Psychometric Properties of the Personality Inventory for DSM-5 (PID-5) in Brazilian Samples

Sérgio Eduardo Silva de Oliveira[1]
Denise Ruschel Bandeira[2]
Ricardo Primi[3]
Robert Frank Krueger[4]

[1]Universidade de Brasília, Brasília, Distrito Federal, Brasil
[2]Universidade Federal do Rio Grande do Sul, Porto Alegre, Rio Grande do Sul, Brasil
[3]Universidade São Francisco, Campinas, São Paulo, Brasil
[4]University of Minnesota, Minneapolis, Minnesota, United States of America

Abstract

This study aimed to investigate the psychometric properties of the Personality Inventory for DSM-5 (PID-5) in Brazilian community and clinical samples. This research included 1,210 people, 554 of them with psychopathology indicators. The participants answered the PID-5 and the Self-Reporting Questionnaire, in addition to a sociodemographic and health data questionnaire that included the six items of the suicidality module of the Mini International Neuropsychiatric Interview. The results showed that the 25 facets of the PID-5 had adequate reliability coefficients and evidence of unidimensionality. The instrument's five-factor structure was replicated with high levels of congruence with the representative sample from North America. PID-5 scores were statistically different between clinical and community groups and were positively correlated with measures of suicide risk and psychopathological symptoms. This study presents the psychometric properties of PID-5 and its suitability for use in the Brazilian population.
Keywords: personality traits; personality disorders; psychometrics

Propriedades Psicométricas do Personality Inventory for DSM-5 (PID-5) em Amostras Brasileiras

Resumo

Este estudo teve como objetivo investigar as propriedades psicométricas do Inventário de Personalidade para o DSM-5 (PID-5) para amostras clínica e comunitária brasileiras. Esta pesquisa incluiu 1.210 pessoas, sendo 554 delas com indicadores de psicopatologia. Os participantes responderam ao PID-5 e ao *Self-Reporting Questionnaire*, além de um questionário sobre dados sociodemográfico e de saúde que incluía os seis itens do módulo de risco de suicídio *Mini International Neuropsychiatric Interview*. Os resultados mostraram que as 25 facetas do PID-5 apresentaram coeficientes de confiabilidade adequados e evidências de unidimensionalidade. A estrutura de cinco fatores do instrumento foi replicada com altos níveis de congruência com a amostra representativa da América do Norte. Os escores PID-5 foram estatisticamente diferentes entre os grupos clínicos e comunitários e foram positivamente correlacionados com medidas de risco de suicídio e sintomas psicopatológicos. Este estudo apresenta as propriedades psicométricas do PID-5 e sua adequação para uso na população brasileira.
Palavras-chave: traços de personalidade; distúrbios da personalidade; psicometria

Propiedades Psicométricas del Personality Inventory for DSM-5 (PID-5) en Muestras Brasileñas

Resumen

Este estudio tuvo como objetivo investigar las propiedades psicométricas del Inventario de Personalidad para el DSM-5 (PID-5) en muestras clínicas y comunitarias de Brasil. Esta investigación incluyó a 1.210 personas, 554 de ellas con indicadores de psicopatología. Los participantes respondieron al PID-5 y al *Self-Reporting Questionnaire*, además de un cuestionario de datos sociodemográficos y de salud que incluía los seis ítems del módulo de suicidio de la Mini Entrevista Neuropsiquiátrica Internacional. Los resultados mostraron que las 25 facetas del PID-5 presentaron coeficientes de confiabilidad adecuados y evidencias de unidimensionalidad. La estructura de cinco factores del instrumento se replicó con altos niveles de congruencia con la muestra representativa de Norteamérica. Las puntuaciones de PID-5 fueron estadísticamente diferentes entre los grupos clínicos y comunitarios, y se correlacionaron positivamente con las medidas de riesgo de suicidio y síntomas psicopatológicos. Este estudio presenta las propiedades psicométricas del PID-5 y su idoneidad para su uso en la población brasileña.
Palabras clave:rasgos de personalidad; trastornos de la personalidad; psicometría

The pathological personality trait model presented in Section III of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) has been shown as a reliable and valid way to describe people's maladaptive personality expression (Zimmermann et al., 2019). The assessment of the pathological personality traits proposed in this model is mainly performed by the Personality Inventory for DSM-5 (PID-5; Krueger et al., 2012), which has been adapted to several cultures and

presented good psychometric properties (Al-Dajani et al., 2016, 2018).

Studies have shown that the pathological personality traits model described in Criterion B of the DSM-5 alternative model for personality disorders (AMPD) has been replicated in different cultures (Watters & Bagby, 2018), indicating its generalization beyond North American culture, where the model was developed. This model comprises a hierarchical structure that has at the lower level 25 facet traits that are organized into five broad domain traits, namely, negative affectivity, detachment, antagonism, disinhibition, and psychoticism (Krueger et al., 2012). Studies consistently find the five broad domains, but with some minor differences at the level of the facets (Watters & Bagby, 2018). For example, while in the original study (Krueger et al., 2012) the hostility facet loaded onto both the negative affectivity domain and the antagonism domain, Zimmerman et al. (2014) observed that this facet loaded mostly onto the antagonism domain. However, the differences found in the studies at the facet level did not weaken the validity evidence of the higher-order structure (i.e. the five-factor model). Furthermore, these broad domains are intrinsically linked to the spectrums of the hierarchical taxonomy of psychopathology model (HiTOP model; Kotov et al., 2017) underscoring the well-known relationship between clinical mental symptoms and personality traits.

There is still no published empirical evidence on the fit of this structural model in the Brazilian population. Our aim in this paper is to present the psychometric properties of a Brazilian-Portuguese language version of the PID-5. Although there is some evidence of validity already published about the Brazilian-Portuguese version of the PID-5 (Lugo et al., 2019; Oliveira et al., 2020), its structure has not been reported yet. We are particularly interested in understand how the pathological personality traits model created in US could fit in Brazilian population. We aimed to address the following questions: Are the PID-5 items good indicators for estimating pathological personality traits in Brazilians? What is the configuration of the pathological personality traits structure in Brazilian population? Can we estimate the pathological personality traits in a valid and reliable way in Brazil by using the PID-5?

Method

Participants

A total of 1,210 individuals participated in an online survey (convenience sampling). Sample average age is 29.2 ($SD = 10.2$, ranging from 15 to 73 years old), and 73.8% are female. 88.9% indicated having college or higher educational level, and 71.8% self-reported their ethnicity as white or Caucasian. We had participants from the five geopolitical regions of Brazil, but mainly from the southeast (39.7%) and south (39.0%) regions (details can be seen in Table 1).

The overall sample consisted of two groups, Community ($n = 656$), and Clinical ($n = 554$). People classified in the clinical group were those who: 1) self-reported having one or more psychiatric diagnosis ($n = 203$); 2) self-reported using psychotropic medication ($n = 163$); 3) presented scores equal or higher than six (equivalent to moderate suicide risk) on the Suicidality Module of the Mini International Neuropsychiatric Interview – MINI ($n = 176$); and 4) presented scores equal or higher than eight (equivalent to risk for psychiatric disturbance) on the Self-Reporting Questionnaire – SRQ-20 ($n = 411$).

Instruments

Sociodemographic and Health Questionnaire (SHQ): We elaborated a questionnaire to obtain information about sociodemographic (e.g. age, gender, socioeconomic level, educational level, marital status, ethnic, etc.), and health data (e.g. psychiatric diagnosis, and psychotropic medication). We included in this questionnaire the six items of the Suicidality Module of the MINI (Sheehan et al., 1998), which were administered in a self-reporting format. We used the Brazilian-Portuguese version (Amorim, 2000).

Personality Inventory for DSM-5 (PID-5; Krueger et al., 2012): The PID-5 is a 220-item self-report inventory rated on a 4-point Likert-type scale (from 0 "very false or often false" to 3 "very true or often true"). We performed the PID-5 transcultural adaptation into Brazilian-Portuguese by following the guidelines available in literature (Beaton et al., 2000). The items were translated into Brazilian-Portuguese by two independent bilingual professionals. The translations were analyzed by a committee of experts in order to adapt the items for the Brazilian culture. Then, a synthetized version of the items based on the experts' comments was stablished. This version was applied in a sample of people to verify if them would have any difficulty to respond the inventory (this procedure did not indicate the need for changes in the item presentations). Finally, the Brazilian-Portuguese items were back-translated into US/English and it was confirmed their semantic equivalence with the original items. The translation was authorized by American Psychological Association in April 20, 2012.

Table 1.
Samples Descriptive Statistics

	Community (*n* = 656)		Clinical (*n* = 554)		Total (*n* = 1,210)	
Age						
Min / Max	15	73	15	63	15	73
M / SD	29.8	10.7	28.5	9.6	29.2	10.2
Gender (*f* / %)						
Male	154	23.5	112	20.2	266	22.0
Female	473	72.1	420	75.8	893	73.8
Not reported	29	4.4	22	4.0	51	4.2
Region (*f* / %)						
North	8	1.2	12	2.2	20	1.7
Northeast	59	9.0	54	9.7	113	9.3
Middle-West	38	5.8	35	6.3	73	6.0
Southeast	243	37.0	237	42.8	480	39.7
South	278	42.4	194	35.0	472	39.0
Not reported	30	4.6	22	4.0	52	4.3
Ethnic (*f* / %)						
White	487*	74.2	382*	69.0	869	71.8
Black	21*	3.2	32*	5.8	53	4.4
Asiatic	4	.6	10	1.8	14	1.2
Indian	2	.3	-	-	2	.2
Brown	100	15.2	99	17.9	199	16.4
Other	11	1.7	11	2.0	22	1.8
Not reported	31	4.7	20	3.6	51	4.2
Educational Level (*f* / %)						
Low	3	.5	6	1.1	9	.7
Medium	19*	2.9	48*	8.7	67	5.5
High	600*	91.5	476*	85.9	1,076	88.9
Not reported	34	5.2	24	4.3	58	4.8
Socioeconomic Level (*f* / %)						
Low	6	.9	8	1.4	14	1.2
Medium-Low	214*	32.6	242*	43.7	456	37.7
Medium	174	26.5	134	24.2	308	25.5
Medium-High	104	15.9	69	12.5	173	14.3
High	119*	18.1	73*	13.2	192	15.9
Not reported	39	5.9	28	5.1	67	5.5
Marital Status (*f* / %)						
Single	212	32.3	195	35.2	407	33.6
Single in relationship	197	30.0	172	31.0	369	30.5
Married	181	27.6	134	24.2	315	26.0
Divorced	20	3.0	20	3.6	40	3.3
Divorced in relationship	6	0.9	12	2.2	18	1.5
Widower	2	.3	1	.2	3	.2
Widower in relationship	1	.2	-	-	1	.1
Other	3	.5	3	.5	6	.5
Not reported	34	5.2	17	3.1	51	4.2

Note. * asterisk indicates differences statiscally significant via analysis of adjusted residual from chi-squared tests.

Self-Reporting Questionnaire (SRQ-20; Harding et al., 1980): The SRQ-20 is a 20-items questionnaire with yes or no response. It is a screening tool for common mental disorders with items describing symptoms such as anxiety, depression, and psychosomatic illness. A cut-off point of eight was used in this study based on national and international research (Gonçalves, Stein, & Kapczinski, 2008; Harpham et al., 2003; Mari & Williams, 1985). We used the Brazilian-Portuguese version that was validated by Mari and Williams (1985).

Procedures

A website was created for data collection and was announced on online communities for patients with different kinds of disorders like schizophrenia, social phobia, depression, anxiety, bipolar disorders, and borderline personality. The website was also announced in university communities. Snowball sampling was encouraged. Once the participant was on the research webpage, their first task was to provide informed consent. After consenting, participants registered themselves into the online platform. The registration was encrypted, ensuring the participants' anonymity and privacy. When they had completed all questionnaires, a downloadable PDF performance report was made available to participants. The web platform automatically computed the participants' scores for all scales and a descriptive-interpretive text was provided according to the participants' scores in each scale. For example, participants with scores less than 8 in the SRQ-20 received an interpretive text different from those participants that had scores higher than 7 in the SRQ-20. Psychological reporting was chosen as a strategy to motivate the participants to complete the questionnaires.

Data Analysis

In order to investigate the psychometric properties of the Brazilian version of the PID-5, we first assessed the unidimensionality of the individual PID-5 facets by performing Exploratory Factor Analysis (EFA). We conducted robust EFA based on the items' polychoric correlation matrix using Minimum Rank Factor Analysis (MRFA) as the extraction method. Factor retention was examined by the Minimum Average Partial test (MAP) and by Parallel Analysis (PA). We performed PA with 500 datasets randomly generated with permutation of sample values. These analyses were performed using the software *Factor* (Version 10.3.1). If there was potential evidence for more than one factor, the nature

of the solution was explored using the oblimin rotation method, which was chosen because we expected the factors were related. In those cases, exploratory bifactor models were also applied. The bifactor model was conducted by performing a Schmid–Leiman orthogonalization on the polychoric correlation matrix. These analyses were conducted using the R statistical software (R Core Team, 2013) with the "psych" package (Revelle, 2015). The reliability of the 25 facet scales was assessed by computing Cronbach's alpha and McDonald's omega.

The PID-5 higher-order structure of the Brazilian version of the PID-5 was examined via Exploratory Structural Equation Modeling (ESEM), with oblique target rotation based on the Krueger et al. (2012) loading matrix, and with maximum likelihood with robust standard errors using a numerical integration algorithm (MLR). Tucker (1951)'s congruence coefficients were computed in order to obtain the congruence level of the Brazilian factor models with the original models from United States of America.

To verify the external correlates of the PID-5 Brazilian version we conducted Student *t*-tests to compare facets and domains mean scores between different groups established for different criteria: 1) groups of people with psychiatric disturbance risk formed by those who had a score equal or greater than eight on SRQ-20; 2) groups of participants with suicide risk formed by people who presented scores equal or greater than six on MINI's Suicidality Module; 3) groups of psychiatric patients formed by those participants who self-reported having a psychiatric diagnosis; 4) groups of people that self-reported to be using psychotropic medication; and finally, 5) groups of people with clinical indicators which was formed by the set of the four previously described criterions. We also analyzed the correlation of the PID-5 facets and domains with the SRQ-20 scores and the MINI's suicidality level.

Ethical Considerations

The current research proposal was evaluated and approved by an Ethics Committee under the protocol number 31610114.9.0000.5334 and evaluation report number 937.290.

Results

Unidimensionality of the Facets

MAP and PA tests confirmed unidimensionality for almost all facets (see Table 2). The Depressivity

facet presented a two factor solution for the community sample. We explored the two-factor model for the Depressivity facet, and we observed that nine items related to negative beliefs and feelings about one's self (Self-Deprecation) loaded in the first factor, and five items related to thoughts and feelings about the senselessness of continuing to live (Suicidality) loaded in the second factor. The general factor (Depressivity) of the bi-factor model explained the largest portion of the variance (77%, 88% and 92% for community, clinical and total samples respectively). As such, we treated the Depressivity facet as unidimensional.

An exploratory examination of the Emotional Lability facet suggested a factor with three items indexing how a person can easily get emotional (Emotional Sensitivity), and four items related to emotional changing (Emotional Instability) (inter-factor correlation: r_ϕ = .35, .33 and .39 for community, clinical and total samples respectively). Exploratory bi-factor model demonstrated that the general factor (Emotional Lability) is able to explain the largest part of the data variance (55%, 44% and 49% for community, clinical and total samples respectively). Thus, although the specific factors have some impact on the meaning of the general factor, we assumed that Emotional Lability can be treated as essentially unidimensional for further analyses, inasmuch as its general factor explains the largest proportion of the variance.

The two-factor model for the Risk Taking facet indicated one factor with eight items pertaining to imprudent behavior (Recklessness), and another factor with six items keyed in the other direction, pertaining to cautious behavior (Risk Aversion). The general factor (Risk Taking) of the bi-factor model explained the largest portion of the variance (73%, 74% and 72% for community, clinical and total samples respectively) supporting its unidimensionality.

Reliability of the Facets

Cronbach's alpha based on ordinal data for all facets and all samples were higher than .70 with exception of the Suspiciousness facet (see Table 2). The average Cronbach's alpha for the community sample was .82, while for clinical and total samples was .85. The estimated reliability via McDonald's omega showed that all facets presented ω values equal or greater than .70 for all samples. The average McDonald's omega for community sample was .86, while for clinical sample was .88 and for the total sample was .89.

Higher-Order Structure: Reliability and Factor Congruence

ESEM oblique target rotation applied to our Brazilian data replicated the PID-5 higher-order structure {community sample = x^2(185) = 777.065, p < .001, CFI = .91. TLI = .86, RMSEA = .07 [CI95% .07-.08]; clinical sample = x^2(185) = 866.163, p < .001, CFI = .91. TLI = .85, RMSEA = .08 [CI95% .08-.09]; total sample = x^2(185) = 1429.765, p < .001, CFI = .92. TLI = .87, RMSEA = .08 [CI95% .07-.08]}. The fit indices were quite good in the models. The TLI was the only fit index that did not reach the minimal expected value (.90), indicating that the average correlation between variables was not high. The PID-5 Brazilian version factorial structure can be considered virtually equal to the original structure presented in Krueger et al. (2012). The expected facets for each domain can be seen in Table 3 highlighted in gray. Tucker's congruence coefficients ranged from .92 to .99 (see Table 3). The estimated congruence between the community and clinical samples suggested they can be considered virtually identical (Negative Affectivity .99, Detachment .98, Antagonism .99, Disinhibition .97, and Psychoticism .98). Considering the higher-order structural equivalence between the original and Brazilian versions of the PID-5, we calculated the factor scores according to the algorithm proposed by Krueger et al. (2012). The reliability coefficients for each domain were adequate (see bottom part of the Table 3).

Concurrent Validity

Concurrent validity was tested by investigating the ability of the PID-5 scores to discriminate between groups composed of people with indicators of adaptive and maladaptive psychological functioning. Table 4 presents means, standard deviations, and Cohen's *d* for each PID-5 facet and domain. The first grouping procedure was based on the SRQ-20 score, where scores equal or greater than 8 indicate risk for psychiatric disturbances (Gonçalves et al., 2008; Harpham et al., 2003; Mari & Williams, 1985). The group of people with psychiatric disturbance risk presented higher scores in all dimensions than those with low risk for psychiatric problems (*d* ranged from .51 to 1.40).

The second grouping procedure was based on the Suicidality Module of the MINI, where people with a weighted score equal or greater than six were considered as having a moderate risk for suicidal behavior. People from the high risk for suicidal behavior group presented higher scores than those from the low risk group in all domains. The third and fourth grouping

Table 2.
Descriptive Statistics, Facet Unidimensionality, and Reliability Coefficients

Facets	Community (n = 656)								Clinical (n = 554)									Total (n = 1,210)							
	M	SD	MAP	PA	$\bar{\lambda}$	$\bar{h2}$	α	ω	M	SD	d	ω	α	$\bar{h2}$	$\bar{\lambda}$	PA	MAP	M	SD	MAP	PA	$\bar{\lambda}$	$\bar{h2}$	α	ω
ANHE	.72	.48	1	1	.65	.45	.79	.85	1.39	.71	**1.13**	.90	.86	.51	.70	1	1	1.03	.69	1	1	.73	.55	.87	.91
ANXI	1.21	.59	1	1	.63	.44	.82	.85	1.82	.67	**.97**	.88	.83	.47	.66	1	1	1.49	.70	1	1	.68	.50	.85	.89
ATT-S	.91	.66	1	1	.75	.58	.88	.90	1.12	.77	.30	.92	.89	.60	.76	1	1	1.00	.72	1	1	.76	.59	.89	.91
CALL	.26	.34	1	1	.72	.54	.86	.88	.42	.47	.40	.91	.88	.53	.71	1	1	.34	.41	1	1	.72	.54	.88	.91
DECE	.39	.42	1	1	.70	.53	.84	.88	.61	.57	.46	.89	.87	.55	.72	1	1	.49	.51	1	1	.72	.55	.86	.90
DEPR	.34	.35	2	1	.70	.51	.85	.88	1.02	.73	**1.23**	.95	.93	.61	.78	1	2	.65	.65	1	1	.82	.67	.94	.95
DIST	.79	.60	1	1	.72	.53	.87	.90	1.31	.73	**.78**	.91	.89	.54	.73	1	1	1.03	.71	1	1	.75	.57	.89	.92
ECCE	.41	.56	1	1	.86	.74	.95	.96	.80	.80	**.56**	.96	.96	.74	.86	1	1	.59	.71	1	1	.87	.76	.96	.96
EMO-L	.94	.63	2	1	.66	.46	.81	.89	1.51	.75	**.83**	.90	.82	.45	.66	1	2	1.20	.74	2	1	.70	.50	.84	.93
GRAN	.62	.54	1	1	.70	.50	.77	.81	.77	.65	.26	.84	.81	.52	.72	1	1	.69	.60	1	1	.71	.51	.79	.85
HOST	.75	.53	1	1	.66	.45	.84	.87	1.15	.70	**.66**	.91	.88	.52	.70	1	1	.93	.65	1	1	.70	.51	.88	.90
IMPU	.62	.59	1	1	.79	.65	.86	.89	1.02	.79	**.59**	.93	.90	.71	.83	1	1	.80	.72	1	1	.83	.70	.90	.92
INT-A	.47	.56	1	1	.76	.60	.81	.87	.65	.69	.29	.88	.83	.60	.76	1	1	.55	.63	1	1	.76	.61	.83	.86
IRRE	.38	.42	1	1	.62	.39	.71	.77	.70	.56	**.68**	.78	.73	.37	.60	1	1	.53	.51	1	1	.64	.41	.75	.80
MANI	.63	.62	1	1	.79	.63	.82	.86	.78	.74	.23	.88	.84	.64	.80	1	1	.70	.68	1	1	.80	.63	.84	.87
PER-D	.32	.36	1	2	.69	.49	.83	.85	.66	.52	**.77**	.86	.84	.44	.65	1	1	.48	.47	1	1	.70	.49	.85	.87
PERS	.63	.51	1	1	.67	.45	.83	.86	1.01	.60	**.68**	.87	.82	.41	.62	1	1	.80	.58	1	1	.67	.46	.84	.87
RES-A	.81	.64	1	1	.72	.52	.84	.88	.96	.70	.22	.87	.84	.53	.72	1	1	.88	.68	1	1	.72	.53	.84	.88
RIG-P	.93	.64	1	1	.72	.52	.89	.90	1.16	.72	.34	.91	.89	.53	.72	1	1	1.04	.69	1	1	.72	.53	.89	.90
RIS-T	1.01	.47	2	2	.60	.38	.84	.87	1.00	.55	-.02	.89	.86	.42	.63	2	2	1.00	.50	2	1	.61	.40	.85	.88
SEP-I	.60	.58	1	1	.73	.53	.82	.87	1.04	.80	**.64**	.89	.87	.60	.77	1	1	.80	.72	1	1	.77	.60	.87	.89
SUBM	.78	.62	1	1	.78	.61	.80	.83	1.08	.72	.45	.84	.80	.59	.77	1	1	.91	.68	1	1	.78	.61	.81	.84
SUSP	.86	.47	1	1	.53	.34	.60	.70	1.24	.58	**.72**	.75	.69	.36	.55	1	1	1.03	.55	1	1	.57	.38	.70	.77
U-B-E	.34	.43	1	1	.71	.51	.79	.85	.55	.56	.43	.87	.81	.51	.71	1	1	.44	.51	1	1	.72	.52	.81	.86
WITH	.69	.55	1	1	.73	.55	.88	.90	1.07	.69	**.62**	.91	.89	.55	.73	1	1	.87	.65	1	1	.75	.58	.89	.91

Note. MAP - minimum average partial test; PA - parallel analysis; λ- mean of factor loadings; h2- mean of communalities; α - Cronbach's alpha; ω - MacDonald's ômega; d - Cohen's d with a medium effect size considering the lower boundaries of confidence interval of 95% are presented in bold; ANHE - Anhedonia; ANXI - Anxiousness; ATT-S - Attention Seeking; CALL - Callousness; DECE - Deceitfulness; DEPR - Depressivity; DIST - Distractibility; ECCE - Eccentricity; EMO-L - Emotional Lability; GRAN - Grandiosity; HOST - Hostility; IMPU - Impulsivity; INT-A - Intimacy Avoidance; IRRE - Irresponsibility; MANI - Manipulativeness; PER-D - Perceptual Dysregulation; PERS - Perseveration; RES-A - Restricted Affectivity; RIG-P - Rigid Perfectionism; RIS-T - Risk Taking; SEP-I - Separation Insecurity; SUBM - Submissiveness; SUSP - Suspiciousness; U-B-E - Unusual Beliefs and Experiences; WITH - Withdrawal

Table 3.
Exploratory Structural Equating Modeling with Oblique Target Rotation

	Negative Affectivity			Detachment			Antagonism			Disinhibition			Psychoticism		
	Comm	Clinical	Total	Comm	Clinical	Total	Comm	Clinical	Total	Comm	Clinical	Total	Comm	Clinical	Total
EMO-L	**.59**	**.63**	**.62**	-.10	.02	-.01	.00	.03	.02	.14	.12	.15	.28	.25	.26
ANXI	**.66**	**.67**	**.66**	.27	.28	.28	.15	.04	.08	.00	-.01	.02	.01	.14	.10
RES-A	-.29	**-.35**	**-.36**	**.58**	**.48**	**.53**	.15	.23	.21	.12	.13	.08	.25	.22	.23
SEP-I	**.55**	**.60**	**.59**	.03	-.09	-.02	.17	.18	.17	.15	.24	.20	-.01	-.04	-.02
HOST	.17	.17	.19	.13	.24	.20	**.43**	**.49**	**.44**	.24	.12	.20	.04	.08	.06
PERS	**.40**	**.43**	**.40**	.29	.26	.27	.05	.13	.12	.08	.08	.05	**.41**	.29	**.34**
SUBM	**.41**	**.43**	**.41**	.23	.22	.23	.07	.08	.10	.17	.21	.16	-.02	-.10	-.06
WITH	-.09	-.06	-.07	**.76**	**.75**	**.76**	.05	-.01	.02	.07	.14	.11	.19	.18	.19
ANHE	.15	.21	.23	**.67**	**.65**	**.65**	-.08	-.12	-.11	.27	.28	**.30**	.00	.05	.04
DEPR	**.32**	**.36**	**.36**	**.48**	**.53**	**.49**	-.11	-.10	-.11	**.30**	**.40**	**.39**	.17	.11	.13
INT-A	-.24	-.18	-.22	**.49**	**.47**	**.48**	-.04	.01	-.01	.13	.03	.07	.18	.28	.25
SUSP	.12	.25	.22	.23	.27	.26	**.34**	.26	.27	.08	.07	.11	.23	.26	.24
MANI	-.03	-.06	-.06	-.09	-.07	-.09	**.70**	**.76**	**.75**	.19	.15	.16	.08	.07	.06
DECE	.00	-.02	-.01	.02	.09	.07	**.65**	**.64**	**.64**	**.40**	**.34**	**.37**	.00	-.01	-.02
GRAN	.03	.00	.00	.11	.03	.06	**.64**	**.65**	**.65**	-.12	-.02	-.07	.20	.24	.22
ATT-S	**.32**	**.30**	**.31**	-.14	-.27	-.23	**.56**	**.65**	**.63**	.11	.15	.11	.04	.03	.04
CALL	-.26	-.25	-.26	**.31**	**.33**	**.33**	**.46**	**.56**	**.51**	.27	.27	.28	.13	.06	.08
IRRE	.03	-.01	.02	.03	.06	.06	.14	.12	.12	**.56**	**.63**	**.60**	.17	.23	.21
IMPU	.23	.27	.27	-.10	-.14	-.12	.11	.15	.13	**.50**	**.43**	**.47**	.09	.18	.15
RIG-P	**.33**	**.32**	**.33**	**.30**	**.32**	**.32**	**.34**	**.34**	**.35**	**-.47**	**-.48**	**-.51**	.29	.27	.29
DIST	**.33**	.19	.26	.17	.13	.16	-.12	-.14	-.11	**.48**	**.55**	**.49**	.19	.21	.21
RIS-T	-.20	-.23	-.23	-.27	-.29	**-.30**	.27	.20	.22	.19	**.33**	.27	.24	.25	.26
U-B-E	-.01	.01	.01	-.09	-.05	-.08	.10	.08	.08	.04	.00	.03	**.72**	**.81**	**.78**
ECCE	-.05	-.03	-.05	.14	.19	.17	.10	.06	.07	.17	.22	.20	**.64**	**.66**	**.66**
PER-D	.17	.13	.15	.03	.04	.05	.00	.02	.01	.22	.24	.24	**.72**	**.73**	**.71**
TCC	.93	.95	.95	.97	.98	.98	.98	.99	.99	.92	.92	.94	.97	.97	.98
α	.91	.94	.95	.93	.95	.95	.94	.95	.95	.84	.89	.87	.94	.95	.95

Note. Facets are ordered (descending) according to the values of factor loadings from Krueger et al. (2012); Gray areas indicate facets that belong to respective domains according to Krueger et al. (2012) algorithm; Values greater than |.30| are presented in bold; Comm - community sample; TCC - Tucker's congruence coefficient between factors from current study and factors from Krueger et al. (2011); ANHE - Anhedonia; ANXI - Anxiousness; ATT-S - Attention Seeking; CALL - Callousness; DECE - Deceitfulness; DEPR - Depressivity; DIST - Distractibility; ECCE - Eccentricity; EMO-L - Emotional Lability; GRAN - Grandiosity; HOST - Hostility; IMPU - Impulsivity; INT-A - Intimacy Avoidance; IRRE - Irresponsibility; MANI - Manipulativeness; PER-D - Perceptual Dysregulation; PERS - Perseveration; RES-A - Restricted Affectivity; RIG-P - Rigid Perfectionism; RIS-T - Risk Taking; SEP-I - Separation Insecurity; SUBM - Submissiveness; SUSP - Suspiciousness; U-B-E - Unusual Beliefs and Experiences; WITH - Withdrawal.

Table 4.
Comparisons of the PID-5 Scores Between Groups of People With and Without Psychopathological Indicators

	Psychiatric risk					Suicide risk					Psychiatric diagnosis					Psychotropic medication				
	Low (n = 797)		High (n = 411)		d	Low (n = 910)		High (n = 176)		d	No (n = 909)		Yes (n = 203)		d	No (n = 972)		Yes (n = 163)		d
	M	SD	M	SD		M	SD	M	SD		M	SD	M	SD		M	SD	M	SD	
ANHE	.75	.51	1.56	.67	**1.42**	.90	.60	1.60	.73	**1.12**	.93	.63	1.43	.75	**.77**	.96	.64	1.41	.76	**.69**
ANXI	1.25	.60	1.96	.63	**1.16**	1.40	.66	1.92	.69	**.78**	1.41	.67	1.85	.70	**.66**	1.43	.67	1.84	.73	.60
ATT-S	.93	.68	1.16	.77	.32	.96	.69	1.19	.82	.32	.96	.69	1.13	.81	.23	.97	.70	1.14	.79	.24
CALL	.27	.33	.46	.50	.48	.28	.34	.57	.56	**.76**	.31	.37	.44	.50	.32	.31	.38	.46	.52	.36
DECE	.40	.42	.66	.60	.53	.43	.45	.79	.66	**.74**	.46	.48	.59	.58	.27	.46	.48	.61	.59	.30
DEPR	.38	.38	1.17	.74	**1.49**	.48	.47	1.42	.81	**1.74**	.54	.53	1.08	.85	**.90**	.56	.57	1.09	.87	**.86**
DIST	.82	.60	1.43	.73	**.94**	.94	.66	1.43	.77	**.72**	.95	.68	1.35	.73	.58	.97	.69	1.30	.71	.47
ECCE	.44	.59	.87	.82	**.64**	.47	.59	1.09	.92	**.95**	.51	.63	.86	.88	.51	.53	.65	.82	.87	.42
EMO-L	.98	.63	1.64	.74	**.99**	1.10	.70	1.65	.79	**.77**	1.09	.69	1.58	.80	**.69**	1.11	.71	1.63	.77	**0.72**
GRAN	.63	.55	.80	.67	.29	.65	.55	.87	.75	.38	.66	.56	.80	.69	.25	.66	.57	.83	.67	.29
HOST	.77	.55	1.24	.72	**.77**	.85	.59	1.27	.78	**.67**	.86	.62	1.16	.72	.47	.87	.62	1.19	.76	.49
IMPU	.65	.60	1.10	.83	**.66**	.72	.65	1.15	.90	.62	.72	.68	1.09	.81	.53	.72	.68	1.15	.82	.62
INT-A	.48	.57	.70	.70	.36	.50	.57	.79	.79	.48	.51	.59	.68	.69	.27	.53	.60	.67	.71	.23
IRRE	.39	.42	.78	.58	**.81**	.45	.45	.91	.63	**.95**	.47	.47	.75	.62	.56	.48	.48	.76	.61	.55
MANI	.65	.64	.79	.74	.21	.66	.64	.86	.84	.30	.66	.66	.81	.71	.22	.67	.67	.83	.72	.24
PER-D	.34	.36	.73	.54	**.91**	.40	.40	.82	.59	**.96**	.42	.41	.68	.57	**.58**	.43	.42	.68	.61	.55
PERS	.66	.51	1.08	.61	**.77**	.73	.54	1.12	.65	**.70**	.74	.56	1.02	.61	.49	.75	.56	1.05	.63	**.53**
RES-A	.81	.64	1.02	.71	.32	.83	.66	1.09	.73	.39	.87	.67	.91	.71	.06	.88	.68	.87	.68	-.02
RIG-P	.94	.65	1.21	.73	.40	1.00	.67	1.19	.76	.28	.99	.67	1.18	.72	.28	1.01	.67	1.16	.75	.23
RIS-T	1.02	.47	.97	.56	-.10	.97	.47	1.14	.61	.34	.99	.48	1.00	.59	.02	.98	.48	1.04	.62	.10
SEP-I	.62	.60	1.16	.82	**.79**	.70	.65	1.27	.86	**.83**	.75	.68	.97	.81	.31	.76	.69	.98	.82	.30
SUBM	.79	.62	1.15	.73	.55	.86	.65	1.19	.76	.49	.88	.67	1.03	.70	.22	.88	.66	1.09	.74	.31
SUSP	.88	.47	1.32	.59	**.86**	.95	.51	1.39	.58	**.84**	.98	.53	1.24	.60	.48	1.00	.54	1.20	.61	.37
U-B-E	.36	.44	.58	.58	.45	.38	.46	.66	.61	.58	.38	.46	.60	.59	.45	.39	.46	.63	.63	.50
WITH	.71	.55	1.17	.72	**.75**	.76	.58	1.37	.75	**1.00**	.80	.61	1.12	.73	.50	.82	.62	1.12	.74	.48
NEG-A	.89	.33	1.41	.44	**1.40**	.98	.37	1.47	.50	**1.25**	1.00	.40	1.33	.50	**.80**	1.01	.40	1.35	.52	**.82**
DETA	.64	.37	1.17	.53	**1.23**	.71	.41	1.32	.57	**1.39**	.75	.45	1.09	.58	**.72**	.77	.46	1.08	.60	**.65**
ANTA	.57	.37	.82	.50	**.60**	.59	.39	.90	.56	**.74**	.61	.41	.78	.50	.39	.62	.42	.80	.52	.43
DISI	1.06	.30	1.23	.39	.51	1.08	.32	1.31	.42	**.68**	1.09	.32	1.22	.42	.38	1.09	.33	1.23	.41	.42
PSYC	.39	.41	.75	.60	**.75**	.42	.43	.89	.66	**.99**	.45	.45	.73	.63	.58	.46	.46	.72	.66	.53

Note. d - Cohen's *d*; Cohen's *d* with a medium effect size considering the lower boundaries of confidence interval of 95% are presented in bold; ANHE - Anhedonia; ANXI - Anxiousness; ATT-S - Attention Seeking; CALL - Callousness; DECE - Deceitfulness; DEPR - Depressivity; DIST - Distractibility; ECCE - Eccentricity; EMO-L - Emotional Lability; GRAN - Grandiosity; HOST - Hostility; IMPU - Impulsivity; INT-A - Intimacy Avoidance; IRRE - Irresponsibility; MANI - Manipulativeness; PER-D - Perceptual Dysregulation; PERS - Perseveration; RES-A - Restricted Affectivity; RIG-P - Rigid Perfectionism; RIS-T - Risk Taking; SEP-I - Separation Insecurity; SUBM - Submissiveness; SUSP - Suspiciousness; U-B-E - Unusual Beliefs and Experiences; WITH - Withdrawal; NEG-A - Negative Affectivity; DETA - Detachment; ANTA - Antagonism; DISI - Disinhibition; PSYC - Psychoticism.

procedure was based on self-reports. Participants were asked to indicate if they had any psychiatric diagnosis, as well as to declare if they were using any psychotropic medication. People that reported having a psychiatric diagnosis had higher scores in all domains, compared with those that denied it. The results were very similar for the group of people that was taking psychotropic medication. Finally, the PID-5 domain score differences between community and clinical samples were as follow: Negative Affectivity (Community: M = .87, SD = .31; Clinical M = 1.31, SD = .45; d = 1.15 [1.12-1.18]); Detachment (Community: M = .61, SD = .36; Clinical M = 1.07, SD = .53; d = 1.01 [.97-1.04]); Antagonism (Community: M = .55, SD = .37; Clinical M = . 78, SD = .48; d = .53 [.49-.56]); Disinhibition (Community: M = 1.05, SD = .29; Clinical M = 1.20, SD = .38; d = .45 [.42-.47]); Psychoticism (Community: M = .36, SD = .40; Clinical M = .69, SD = .58; d = .66 [.62-.70]). The differences regarding the facet level can be found in Table 2.

We also investigated the relationship of the PID-5 facets and domains scores with indicators of mental illness (Table 4). We highlight the strong relationship of the Anhedonia, Depressivity, and Withdrawal facets with the Depressive Symptoms component of the SRQ-20. It is also worthy to highlight the relationship of the Anxiousness, Emotional Lability, and Separation Insecurity facets with the Anxiety Symptoms component. Finally, the Somatic Complaints component of the SRQ-20 was strongly related with the Anhedonia facet and the Negative Affectivity domain. The Negative Affectivity and Detachment were the domains the most associated with symptoms of common mental illness (total SRQ-20 score). Regarding suicide risk, the strongest correlations were with the Depressivity facet and Detachment and Negative Affectivity domains.

Discussion

The present study aimed to examine the psychometric properties of the PID-5 in community and clinical Brazilian samples. Our findings indicated, in a general way, that the PID-5 (Krueger et al., 2012) is a reliable and valid instrument to assess the personality pathological traits of the DSM-5 trait model (APA, 2013) in Brazilian population. Our results replicated previous findings about the PID-5's structure indicating its robustness and generalization. The results of the current research suggest that the Brazilian version of the PID-5 is strongly equivalent with other versions in

other languages. Thus, we recommend its use in Brazilian culture.

Although the literature, as well as the current study generally support the acceptable psychometric properties of the PID-5, some minor issues were also identified. Unidimensionality was surly obtained for most, but not all facets, for example. The PID-5 scales generally loaded in ways that were consistent with previous research on the higher-order structure of the instrument, but not in all cases. In order to improve the knowledge about the PID-5 and DSM-5 personality disorders dimensional model, we selected some findings to discuss them deeper.

The Structure of Pathological Personality Traits

Some facets do not seem to be purely unidimensional as indicated by MAP, PA, and omega hierarchical tests in the current study. Emotional Lability facet was the one which presented more evidence for a two-factor solution than the others one. Emotional Lability would comprise two subcomponents which could be labeled as Emotional Sensitivity and Emotional Instability. Bastiaens et al. (2016), Gutiérrez et al. (2017), and Zimmerman et al. (2014) also found evidences for two factor model for Emotional Lability, and these two factor also appear in the operational definition in the DSM-5 (APA, 2013, p. 779): *"Instability of emotional experiences and mood; emotions that are easily aroused, intense, and/or out of proportion to events and circumstances"*. It is worthy to note that Gutiérrez et al. (2017) found a factorial solution identical to the current study for Emotional Lability scale.

In a general way, this result lead us to believe that the pathology of emotional experience is better described by its intensity and instability components separately but also correlated. People with personality disorders can be very sensitive to emotional stimuli but they do not necessarily have to present emotional oscillation because of it. For example, a person can feel very offended by a constructive criticism, overreacting to this event, and they tend to keep their feelings in a constant and stable way towards this event. On other hand, some people can often experience changes in their feelings without being highly sensitive to external emotional stimuli. For example, a person can experience emotional shifts, often changing from an appropriate self-worth feeling to a sense of useless and self-deprecation, but they do not necessarily have to be sensitive to emotional stimuli to experience these shifts. Having said that, the current study provides empirical support

Table 5.
Correlations Between PID-5 Scores and Mental Illness Indicators

PID-5	SRQ-20 (n = 1,208)				MINI (n = 1,086)
	Depression Symptoms (KR20 = .77)	Somatic Complaints (KR20 = .68)	Anxiety Symptoms (KR20 = .64)	Total (KR20 = .83)	Suicide Risk (KR20 = .78)
ANHE	**.71***	**.44***	**.46***	**.67***	**.49***
ANXI	**.48***	**.41***	**.60***	**.62***	.36***
ATT-S	.15***	.09**	.20***	.18***	.16***
CALL	.34***	.15***	.15***	.27***	.37***
DECE	.31***	.19***	.24***	.31***	.32***
DEPR	**.77***	.39***	**.53***	**.71***	**.66***
DIST	**.45***	.33***	**.46***	**.51***	.31***
ECCE	**.42***	.19***	.27***	.37***	**.42***
EMO-L	**.40***	.37***	**.53***	**.53***	.37***
GRAN	.17***	.13***	.10***	.17***	.18***
HOST	.37***	.31***	.34***	**.43***	.34***
IMPU	.34***	.20***	.37***	.38***	.33***
INT-A	.29***	.13***	.13***	.23***	.24***
IRRE	**.44***	.25***	.33***	**.43***	**.40***
MANI	.11***	.10***	.10***	.13***	.15***
PER-D	**.46***	.31***	**.41***	**.49***	**.44***
PERS	**.42***	.26***	**.41***	**.45***	.32***
RES-A	.26***	.08**	.11***	.19***	.18***
RIG-P	.17***	.19***	.25***	.25***	.16***
RIS-T	.05	-.09**	-.07*	-.03	.14***
SEP-I	.35***	.24***	**.48***	**.44***	.35***
SUBM	.31***	.14***	.30***	.31***	.21***
SUSP	**.44***	.28***	.37***	**.46***	.38***
U-B-E	.27***	.19***	.19***	.28***	.29***
WITH	**.49***	.26***	.28***	**.43***	**.43***
NEG-A	**.61***	**.43***	**.62***	**.69***	**.53***
DETA	**.69***	.37***	**.44***	**.63***	**.57***
ANTA	.34***	.22***	.26***	.34***	.32***
DISI	.33***	.12***	.23***	.28***	.30***
PSYC	**.44***	.25***	.33***	**.43***	**.44***

Note. * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$; SRQ-20 - Self-Reporting Questionnaire; MINI - Mini International Neuropsychiatric Interview; KR20 - Kuder-Richardson coefficient of reliability; Coefficients $\geq |.40|$ are presented in bold; ANHE - Anhedonia; ANXI - Anxiousness; ATT-S - Attention Seeking; CALL - Callousness; DECE - Deceitfulness; DEPR - Depressivity; DIST - Distractibility; ECCE - Eccentricity; EMO-L - Emotional Lability; GRAN - Grandiosity; HOST - Hostility; IMPU - Impulsivity; INT-A - Intimacy Avoidance; IRRE - Irresponsibility; MANI - Manipulativeness; PER-D - Perceptual Dysregulation; PERS - Perseveration; RES-A - Restricted Affectivity; RIG-P - Rigid Perfectionism; RIS-T - Risk Taking; SEP-I - Separation Insecurity; SUBM - Submissiveness; SUSP - Suspiciousness; U-B-E - Unusual Beliefs and Experiences; WITH - Withdrawal; NEG-A - Negative Affectivity; DETA - Detachment; ANTA - Antagonism; DISI - Disinhibition; PSYC - Psychoticism.

for an improvement of the DSM-5's pathological personality traits model.

Besides Emotional Lability two-factor model, other two facets (Risk Taking and Depressivity) seemed to be multidimensional. The two-factor solution of Risk Taking facet is known in the literature (Fossati et al., 2013; Quilty et al., 2013) and refers to the original facets Recklessness and Risk Aversion in the PID-5 construction (see Krueger et al., 2012). We highlight the need of a deeper investigation of the nature of this facet to verify if the two-factor solution is reflecting just a methodological issue (positively and negatively keyed items), or a latent structure of behaviors related to risk taking. Regarding the Depressivity facet, our study found a better fit for a two-factor solution for our community sample, and the factors were labeled as Self-Deprecation and Suicidality (similar results were observed by Quilty et al., 2013; Roskam et al., 2015). Although the evidence for a two-factor solution was not strong in our study, this result can indicate some differences on behavior pattern of people with and without psychopathological functioning. People with a healthy psychological functioning can present negative beliefs and feelings about their selves without engaging in suicidal thoughts and feelings. On the other hand, people with psychopathological indicators tend to present all these features together.

The two factor solutions found in the current study for Emotional Lability, Risk Taking, and Depressivity facets, as well as those seen in other studies (Hostility in Bastiaens et al., 2015; Quilty et al, 2013; Zimmerman et al., 2014; Perseveration and Manipulativeness in Zimmerman et al., 2014; Callousness and Perceptual Dysregulation in Roskam et al., 2015), may suggest the need for a model reviewing, or could be reflecting cultural differences.

The PID-5 higher-order structure is a complex model with a large number of variables presenting cross-loadings in different domains, since Krueger et al. (2012) focused on content validity over structural simplicity. This complexity was also observed in Brazilian data. Our study, as such as many studies, have successfully replicated the original five-factor model (Watters & Bagby, 2018). In particular, our results converged to the Zimmerman et al.'s (2014) study which also found that Restricted Affectivity and Hostility facets are more likely associated with Detachment and Antagonism domains respectively than to the Negative Affectivity domain. It is worthy to mention that, in our study, the Suspiciousness and Risk Taking facets did not present

satisfactory loading in any domain. We, however, highlight that Suspiciousness facet presented fair reliability coefficients, mostly because of the item 177, and that Risk Taking showed better fit for two-factor model. Maybe, these elements would explain these results in the higher-order structure.

Considering that some facets of the DSM-5's pathological personality traits model can be changed after deeper studies on their structural nature, as it was discussed before, we can wonder how the higher-order structure will looks like when new facets are included in the model. Some studies have reported that the pathological personality structure can include domains like Compulsivity (Van den Broeck et al., 2014), Anger-Hostility and Openness to Experience (Ashton et al., 2012). The number of and the kind of traits are important issues to elucidate the structure and the description of personality.

The findings of this research result in practical implications regarding the use of PID-5 in the Brazilian population. First, we stress the need for further research and with larger samples to test the structure of the PID-5 in Brazil. This was an initial study and it can be complemented by other sources of evidence. If the structure found in this study is confirmed in other samples, it is recommended that the estimate of the pathological personality domains be made considering the structure that has empirical support.

Mental Disorders and Pathological Personality Traits

Pathological personality traits are related with a large number of psychological/clinical issues (Hopwood et al., 2013). The prevalence of personality disorders in community is estimated in about 13% (Torgersen et al., 2001), while in psychiatric patients is about 45% (Zimmerman et al., 2005). Thus, it is empirically expected that people who are going through psychopathological issues tend to have more personality traits in a pathological level. The present study has shown that PID-5 facets and domains differentiate groups composed of people with indicators of adaptive and maladaptive psychological functioning. The PID-5's ability to differentiate among groups has also been noted by Quilty et al. (2013), Bastiaens et al. (2015), Gutiérrez et al. (2017), and Bach et al. (2018).

Although many PID-5 facets were able to discriminate the groups formed in the current study, Anhedonia, Depressivity and Emotional Lability were the only facets that discriminated all the five groups with a moderate effect size considering the lower

boundaries of confidence interval of 95%. Negative Affectivity and Detachment domains showed the same results. It is known that internalizing problems are the most frequent mental disorders among Brazilian women (Barros et al., 2018). Since our sample is composed mostly by women (73.8%), our results reinforce the relation between personality disturbances and psychiatric symptoms. An individual's personality is the expression of one's self, and as so, his/her symptoms are presented accordingly to the individual's behavioral tendencies.

In our study we observed that suicide risk was more related with higher levels of the Depressivity facet, and Detachment and Negative Affectivity domains. The relationship of risk of suicidal behavior with internalizing problems is well known in the literature (see, for example, Eaton et al., 2013), and our findings underscore this relation. However, it has also been shown that suicidal behavior is related to externalizing problems (Miller et al., 2019; Rice et al., 2018), and we found the Impulsivity and Hostility facets presented a statistically significant relationship with suicide risk ($r = .33$ and $r = .34$, respectively); however, their effect sizes were not large as for the internalizing facets and domains.

The strong correlations observed between depressive symptoms and Anhedonia, Depressivity, and Withdrawal facets, and between anxiety symptoms and Anxiousness, Emotional Lability, and Separation Insecurity facets underscore the well-known overlap between psychological symptoms and pathological personality traits (DeYoung et al., 2020; Kotov et al., 2017). Similarly, the correlation between somatic complaints and Negative Affectivity domain fits well with literature indicating that people that present somatic complains are more neurotic on average (Wei et al., 2015).

Limitations and Future Research

Data were collected via online survey and the sample may not be perfectly representative of the community dwelling Brazilian population. In the current study 73.8% reported female gender (the female population was estimated in 51% in the Brazilian census of 2010); 71.8% self-reported being white (estimated in 47.7%); 88.9% are studying or have completed the college degree (estimated in 31.8%); and, finally, the absolute number of participants from North, Northeast, and Middle-West regions were small. Further studies with a more representative sample are recommended in order to verify the

generalization of the current results. Balanced sampling design by gender and region of residence, and comparisons between online and paper and pen data collection can provide information about the generalization of the current findings.

In order to obtain valid responses, we provided a psychological reporting of the participant's performance as strategic method to keep the motivation of the respondents, but no other procedure was applied. Moreover, we recommend further validity investigations and the examination of the temporal stability (test-retest) of the PID-5 facets and domains.

Conclusion

The current study aimed to investigate the psychometric properties of the PID-5 Brazilian version. Results generally support its reliability and validity in Brazilian culture as well as its congruence with the original version presented by Krueger et al. (2012). The current research presents to the Brazilian researchers and clinicians the Brazilian Portuguese version of the PID-5. The results indicate that the PID-5 Brazilian version is a reliable and valid way to measure the DSM-5 pathological personality traits in Brazilian people.

References

Al-Dajani, N., Gralnick, T. M., & Bagby, R. M. (2016). A psychometric review of the Personality Inventory for DSM–5 (PID–5): Current status and future directions. *Journal of personality assessment, 98*(1), 62-81. https://doi.org/10.1080/00223891.2015.1107572

Al-Dajani, N., Gralnick, T. M., & Bagby, R. M. (2018). "A psychometric review of the personality inventory for DSM-5 (PID-5): Current status and future directions": Correction. *Journal of Personality Assessment, 100*(4), 448. https://doi.org/10.1080/00223891.2018.1433405

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Pub.

Amorim, P. (2000). Mini International Neuropsychiatric Interview (MINI): validação de entrevista breve para diagnóstico de transtornos mentais. *Brazilian Journal of Psychiatry*, *22*(3), 106-115. https://doi.org/10.1590/S1516-44462000000300003

Ashton, M. C., Lee, K., de Vries, R. E., Hendrickse, J., & Born, M. P. (2012). The maladaptive personality traits of the Personality Inventory for DSM-5 (PID-5) in relation to the HEXACO personality factors and schizotypy/dissociation. *Journal of Personality Disorders, 26*(5), 641-659. https://doi.org/10.1521/pedi.2012.26.5.641

Bach, B., Sellbom, M., & Simonsen, E. (2018). Personality Inventory for DSM-5 (PID-5) in Clinical Versus Nonclinical Individuals: Generalizability of Psychometric Features. *Assessment, 25*(7), 815–825. https://doi.org/10.1177/1073191117709070

Barros, F. C., Matijasevich, A., Santos, I. S., Horta, B. L., da Silva, B., Munhoz, T. N., Fazel, S., Stein, A., Pearson, R. M., Anselmi, L., & Rohde, L. A. (2018). Social inequalities in mental disorders and substance misuse in young adults: A birth cohort study in Southern Brazil. *Social Psychiatry and Psychiatric Epidemiology, 53*(7), 717–726. https://doi.org/10.1007/s00127-018-1526-x

Bastiaens, T., Claes, L., Smits, D., De Clercq, B., De Fruyt, F., Rossi, G., Vanwalleghem, D., Vermote, R., Lowyck, B., Claes, S., & De Hert, M. (2016). The Construct Validity of the Dutch Personality Inventory for DSM-5 Personality Disorders (PID-5) in a Clinical Sample. *Assessment, 23*(1), 42–51. https://doi.org/10.1177/1073191115575069

Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine, 25*(24), 3186-3191. https://journals.lww.com/spinejournal/Citation/2000/12150/Guidelines_for_the_Process_of_Cross_Cultural.14.aspx

DeYoung, C. G., Chmielewski, M., Clark, L. A., Condon, D. M., Kotov, R., Krueger, R. F., Lynam, D. R., Markon, K. E., Miller, J. D., Mullins-Sweatt, S. N., Samuel, D. B., Sellbom, M., South, S. C., Thomas, K. M., Watson, D., Watts, A. L., Widiger, T. A., Wright, A., & HiTOP Normal Personality Workgroup (2020). The distinction between symptoms and traits in the Hierarchical Taxonomy of Psychopathology (HiTOP). *Journal of Personality*, 10.1111/jopy.12593. Advance online publication. https://doi.org/10.1111/jopy.12593

Eaton, N. R., Krueger, R. F., Markon, K. E., Keyes, K. M., Skodol, A. E., Wall, M., ... & Grant, B. F. (2013). The structure and predictive validity of the internalizing disorders. *Journal of Abnormal Psychology, 122*(1), 86-92. https://doi.org/0.1037/a0029598

Fossati, A., Krueger, R. F., Markon, K. E., Borroni, S., & Maffei, C. (2013). Reliability and validity of the personality inventory for DSM-5 (PID-5) predicting DSM-IV personality disorders and psychopathy in community-dwelling Italian adults. *Assessment, 20*(6), 689-708. https://doi.org/10.1177/1073191113504984

Gonçalves, D. M., Stein, A. T., & Kapczinski, F. (2008). Avaliação de desempenho do Self-Reporting Questionnaire como instrumento de rastreamento psiquiátrico: um estudo comparativo com o Structured Clinical Interview for DSM-IV-TR. *Cadernos de Saúde Pública, 24*(2), 380-390. https://doi.org/10.1590/S0102-311X2008000200017

Gutiérrez, F., Aluja, A., Peri, J. M., Calvo, N., Ferrer, M., Baillés, E., Gutiérrez-Zotes, J. A., Gárriz, M., Caseras, X., Markon, K. E., & Krueger, R. F. (2017). Psychometric properties of the Spanish PID-5 in a Clinical and a Community Sample. *Assessment, 24*(3), 326-336. https://doi.org/10.1177/1073191115606518

Harding, T. W., De Arango, V., Baltazar, J., Climent, C. E., Ibrahim, H. H. A., Ladrido-Ignacio, L., & Wig, N. N. (1980). Mental disorders in primary health care: a study of their frequency and diagnosis in four developing countries. *Psychological Medicine, 10*(2), 231-241. https://doi.org/10.1017/S0033291700043993

Harpham, T., Reichenheim, M., Oser, R., Thomas, E., Hamid, N., Jaswal, S., Ludermir, A. & Aidoo, M. (2003). Measuring mental health in a cost-effective manner. *Health Policy and Planning, 18*(3), 344-349. https://doi.org/10.1093/heapol/czg041

Hopwood, C. J., Wright, A. G., Krueger, R. F., Schade, N., Markon, K. E., & Morey, L. C. (2013). DSM-5 pathological personality traits and the Personality Assessment Inventory. *Assessment, 20*(3), 269-285. https://doi.org/10.1177/1073191113486286

Kotov, R., Waszczuk, M. A., Krueger, R. F., Forbes, M. K., Watson, D., Clark, L. A., Achenbach, T. M., Althoff, R. R., Ivanova, M. Y., Michael Bagby, R., Brown, T. A., Carpenter, W. T., Caspi, A., Moffitt, T. E., Eaton, N. R., Forbush, K. T., Goldberg, D., Hasin, D., Hyman, S. E., ... Zimmerman, M. (2017).

The hierarchical taxonomy of psychopathology (HiTOP): A dimensional alternative to traditional nosologies. *Journal of Abnormal Psychology, 126*(4), 454-477. https://doi.org/10.1037/abn0000258

Krueger, R. F., Derringer, J., Markon, K. E., Watson, D., & Skodol, A. E. (2012). Initial construction of a maladaptive personality trait model and inventory for DSM-5. *Psychological medicine, 42*(09), 1879-1890. https://doi.org/10.1017/S0033291711002674

Lugo, V., de Oliveira, S., Hessel, C. R., Monteiro, R. T., Pasche, N. L., Pavan, G., Motta, L. S., Pacheco, M. A., & Spanemberg, L. (2019). Evaluation of DSM-5 and ICD-11 personality traits using the Personality Inventory for DSM-5 (PID-5) in a Brazilian sample of psychiatric inpatients. *Personality and Mental Health, 13*(1), 24–39. https://doi.org/10.1002/pmh.1436

Mari, J. J., & Williams, P. (1985). A comparison of the validity of two psychiatric screening questionnaires (GHQ-12 and SRQ-20) in Brazil, using Relative Operating Characteristic (ROC) analysis. *Psychological Medicine, 15*(03), 651-659. https://doi.org/10.1017/S0033291700031500

Miller, S. N., Bozzay, M. L., Ben-Porath, Y. S., & Arbisi, P. A. (2019). Distinguishing levels of suicide risk in depressed male veterans: The role of internalizing and externalizing psychopathology as measured by the MMPI-2-RF. *Assessment, 26*(1), 85-98. https://doi.org/10.1177/1073191117743787

Oliveira, S. E. S., Oliveira, T. C. D., Bandeira, D. R., & Krueger, R. F. (2020). Personality Types and Personality Traits in DSM-5: Do They Really Match?. *Psicologia: Teoria e Pesquisa, 36*(spe), 1-15. https://doi.org/10.1590/0102.3772e36nspe15

Quilty, L. C., Ayearst, L., Chmielewski, M., Pollock, B. G., & Bagby, R. M. (2013). The Psychometric Properties of the Personality Inventory for DSM-5 in an APA DSM-5 Field Trial Sample. *Assessment, 20*(3), 362–369. https://doi.org/10.1177/1073191113486183

R Core Team. (2013). R*: A language and environment for statistical computing. Vienna: R Foundation for Statistical Computing*. http://www.R-project.org

Revelle, W. (2015). *Psych: procedures for psychological, psychometric, and personality research r Package Version 1.5.8*. Northwestern University. https://cran.r-project.org/web/packages/psych/psych.pdf

Rice, S. M., Oliffe, J. L., Kealy, D., & Ogrodniczuk, J. S. (2018). Male depression subtypes and suicidality: Latent profile analysis of internalizing and externalizing symptoms in a representative Canadian sample. *The Journal of Nervous and Mental Disease, 206*(3), 169-172. https://doi.org/10.1097/NMD.0000000000000739

Roskam, I., Galdiolo, S., Hansenne, M., Massoudi, K., Rossier, J., Gicquel, L., & Rolland, J. P. (2015). The psychometric properties of the French version of the Personality Inventory for DSM-5. *PLoS One, 10*, 1-13. https://doi.org/10.1371/journal.pone.0133413

Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Amorim, P., Janavs, J., Weiller, E., Hergueta, T., Baker, R. & Dunbar, G. C. (1998). The Mini-International Neuropsychiatric Interview (MINI): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry, 59*(suppl20), 22-33. https://www.psychiatrist.com/wp-content/uploads/2021/02/15175_mini-international-neuropsychiatric-interview-mini.pdf

Torgersen, S., Kringlen, E., & Cramer, V. (2001). The prevalence of personality disorders in a community sample. *Archives of General Psychiatry 58*(6), 590-596. https://doi.org/10.1001/archpsyc.58.6.590

Van den Broeck, J., Bastiaansen, L., Rossi, G., Dierckx, E., De Clercq, B., & Hofmans, J. (2014). Hierarchical structure of maladaptive personality traits in older adults: joint factor analysis of the PID-5 and the DAPP-BQ. *Journal of Personality Disorders, 28*(2), 198-211. https://doi.org/10.1521/pedi_2013_27_114

Watters, C. A., & Bagby, R. M. (2018). A meta-analysis of the five-factor internal structure of the Personality Inventory for DSM–5. *Psychological Assessment, 30*(9), 1255–1260. https://doi.org/10.1037/pas0000605

Wei, D., Du, X., Li, W., Chen, Q., Li, H., Hao, X., Zhang, L., Hitchman, G., Zhang, Q., & Qiu, J. (2014). Regional gray matter volume and anxiety-related traits interact to predict somatic complaints in a non-clinical sample. *Social Cognitive and Affective Neuroscience, 10*(1), 122–128. https://doi.org/10.1093/scan/nsu033

Zimmermann, J., Altenstein, D., Krieger, T., Holtforth, M. G., Pretsch, J., Alexopoulos, J., Spitzer,

C., Benecke, C., Krueger, R. F., Markon, K. E., & Leising, D. (2014). The Structure and Correlates of Self-Reported DSM-5 Maladaptive Personality Traits: Findings From Two German-speaking Samples. *Journal of Personality Disorders, 28*(4), 518-540. https://doi.org/10.1521/pedi_2014_28_130

Zimmermann, J., Kerber, A., Rek, K., Hopwood, C. J., & Krueger, R. F. (2019). A brief but comprehensive review of research on the Alternative DSM-5 Model for Personality Disorders. *Current psychiatry reports, 21*(9), 1-19. https://doi.org/10.1007/s11920-019-1079-z

Zimmerman, M., Rothschild, L., & Chelminski, I. (2005). The prevalence of DSM-IV personality disorders in psychiatric outpatients. *American Journal of Psychiatry, 162*(10), 1911-1918. https://doi.org/10.1176/appi.ajp.162.10.1911

About the authors:

Sérgio E. S. Oliveira Ph.D. is a psychologist and a full-time professor in the Department of Clinical Psychology at the Unversidade de Brasília (UnB), Brasília, Brazil. He is an associated member of the National Institute of Psychological Assessment (IBAP) and current coordinator of the Work-Group in Psychological Assessment and Psychopathology of the Brazilian National Association for Research and Postgraduate Studies in Psychology (ANPEPP).
ORCID: https://orcid.org/0000-0003-2109-4862
E-mail: sesoliveira@unb.br / sergioeduardos.oliveira@gmail.com

Denise R. Bandeira Ph.D. is a psychologist and full professor at the Department of Developmental and Personality Psychology at Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, Brazil. She is a Productivity Research fellow by CNPq PQ 1B.
ORCID: https://orcid.org/0000-0001-9867-2718
E-mail: bandeira@ufrgs.br

Ricardo Primi Ph.D. is a psychologist and associated professor at the Universidade São Francisco (USF), Campinas, Brazil. He is a member of the scientific committee of EduLab21 of the Ayrton Senna Institute (IAS), of the Advisory Committee on Statistics and Psychometry of the National Institute of Educational Studies and Research "Anísio Teixeira" (INEP), and Academic Director of ABAVE. He was a visiting professor at the Lemann Center at Stanford University.
ORCID: https://orcid.org/0000-0003-4227-6745
E-mail: ricardo.primi@usf.edu.br

Robert F. Krueger Ph.D. is a Distinguished McKnight University Professor in the Department of Psychology at the University of Minnesota. He has authored numerous scholarly publications in areas such as Personality Disorders, Psychopathology, Psychometrics, Genetics, and Health, and has been named a Highly Cited Researcher by the Web of Science group. He is the current co-Editor of the Journal of Personality Disorders.
ORCID: https://orcid.org/0000-0001-9127-5509
E-mail: krueg038@umn.edu

Contact:

Campus Darcy Ribeiro, ICC Sul, Sala A1-28/4, Asa Norte
Brasília, DF
CEP: 70910-900