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Comparing Empathy Among Individuals with Borderline Personality Disorder with and without Other Psychiatric Disorders: A Study in a Clinical Sample

Marta Alexandra Castro Ferreira

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2024

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Comparing Empathy Among Individuals with Borderline Personality Disorder with and without Other Psychiatric Disorders: A Study in a Clinical Sample

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UC Dissertação - DECLARAÇÃO DE TRANSPARÊNCIA RELATIVAMENTE À UTILIZAÇÃO DE FERRAMENTAS DE CHATBOT GENERATIVO BASEADAS EM LARGE LANGUAGE MODELS

Eu, Marta Alexandra Castro Ferreira, abaixo assinado, nº mecanográfico 201705941, estudante do 6º ano do Ciclo de Estudos Integrado em Medicina, na Faculdade de Medicina da Universidade do Porto, declaro que:

☒ Não procedi à utilização de ferramentas de *chatbox* generativo baseadas em *large language models* para nenhuma das tarefas no contexto do meu trabalho de Dissertação ou Monografia

☐ Procedi à utilização de ferramentas de *chatbox* generativo baseadas em *large language models* no contexto do meu trabalho de Dissertação ou Monografia, encontrando-se todas as interacções (*prompts* e respostas) transcritas em anexo bem como a indicação das aplicações utilizadas.

Neste sentido, confirmo que a eventual utilização de ferramentas de *chatbox* generativo baseadas em *large language models* no contexto do meu trabalho de Dissertação ou Monografia foi exclusivamente descrita na sequência de *prompts* e respostas transcritos em anexo e nas aplicações indicadas.

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Trabalho de acordo com as normas da revista "Journal of Affective Disorders"

Comparing Empathy Among Individuals with Borderline Personality Disorder with and without Other Psychiatric Disorders: A Study in a Clinical Sample

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Abstract

Background: Borderline personality disorder (BPD) is characterized by emotional instability and difficulties in interpersonal relationships. Empathy, a key ability for social interactions, has been found to be impaired in individuals with BPD. The presence of other psychiatric diagnoses may exacerbate these difficulties. This work aims to compare empathy levels on individuals with BPD with and without other psychiatric disorders.

Methods: This is a cross-sectional study conducted in a clinical sample. Using the Interpersonal Reactivity Index (IRI) to evaluate empathy, this study involved all the patients diagnosed with BPD followed in the psychiatry service of a general hospital in Portugal. Data were analysed with group comparison tests and multiple linear regression.

Results: A total of 142 participants (88.7% women) responded to the IRI questionnaire (59.2% with BPD, 40.8% with BPD plus other diagnoses). Mean empathy levels ranged from 14.12 (*SD* = 5.44) for perspective taking and 14.46 (*SD* = 6.12) for personal distress, to 16.18 (*SD* = 6.26) for fantasy and 17.22 (*SD* = 5.89) for empathic concern. Individuals with BPD plus comorbid psychiatric disorders showed lower levels of empathy compared to individuals with BPD alone, specifically in the perspective taking (*B* = -2.648, S.E. = .938, *p* = .005) and empathic concern (*B* = -2.394, S.E. = 1.021, *p* = .020) dimensions of empathy, even when adjusting for the participant's gender.

Conclusion: These findings underline the need to consider comorbidities when assessing and treating BPD, suggesting that empathy-focused interventions may be beneficial for individuals with BPD plus comorbid disorders.

Keywords: borderline personality disorder; empathy; psychiatric disorders

1. Introduction

1.1.Borderline personality disorder

According to the Diagnostic and Statistical Manual of Mental Disorders, borderline personality disorder (BPD) is a mental health condition characterized by a pervasive pattern of instability in interpersonal relationships, self-image and affects, as well as severe impulsivity and chronic feelings of emptiness. Relationship instability often involves alternating between idealization and devaluation of the other person, along with frantic efforts to avoid abandonment. This diagnostic affects approximately 1-2% of the general population, with around 75% of the cases occurring in women. (American Psychiatric Association, 2013; Fonagy, 1991; Leichsenring et al., 2011; Lieb et al., 2004)

Like many other disorders, BPD is often associated with comorbidities, in approximately 85% of the cases, including other psychiatric disorders. Mood disorders, anxiety, substance abuse and other personality disorders are among the most common BPD comorbidities. The presence of these comorbidities tends to intensify BPD symptoms, particularly emotional instability and interpersonal conflicts, which in turn leads to a significant negative impact on the personal, emotional and social functioning of individuals with BPD. (Leichsenring et al., 2011; Skodol et al., 2022; Kline et al., 2024)

The emotional instability in BPD, driven by mood reactivity, sudden and intense emotions and difficulty in controlling those emotions, along with exaggerated reactions to social situations, such as outbursts of rage, sadness and impulsivity, hinders the ability to maintain stable relationships. (Keepers, et al., 2024) Empathy may be affected in individuals with BPD. Emotional intensity is associated with distortions in the interpretation of others' intentions, leading to misunderstandings and difficulty in interpreting others' mental states, resulting in disproportional reactions. (Belloch et al., 2020; Serralta et al., 2019)

The concomitant diagnoses of other psychiatric disorders, including other personality disorders, significantly impacts the personal, emotional and social functioning of the person with BPD. (American Psychiatric Association, 2013; Lieb et al., 2004; Skodol et al., 2022) The presence of these comorbidities often exacerbates the symptoms of BPD, particularly emotion instability and interpersonal conflicts.

(Hayward et al., 2024) In this context, it is possible that the level of empathy is different in cases who have an associated comorbid psychiatric disorder.

1.2.Empathy

Empathy plays a fundamental role in interpersonal relationships and emotional regulation, allowing individuals to understand and share others' emotions while managing their own. (Morawetz et al., 2022) In its broadest sense, empathy refers to the reactions of one individual to the experiences of another. (Davis, 1983) Empathy enables people to recognize and understand the emotions of others and their perspective, to resonate with them emotionally and cognitively, as if experiencing their feelings. (Rogers, 1980)

Empathy has been conceptualized as involving four dimensions, two of which are cognitive in nature: the capacity to adopt another person's perspective, anticipating their reactions (perspective taking), and the tendency to place oneself in fictional situations, such as those of characters in books (fantasy). The other two dimensions are emotional in nature: emotions felt in response to the emotions of others, especially in unfavourable situations (empathic concern), and the feeling of discomfort as a result of another person's distress (personal distress). (Davis, 1983; Raimondi et al., 2023)

Given the central role of empathy in social interactions and emotional regulation, understanding how this ability functions in individuals with BPD is essential to uncover the underlying basis of their interpersonal difficulties and improve therapeutic interventions aimed at enhancing social functioning.

Existing literature indicates that individuals with BPD exhibit deficits in empathy, particularly in its cognitive components. (Salgado et al., 2020; Serralta et al., 2019) This inability to understand the mental states of others has been described by Fonagy as a defence mechanism developed in response to childhood trauma, physical abuse, and dysfunctional family dynamics. (Fonagy, 1991) Other authors, however, suggest that this dysfunction may not solely be a consequence of trauma, but also an inherent characteristic of individuals with BPD. (Hayward et al., 2024)

Considering the possible connection between BPD and empathy deficits, namely in cognitive components, and their potential association with comorbid psychiatric disorders, further investigation is necessary to clarify these relationships. Since that comorbid psychiatric disorders often exacerbate core symptoms of BPD, it is plausible that empathy levels could be more impaired in individuals with both BPD

and additional comorbidities. Previous studies have explored empathy impairments in BPD. (Jeung & Herpertz, 2014; Lazarus et al., 2014; Salgado et al., 2020) However, there is a lack of research examining how the diagnoses of other psychiatric disorders may influence these deficits. Therefore, this study aims to assess empathy in individuals with BPD comparing with individuals with BPD also diagnosed with other psychiatric disorders, contributing to a better understanding of the role of comorbidities in empathy functioning within this population.

2. Material and methods

2.1.Sample

This cross-sectional study was conducted in the Psychology Service of a general hospital in Portugal in 2025. This Service was created for, and specialises in BPD. The following eligibility criteria were applied for participation in the study: (1) individuals with a BPD diagnosis established through the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II), and (2) individuals with a BPD diagnosis plus other psychiatric diagnoses also established through the same evaluation. Within these criteria, individuals who had not completed the empathy questionnaire were excluded.

Participant anonymity and data confidentiality were ensured, and the study received approval from the ethics committee in accordance with Law No. 21/2014, of April 16 and in compliance with the General Data Protection Regulation (EU) 2016/679 – GDPR.

2.2.Instruments

Sociodemographic data and empathy-related information, assessed using the Interpersonal Reactivity Index, were collected by the service's psychologists as part of the routine procedures.

Interpersonal Reactivity Index (IRI)

The Interpersonal Reactivity Index is a self-report questionnaire developed by Davis (1980) to evaluate empathy. It has been validated in multiple languages, including Portuguese.

The IRI is based on a multidimensional conceptualization of empathy and comprises four subscales, each corresponding to an empathy dimension: perspective taking (PT), empathic concern (EC), personal distress (PD) and fantasy (F).

Two of these are cognitive dimensions: perspective taking refers to the ability to adopt another person's perspective, and fantasy measures the capacity to place oneself in fictional situations, such as identifying with characters in books. The other two are emotional dimensions: empathic concern assesses the tendency to experience compassion and concern for others, while personal distress reflects the discomfort experienced as a result of another person's distress.

The Portuguese version of the questionnaire presents strong psychometric characteristics regarding validity, reliability and sensitivity. The results were consistent with the original version as well as with validated versions in other languages. (Limpo et al., 2010)

The Portuguese version of the IRI consists of 24 out of the original questionnaire's 28 questions, with 6 questions per subscale. For each statement, participants are asked to answer, on a five-point Likert-type scale, to what extent that statement applies to them. Response options range from 0 ("Does not describe me well") to 4 ("Describes me very well"). Scores are obtained by summing the responses by subscale, with minimum and maximum possible values of 0 and 24, respecitvely, for each subscale. In the present sample, a good internal consistency was obtained, with Cronbach's *alpha* values of 0.80 for perspective taking, 0.84 for fantasy and also for personal distress, and 0.86 for empathic concern.

2.3.Analysis

Data analysis was conducted using the Statistical Package for the Social Sciences software (SPSS), version 29.0. All individuals included in the analysis completed the IRI. Only one participant left one item (from the empathic concern subscale) blank, and this item was attributed by logical imputation.

Numeric data were presented as mean (*M*) and standard-deviation (*SD*), median (*Mdn*) and interquartile range (*IQR*), or absolute and relative frequency, as appropriate. The four dimensions of the IRI were calculated following the recommended procedures. (Limpo et al., 2010)

For variable associations and group differences, Pearson correlation (*r*), Spearman's correlation (*rs*), *t*-test, Mann-Whitney *U* and chi-square tests were used

after normality check through the Shapiro-Wilk test and graphical inspection. In addition, multiple linear regression was performed on each of the four IRI dimensions, adjusting the models for the participant's gender, after checking the regression assumptions.

3. Results

Of a total of 160 cases with a BPD diagnosis in the health centre, 142 (88.8%) responded to the IRI and were included in this study. Mean age was 23.96 years old (*SD* = 6.95) and most participants were women (*n* = 126; 88.7%) (**Table 1**). Most had 12 years of school (*n* = 85; 60.7%). A large proportion of the participants were students (*n* = 65; 45.8%), another 27 (19.0%) were actively working and 12 (8.5%) were on medical leave. The vast majority was single (*n* = 126; 89.4%) and without children (*n* = 130; 92.2%). Over a half of the sample had the sole diagnosis of BPD (*n* = 84; 59.2%), and the remaining 58 (40.8%) had BPD plus other personality disorder diagnoses (e.g., avoidant personality disorder, depressive personality disorder and anti-social personality disorder).

Overall mean scores in this sample (on the IRI Portuguese version, which adds to a maximum possible score of 24 in each IRI subscale) ranged from 14.12 (*SD* = 5.44) for perspective taking and 14.46 (*SD* = 6.12) for personal distress, to 16.18 (*SD* = 6.26) for fantasy and 17.22 (*SD* = 5.89) for empathic concern (**Table 2**).

Empathy scores were uncorrelated with participants' age, education or marital status, and showed no gender differences, except for the dimension of personal distress, with women presenting significantly higher levels (*Mdn* = 16.00, *IQR* = 10.00-20.00) when compared to men (*Mdn* = 11.00, *IQR* = 7.00-18.00), $U(N = 141) = 627.000$, $p = .033$. Regarding working status, non-significant differences also emerged for all empathic dimensions, except fantasy. Active workers/students showed higher empathy levels on the fantasy dimension (*Mdn* = 18.50, *IQR* = 12.00-22.00), comparing with unemployed/retired/on medical leave participants (*Mdn* = 15.00, *IQR* = 9.00-20.00), $U(N = 142) = 1781.500$, $p = .026$.

The characteristics of the sample by presence of a BPD diagnosis (BPD-only group) or a BPD plus other diagnosis (BPD+ group) are presented in **Table 1**. No significant differences emerged between the BPD-only and the BPD+ groups in sample composition, namely regarding age, education, professional status (employed/student

versus unemployed/retired/on medical leave) or marital status (single *versus* married/divorced/separated/widowed). However, the BPD-only group had a smaller proportion of men (4/15 = 4.8%) comparing to the BPD+ group (11/15 = 19.3%), chi-square(1) = 7.548, $p = .006$, $N = 141$.

Empathy by diagnosis type

Significant differences emerged between the BPD-only group and the BPD+ group regarding the empathy dimensions of perspective taking ($t(140) = 2.594$, $p = .005$) and empathic concern ($t(104) = 2.575$, $p = .006$). The BPD-only group showed significantly higher levels of empathy both on the perspective taking scale ($M = 15.08$, $SD = 5.01$) and on the empathic concern scale ($M = 18.30$, $SD = 5.19$) than did the BPD+ group ($M = 12.72$, $SD = 5.76$ and $M = 15.66$, $SD = 6.52$, respectively). Adjusting for gender, the differences remained statistically significant for both the perspective taking scale ($B = -2.648$, S.E. = .938, $p = .005$) and the empathic-concern scale ($B = -2.394$, S.E. = 1.021, $p = .020$).

4. Discussion

This study was aimed at examining the relationship between empathy and borderline personality disorder, specifically comparing individuals with a BPD only diagnosis and those with a BPD plus comorbid psychiatric diagnoses. Given the centrality of empathy in emotional regulation and interpersonal interactions, and its potential role in therapeutic interventions, it is important to understand how empathy manifests in individuals with BPD. The results of this study contribute to the growing body of literature in this area by exploring empathy across different dimensions, with particular attention to how comorbidities might influence empathy in BPD. The hypothesis of this study posited that individuals with BPD plus comorbid psychiatric diagnoses would show lower levels of empathy compared to individuals with a BPD only diagnosis. The results provide support for this hypothesis.

The results regarding empathy scores in the BPD-only and BPD-comorbid groups (**Table 2**) revealed significant differences in the perspective taking and empathic concern dimensions between the two groups. The BPD-only group exhibited higher empathy levels in both dimensions compared to the BPD-comorbid group. These differences were still significant after adjusting for gender, indicating that they were

not attributed to the unequal proportion of men and women. These findings suggest that the presence of a comorbid psychiatric diagnosis in individuals with BPD is associated with lower empathy levels. Comorbid psychiatric diagnoses, which are frequently present in individuals with BPD, may negatively affect the ability to understand others' perspectives and emotionally engage with others' emotions and distress. Studies suggest that symptoms such as anhedonia, lack of self-control and social isolation, which are frequently present in psychiatric disorders, may reduce emotional sensitivity and empathy. (Decety & Moriguchi, 2007) To the best of our knowledge, this is the first study specifically comparing empathy dimensions between individuals with BPD and BPD plus comorbid psychiatric diagnoses, reinforcing the need for further research on the relationship between comorbidities and empathy in individuals with BPD, so as to better comprehend the underlying mechanisms and its clinical relevance.

The socio-demographic characteristics of the sample in this study, particularly concerning gender and age, are consistent with other research on BPD, even though previous studies have shown a broader age range (than the mean 23.96 years old in this study, reflecting a young population under treatment), for receiving a BPD diagnosis, with individuals being diagnosed throughout adulthood. (Sollof & Chiappetta, 2018) The predominance of women in the sample (88.7%) aligns with the literature, which typically shows a higher prevalence of this disorder in women. (Lieb et al., 2004; Salgado et al., 2020) This gender discrepancy, according to the existing studies, may be due to the BPD classification and diagnosis criteria taking into more consideration internal symptoms (such as affective instability and identity disturbance), which are more typical of women, whereas men tend to show more external symptoms (like aggression and impulsivity). Women are also more likely to frequent mental health services, making them more likely to be diagnosed, whereas men, conforming to traditional masculine norms, will be more reluctant to initiate and maintain treatment in mental health services. (Qian et al., 2022) Some authors actually argue that there is no evidence to suggest that this disorder is more frequent in women. (Leichsenring et al., 2011)

When comparing the scores for the IRI subscales (**Table 2**) with those of other individuals with BPD regarding perspective taking and empathic concern, the scores in this sample fell within the range observed in other studies, however closer to the higher end. (Homan et al., 2017; Petersen et al., 2016) In contrast, personal distress and fantasy

scores were higher than those typically reported on populations with BPD. (Homan et al., 2017; Petersen et al., 2016)

The scores in this sample were also compared with those reported in studies with healthy controls. (Homan et al., 2017; Limpo et al., 2010; Martin et al., 2017; Petersen et al., 2016) From this comparison, some key differences emerge. Regarding perspective taking, the scores in this sample are lower than those found in healthy individuals, which aligns with previous findings suggesting impairments in cognitive empathy among individuals with BPD. (Salgado et al., 2020; Serralta et al., 2019) As for empathic concern scores in this sample, they are similar to those found in healthy controls. This is consistent with previous studies that suggest that affective empathy, particularly empathic concern, may be preserved in BPD. (Harari et al., 2010; Serralta et al., 2019) Contrarily, personal distress scores in this sample are notably higher than those observed in healthy controls. This result is consistent with the notion that individuals with BPD tend to exhibit an increased sensitivity to negative emotions, difficulties in differentiating between their own feelings and those of others, or a reduced ability to regulate the emotional arousal triggered by such situations. As a result, they may react more intensely, leading to higher scores on this subscale compared to other populations. (Salgado et al., 2020) Finally, fantasy scores in this sample are within the range of those found in healthy controls, suggesting that the ability to imagine oneself in fictional or hypothetical scenarios may not be significantly affected in BPD. However, given the variability of results across studies, further research is needed to clarify the role of fantasy in the empathic profile of individuals with BPD. (Salgado et al., 2020)

This study is partially consistent with previous research on populations with BPD in that it showed no correlation between age and overall empathy scores and confirmed gender differences in the personal distress subscale, with women reporting significantly higher levels than men. (Serralta et al., 2019)

However, some studies have reported a positive correlation between age and empathic concern in populations with BPD, suggesting that, as individuals grow older, they may develop greater emotional responsiveness to others' experiences. Additionally, a negative correlation between age and fantasy has been observed, indicating that younger individuals might engage more frequently in imagining themselves in hypothetical or fictional situations in populations with BPD. These discrepancies may be attributed to differences in sample composition or cultural factors.

Further research is needed to clarify the influence of age on different dimensions of empathy. (Serralta et al., 2019)

The absence of significant correlations between empathy scores, and education, and the lack of differences by marital status in this sample may indicate that these socio-demographic characteristics do not directly or pronouncedly influence empathy. However, no research was found on this topic, which limits the ability to draw definite conclusions.

In this study, significant differences emerged between working status and the fantasy subscale, with active workers and students revealing higher empathy levels in this dimension. It is possible that being involved in academic or professional activities requires more creative thinking and exposure to various perspectives, which may stimulate the ability to imagine oneself in fictional situations, comparing with being unemployed or retired. Additionally, unemployment or medical leave may be associated with higher stress levels and reduced engagement with imaginative situations, potentially affecting empathy. There is no research exploring the relationship between work status and empathy dimensions in individuals with BPD. Future studies should investigate these associations in more detail to better understand the potential impact of work and education on empathic processes.

The lack of significant differences in age, education, professional status, and marital status between the BPD-only and BPD+ groups (**Table 1**) suggests that these sociodemographic factors may not play a determining role in the presence of comorbidities among individuals with BPD. These results are aligned with the study of Zanarini, et al. (1998), which also showed no significant associations between sociodemographic variables and the presence of comorbidities in patients with BPD. (Zanarini, et al., 1998) However, the BPD+ group had a higher proportion of men compared to the BPD-only group. This finding may suggest that men with BPD are more likely to present a comorbid personality disorder diagnosis. However, no studies were found to support this hypothesis.

These results have clinical implications, showing that individuals with both BPD and comorbid personality disorder diagnoses might benefit from interventions that not only focus on treating the disorder, but also specifically target the perspective taking and empathic concern dimensions of empathy.

The results of this study largely support the hypothesis that individuals with both BPD plus comorbid personality disorder diagnoses exhibit lower levels of

empathy compared to those with BPD only, particularly regarding perspective taking and empathic concern.

5. Limitations

A significant limitation of this study is the lack of diversity in socio-demographic characteristics. The sample was predominantly composed of women (88.7%), which is in line with the literature, but this overrepresentation of women may limit the generalizability of the findings to the male population. Furthermore, the sample included young adults with a mean age of 23.96 years, which may not fully represent the age range typically observed in BPD populations. The overrepresentation of younger individuals may influence the results, in light of the fact that age can impact empathy and emotional regulation, as well as the presence of comorbidities. Future studies should aim for more balanced, diverse samples that better represent the broader BPD population across gender and age groups.

Another limitation is the lack of longitudinal data to assess how empathy in individuals with BPD evolves over time, particularly when comorbid conditions are present. The cross-sectional design of the study restricts the ability to infer causal relationships between comorbidities and empathy deficits. While this study identifies significant differences between the BPD-only and BPD-comorbid groups in empathy scores, it cannot determine if the comorbid psychiatric diagnoses lead to the empathy impairments or if individuals with lower empathy are more likely to develop comorbid conditions. Longitudinal research would be beneficial to understand the dynamic interaction between BPD, comorbidities and empathy across the lifespan.

Finally, the use of self-report questionnaires, such as the Interpersonal Reactivity Index, may be influenced by response bias or the perception of one's own behaviour, especially in individuals with BPD, who often have distortions in the perception of their own emotions and behaviours.

6. Conclusion

In summary, this study provides valuable insights into the relationship between empathy and comorbid personality disorders in individuals with BPD. The results

indicate that individuals with BPD and comorbid personality disorder diagnoses show lower levels of empathy, specifically in the perspective taking and empathic concern dimensions. It highlights the importance of considering comorbidities in the assessment and treatment of BPD, suggesting that interventions focusing on empathy, particularly targeting perspective-taking and empathic concern, may be beneficial for individuals with BPD plus comorbid disorders. Further longitudinal studies with larger and more diverse samples are necessary to better understand these relationships and to develop more targeted interventions for individuals with BPD.

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Table 1

Sample characteristics: Total and by diagnosis

	Total sample		BPD-only		BPD+	
	N		*n*		*n*	
Age - *M* (*SD*)	139	23.96 (6.95)	83	23.65 (6.93)	56	24.41 (7.02)
Gender - *n* (%)	142		84		58	
Female		126 (88.7)		80 (95.2)		46 (79.3)
Male		15 (10.6)		4 (4.8)		11 (19.0)
Education - *M* (*SD*)	140	11.87 (1.14)	83	11.80 (1.11)	57	11.98 (1.17)
Working status - *n* (%)	142		84		58	
Employed/student		92 (64.8)		56 (66.7)		36 (62.1)
Unemployed/Retired/Medical leave		50 (35.2)		28 (33.3)		22 (37.9)
Marital status - *n* (%)	141		84		57	
Single		126 (89.4)		78 (92.9)		48 (82.8)
Married/divorced/widowed		15 (10.6)		6 (7.1)		9 (15.5)
Children - *n* (%)	141		84		58	
No		130 (92.2)		77 (91.7)		53 (91.4)
Yes		11 (7.8)		6 (7.1)		5 (8.6)
Diagnosis - *n* (%)	142					
BPD		84 (59.2)				
BPD+		58 (40.8)				

M: mean. SD: Standard deviation. BPD: Borderline personality disorder. BPD+: Borderline personality disorder plus comorbid psychiatric diagnosis.

Table 2

IRI scores: Total sample and by diagnosis

	Total sample (*N* = 142)		BPD-only (*n* = 84)		BPD+ (*n* = 58)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Perspective taking	14.12	5.44	15.08	5.01	12.72	5.76
Fantasy	16.18	6.26	16.37	6.37	15.91	6.13
Personal distress	14.46	6.12	14.48	5.99	14.43	6.35
Empathic concern	17.22	5.89	18.30	5.19	15.66	6.51

M: mean. SD: Standard deviation. BPD: Borderline personality disorder. BPD+: Borderline personality disorder plus comorbid personality diagnoses. Possible scores for each IRI subscale range from 0 (minimum) to 24 (maximum).

STROBE Statement—Checklist of items that should be included in reports of ***cross-sectional studies***

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	Página 7: "This is a cross-sectional study conducted in a clinical sample."
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	Página 7: "This work aims to compare empathy levels on individuals with BPD with and without other psychiatric disorders."; "Using the Interpersonal Reactivity Index (IRI) to evaluate empathy, this study involved all the patients diagnosed with BPD followed in the psychiatry service of a general hospital in Portugal."; "Individuals with BPD plus comorbid psychiatric disorders showed lower levels of empathy compared to individuals with BPD alone"
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	Página 8: "Empathy may be affected in individuals with BPD. Emotional intensity is associated with distortions in the interpretation of others' intentions, leading to misunderstandings and difficulty in interpreting others' mental states, resulting in disproportional reactions."; Página 9: "Given that comorbid psychiatric disorders often exacerbate core symptoms of BPD, it is plausible that empathy levels in individuals with both BPD and additional comorbidities may be even lower. Previous studies have explored empathy impairments in BPD."; Página 10: "However, there is a lack of research examining how the diagnoses of other psychiatric disorders may influence these deficits."
Objectives	3	State specific objectives, including any prespecified hypotheses	Página 10: "this study aims to assess empathy in individuals with BPD comparing with individuals with BPD also diagnosed with other psychiatric disorders, contributing to a better understanding of the role of comorbidities in empathy functioning within this population."
Methods			
Study design	4	Present key elements of study design early in the paper	Página 10: "This cross-sectional study was conducted in the Psychology Service of a general hospital in Portugal";
Setting	5	Describe the setting, locations,	Página 10: "in the Psychology Service of a general hospital in Portugal in 2025"; "the

		and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Interpersonal Reactivity Index, were collected by the service's psychologists as part of the routine procedures."
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	Página 10: ". The following eligibility criteria were applied for participation in the study: (1) individuals with a BPD diagnosis through the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II) and (2) individuals with a BPD diagnosis plus other psychiatric diagnoses also established through the same evaluation. Within these criteria, individuals who had not completed the empathy questionnaire were excluded."
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Página 10: "BPD diagnosis through the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II)"; ") individuals with a BPD diagnosis plus other psychiatric diagnoses also established through the same evaluation."; "Sociodemographic data and empathy-related information, assessed using the Interpersonal Reactivity Index"
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	Página 10: "Sociodemographic data and empathy-related information, assessed using the Interpersonal Reactivity Index, were collected by the service's psychologists as part of the routine procedures." Página 12: "The four dimensions of the IRI were calculated following the recommended procedures."
Bias	9	Describe any efforts to address potential sources of bias	Página 11: "In the present sample, a good internal consistency was obtained, with Cronbach's alpha values of 0.80 for perspective taking, 0.84 for fantasy and also for personal distress, and 0.86 for empathic concern."
Study size	10	Explain how the study size was arrived at	Página 7: "this study involved all the patients diagnosed with BPD followed in the psychiatry service"
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which	Página 12: "Numeric data were presented as mean (M) and standard-deviation (SD), median (Mdn) and interquartile range (IQR), or absolute and relative frequency, as appropriate. The four dimensions of the IRI were calculated following the recommended procedures."

		groupings were chosen and why	
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	Página 12: "For variable associations and group differences, Pearson correlation (r), Spearman's correlation (rs), t-test, Mann-Whitney U and chi-square tests were used after normality check through the Shapiro-Wilk test and graphical inspection"; "multiple linear regression was performed on each of the four IRI dimensions, adjusting the models for the participant's gender, after checking the regression assumptions."
		(*b*) Describe any methods used to examine subgroups and interactions	Página 13: "Significant differences emerged between the BPD-only group and the BPD+ group regarding the empathy dimensions of perspective taking (t(140) = 2.594, p = .005) and empathic concern (t(104) = 2.575, p = .006). The BPD-only group showed significantly higher levels of empathy both on the perspective taking scale (M = 15.08, SD = 5.01) and on the empathic concern scale (M = 18.30, SD = 5.19) than did the BPD+ group (M = 12.72, SD = 5.76 and M = 15.66, SD = 6.52, respectively). Adjusting for gender, the differences remained statistically significant for both the perspective taking scale (B = -2.648, S.E. = .938, p = .005) and the empathic-concern scale (B = -2.394, S.E. = 1.021, p = .020)."
		(*c*) Explain how missing data were addressed	Página 11: "Only one participant left one item (from the empathic concern subscale) blank, and this item was attributed by logical imputation."
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	Não aplicável, uma vez que não foram utilizados métodos analíticos de amostragem.
		(*e*) Describe any sensitivity analyses	Página 12: "For variable associations and group differences, Pearson correlation (r), Spearman's correlation (rs), t-test, Mann-Whitney U and chi-square tests were used after normality check through the Shapiro-Wilk test and graphical inspection."
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined	Página 12: "Of a total of 160 cases with a BPD diagnosis in the health centre, 142 (88.8%) responded to the IRI and were included in this study."

		for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	
		(b) Give reasons for non-participation at each stage	Página 10: "individuals who had not completed the empathy questionnaire were excluded" Página 12: "Of a total of 160 cases with a BPD diagnosis in the health centre, 142 (88.8%) responded to the IRI"
		(c) Consider use of a flow diagram	Não aplicável, uma vez que o estudo não envolveu processos complexos de seleção/exclusão de participantes, não tendo sido desenhado um diagrama
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Página 12: "Mean age was 23.96 years old (SD = 6.95) and most participants were women (n = 126; 88.7%) (Table 1). Most had 12 years of school (n = 85; 60.7%). A large proportion of the participants were students (n = 65; 45.8%), another 27 (19.0%) were actively working and 12 (8.5%) were on medical leave. The vast majority was single (n = 126; 89.4%) and without children (n = 130; 92.2%). Over a half of the sample had the sole diagnosis of BPD (n = 84; 59.2%), and the remaining 58 (40.8%) had BPD plus other personality disorder diagnoses (e.g., avoidant personality disorder, depressive personality disorder and anti-social personality disorder)."
		(b) Indicate number of participants with missing data for each variable of interest	Não aplicável, sem participantes com dados em falta.
Outcome data	15*	Report numbers of outcome events or summary measures	Página 12: "Overall mean scores in this sample (on the IRI Portuguese version, which adds to a maximum possible score of 24 in each IRI subscale) ranged from 14.12 (SD = 5.44) for perspective taking and 14.46 (SD = 6.12) for personal distress, to 16.18 (SD = 6.26) for fantasy and 17.22 (SD = 5.89) for empathic concern"; Página 13: "Significant differences emerged between the BPD-only group and the BPD+ group regarding the empathy dimensions of perspective taking ($t(140) = 2.594$, $p = .005$) and empathic concern ($t(104) = 2.575$, $p = .006$). The BPD-only group showed significantly higher levels of empathy both on the perspective taking scale (M = 15.08, SD = 5.01) and on the empathic

			concern (M = 18.30, SD = 5.19) scale than did the BPD+ group (M = 12.72, SD = 5.76 and M = 15.66, SD = 6.52, respectively)."
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Página 12: "Overall mean scores in this sample (on the IRI Portuguese version, which adds to a maximum possible score of 24 in each IRI subscale) ranged from 14.12 (SD = 5.44) for perspective taking and 14.46 (SD = 6.12) for personal distress, to 16.18 (SD = 6.26) for fantasy and 17.22 (SD = 5.89) for empathic concern"; Página 13: "Significant differences emerged between the BPD-only group and the BPD+ group regarding the empathy dimensions of perspective taking (t(140) = 2.594, p = .005) and empathic concern (t(104) = 2.575, p = .006). The BPD-only group showed significantly higher levels of empathy both on the perspective taking scale (M = 15.08, SD = 5.01) and on the empathic concern (M = 18.30, SD = 5.19) scale than did the BPD+ group (M = 12.72, SD = 5.76 and M = 15.66, SD = 6.52, respectively). Adjusting for gender, the differences remained statistically significant for both the perspective taking scale (B = -2.648, S.E. = .938, p = .005) and the empathic-concern scale (B = -2.394, S.E. = 1.021, p = .020)."
		(*b*) Report category boundaries when continuous variables were categorized	Não aplicável, nenhuma variável contínua foi categorizada.
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	Não aplicável, este estudo não envolve estimativas de risco.
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	Página 12: "Empathy scores were uncorrelated with participants' age, education or marital status, and showed no gender differences, except for the dimension of personal distress, with women presenting significantly higher levels (Mdn = 16.00, IQR = 10.00-20.00) when compared to men (Mdn = 11.00, IQR = 7.00-18.00), U(N = 141) = 627.000, p = .033. Regarding working status, non-significant differences also emerged for all empathic dimensions, except fantasy. Active workers/students showed higher empathy levels on the fantasy dimension

			(Mdn = 18.50, IQR = 12.00-22.00), comparing with unemployed/retired/on medical leave participants (Mdn = 15.00, IQR = 9.00-20.00), U(N = 142) = 1781.500, p = .026."; Página 13: "No significant differences emerged between the BPD-only and the BPD+ groups in sample composition, namely regarding age, education, professional status (employed/student versus unemployed/retired/on medical leave) or marital status (single versus married/divorced/separated/widowed). However, the BPD-only group had a smaller proportion of men (4/15 = 4.8%) comparing to the BPD+ group (11/15 = 19.3%), chi-square(1) = 7.548, p = .006, N = 141."
Discussion			
Key results	18	Summarise key results with reference to study objectives	Página 13: "The results regarding empathy scores in the BPD-only and BPD-comorbid groups (Table 2) revealed significant differences in the perspective taking and empathic concern dimensions between the two groups. The BPD-only group exhibited higher empathy levels in both dimensions compared to the BPD-comorbid group. These differences were still significant after adjusting for gender, indicating that they were not attributed to the unequal proportion of men and women. These findings suggest that the presence of a comorbid psychiatric diagnosis in individuals with BPD is associated with lower empathy levels. Comorbid psychiatric diagnoses, which are frequently present in individuals with BPD, may negatively affect the ability to understand others' perspectives and emotionally engage with others' emotions and distress."; Página 16: "These results have clinical implications, showing that individuals with both BPD and comorbid personality disorder diagnoses might benefit from interventions that not only focus on treating the disorder, but also specifically target the perspective taking and empathic concern dimensions of empathy."; "The results of this study largely support the hypothesis that individuals with both BPD plus comorbid personality disorder diagnoses exhibit lower levels of empathy compared to those with BPD only, particularly regarding perspective taking and empathic concern."

Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	Página 17: "A significant limitation of this study is the lack of diversity in socio-demographic characteristics. The sample was predominantly composed of women (88.7%), which is in line with the literature, but this overrepresentation of women may limit the generalizability of the findings to the male population."; "the sample included young adults with a mean age of 23.96 years, which may not fully represent the age range typically observed in BPD populations. The overrepresentation of younger individuals may influence the results, in light of the fact that age can impact empathy and emotional regulation, as well as the presence of comorbidities."; "Another limitation is the lack of longitudinal data to assess how empathy in individuals with BPD evolves over time, particularly when comorbid conditions are present. The cross-sectional design of the study restricts the ability to infer causal relationships between comorbidities and empathy deficits. While this study identifies significant differences between the BPD-only and BPD-comorbid groups in empathy scores, it cannot determine if the comorbid psychiatric diagnoses lead to the empathy impairments or if individuals with lower empathy are more likely to develop comorbid conditions. Longitudinal research would be beneficial to understand the dynamic interaction between BPD, comorbidities and empathy across the lifespan."; "The use of self-report questionnaires, such as the Interpersonal Reactivity Index, may be influenced by response bias or the perception of one's own behaviour, especially in individuals with BPD, who often have distortions in the perception of their own emotions and behaviours.";
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Página 18: "In summary, this study provides valuable insights into the relationship between empathy and comorbid personality disorders in individuals with BPD. The results indicate that individuals with BPD and comorbid personality disorder diagnoses show lower levels of empathy, specifically in the perspective taking and empathic concern dimensions. It highlights the importance of considering comorbidities in the assessment and treatment of BPD, suggesting that interventions focusing on empathy, particularly targeting perspective-taking and empathic concern,

			may be beneficial for individuals with BPD plus comorbid disorders. Further longitudinal studies with larger and more diverse samples are necessary to better understand these relationships and to develop more targeted interventions for individuals with BPD."
Generalisability	21	Discuss the generalisability (external validity) of the study results	Página 17: "this overrepresentation of women may limit the generalizability of the findings to the male population"; "The overrepresentation of younger individuals may influence the results, in light of the fact that age can impact empathy and emotional regulation, as well as the presence of comorbidities"
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Não aplicável, uma vez que este estudo não requereu financiamento

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

Regras de formatação da revista escolhida: Journal of Affective Disorders

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You are required to provide a concise and factual abstract which does not exceed 250 words. The abstract should briefly state the purpose of your research, principal results and major conclusions. Some guidelines:

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You are required to provide 1 to 7 keywords for indexing purposes. Keywords should be written in English. Please try to avoid keywords consisting of multiple words (using "and" or "of").

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- Display equations separately from your text, numbering them consecutively in the order they are referred to within your text.

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Strunk Jr., W., White, E.B., 2000. The Elements of Style, fourth ed. Longman, New York.

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Reference to a website:

Cancer Research UK, 2023. Cancer statistics reports for the UK. http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/ (accessed 13 March 2023).

Reference to a dataset:

Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T., 2015. Mortality data for Japanese oak wilt disease and surrounding forest compositions [dataset]. Mendeley Data, v1. https://doi.org/10.17632/xwj98nb39r.1.

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Coon, E., Berndt, M., Jan, A., Svyatsky, D., Atchley, A., Kikinzon, E., Harp, D., Manzini, G., Shelef, E., Lipnikov, K., Garimella, R., Xu, C., Moulton, D., Karra, S., Painter, S., Jafarov, E., & Molins, S., 2020. Advanced Terrestrial Simulator (ATS) v0.88 (Version 0.88) [software]. Zenodo. https://doi.org/10.5281/zenodo.3727209.

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