



ORIGINAL ARTICLE

Association of personality dimensions with depressive symptoms in patients in psychotherapy

Associação das dimensões da personalidade com sintomas depressivos em pacientes em psicoterapia

Asociación de dimensiones de la personalidad con síntomas depresivos en pacientes en psicoterapia

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DOI 10.5935/2318-040420240011

Abstract

Objective: evidence indicates the association between specific domains of personality and depressive symptoms. However, few previous studies used the alternative model of personality proposed by the DSM-5 for assessing such association and there are still no studies in Latin America addressing it. Thus, the aim of this study was to assess the association between the domains of personality and the presence of depressive symptoms, as well as to assess the interference of potential confounding variables on the outcome, in a Brazilian psychiatric clinical sample. **Methods:** in total, 83 patients receiving medical assistance at the Hospital de Clínicas de Porto Alegre (HCPA) psychotherapies outpatient clinic were included. Personality domains were assessed using the Screening Version of the Personality Inventory for DSM-5 (PID-5) and depressive symptoms were assessed using the Beck Depression Inventory (BDI). The univariate analysis of correlation with continuous variables was carried out using the Spearman correlation test. For the association between BDI and PID-5 controlled for confounding variables (use of mood stabilizer and recent suicide attempts), a multiple linear regression model was constructed. **Results:** both Negative Affectivity and Detachment maintained the association with depressive symptoms. Among the confounding variables, the use of mood stabilizer showed a significant correlation with depressive symptoms. **Conclusions:** the results support the association of Negative Affectivity and Detachment with depressive symptoms. These findings have significant clinical implications, since a better understanding

of the association between personality dimensions and depressive symptoms increases clinical attention towards symptom refractoriness and worse prognosis, as well as reverberates in both psychotherapeutic and pharmacological approaches.

Keywords: Personality; Domains of personality; Depressive symptoms; PID-5

Resumo

Objetivo: evidências indicam a associação entre domínios específicos da personalidade e sintomas depressivos. No entanto, poucos estudos anteriores utilizaram o modelo alternativo de personalidade proposto pelo DMS-5 para avaliar tal associação, e ainda não há pesquisas na América Latina abordando esse tema. Portanto, o objetivo desse estudo consistiu em avaliar a associação entre os domínios da personalidade e a presença de sintomas depressivos, bem como verificar a interferência de variáveis potencialmente confundidoras no resultado, em uma amostra clínica psiquiátrica brasileira. **Métodos:** foram incluídos 83 pacientes que estavam em atendimento no ambulatório de psicoterapias do Hospital de Clínicas de Porto Alegre. Os domínios da personalidade foram avaliados através do Inventário de Personalidade do DSM-5 (PID-5, versão de 50 itens) e os sintomas depressivos foram avaliados através do Inventário de Depressão de Beck (BDI). As análises univariáveis de correlação com variáveis contínuas foram feitas através da correlação de Spearman. Para a associação entre a BDI e a PID-5, controlada para variáveis confundidoras (uso de estabilizadores do humor e tentativa recente de suicídio), foi construído um modelo de regressão linear múltipla. **Resultados:** tanto Afetividade Negativa quanto Distanciamento mantiveram a associação com a presença de sintomas depressivos. Dentre as variáveis confundidoras, o uso de estabilizadores de humor mostrou uma correlação significativa com a presença de sintomas depressivos. **Conclusões:** Este estudo mostrou a associação entre Afetividade Negativa e Distanciamento e a presença de sintomas depressivos. Os achados têm implicações clínicas significativas, uma vez que o maior entendimento da associação entre domínios da personalidade e sintomas depressivos aumenta a atenção clínica para a refratariedade dos sintomas e para o pior prognóstico, além de repercutir em abordagens tanto psicoterapêuticas quanto farmacológicas.

Palavras-chave: Personalidade; Depressão; Inventário de personalidade

Resumen

Objetivo: evidencias indican la asociación entre dominios específicos de la personalidad y síntomas depresivos. Sin embargo, pocos estudios anteriores utilizaron el modelo alternativo de personalidad propuesto por el DSM-5 para evaluar tal asociación, y aún no hay investigaciones en América Latina abordando este tema. Por lo tanto, el objetivo de este estudio fue evaluar la asociación entre los dominios de la personalidad y la presencia de síntomas depresivos, así como verificar la interferencia de variables potencialmente confusas en el resultado, en una muestra clínica psiquiátrica brasileña. **Métodos:** Se incluyeron 83 pacientes que estaban en tratamiento en el consultorio de psicoterapias del Hospital de Clínicas de Porto Alegre. Los dominios de la personalidad se evaluaron mediante el Inventario de Personalidad del DSM-5 (PID-5, versión de 50 ítems) y los

síntomas depresivos se evaluaron mediante el Inventario de Depresión de Beck (BDI). Los análisis univariados de correlación con variables continuas se realizaron mediante la correlación de Spearman. Para la asociación entre el BDI y el PID-5, controlada por variables confusas (uso de estabilizador del humor y intento reciente de suicidio), se construyó un modelo de regresión lineal múltiple. **Resultados:** tanto la Afectividad Negativa como el Distanciamiento mantuvieron la asociación con la presencia de síntomas depresivos. Entre las variables confusas, el uso de estabilizadores del humor mostró una correlación significativa con la presencia de síntomas depresivos. **Conclusiones:** este estudio mostró la asociación entre Afectividad Negativa y Distanciamiento y la presencia de síntomas depresivos. Estos hallazgos tienen implicaciones clínicas significativas, ya que una mejor comprensión de esta asociación aumenta la atención clínica hacia la refractariedad de los síntomas y el peor pronóstico, repercutiendo en enfoques psicoterapéuticos y farmacológicos.

Palabras clave: Personalidad; Depresión; Inventario de personalidad

Introduction

Depression is a highly prevalent disorder that severely limits psychosocial functioning and diminishes quality of life¹. For this reason, depression has an enormous individual impact and consequent huge economic cost associated. The prevalence of major depressive disorder varies substantially across countries, but remains at approximately 6%, overall². Depressive disorder is very heterogeneous in its clinical presentation, and may vary regarding its onset, number and duration of episodes, course, and pattern of occurrence³. Therapy aims to remit the symptoms; however, response to treatment varies widely due to several factors. The recurrence of depressive episodes and the presence of psychiatric comorbidities reduce the possibility of responsiveness⁴⁻⁶.

Personality does not have a single definition. In fact, even the description of specific types of personality disorder always had a strong subjective element because of the complex issues regarding its classification⁷. Among the several existing theoretical models of personality, those that explain this construct based on a dimensional classification system seem to be less arbitrary, more informative and more consistent with empirical data. The dimensional models most used in research so far are Cloninger's psychobiological model⁸, Eysenck's model of personality⁹ and the Big Five¹⁰.

The alternative model of the 5th Diagnostic and Statistical Manual of Mental Disorders¹¹ (DSM-5) has a hybrid approach, incorporating dimensional and categorical aspects of personality. This model presents its dimensional aspect when assessing levels of impairment and personality traits, as well as maintains its categorical feature when including categorical diagnoses. The first (criterion A) concerns the level of functioning, encompassing aspects of individual and interpersonal functioning. The second (criterion B) assesses pathological personality traits, which are grouped into five major domains. These domains correspond to personality dimensions, with a broad descriptive character, varying in a continuum, from the non-pathological to the pathological pole. They are: Negative Affectivity (vs. Emotional Stability),

Detachment (vs. Extraversion), Antagonism (vs. Agreeableness), Disinhibition (vs. Conscientiousness), and Psychoticism (vs. Lucidity).

These five pathological dimensions of personality are maladaptive variants of the domains of the Big Five model, extensively validated and consolidated in the literature¹²⁻¹⁵. The structure analysis of both models shows that Negative Affectivity, Detachment, Antagonism and Disinhibition are similar to Neuroticism and the pathological extremes of Extraversion, Agreeableness and Conscientiousness, respectively. The relationship between the domain of Psychoticism and Openness to Experiences is less clear, so far.

To operationalize the DSM-5 model of personality traits, the American Psychiatric Association's Personality and Personality Disorders Workgroup developed a psychometric instrument, the Personality Inventory for the DSM-5 (PID-5) (16). PID-5 exists in three different versions—full version (220 items); short form (100 items); Screening Version (50 items), brief form (25 items)— and has already been translated into several languages, such as Italian¹⁷, Dutch¹⁸, German¹⁹, French²⁰, Spanish²¹, Danish²², Arabic²³, and Portuguese²⁴.

The assessment of psychometric properties of PID-5 has been executed across several studies. The results show adequate internal consistency and acceptable convergence with established personality instruments, which demonstrates the validity of the new construct²⁵⁻²⁹. In Brazil, Zatti et al.,³⁰ performed the translation and cultural adaptation of the brief form (PID-5-BF). Psychometric properties of the PID-5 were also investigated in Oliveira's³¹, in which an alternative version (50 items) was developed.

Several studies have evaluated the correlation between personality and the presence of depressive symptoms. However, most of them used the Big Five or other models as a standard for personality assessment³²⁻³⁴ and very few studies have so far used the alternative model of DSM-5 to assess this association³⁵⁻³⁷. All previous studies indicate that high levels of Neuroticism (or Negative Affectivity) are related to several serious psychiatric illnesses, including major depressive disorder^{38,39}. However, many of these studies assess very specific patient populations, for example, those diagnosed with borderline personality disorder in association with depressive symptoms, which may not adequately represent a larger group of patients.

Despite the advances in the personality science field and the various published studies, many questions still remain, and some gaps still need to be filled. They are: (a) the lack of studies evaluating the association of personality domains and the presence of depressive symptoms with the alternative model of the DSM-5 (PID-5), and (b) the lack of studies with clinic Latin American populations.

To understand the association between personality and depression, as well as its magnitude, is essential due to the high prevalence of personality disorders, since in this case, individuals have a worse prognosis, greater refractoriness to treatment and more recurrence of symptoms, with consequent higher morbidity and mortality. When we diagnose a patient as depressed, the question if we are assessing a condition or trait still remains.

Thus, this study aimed to assess the association between Negative Affectivity, whose relationship with

serious psychiatric disorders is already established in the literature, and the presence of depressive symptoms in a population of patients undergoing psychotherapeutic care. Furthermore, we aimed to further examine the association between the other domains of personality and the presence of depressive symptoms, as well as to assess the interference of factors such as sex, pharmacological treatment, and stressful life events on the results of this association in the same sample.

Materials and methods

Research design

The study had a cross-sectional design. It included as many patients as possible in psychotherapeutic care who were willing to participate and sign an informed consent form.

Sample description

This study was carried out at the Hospital de Clínicas de Porto Alegre (HCPA), a general hospital in Southern Brazil, and included 83 patients attended at the psychotherapies outpatient clinic. **Patients entering the service are initially evaluated by fourth-year residents, who have completed their general psychiatry training and are undertaking an additional year focused on psychotherapy training. These residents determine the indication and type of psychotherapy after discussing the case with their supervisors.** Three types of individual psychotherapy are offered: Analytically Oriented Psychotherapy (AOP), Cognitive-Behavioral Therapy (CBT) and Interpersonal Therapy (IPT). Treatment is provided by psychiatric residents of the second, third, and fourth year of residence. They receive supervision, conduct seminars on the different psychotherapeutic techniques and participate in interviews and discussions of clinical cases every week.

Measures

Personality traits and domains were assessed using the Personality Inventory for DSM-5 (PID-5). Depressive symptoms were assessed using the Beck Depression Inventory (BDI) and stress events through the Life Events Questionnaire (LEQ).

Instruments

Beck Depression Inventory (BDI)

Self-report instrument for identification and quantification of depressive symptoms. This instrument is composed of 21 items that describe how the patient felt in the last week, with its score ranging from 0 to 3 (sum of items can vary from 0 to 63 points). The recommended cutoff points are: 0–9, without depression; 10–18, mild depression; 19–29, moderate depression; 30–63, severe depression. BDI is validated worldwide and for the Brazilian version its psychometric properties remained similar to the original⁴⁰.

Life Events Questionnaire (LEQ)

Self-report instrument that investigates the occurrence and severity of 14 different life-stressing events in the last 12 months, their impact on the individual and their association with the onset of psychiatric symptoms⁴¹.

Personality Inventory for DSM-5 Screening Version (PID-5)

Self-report instrument answered on a 4-point Likert-type scale (from 0 “very false or often false” to 3 “very true or often true”), **which addresses the personality dimensions of Negative Affectivity, Detachment, Antagonism, Disinhibition and Psychoticism**. In its reduced Brazilian version, PID-5 consists of 50 items, having been translated, adapted, and validated in Portuguese. Preliminary results suggest evidence of validity and reliability for the Brazilian version of the PID-5⁴².

Statistical analyses

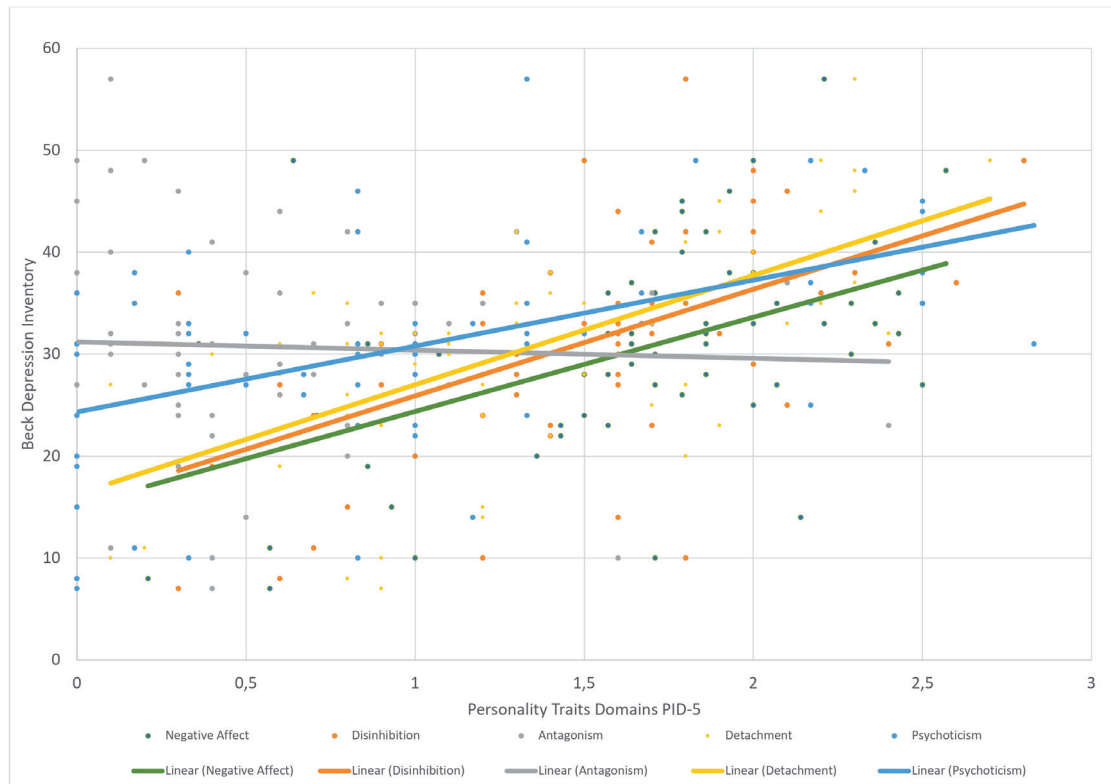
Statistical analysis of the data was performed using the IBM SPSS v.25 software. As the PID-5 scale did not meet the assumptions of normality, the univariate analyses of correlation with continuous variables were carried out with the Spearman correlation. The distribution of PID-5 among categorical variables was assessed using the Mann-Whitney U test. Subsequently, for the association between BDI and PID-5 controlled for confounding variables (use of mood stabilizer and attempts to commit suicide in the last six months), a multiple linear regression model was constructed, with the Backward method, in which only the variables that showed a $p < 0.2$ in the univariate analysis entered the model adjustment. The quality of the model fit was assessed by inspecting the waste graph. Variables with a p -value < 0.05 in the multivariate model were considered statistically significant. In the model summary, the R square value was considered to assess the amount of depression variation explained by the model, when keeping multiple variables controlled. The B value was also observed to quantify the increase in BDI for each studied predictive variables.

Ethical statement

This study was part of a larger project, approved by the Research Ethics Committee of Hospital de Clínicas de Porto Alegre (GPPC - HCPA number 150097). All patients who participated signed an informed consent form containing the objectives of the study. No member of the research team had direct contact with the treatment of patients.

Results

Sociodemographic and clinical characteristics of the total sample are shown in Table 1. Results of the correlation analysis between personality domains (PID-5) and depression (BDI) are presented by the scatter plot (Figure 1).



A positive correlation was found between depression (BDI) and Negative Affectivity ($Rho = 0.5$; $p < 0.001$), Disinhibition ($Rho = 0.544$; $p < 0.001$), Detachment ($Rho = 0.614$; $p < 0.001$) and Psychoticism ($Rho = 0.489$; $p < 0.001$). There was no association between Antagonism and the score on Beck's depression inventory.

The association between depression and the other variables studied (sex, use of antidepressants, use of antipsychotic, use of mood stabilizer, use of benzodiazepine, use of methylphenidate, psychiatric hospitalizations in the last six months, attempts to commit suicide in the last six months, age, and stressful life events) were analyzed using a univariate model, as shown in Table 2. There was an association between BDI and the use of mood stabilizer (33 vs 30; $p = 0.02$) and attempts to commit suicide in the last six months (36 vs 28.5; $p = 0.001$). No association with statistical significance for the other variables analyzed was found.

Finally, a multiple linear regression model that assessed the association between BDI and the PID-5 domains was constructed, controlled for confounding variables (use of mood stabilizer and suicide attempts in the last six months). This model included Negative Affectivity, Disinhibition, Detachment, Psychoticism, use of mood stabilizer, and attempts to commit suicide in the last six months. The choice to include these variables was based on the statistical significance demonstrated in previous analyzes and sample size. These data are presented in Table 3. The summary of this model showed $R = 0.73$ (correlation coefficient), $R^2 = 0.53$ (determination coefficient) and $p < 0.001$.

Table 1. Sociodemographic and clinical characteristics of the sample

	Patients (n= 83)
Mean Age (\pmSD)	45.13 (\pm 12.38)
Sex	
Feminine, n (%)	63 (77.8)
Years of Study (mean)	12.27
Marital status	
Single, n (%)	20 (27.4)
Married, n (%)	40 (54.8)
Divorced, n (%)	9 (12.3)
Widowed, n (%)	4 (5.5)
Psychiatric hospitalizations in the last 6 months	
Yes, n (%)	20 (28.2)
Suicide attempts in the last 6 months	
Yes, n (%)	27 (39.4)
Use of psychiatric pharmacological treatment	
Yes, n (%)	63 (90)
Medicines in use	
Antidepressants, n (%)	53 (63.9)
Antipsychotic, n (%)	17 (20.5)
Mood stabilizer, n (%)	19 (22.9)
Benzodiazepine, n (%)	14 (16.9)
Methylphenidate, n (%)	1 (1.2)
PID-5	
Median Negative Affectivity (IQR)	1.78 (1.5 - 2.07)
Median Disinhibition (IQR)	1.6 (1.1 - 1.8)
Median Antagonism (IQR)	0.4 (0.1 - 0.85)
Median Detachment (IQR)	1.3 (0.9 - 1.85)
Median Psychoticism (IQR)	0.83 (0.33 - 1.41)
Median BDI (IQR)	31 (25.25 - 36)
Median LEQ (IQR)	5 (3 - 8)

SD = standard deviation; IQR = interquartile range.

Table 2. Association between predictive variables and depression by BDI

	Median (IQR)		Spearman's ρ	p-value
	Yes	No		
Use of antidepressants	31 (25.25 - 35.75)	32 (17.25 - 36)	-	0.92
Use of antipsychotic	31 (28 - 44)	31 (24 - 35.5)	-	0.54
Use of mood stabilizer	33 (31 - 45)	30 (23.75 - 35)	-	0.02
Use of benzodiazepine	31 (19.5 - 40.5)	31 (26 - 36)	-	0.93
Use of methylphenidate	29 (29 - 29)	31 (25 - 36)	-	0.75
Psychiatric hospitalizations in the last 6 months	31 (29 - 42)	31 (23.75 - 35.25)	-	0.33

	Median (IQR)		Spearman's ρ	p-value
	Yes	No		
Suicide attempts in the last 6 months	36 (31 – 42.5)	28.5 (22.25 – 33)	-	0.001*
Gender	Male	Female		
	23.5 (16.75 – 33.75)	31 (27.75 – 36.25)		0,06
Age	-	-	-0.113	0.37
BDI	-	-	0.500	<0.001*
LEQ	-	-	0.232	0.07

*p-value <0.05

Table 3. Multivariate Adjustment

	n	B (95% CI)	p-value
Negative Affectivity¹	60	5.92 (2.3 – 9.53)	0.002*
Detachment¹	60	8.53 (5.23 – 11.83)	<0.001*
Disinhibition ¹	60	2.44 (-2.52 – 7.41)	0.328
Psychoticism ¹	60	1.73 (-1.22 – 4.69)	0.246
Mood stabilizer	60	4.62 (0.26 – 8.99)	0.038*
Attempts to commit suicide	60	-3.3 (-7.43 – 0.83)	0.115

¹ = assessed by PID-5; *P < 0.05.

Discussion

This is the first study to assess the association between personality domains and the presence of depressive symptoms in a Brazilian psychiatric clinical sample. This study results replicate in a Latin American population those outcomes found in North American and European populations, showing that Negative Affectivity (Neuroticism) is associated with depressive symptoms (32,33,38). Furthermore, these findings also demonstrate that Disinhibition, Detachment and Psychoticism are associated with the presence of depressive symptoms. Still, other predictor variables had to be controlled to avoid confounding factors and to obtain more reliable results.

The use of mood stabilizer and the presence of suicide attempts in the last six months proved to be potentially confounding in the assessment of the association between Negative Affectivity, Disinhibition, Detachment and Psychoticism with depressive symptoms. Therefore, after the development of a multivariable model that included these four personality domains and these two potential confounding variables, it was observed that both Negative Affectivity, Detachment and the use of mood stabilizer maintained their association with depression. The high values of correlation coefficient ($R = 0.73$) and determination ($R^2 = 0.53$) found for this multivariable adjustment explain the strength of this correlation.

Life stressors, as measured by the LEQ, did not show statistically significant association with depressive symptoms. Here are some hypotheses for this occurrence. Depression is a multifactorial condition influenced by a combination of genetic, biological, environmental, and psychological factors¹. Although life stressors are

traditionally seen as triggers for depressive symptoms^{43,44}, their lack of statistical significance in this study may indicate that, for this specific sample, other factors may have played a more crucial role. Moreover, the ability of an individual to cope with stressful events can vary widely. Therefore, individuals with high resilience, effective coping skills, or good social support⁴⁵, may not develop depressive symptoms even when facing significant life events.

Concerning Detachment, the relationship with depressive symptoms is not as well established in the literature as it is for Negative Affectivity. However, many studies indicate evidence of this relationship, as is the case with the widely accepted Tripartite Model of Anxiety and Depression proposed by Clark and Watson⁴⁶. This model relates depression to a low positive affect, which can be interpreted as low 'Extraversion,' according to the Big Five model, or high 'Detachment,' as shown by the DSM-5 model. Besides, Clark and Watson⁴⁷ made a review in which Negative Affectivity and low Positive Affectivity seemed to be vulnerability factors for the development of depression, indicating poor long-term prognosis.

Furthermore, although Negative Affectivity may be the core dimension of internalizing psychopathology⁴⁸, both Negative Affectivity and Detachment share the internalizing factor, which is characterized by depression, anxiousness, anhedonia, withdrawal, among others⁴⁹. Finally, studies investigating the relationship between the dimensions of personality and psychiatric symptoms have reported that high Detachment scores are related with depression symptoms^{35,50,51}.

The results of this study show that there is a relationship between personality (trait) and symptomatology (state), which certainly affects mental health and may be a future direction for longitudinal studies. Moreover, although we found the use of mood stabilizers associated with depressive symptoms, it is noteworthy the significance of these medication for depressive conditions, as they can help prevent further episodes of depression, as well as they are a protective factor against suicide.

The results of this study have significant clinical implications. Firstly, personality research is particularly important for the prevention of depression, as evidence indicates that preventive interventions can reduce in 25% the incidence of depressive disorders⁵². This suggests that early identification of pathological personality traits can allow for the development of more specific strategies, providing valuable directions to the course of treatment and, consequently, a better prognosis for the patient. Besides, personality traits can predict response to treatment in depression. Evidence has shown that individuals with lower Negative Affectivity/Neuroticism have better treatment outcomes^{53,54}.

Thus, there is no doubt that a better understanding of the population of patients undergoing psychotherapeutic care allows optimization of the therapeutic approaches implemented, both from a psychotherapeutic and pharmacological point of view. Also, an improved comprehension of the magnitude of the association between personality dimensions and the presence of depressive symptoms increases the clinical attention focused on the refractoriness of symptoms, the worst prognosis and greater morbidity and mortality involved.

However, some limitations of the study must be mentioned. Firstly, due to the cross-sectional design, no causal relation can be inferred from the results obtained. As a result, we were unable to answer whether the pathological personality domains that showed a positive association are precursors, consequences or even only have similar causal factors in common with depressive symptoms. Moreover, due to the limited sample size, it was not possible to adopt a multivariate model correcting a greater number of potentially confounding variables. Also, we were unable to include in this analysis variables such as the presence of diagnoses of mood disorder or borderline personality disorder.

We highlight some possibilities to future perspectives in this field of study. Longitudinal studies are necessary to elucidate the direction of the relation between dimensions and personality traits and the presence of depressive symptoms. It is also important to implement studies that aim to assess the association between personality dimensions and the presence of Major Depressive Disorder, specific subtypes of depressive disorders, in addition to other psychiatric disorders. Assessing a greater number of possible confounding factors, such as levels of resilience and quality of life, can add valuable information. The search for the identification of neurobiological markers involved in these processes can also bring significant advances in knowledge.

Conclusion

Negative Affectivity is associated with the presence of depressive symptoms in a Brazilian sample, similar to what has been found in other populations, using different instruments for personality assessment. Additionally, the results show that Detachment is also associated with the presence of depressive symptoms. These findings have significant clinical implications, since a better understanding of the association between personality dimensions and depressive symptoms increases clinical attention towards symptom refractoriness and worse prognosis, as well as reverberates in both psychotherapeutic and pharmacological approaches.

To better understand the interrelationship between personality and depression, we must inspect the relation between the domains and the personality traits with depressive symptoms, and investigate the interaction that these traits have on one another. The search for comprehending the moderating and mediating factors of the processes involved in this interrelationship is extremely significant.

Funding source

This study was supported by: Coordination for the Improvement of Higher Education Personnel (CAPES); Nacional Council for Scientific and Technological Development (CNPq); Institutional Program for Scientific Initiation Scholarship (PIBIC); Research Incentive Fund of the Hospital de Clínicas de Porto Alegre (FIPE/HCPA); and Rio Grande do Sul Research Foundation (FAPERGS).

Conflict of interest statement

The authors declare no potential conflicts of interest regarding the research, authorship, and/or publication of this article.

Acknowledgements

We would like to thank all the participants in this study.

This study was financed in part by Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES) – Process 12/2020 Scholler-SHIP 88887.507070/2020-00, PDSE-CAPES nº 99999.007135/2014-09. Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq; MCTI/CNPq/MEC/CAPES Nº 18/2012; 303652/2019-5). Edital Capes 12/20-, Fundação de Amparo à Pesquisa do Estado do Rio Grande do Sul (FAPERGS) process 19/251-0001930-0 and by Fundo de Incentivo à Pesquisa Eventos - Hospital de Clínicas de Porto Alegre (FIPE-HCPA).

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Submitted in: 01/02/2024

Accepted in: 24/07/2024