and anxiety scales.

Procedures and final sample

In the clinical sample, inpatients answered the questionnaires in the days before discharge when they presented significant improvement of the acute psychopathology, and the severity of the symptoms improved sufficiently to be discharged. The patients who agreed to participate received the questionnaires (socio-demographic and IPO-Br). Individuals who did not agree to participate in the study, with psychotic symptoms at discharge or with intellectual deficit were excluded from the study. We exceptionally included in the final sample an individual under the age of 18, who was admitted to the adult unit and had the maturity to participate and respond to the instruments. The individuals with more than 10% of unanswered items in each factor were also excluded. The final sample was 56 patients with a full version of the instrument. The mean [\pm standard deviation (SD)] age was 37.3 ± 14.86 years [range: 16–66 years]; 18 participants were male (32.1%), and 38 were female (67.9%). The clinical diagnosis was performed by the assistant psychiatrist according to the International Classification of Disease 10th version (ICD-10).

In the non-clinical sample, the subjects were invited to participate in the study during the class period, answering a pen-paper version of

the instruments in the classroom. Sixty-two students did not return the instruments. The final sample consisted of 214 questionnaires (159 medical students and 54 nursing students). The mean age was 23.6 ± 4.21 years (range: 19–43 years); 65 participants were male (30.5%), and 147 were female (69.0%; data on gender was missing for 1 participant).

Statistics

Descriptive statistics were used for characterization of the sample, analyzed by absolute number, percentages, mean and standard-deviation. To evaluate the internal consistency of IPO-Br, the Cronbach's alpha method was calculated for all subscales. To calculate differences between the mean level of IPO-Br factors between groups, we performed analysis of variance controlling for participants' age (ANCOVA), and the post-hoc differences were evaluated by the Bonferroni test. The significance level was considered as $p < 0.05$. All analyses were conducted by the SPSS® Statistics 23.0 (IBM®, Chicago, IL, USA).

Ethics

None of the procedures presented risks to the participants. Participants were informed that participation in the study did not influence their academic performance evaluation (non-clinical sample) or their treatment (clinical sample). Identifications were omitted, and the data were kept confidential. This study was approved by the Research Ethics Committee at the Pontifícia Universidade Católica do Rio Grande do Sul (protocol number: 68823717.3.0000.5336).

Results

The final sample consisted of 269 individuals, 214 of the non-clinical sample and 56 inpatients. According to the PHQ-4, the non-clinical sample was categorized into four groups: no symptoms (32.9%), mild distress symptoms (39.9%), moderate distress symptoms (20.2%), and severe distress symptoms (8%). In the clinical sample, the main diagnoses were unipolar depression (38.2%), bipolar disorder (16.4%), and substance-related disorders (16.4%). The descriptive values of the sociodemographic and clinical data are presented in Table 1.

Table 2 shows the mean values of the IPO-Br factors in the four main scales and the three secondary scales for the five groups. Analysis of variance controlling for participants' age (ANCOVA) indicated a general trend that the inpatients' group had higher mean scores than the non-clinical groups. The factor with the greatest discriminative power was the ISO, where the samples with few distress symptoms consistently differed from those with severe symptoms and inpatients. In the Table 2, the reliability coefficients are presented by Cronbach's alpha method. All four primary IPO-Br scales presented adequate reliability values ranging from 0.87 (PSY) to 0.93 (ISO). For the additional scales, two factors presented alpha values lower than 0.70. SDA and SA each presented an alpha of 0.65, while DVM presented an alpha of 0.76.

Discussion

This study aimed to investigate whether the IPO-Br factors would be able to discriminate different people grouped by their levels of psychopathology. We found that individuals with severe psychopathology (inpatients) had significantly higher scores on personality structure dysfunction than individuals from a non-clinical sample with different levels of symptoms. The ISO factor was the only factor that discriminated individuals in the non-clinical sample. The present study shows an important finding

Table 1: Descriptive statistics of non-clinical (undergraduates) and clinical (inpatients) samples.

	Total n=269	Non-Clinical n=213	Inpatients n=56	p-value
Gender (% Female)	69.0%	69.3%	67.9%	.831
Age - M ± SD	26.4 ± 9.52	23.6 ± 4.21	37.3 ± 14.8	<0.001
Marital Status				
Single	86.3%	91.1%	65.3%	<0.001
Married/live together	10.7%	8.5	20.4%	
Separated/divorced	3.1%	.5%	14.3%	
Higher Education (%)	97%	100%	85.7%	<0.001
Psychiatric diagnosis (%)				
Unipolar depression	-	-	38.2%	-
Bipolar disorder	-	-	16.4%	-
Use/misuse disorders	-	-	16.4%	-
Neurotic/anxious disorders	-	-	10.9%	-
Personality disorders	-	-	10.9%	-
Psychotic disorders	-	-	7.3%	-
PHQ-4 – M ± SD	-	4.10 ± 2.74	-	-
PHQ-4 categories (%)				
No distress symptoms	-	32.9%	-	-
Mild distress symptoms	-	39.0%	-	-
Moderate distress symptoms	-	20.2%	-	-
Severe distress symptoms	-	8.0%	-	-

Table 2: Comparison of mean scores of IPO-Br factors controlling for age between groups with no symptoms of psychological distress [A], mild [B], moderate [C], severe [D] and inpatients [E], and Cronbach's alpha values.

	α	Total n = 269 M ± SD		No distress [A] n = 71 M ± SD		Mild [B] n = 82 M ± SD		Moderate [C] n = 43 M ± SD		Severe [D] n = 17 M ± SD		Inpatients [E] n = 56 M ± SD		p-value	Post hoc differences (Bonferroni)
Instability of self/other	.94	2.09	0.74	1.72	0.54	1.89	0.57	2.02	0.54	2.41	0.87	2.82	0.74	< .001	AB < DE C < E
Instability of goals	.90	1.92	1.13	1.58	0.84	1.74	0.88	1.77	1.15	1.82	1.03	2.75	1.39	< .001	ABCD < E
Psychosis	.87	1.38	0.59	1.16	0.21	1.20	0.25	1.31	0.42	1.38	0.57	1.96	0.94	< .001	ABCD < E
Instability of behavior	.89	1.77	0.71	1.47	0.46	1.59	0.52	1.69	0.55	1.71	0.44	2.50	0.87	< .001	ABCD < E
Self-directed aggression	.66	1.41	0.48	1.21	0.21	1.30	0.32	1.36	0.37	1.43	0.44	1.87	0.70	< .001	ABCD < E
Distortion of moral values	.77	1.84	0.60	1.60	0.47	1.72	0.52	1.78	0.47	1.86	0.45	2.34	0.70	< .001	ABCD < E
Sadistic aggression	.65	1.19	0.36	1.12	0.18	1.16	0.31	1.09	0.16	1.19	0.32	1.39	0.57	< .001	ABC < E

Note. Mean and standard-deviation values displayed are unadjusted.

on the informative value of personality structure assessment in individuals with symptoms of psychopathology. To our knowledge, this is the first study where the IPO was used to differentiate groups with different levels of psychopathology symptoms, regardless of a formal psychiatric diagnosis.

The evaluation of personality structure by IPO has been performed in several studies comparing individuals with and without personality disorders, individuals with personality disorders and other psychopathologies, and with different psychopathological symptoms^{9,10,12,14,36}, in clinical and non-clinical samples. However, its initial tripartite structure, which has separate discrete subscales for identity diffusion, primitive defenses, and reality testing, has not been replicated in studies with exploratory

structural equation modeling (ESEM) strategies^{33,35}. Instead, a four-factor model has been replicated, which represents the more complex structure of Kernberg's personality organization model. Like other studies, we also found important differences in these factors when comparing individuals with different severities of psychopathology and mental health indicators, mainly with the factor ISO³³⁻³⁵. Thus, undergraduate students with no and minor distress symptoms obtained lower average scores in the ISO factor than students with severe distress symptoms. Since the impaired sense of self and a lack of integration of the concept of significant others interferes with the capacity for realistic assessment of others, this factor might be more sensitive to capture operating nuances related to distress symptoms². These symptoms might be the

product of the difficulties of predicting actions, and difficulties in social interactions, commitments, and personal interests related to a not well-integrated sense of self, which are relativized but not absent even in situations of higher levels of functioning, such as the academic ambiance of medical and nursing courses. The ISO factor is also the factor that is most strongly associated with both positive and negative mental health indicators and is the largest supplier of the information level within latent personality traits³⁵.

Since the level of personality organization is an important indicator of its functioning and is related to vulnerability to psychiatric disorders, our findings reinforce that the constructs evaluated by the IPO are indicators of pathological personality organization³⁵. All scales presented great differences between clinical and non-clinical samples. The IPO scores have been strongly associated with measures of depression and anxiety^{14,18}, and this is consistent with the Kernberg BPO construct-model¹⁴. Among the tested factors, ISO, IB, and SDA scored highest, with averages for inpatients above 1.5 SDs from the normative values. Since most of the inpatients had a diagnosis of mood disorders, and suicide behavior being one of the most important morbidities for admission, the SDA scores might represent the self-aggressive component, which in its pathological pole has suicide as an expression. PSY was the main factor with a lower average in all samples, presenting higher values for inpatients, although not as high as the other factors. This might be due to the low percentage of psychotic individuals in the clinical sample.

The results we got can also underscore the similarity between Kernberg's model and the AMPD. Since the criterion A of the AMPD is represented by disturbances in individual and interpersonal functioning, constituting the core of personality psychopathology⁴³, IPO constructs are relevant and useful for understanding and managing personality disorders from a DSM-5 AMPD perspective⁴⁴. Lowyck et al. found that IPO was a valid measure to differentiate levels of personality functioning in a sample of patients with personality disorders¹⁸ and the current study indicates IPO's ability to differentiate levels of personality functioning across people with different levels of psychological distress, including those with severe symptoms that require hospitalization.

The present study has some limitations that might have a potential impact on our findings. First, the nonclinical sample was composed of young undergraduate students and selected by convenience. This sample presents several differences in relation to the inpatient sample. However, as already mentioned, this population is similar to that most found in the validation studies of the instrument. Moreover, to minimize age bias, we controlled its effect in the analysis of variance. The scores of the nonclinical sample were very similar to the means of the normative sample, especially in the individuals without psychopathology, which reinforces that our comparative sample was adequate. Second, we do not use standardized instruments for the diagnostic evaluation of inpatients. However, as our goal was to compare severity levels of psychopathology rather than diagnostic groups, we believe that this limitation did not detract from our findings. Third, the sample size was small, especially in the clinical sample. Despite this, the differences found in relation to the non-clinical sample were significantly high, which might also show that the instrument was answered coherently by the included individuals. Fourth, although not specific to this study, it concerns to the use of self-reports in operationalizing Kernberg's model because it is not optimally suited for the assessment of intrapsychic patterns. In this way, it is worthy to mention the measurement model designed to assess personality structure according to Kernberg's model based on a structured interview⁴⁵. Finally, other limitation is the length of the IPO which

is a relatively long instrument (83 items) concerning the amount of information it provides. It is suggested to refine the measure to be brief once clinical work is often limited by time.

In summary, the present study suggests that the IPO-Br is a useful instrument to assess personality pathologies and personality functioning in individuals with different level of psychopathology. Our findings show that subjects with severe levels of psychopathology, represented by psychiatric inpatients, have higher personality structure dysfunction than a non-clinical sample. Whereas deeper personality structures should not be evaluated only by observational criteria, and are only inferred by observed characteristics, this instrument might be a useful auxiliary tool for the evaluation of personality functioning in hospitalized patients. Once the patient's personality organization is understood, it could potentially aid in predicting some future pathology and perhaps risk assessments, thereby helping to plan treatments for a better prognosis. However, more research concerning the validity of these measures to assess levels of personality functioning in severe psychiatric patients is needed to confirm our results.

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