Validation of the Bipolar Recovery Questionnaire for the Portuguese Population: Recovery and Predictors in People with Bipolar Disorder

Validação do Questionário de Recuperação Bipolar para a População Portuguesa: Recuperação e Preditores em Pessoas com Perturbação Bipolar

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ABSTRACT

Introduction: The paradigm in mental health care is progressively moving towards a recovery-focused perspective. Thus, there is a need for validated instruments to measure recovery in bipolar disorder (BD). The Bipolar Recovery Questionnaire (BRQ) is the most used instrument to assess it. The aim of this study was to translate and perform a cross-cultural adaptation of the BRQ to European Portuguese (PT-PT) and to explore further associations of recovery with sociodemographic and emotional regulation, as well as recovery predictors to inform future research and clinical practice.
Methods: The BRQ was forward-translated and back-translated until a consensus version was found, and a test-retest design was used to assess temporal stability. Participants were recruited in public hospitals and organizations supporting people with BD, either referred by their psychiatrists or psychologists or through self-referral. Eighty-eight individuals diagnosed with BD were recruited to complete a battery of Portuguese-validated self-report questionnaires to assess recovery (BRQ), clinical mood symptoms (Hospital Anxiety and Depression Scale), affect (Positive and Negative Affect Scale), well-being (brief Quality of Life for Bipolar Disorder; Satisfaction with Life Scale) and emotion regulation (Difficulties in Emotion Regulation Scale).
Results: The BRQ showed excellent internal consistency with a Cronbach alpha of 0.92, and test-retest exhibited good reliability (r = 0.88). Construct validity was confirmed through/by positive and moderate correlations with quality of life (QoL; r = 0.58) and positive affect (r = 0.52), and negative moderate correlations with depression (r = -0.64), and negative affect (r = -0.55). Both satisfaction with life (β = 0.38, p = 0.010) and recovery (β = 0.34, p = 0.022) impacted quality of life, supporting the BRQ's incremental validity. Depressive symptoms and emotion dysregulation accounted for 51% of its variance.
Conclusion: The BRQ is a valid and reliable instrument to measure recovery in people with BD in the Portuguese population and is suitable for both clinical and research contexts.
Keywords: Bipolar Disorder; Psychometrics; Recovery of Function; Reproducibility of Results; Surveys and Questionnaires; Translations

RESUMO

Introdução: O paradigma da saúde mental está a evoluir progressivamente para uma perspetiva centrada na recuperação. Assim, são necessários instrumentos validados para medir a recuperação na perturbação bipolar (PB). O Questionário de Recuperação Bipolar (BRQ) é o instrumento mais utilizado para avaliar este construto. O objetivo deste estudo foi traduzir e realizar uma adaptação transcultural do BRQ para o português europeu (PT-PT), explorar associações adicionais da recuperação com características sociodemográficas e regulação emocional, e investigar preditores de recuperação para contribuir para estudos e práticas clínicas futuras.
Métodos: Foi feita a tradução do BRQ para português e retroversão, chegando-se a uma versão consensual entre os tradutores, e um desenho teste-reteste foi usado para avaliar a estabilidade temporal do instrumento. Os participantes foram recrutados em hospitais públicos e organizações de apoio a pessoas com PB pelos seus psiquiatras, psicólogos ou por autorreferenciação. Oitenta e oito pessoas com diagnóstico de PB preencheram uma bateria de questionários de autorresposta para avaliar a recuperação (BRQ), sintomas clínicos de humor (Escala Hospitalar de Ansiedade e Depressão), afeto (Escala de Afeto Positivo e Negativo), bem-estar (Qualidade de Vida Breve para Perturbação Bipolar; Escala de Satisfação com a Vida) e regulação emocional (Escala de Dificuldades na Regulação Emocional).
Resultados: O BRQ apresentou uma excelente consistência interna, com um alfa de Cronbach de 0,92, e o teste-reteste apresentou uma boa fiabilidade (r = 0,88). A validade do constructo foi confirmada através das correlações positivas e moderadas com a qualidade de vida (r = 0,58) e afeto positivo (r = 0,52), e correlações negativas moderadas com a depressão (r = -0,64) e o afeto negativo (r = -0,55). Tanto a satisfação com a vida (β = 0,38, p = 0,010) como a recuperação (β = 0,34, p = 0,022) tiveram impacto na qualidade de vida, apoiando a validade incremental do BRQ. Os sintomas depressivos e a desregulação emocional foram responsáveis por 51% da sua variância.
Conclusão: O BRQ é um instrumento válido e fiável para medir a recuperação em pessoas com PB na população portuguesa, sendo adequado para contextos clínicos e de investigação.
Palavras-chave: Inquéritos e Questionários; Perturbação Bipolar; Psicometria; Qualidade de Vida; Recuperação de Função Fisiológica; Reprodutibilidade dos Testes; Traduções

INTRODUCTION

Bipolar disorder (BD) is characterized by fluctuations in mood states and energy that vary in frequency and severity, affecting around 2.4% of the global population.[1] This poses substantial challenges for individuals, their families, and

healthcare systems worldwide due to its chronic and recurrent nature,[2] and BD has been associated with functional and cognitive impairment and a reduction in quality of life.[3,4] Traditionally, the primary goal of treatment has revolved around reducing symptoms and preventing relapses, with the aim of achieving symptomatic remission and functional stability.[5,6] However, a growing body of evidence suggests that this symptom-centered approach may not fully address the complexities and holistic needs of individuals living with BD[7] and people with BD have shown their dissatisfaction with this model, exhibiting interest in taking control of their lives rather than returning to the elusive state of the pre-morbid level of functioning.[8] According to Merikangas *et al*,[1] BD is responsible for the loss of more disability-adjusted life-years than all forms of cancer or major neurologic conditions, which has a marked effect on the overall quality of life (QoL) of both patients and their families.[9]

Consequently, mental health is witnessing a paradigm shift towards embracing a personal recovery-focused model, which encompasses pursuing a satisfying and meaningful life, even when clinical symptomatology is present.[10,11] This concept has become increasingly important and is seen as a desired outcome for mental health care programs in severe mental disorders, specifically for BD.[8] Recovery is described as a personal journey of coping with mental illness, which involves a series of subjective experiences and, therefore, is based on the person's empowerment, self-directedness and perception of competence to deal with their difficulties.[12] Hence, considering the significant impact that BD has on various aspects of daily life (i.e., work productivity, interpersonal relationships, etc.), achieving recovery is essential and it should focus on fostering resilience, enhancing self-management skills, and promoting quality of life and well-being and improving inter-episodic residual symptoms to enhance global functioning.[13] Thornton and Lucas[14] made an effort to clarify the model of recovery, by showing an integrative view, where the goal of recovery is determined through the conception of a life to be valued and hoped for by the subject concerned, and not a normative and standardized view of recovery for all.

According to a recent systematic review of personal recovery instruments in BD,[8] there are only two recovery-focused scales specifically validated for BD: the Questionnaire of Personal Recovery (QPR) and the Bipolar Recovery Questionnaire (BRQ). The QPR was initially a 22-item questionnaire with two subscales (intrapersonal and interpersonal recovery) developed from service users' accounts of recovery from psychosis, recruited in the National Health Service (United Kingdom).[15] This questionnaire was then reduced to a one-factor solution with 15 items,[16] with a sample of 335 participants with a schizophrenia spectrum diagnosis, demonstrating adequate internal consistency (α

= 0.93) and test-retest reliability (*r* = 0.70). The QPR was later applied to a wider sample with different mental health disorders, including 61 participants with BD,[17] and its validity to use with BD was confirmed by Kraiss and collaborators,[18] with a sample of 102 people diagnosed with BD, even though there were no reported adaptations to the questionnaire. The QPR is answered on a 5-point Likert scale, ranging from 0 (disagree strongly) to 4 (agree strongly), with higher scores indicating more personal recovery.

The second, the BRQ,[19] is a 36-item questionnaire, and its items were generated based on a review of the literature and an earlier qualitative study with people with BD, which explored personal definitions, experiences, and accounts of recovery. Its psychometric properties were assessed in a study with 60 participants, the majority with a diagnosis of bipolar disorder I (87%) and the remainder with bipolar disorder II (13%). The study reported that BRQ had a good to excellent consistency (α = 0.875) and excellent test-retest reliability (α = 0.866; *p* < 0.001).[19] The BRQ has been used widely to measure recovery improvements in BD after undergoing treatment, with all the intervention studies reported in the aforementioned systematic review using the BRQ.[8] So far, this is still the only instrument specifically constructed for people with BD. It asks individuals to rate their level of agreement with each of the 36 items in the previous week, going from 0 (strongly disagree) to 100 [strongly agree; on a 100 mm visual analogue scale (VAS)]. Due to having a small sample size (n = 60), the authors did not perform a factor analysis of the BRQ and recommended using it as a single-factor scale.

As far as we know, there is no instrument available in European Portuguese (PT-PT) to measure recovery in people with BD, which further contributes to a lack of data on this topic, particularly in middle and low-income countries.

The aim of this study was to translate and validate BRQ to PT-PT, analyze its psychometric properties, and explore recovery predictors that can inform research and clinical practice.

METHODS
Ethics and study design

This research is part of a broader project that aims to improve the assessment and intervention for people in the bipolar spectrum (ref.: SFRH/BD/130116/2017). The project was approved by the Faculty of Psychology and Educational Sciences of the University of Coimbra Ethics Committee and received further approval from the hospitals and organizations involved in the study [i.e., Coimbra Hospital and University Centre, Leiria Hospital Centre, West Hospital Centre, Association for the Support of Depressive and Bipolar Patients (ADEB)].

This was a two-phase study where 1) the full process of

translation and cross-cultural adaptation of the BRQ from English to PT-PT was performed following recommendations for psychological tests, and 2) we carried out an observational, prospective validation study, including patients with bipolar disorder, that assessed the psychometric properties of the PT-PT version of the BRQ and explored BD recovery predictors. A comprehensive analysis was conducted, including descriptive statistics of the items, qualitative feedback on the items, evaluation of construct and incremental validity, examination of Cronbach's alpha, and a test-retest analysis (with data collected in a second visit, six weeks after the baseline). Participants gave written informed consent, data confidentiality was assured, and clear instructions were provided about the General Data Protection Regulations (GDPR).

Bipolar Recovery Questionnaire translation and cross-cultural adaptation

Permission to translate and validate the BRQ from English to PT-PT was granted by Lancaster University, which states that this instrument is free to use and translate. The forward translation to Portuguese was conducted by three independent Portuguese native speakers fluent in English (two clinical psychologists and one psychiatrist and researcher), following the guidelines that encourage at least two independent translators.[20] The two versions were compared, and the discrepancies were discussed between the translators and the research team, and a consensus was reached. A back-translation was then made from the agreed version by two different members of the research team who did not take part in the previous discussion, and this was compared with the original version, which was deemed similar. Finally, the last version was discussed with experienced psychiatrists (n = 3) and psychologists (n = 2) in dealing with people with BD, inquiring them about its clarity, language adequacy and comprehensibility. Additionally, five patients with this disorder were asked to fill in the questionnaire in a one-to-one in person session, and asked questions according to the principles of cognitive interviewing to assess translated questionnaires (i.e., common standardized questions regarding clarity, adequacy, language and type of response of the questionnaire, and allowing for flexibility and additional questions to clarify any identified problems). The feedback was positive, with all the participants considering it clear, coherent, and overall easy to comprehend, reporting the visual analogic scale (from 0 - 100) in particular as a strong point, and easy to understand. The BRQ scale for psychometric investigation asks participants to rate their level of agreement (on a visual analogue scale), in the last week, with 36 items assessing their sense of recovery (same as the original) going from 0 to 100 (with labels across the VAS: 0 - 'strongly disagree', 25 - 'disagree',

75 - 'agree' and 100 - 'strongly agree'), with the total score varying from 0 to 3600. The BRQ asks participants to report their agreement with sentences such as "I struggle to make sense of the experiences I have had".

The total BRQ score is calculated by summing individual scores of all items of which 12 are reverse scored. Higher BRQ total scores indicate higher self-rated sense of recovery.

Procedures and inclusion/exclusion criteria

Recruitment took place in three public hospitals via clinician referrals, the ADEB and through online advertisement and flyer distribution in outpatient services (allowing self-referral) and took place between December 2019 and January 2021.The study was presented to all the healthcare professionals at the clinical sites and the ADEB, the inclusion and exclusion criteria were explained, and they were asked to refer patients. Additionally, the ADEB disseminated our study in their newsletter and contributed with referrals. All patients included in this study were outpatients when they filled in the questionnaires, even though the referral and initial contact could be established while they were inpatients.

After being informed about the study's aims and providing written informed consent, all participants were invited to attend a clinical interview assessment to confirm the diagnosis, which could occur in person or online. This study was initially conceptualized to be mainly recruited in person. However, there was a six-month interruption of the in-person recruitment due to COVID-19 restrictions, which led to assessments and questionnaires moving mainly online. When participants could not attend the clinical interview (in person or online in a video call), they would still be included in the study as long as they had a well-established diagnosis made by their psychiatrist (for more than two years). To corroborate the diagnosis, these participants had to fill out an additional screening tool, the Mood Disorder Questionnaire (MDQ; n = 10) and meet the threshold for BD suggested by the authors.[21] All participants answered sociodemographic questions and a battery of self-report questionnaires, which were sent either online (using the Lime Survey platform; https://limesurvey.fpce.uc.pt/) or provided in paper format (ratio 70:30, respectively). Participants who responded in paper format were all recruited before the COVID-19 restrictions.

The inclusion criteria consisted of having a diagnosis of bipolar and related disorders, being aged between 18 and 65, and being a Portuguese-speaking individual. Exclusion criteria included acute manic episode, substance-induced bipolar or related disorder, psychotic symptoms during the interview, and significant cognitive deterioration (described by the clinician or identified during the clinical interview).

Measures

Clinician rated

The Clinical Interview for Bipolar Disorders (CIBD)[22] is a Portuguese semi-structured comprehensive assessment tool for BD and related disorders appropriate for the diagnosis of bipolar disorders and assessment of current mood episodes in adults based on the DSM-5-TR criteria.

Self-reported questionnaires

All the instruments used in this section have been validated for the Portuguese population.

The Mood Disorder Questionnaire (MDQ)[21,23] is a 15-item self-reported screening instrument that can be used to identify individuals who are most likely to have bipolar disorder. The internal reliability for the MDQ was strong in the original study (Cronbach's alpha = 0.88), and an acceptable reliability was found in the Portuguese version (α = 0.76).

The Brief Quality of Life in Bipolar Disorder – short version (Brief QoL.BD)[24,25] is a self-reported quality of life measure for people with BD, comprising 12 items assessed on a standard five-point Likert response scale (strongly disagree – strongly agree). Each item measures a domain of quality of life (physical, sleep, mood, cognitive, leisure, social, spirituality, finances, household, self-esteem, independence, and identity). The reliability of the Portuguese version was good, with an alpha of 0.89. The measure QoL.BD was used to assess construct and incremental validity.

The Positive and Negative Affect Scale (PANAS)[26,27] is a self-reported questionnaire divided into two subscales: PANAS-PA and PANAS-NA (positive and negative affect, respectively). The reliability of the Portuguese version (αNA = 0.89 and αPA = 0.86) was identical to the original version (αNA = 0.87 and αPA = 0.88). It is used for construct validity.

The Hospital Anxiety and Depression Scale (HADS)[28,29] assesses emotional changes in a hospital setting, with two subscales: HADS-ANX and HADS-DEP (anxiety and depression, respectively). The Portuguese version achieved values of α = 0.76 for anxiety subscale and α = 0.80 for depression.

Satisfaction With Life Scale (SWLS)[30,31] measures subjective well-being through five items, measured on a seven-point Likert-type scale. The original scale showed an α = 0.87 and the Portuguese version an α = 0.89. This questionnaire was used for incremental validity.

The Difficulties in Emotional Regulation Scales (DERS)[32,33] is a self-reported questionnaire that assesses difficulties in emotion regulation, providing a total score and six subscales: nonacceptance of emotional responses, difficulty engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. The 36 items are rated on a five-point Likert scale ranging between 1 (almost never) and 5 (almost always). The Portuguese version of the scale presents excellent reliability (α = 0.92).

Data analyses and psychometric validation

Statistical analyses were done using the SPSS software version 22 (Statistical Package for the Social Sciences: IBM Corp.). Normality of data was tested with the Kolmogorov-Smirnov test and examining the skewness (Sk) and kurtosis (Ku) values (normality assumed for Sk < 3 and Ku < 8; Kline, 2005)[34] and no violations were found. Outliers were examined considering the boxplot diagram, and one outlier was removed. Missing data were handled using mean-score imputation (missings < 1%) to evaluate reliability and construct validity. Cronbach's alpha coefficient was calculated as the measure of internal reliability with an acceptable reference value of 0.70, good from 0.80 to 0.89, and excellent above 0.90.[35]

The construct validity was evaluated via Pearson's correlations, considering the correlation coefficients as weak from 0.10 to 0.39, moderate from 0.40 to 0.69, and strong above 0.70.[36] A subsample was used for this analysis, which included the participants that had filled in all the entire battery of tests. We correlated the BRQ with Brief QoL.BD (quality of life), PANAS (positive and negative affect) and HADS (depression) for convergent validity. For incremental validity, a regression model used the BRQ as dependent variable, and the SWLS (satisfaction with life) and Brief QoL.BD (quality of life) as independent variables.

To explore the association between the BRQ and sociodemographic and clinical variables, we needed to recode the work situation variable into two groups: working (employed) and not working (unemployed and on medical leave).

The BRQ predictors were explored through several multiple regression analyses (performed sequentially) to assess the variance explained by psychological distress symptoms (anxiety and depressive symptoms - HADS), positive and negative affect (PANAS) and difficulties in regulating emotions (DERS). Assumptions were verified, and homoscedasticity was assessed by visual inspection of a plot of studentized residuals *versus* unstandardized predicted values. The multicollinearity assumption was tested using Variance Inflation Factor (VIF) values, with VIF > 10 considered problematic.[37] When assessing multicollinearity, anxiety violated this assumption and was thus removed from the model. The final multiple regression model included the significant predictors that respected the assumptions for multiple regression and significantly predicted the outcome variable.

Participants

The participants were 88 people with a disorder from the

BD spectrum, of which 59 were women (67%), and 29 were men (33%). The age of participants ranged between 20 and 65 years (M = 43.74 ± 11.17). Most participants were employed (64.7%) and 13.6% were on medical leave. Fifty-two participants (59.1%) had a diagnosis of bipolar disorder I, 25 were diagnosed with bipolar disorder II (28.4%), one was diagnosed with other specified bipolar and related disorders (1.1%), and 10 were diagnosed with bipolar without having their type specified (11.4%). A full description of participant demographics and clinical features is reported in Table 1.

RESULTS
Descriptive statistics
The mean, standard deviation, item-total correlation and alpha if item deleted are presented for all BRQ items in Table 2.

Reliability and temporal stability
The BRQ showed excellent reliability, with Cronbach's alpha of 0.92 for the total score. To examine test-retest reliability, 31 participants agreed to complete the BRQ a second time (six weeks later). The test-retest correlation suggested good reliability (r = 0.88, p < 0.001).

Construct validity
Convergent validity was explored through Pearson's correlations displayed in Table 3, with the BRQ showing a negative moderate correlation with depression and negative affect and a positive moderate correlation with positive affect and quality of life.

Incremental validity
A hierarchical regression predicting quality of life was

Table 1 – Sample characteristics (n = 88)

	Sex (n)		Total (n / %)	
Diagnosis	♀	♂	Total	%
Bipolar I Disorder	36	16	52	59.1
Bipolar II Disorder	15	10	25	28.4
Other Specified Bipolar and Related Disorder	1	0	1	1.1
Diagnosed with Bipolar Disorder[1]	7	3	10	11.4
	n		%	
Ongoing treatment				
Psychiatric	80		90.9	
Psychological intervention	35		39.8	
Civil status				
Single	36		40.9	
Married / Nonmarital partnership	35		39.8	
Divorced / Separated	17		19.3	
Living area				
Urban	59		67.0	
Rural	29		33.0	
Work situation				
Student	7		7.9	
Employed (and working)	37		42.0	
On medical leave	12		13.6	
Retired	7		7.9	
Unemployed	16		18.2	
Other	9		10.2	
	Mean		SD	
Age of onset	24.2		8.23	
Years of education	14.54		3.57	
Age	43.74		11.17	

n: frequency; %: percentage; ♀: women; ♂: men; SD: standard deviation
1: Participant diagnosed and referred by their psychiatrist without specifying the type – filled out self-reported questionnaires

Table 2 – Item properties of the Bipolar Recovery Questionnaire (n = 88)

Item	Mean	SD	Correlation item-total	α if item deleted
1. I struggle to make sense of the experiences I have had*	49.55	26.99	0.416	0.917
2. I have the resources to effectively manage my health	62.94	24.20	0.492	0.916
3. I am content with who I am as a person	52.47	28.25	0.727	0.913
4. I have little control over my mood*	48.98	29.63	0.340	0.918
5. I avoid taking on challenges in life that matter to me*	53.23	25.85	0.475	0.916
6. I see recovery as a lifelong process	73.70	21.60	0.222	0.919
7. I think (...) compared with when they first occurred	74.58	20.03	0.297	0.918
8. I can access the help I need in order to stay well	69.35	25.98	0.504	0.916
9. My experiences have made me the person I am today	76.43	22.82	0.483	0.916
10. I recognise when (...) that aren't good for my well-being	66.18	24.87	0.571	0.915
11. I am able to engage (...) personally meaningful to me	54.70	26.60	0.625	0.914
12. Recovery means (...) my mental health problems*	63.39	27.59	0.066	0.922
13. I am unsure (...) of the experiences I have had*	44.73	27.96	0.374	0.918
14. I feel in control of the things that happen in my life	47.83	24.06	0.606	0.915
15. I am productive in the things in life I engage in	60.33	26.00	0.618	0.914
16. I depend on others to maintain my own well-being*	45.95	27.81	0.407	0.917
17. I feel confident (...) in the things in life that interest me	53.44	25.56	0.712	0.913
18. I can have mood experiences and still get on with my life	61.75	22.73	0.507	0.916
19. I can see where (...) I have had have come from	64.97	22.49	0.452	0.916
20. I am able to decide (...) to maintain my well-being	68.59	21.85	0.483	0.916
21. I get little personal satisfaction (...) I am involved in*	51.33	26.62	0.542	0.915
22. I have the knowledge (...) for my mental health	74.64	20.21	0.532	0.916
23. I am unhappy with the person I have become*	57.91	29.68	0.600	0.914
24. I sometimes let my mood (...) important tasks to do*	36.56	23.33	0.354	0.918
25. The high standards I set (...) fluctuations in my mood	51.77	26.48	0.370	0.918
26. I play a central role in maintaining my own well being	77.66	19.40	0.480	0.916
27. I have the ability to achieve my goals in life	58.24	26.63	0.737	0.913
28. My ability to make (...) my friends and family	62.59	30.06	0.419	0.917
29. I find it hard to engage (...) that are valuable to me*	45.94	27.64	0.554	0.915
30. I can still be in recovery (...) mood episodes in the future	73.72	17.78	0.486	0.916
31. Understanding where (...) from help me manage them	78.47	16.83	0.405	0.917
32. I have little control over the (...) decisions in my life*	63.41	25.16	0.639	0.914
33. I am able to engage (...) that are valuable to wider society	55.72	27.07	0.540	0.915
34. The knowledge I have (...) me to look after myself	71.64	21.26	0.589	0.915
35. The activities I do make a difference to others	58.88	25.08	0.458	0.916
36. Being in recovery (...) well in every aspect of my life*	56.63	28.07	-0.047	0.923

M: mean; SD: standard deviation [M/SD are from a visual analogue scale (VAS) varying from 0: strongly disagree to 100: strongly agree]; α: Cronbach's alpha
*: reversed items

conducted to examine how much the BRQ added to the information provided by existing variables (satisfaction with life and positive affect) in assessing quality of life. In the first step, satisfaction with life and positive affect were entered as predictors. This model was significant, explaining 51% of the quality of life's variance ($F_{(2, 41)}$ = 23.09, $p < 0.001$). In a second step, recovery was also entered as a predictor and the F change was significant, attaining a model that

Table 3 – Pearson's correlations between variables (n = 60)

	1	2	3	4	5
1. Recovery (BRQ)	1	-	-	-	-
2. Depression (HADS-DEP)	-0.64**	1	-	-	-
3. Positive affect (PANAS-PA)	0.52**	-0.70**	1	-	-
4. Negative affect (PANAS-NA)	-0.55**	0.60**	-0.48**	1	-
5. Quality of life (Brief QoL-BD)	0.58**	-0.67**	0.57**	-0.54**	1

**: $p < 0.01$
HADS: Hospital Anxiety and Depression Scale; PANAS: Positive and Negative Affect Scale; Brief QoL-BD: Brief Quality of Life in Bipolar Disorder – short version; BRQ: Bipolar Recovery Questionnaire; DERS: Difficulties in Emotional Regulation Scale

explained 56% of quality of life ($F_{(3, 40)}$ = 19.02, $p < 0.001$). In this final model, positive affect did not have a significant predictive effect ($\beta = 0.17$, $p = 0.211$). In contrast, satisfaction with life ($\beta = 0.38$, $p = 0.010$) and recovery ($\beta = 0.34$, $p = 0.022$) impacted quality of life, suggesting the incremental value of the BRQ.

Association with sociodemographic variables and other clinical outcomes

The BRQ presented non-significant correlations with age ($r = -0.14$, $p = 0.201$), years of education ($r = 0.02$, $p = 0.887$) and age of onset ($r = -0.02$, $p = 0.845$). Moreover, no differences in the BRQ ($t_{(85)} = -1.724$, $p = 0.088$) were found between male ($M = 2266.38$, $SD = 435.83$) and female ($M = 2096.17$, $SD = 433.09$) participants and civil status ($F_{(84, 2)} = 2.302$, $p = 0.351$). Regarding the work situation, two groups were defined as working (employed) and not working (unemployed and on medical leave), and differences were not found ($t_{(68)} = 1.661$, $p = 0.101$). Participants with current psychological treatment ($M = 2068.25$, $SD = 409.10$) were found to have marginally lower non-significant BRQ scores ($t_{(75)} = 2.176$, $p = 0.053$) than participants with no current psychological treatment ($M = 2283.48$, $SD = 450.23$).

Furthermore, regarding clinical outcomes, the BRQ showed negative moderate correlations with depression ($r = -0.64$), and difficulties in regulating emotions ($r = -0.68$). All correlations were statistically significant ($p < 0.001$). The correlations between the BRQ and DERS subscales were all significant and negative, with r ranging between -0.33 and -0.63 ($p < 0.001$; Table 4).

Predictors of recovery in bipolar disorder

Multiple linear regression was performed to explore the predictors of the BRQ, including positive and negative affect, depressive symptoms and difficulties regulating emotions. A final model established that depressive symptoms ($\beta = -0.374$, $p = < 0.001$) and difficulties in regulating emotions ($\beta = -0.484$, $p = < 0.001$) were significant predictors of recovery, accounting for 54.7% of the BRQ's variance ($F_{(2, 44)} = 28.747$, $p = 0.003$).

DISCUSSION

Traditionally, treatment success assessment focuses primarily on symptom reduction and relapse prevention.[11] More recently, greater attention has been given to the recovery perspective regarding functionality, life satisfaction and quality regardless of the presence or absence of psychopathological symptoms.[8,38] The PT-PT adaptation and validation of the BRQ intended to fill an existing gap in the assessment of recovery in BD in Portugal. In the current study, the BRQ presented good psychometric properties, indicating excellent internal consistency and good test-retest reliability. These results concur with previous research on the original version of the BRQ, which also showed good internal consistency and reliability over time.[19] Some particularly low item-total correlations were found for items 12 and 36, which raises questions about their relevance for the overall measure of recovery. However, both items were kept due to their qualitative importance regarding recovery perception, covering beliefs about recovery [the final version of the questionnaire is available as an Appendix (Appendix 1:

Table 4 – Correlations between BRQ and DERS subscales (n = 64)

DERS subscales	BRQ
Non-acceptance of emotional responses	-0.57**
Difficulty engaging in goal-directed behaviour	-0.42**
Impulse control difficulties	-0.52**
Lack of emotional awareness	-0.33**
Limited access to emotion regulation strategies	-0.63**
Lack of emotional clarity	-0.53**

**: $p < 0.01$
BRQ: Bipolar Recovery Questionnaire; DERS: Difficulties in Emotion Regulation Scale

https://www.actamedicaportuguesa.com/revista/index.php/amp/article/view/20790/15391)]. Jones *et al*[19] meticulously improved the BRQ, refining it based on feedback from clinical staff, researchers, and service users. In the current investigation, the BRQ also received positive feedback regarding clarity and usability from both participants and clinicians.

The correlation results suggested that recovery was associated with fewer depressive symptoms and negative affect and increased positive affect and quality of life in the expected direction. These results support construct validity and concur with previous research that reported negative associations between recovery and psychopathological symptoms[39,40] and positive associations with quality of life.[3] The BRQ's correlations with positive affect and both quality and satisfaction with life are consistent with the conceptual vision of recovery as a process that promotes a rich and fulfilling life, even in the presence of symptoms.[8] These results are consistent with the importance of recovery in mental health care programs, as suggested by a recent systematic review.[41]

The incremental validity analysis showed that the BRQ significantly enhanced the hierarchical regression model's capacity to explain the quality-of-life variance, adding 5% explanatory power to the previous predictors (life satisfaction and positive affect). This result suggests that focusing on the individual perceptions of recovery and potentially fostering more adaptive ways to cope with the disorder significantly impacts the quality of life in BD. This further supports the idea that targeting symptom reduction is not enough to increase the quality of life of people with BD, as suggested by a systematic literature review,[42] and that strategies that might increase and facilitate their recovery are fundamental. Furthermore, studies found significant quality of life impairments even when the participants were clinically euthymic,[4] as well as difficulties in regulating and accessing emotion regulation strategies, suggesting their inclusion in adjunct psychological treatment.[43]

Considering the lack of sociodemographic information regarding people with BD in Portugal, this study additionally explored the association between sociodemographic factors and recovery to inform future research and clinical work. The results suggested no significant associations between age, years of education and recovery. However, previous studies found different results.[44,45] A possible explanation might be related to the differences in the sample characteristics and cultural differences, which might lead to distinct results. Future studies with a larger Portuguese population can help clarify if these differences prevail. Moreover, there were no significant differences between sex in recovery scores. While previous studies have suggested that BD presentation might differ between genders, mentioning men's

higher risk of a comorbid substance abuse disorder and women presenting higher rates of mania episode-related hospitalisations,[46] there is no indication that the patient's gender impacts overall recovery or treatment response.[47]

The recovery levels of people with and without current psychological treatment seemed similar, albeit with a propensity for individuals undergoing treatment to display slightly lower scores. This might reflect that people seeking psychological treatment are the ones facing greater challenges and obstacles in their journey towards recovery. In this study, we did not control for the modality, duration, and frequency of the psychological interventions, hindering further interpretation of this result. Therefore, future studies should collect information on the presence/absence of psychological interventions and carefully study or control their impact on the overall results.

Additionally, the current study explored the associations of psychopathological and clinical outcomes with recovery. This study also shed light on the impact of emotional regulation and affect-related constructs (i.e., dysregulation, positive and negative affect) in the recovery of people with BD, pointing to the importance of emotional regulation in people's perception and confidence in the recovery process (BRQ). The two subscales of the DERS that had the strongest associations with recovery were "limited access to emotional regulation strategies" and "non-acceptance of emotional responses", which is in line with previous studies that confirmed the association between emotion regulation and recovery.[39,48] These associations underline the importance of emotion regulation strategies and acceptance of emotions for recovery. These outcomes may inform potential targets for future clinical intervention studies that are aimed at increasing recovery, suggesting that interventions focusing on cultivating openness and acceptance of emotions and the ability to regulate them may be helpful in achieving it. These findings are in agreement with recent research about the potential benefits of mindfulness-based interventions for BD,[49,50] which can increase the acceptance of emotions and mood regulation, and preliminary results also point to emotion regulation improvements through dialectical behavior therapy for BD.[48,51]

Adding to the research on recovery predictors in BD, our multiple regression results suggest that depressive symptoms and difficulties in regulating emotions portray significant predictors of this construct, accounting for half of its variance. These results align with previous research, which demonstrated the negative impact of depressive symptoms on recovery and overall well-being in BD.[52] Similarly, the effect of difficulties in emotion regulation in BD has been extensively reported,[53-55] with fewer studies exploring the association with recovery.[39] A recent pilot study showed preliminary data on the impact of emotional regulation training

on improving recovery in people with BD, but more robust studies are necessary to draw generalizable conclusions.[48]

While our study contributes valuable insights into the assessment and validation of the BRQ for Portuguese, some limitations are worth mentioning. Firstly, it was not possible to perform a factorial analysis due to the small sample size, considering this is an extensive questionnaire (36 items). A clinical sample of people with BD is hard to collect, particularly in a small country like Portugal. Thus, even if we used a minimum standard for a confirmatory factor analysis of five people per questionnaire,[56] we would need a minimum sample of 180 patients. Secondly, the sample was small to explore differences between participants who responded online and in paper format. Additionally, two items within the BRQ exhibited notably low correlations with the overall score, casting doubt on their psychometric quality.

Future research with larger sample sizes should explore these findings and perform factorial analysis to confirm the one-factor structure, potentially leading to the refinement or elimination of items to enhance the scale's psychometric properties. Despite these considerations, this study stands as a crucial initial step towards psychometric support for the Portuguese version of the BRQ and was able to surpass the original study's sample size. Without a Portuguese version of the scale, the concept of recovery in BD would continue to be unexplored in Portugal.

Another limitation of the current study relies on the exclusive use of self-reported questionnaires to measure recovery, which might lead to response bias due to comprehensibility limitations or social desirability. Future studies should include multiple informants and have, for example, clinician-rated recovery measures.

CONCLUSION

In conclusion, this study represents a valuable contribution to the psychometric properties of the BRQ for BD in different samples and countries, making it available in Portuguese, a language that, as far as we know, has no available measures to assess recovery in BD. Furthermore, it contributes to the recovery field, providing new insights into the construct predictors and associated sociodemographic and clinical outcomes. Future studies should aim to assess recovery perceptions within BD and actively address recovery as a desirable and attainable therapeutic goal in clinical studies.

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AUTHOR CONTRIBUTIONS

JA: Study design, data collection and analysis, writing and critical review of the manuscript.

DC, RG: Data analysis, writing and critical review of the manuscript.

MJM: Writing and critical review of the manuscript.

AM, PC: Critical review of the manuscript.

All authors approved the final version to be published.

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in 2013.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

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