

## Research Article

# Quality of Life in Bipolar Disorder: Portuguese validation of the Brief QoL.BD questionnaire

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## Abstract

The Brief Quality of Life in Bipolar Disorder (Brief QoL.BD) questionnaire is a short version of the first disorder-specific scale developed for Bipolar Disorder (BD), the QoL.BD, designed for use in research settings. This questionnaire has been considered a useful measure to assess psychological interventions' improvements. This study aimed to validate and assess the psychometric properties of the Brief QoL.BD.

**Method:** The Brief QoL.BD questionnaire was translated to Portuguese according to international guidelines, and participants with BD, psychiatrists and psychologists were consulted regarding its intelligibility. It was then administered to 110 people with BD ( $M = 43.81 \pm 11.72$ , 66.4% ♀; 33.6% ♂), in addition to other self-report questionnaires, to assess satisfaction with life, anxiety, depression, external shame and positive and negative affect.

**Results:** The Brief QoL.BD revealed good internal consistency ( $\alpha = .84$ ). Positive correlations with satisfaction with life and positive affect supported the scale's convergent validity. Significant negative correlations supported the divergent validity with negative affect, depression, anxiety and external shame. Confirmatory factor analysis validated the original one-factor structure showing a good fit.

**Conclusion:** The Portuguese translation of Brief QoL.BD questionnaire (European) proved to be a valid, and reliable quality of life measure to be used with people with bipolar disorder. BD type II displayed significantly lower levels of QoL than type I. Brief QoL.BD is short and easy to apply, being recommended for research purposes, specifically tracking psychological intervention's impact.

**Keywords:** QoL.BD; Confirmatory Factor Analysis; Psychometric Study; Bipolar Disorder; Quality of Life

## Introduction

Quality of life (QoL) is a difficult concept to define, incorporating different views according to the field of expertise in which it is used. A recent systematic review on quality of life concluded that this construct's methodological and conceptual clarity in health and medicine had highlighted the need for appropriate validated measures [1]. Service Policies in Mental Health are undergoing profound changes, from an emphasis on reducing symptoms and clinical indexes to an approach that looks beyond the classical indicators to a focus on recovery, well-being and quality of life [1,2].

People with Bipolar Disorder (BD) often experience a severe impact of this condition on their global functioning and specifically in the ability to complete education, access financial independence or have healthy relationships [3]. They also present lower QoL when compared to the general population and other mental health problems, and even though QoL in BD patients can be satisfactory between episodes [4,5], it is still reported as impaired in remitted euthymic patients and during euthymic periods [6-8].

As QoL is a highly subjective concept, assessing it accurately and reliably can be challenging [9], especially in BD. In addition, this disorder is associated with a lack of insight concomitant with high mood and manic states, and thus the validity of self-reported measures has been frequently questioned [10,11]. There have been, however, consistent reports that QoL measures in BD can be reliable, showing consistent scores during mania, depression and remission phases, with overall QoL rates similar to euthymic patients and healthy controls [6]. Also, even though mania and hypomania symptomatology have a less negative impact on perceived QoL when compared to depressive symptoms, this impact is still higher when compared to the general population [12].

Given the importance of this construct, QoL is frequently used as an outcome treatment goal in psychological intervention, namely in people with BD [13,14]. QoL has been shown to be a mediator between treatment adherence and therapeutic alliance [15] and effectiveness of treatment interventions [16] in people with BD. It has been increasingly included in clinical trials and observational studies [17] and specifically in scientific BD literature [18].

The Quality of Life in Bipolar Disorder (QoL.BD) is the first and only (as far as we know) disorder-specific instrument to assess QoL in BD [19]. It has rapidly become an internationally spread and well-known tool [20], which proved to be feasible, reliable and valid, with excellent internal reliability and psychometric properties, being sensitive to clinical changes in BD [19]. Its development was initiated in 2004 by the Collaborative Research Team to study psychosocial issues in BD [19] composed of 56 items and 12 main factors: physical, sleep, cognition, mood, leisure, social, finances, household, spirituality, self-esteem, identity, independence, plus two optional ones, work and education [19]. Each item is rated on a 5-point Likert-type scale (1 = strongly disagree; 5 = strongly agree), with higher scores indicating a better perceived quality of life. A 10-year review of the QoL.BD worldwide revealed that it was adapted into 14 languages, and there is now a vast body of evidence regarding its relationship with various psychological and clinical variables [21].

The Brief QoL.BD is a reliable short version that includes the 12 main domains of the original scale, each one reduced to one item (rated on the same 5-point Likert scale), minus the work and education domains, based on high loadings on the exploratory factor analysis [19]. This version also showed moderate-to-large correlations with each of the subscales of the original version and convergent validity with quality of life, subjective well-being and satisfaction with life [19].

Currently, as far as we know, there is no specific measure to assess QoL in BD for the Portuguese population. Thus, we aimed to translate and validate the Brief QoL.BD questionnaire to this population (PT-EU) and to explore the association between QoL and other related variables (e.g., anxiety, depression, negative and positive affect, and external shame). Additionally, we aimed to analyse the differences between BD type I and II in the variables in study.

## Methods

### Procedures

This study is part of a broader project, which 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 organisations concerned. Par-

ticipants gave written informed consent and data confidentiality, and anonymity was assured, as well as clear instructions about General Data Protection Regulation (GDPR).

A sociodemographic questionnaire and a battery of self-report questionnaires was presented to participants either online (using LimeSurvey platform) or in paper format (ratio 70:30). Recruitment occurred between December 2019 and January 2021. In addition, participants had to have already a well-established diagnosis by a psychiatrist or, in turn, be assessed with a clinical interview by the responsible researcher with a semi-structure interview to confirm the diagnosis and have no other identified comorbidities (73 patients were assessed with the Clinical Interview for Bipolar Disorder).

### Translation of the Brief QoL.BD

Permission to translate and validate the Brief QoL.BD from English to European Portuguese was requested from the scale's original authors [19] and obtained via e-mail and was sent to be added to the CREST. BD research team website ([www.crestbd.ca](http://www.crestbd.ca)). The translation was conducted independently by two native Portuguese clinical psychologists and one psychiatrist, proficient in English, resulting in three translations. A consensus version was achieved by the research team. Later, it was back-translated by a different member of the research team (a psychiatrist), and this was compared to the original version. Slight changes were undertaken. Finally, the last version was shown to psychiatrists (n=5) and psychologists (n=3) experienced in dealing with people with BD and also to patients with this disorder who provided feedback about clarity. The questionnaire was described as clear and easy to understand.

### Statistical analysis

Statistical analyses were done using the SPSS software version 22 (Statistical Package for the Social Sciences: IBM Corp.). To evaluate reliability and construct validity, missing data were handled using mean-score imputation (missings < 1%).

For each Brief QoL.BD domain, Cronbach's alpha coefficients were calculated as the measure of internal reliability with a minimal reference value of 0.70 [22]. The construct validity was evaluated via Pearson's correlations, and different sample sizes were used as we tried to maximise data collected even though some participants did not fill the entire battery of tests. Differences in the clinical sample were tested using independent samples t-test for continuous variables and chi-square for categorical variables.

Confirmatory Factorial Analysis (CFA) was performed using AMOS 24.0 software (Analysis of Moment Structures). To assess overall model fit, several goodness of fit measures and recommended cut-points were used [23,24]. Modification indices were applied to improve the model (i.e., error correlation). Normality, homogeneity and independence of the residue were validated through Skewness and Kurtosis values ( $|Sk| < 3$  e  $|Ku| < 10$ , Kline, 2005), analysis of the normal probability graphic and Durbin-Watson statistic, respectively. Multicollinearity between variables was verified ( $VIF < 5$ ). Outliers were found through the analysis of results graphs (box diagrams) and kept to ensure ecological validity.

### Measures

Participants were assessed by a clinical semi-structured diagnostic interview and answered a battery of self-report questionnaires, with additional questions to describe sociodemographic

variables.

The Clinical Interview for Bipolar Disorders [25] was administered to assess the diagnosis of BD and Related Disorders in adults based on the DSM-5 criteria.

### Self-report questionnaires

The Satisfaction With Life Scale - SWLS [26,27] measures subjective well-being through five items, measured on a 7-point Likert-type scale. The original scale showed an  $\alpha = .87$  and the Portuguese version an  $\alpha = .89$ . In this study, the SWLS had good reliability ( $\alpha = .89$ ,  $n = 41$ ).

The Positive and Negative Affect Scale - PANAS [28] is a self-report questionnaire divided into two subscales: PANAS-PA and PANAS-NA (positive and negative affect, respectively). The reliability of the Portuguese version ( $\alpha_{PA} = .86$  and  $\alpha_{NA} = .89$ ) was identical to the original version ( $\alpha_{PA} = .88$  and  $\alpha_{NA} = .87$ ). In the current study, the PANAS showed an acceptable to excellent reliability ( $\alpha_{PA} = .91$  and  $\alpha_{NA} = .74$ ).

The Hospital Anxiety and Depression Scale - HADS [29,30], 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  $\alpha_A = .76$  and  $\alpha_D = .80$ . HADS achieved a good reliability in this study ( $\alpha_A = .85$  and  $\alpha_D = .85$ ).

The Other As Shamer Scale 2 - OAS2 – Short version of the OAS [31,32], is an abbreviated version of the OAS and measures external shame. OAS2 internal consistency in the original study was  $\alpha = .82$  and  $.94$  in the current study.

### Participants

Participants were 110 Portuguese adults with a mean age of 43.81 ( $\pm 11.723$ ), of which 66.4% were female ( $\phi = 33.6\%$ ), diagnosed with BD of any type (I, II, non-specified) and a mean age of onset of 23.93 ( $\pm 9.954$ ;  $n = 95$ ). Participants lived mainly in urban areas (70%) and 30% in rural areas and reported a mean of 14.36 years of schooling ( $\pm 3.987$ ). Most participants were single (35.2%), 29.7% married, 19.7% divorced, 6.6% with a civil union, 1.1% widowed, and 7.7% did not fill in that information. Further descriptive statistics of clinical and sociodemographic features can be found in **Table 1**.

**Table 1:** Descriptive and clinical characteristics of the sample.

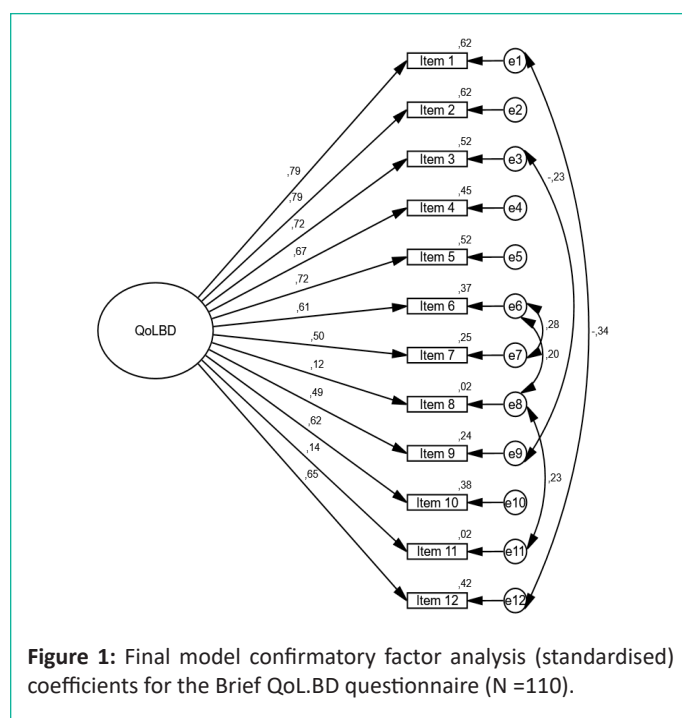
	(N = 110)	
	n	%
Diagnosis		
Bipolar I Disorder	52	47.3%
Bipolar II Disorder	20	18.2%
Other Specified Bipolar and Related Disorder	1	0.9%
Diagnosed with Bipolar Disorder [1]	37	33.6%
	n	%
Working Situation		
Student	10	9.1
Employed	48	43.6
On Sick Leave	13	11.8
Retired – Chronic illness - BD	11	10
Unemployed	19	17.3
Other	3	2.72
Missing	6	5.45

[1] These participants only filled out self-report questionnaires and had a diagnosis of Bipolar Disorder made by their responsible psychiatrist and were medicated accordingly – types were not specified.

## Results

### Construct Validity: Confirmatory Factor Analysis of the Brief QoL.BD

A CFA was performed to investigate construct validity and confirm the underlying factorial structure of the Brief QoL.BD. Previous studies demonstrated a single-factor solution [19]; thus, we tested the same structure. Modification indices generated by AMOS were applied by correlating the errors that showed high associations (**Figure 1**), which are known to be correlated, hence having theoretical support. After correlation errors, the model fit showed a good adjustment ( $\chi^2/df = 1.194$ ; CFI = .98; TLI = .97; RMSEA = .04). The factor loadings were all above  $|0.4|$  except for item 8 ("Had enough money for extras") and 11 ("Travelled around freely [e.g., driving, using public transport]"), both below  $|.15|$  (**cf. Figure 1**). Although loading values were unacceptable for both items, we decided to keep them since each one represents a category of quality of life of the 12 that constitute the original scale (namely measuring finances and independence, respectively). The total mean score of the Brief QoL.BD was 37.95 (SD  $\pm 8.43$ ).



**Figure 1:** Final model confirmatory factor analysis (standardised) coefficients for the Brief QoL.BD questionnaire (N = 110).

### Reliability

The Brief QoL.BD (12 items) showed very good reliability with a Cronbach Alpha of .84, which would remain unchanged by removing any item. Item-total correlations were adequate, ranging from .29 (item 11) to .75 (items 1 and 5).

### Convergent and Divergent Validity

Both convergent and divergent validity were tested (**cf. Table 3**). Convergent validity was assessed through the correlations of Brief QoL.BD with SWLS and PANAS-PA, which were positive, significant, and moderate ( $r = .45$ ,  $p < .01$  and  $r = .52$ ,  $p < .01$ , respectively). Negative significant moderate correlations supported divergent validity with negative affect ( $r = -.53$ ,  $p < .001$ ), depression ( $r = -.65$ ,  $p < .001$ ), anxiety ( $r = -.60$ ,  $p < .001$ ), and external shame ( $r = -.45$ ,  $p < .001$ ).

**Table 2:** Study of item properties and internal consistency (N = 110).

Brief QoL.BD questionnaire ( $\alpha = .84$ )	M	SD	r	$\alpha$
1. Felt physically well (Physical)	3.33	1.17	.75	.73
2. Awoken feeling refreshed (Sleep)	3.01	1.07	.74	.73
3. Enjoyed things as much as I usually do (Mood)	3.26	1.11	.73	.73
4. Had good concentration (Cognition)	3.08	1.08	.69	.73
5. Been interested in my leisure activities (Leisure)	3.36	1.15	.75	.73
6. Been interested in my social relationship (Social)	3.07	1.17	.70	.73
7. Practised my spirituality as I wished (Spirituality)	3.02	1.21	.59	.73
8. Had enough money for extras (Finances)	2.82	1.2	.31	.75
9. Kept my home tidy (Household)	3.25	1.12	.53	.74
10. Felt accepted by others (Self-esteem)	3.42	1.12	.66	.73
11. Travelled around freely (e.g., driving, using public transport) (Independence)	2.91	1.36	.29	.75
12. Had a clear idea of what I want and don't want (Identity)	3.42	1.10	.65	.73

Note. Items and factors are arranged according to the original factor structure. Brief QoL.BD = Brief Quality of Life in Bipolar Disorder; M=Mean; SD=Standard Deviation; r - Factor Loadings;  $\alpha$ = Cronbach's alpha if item deleted.

**Table 3:** Correlations between the Brief QoL.BD questionnaire and HADS-ANX, HADS-DEP, OAS2, SWLS, PANAS-PA, PANAS-NA.

	Anxiety (HADS ANX)	Depression (HADS DEP)	Shame (OAS2)	Satisfaction with life (SWLS)	Positive affect (PANAS PA)	Negative affect (PANAS NA)
Brief QoL.BD	-.604**	-.653**	-.452**	.453**	.523**	-.529**
N	95	95	79	41	94	94

Note. QoL.BD = Quality of Life in Bipolar Disorder Scale; HADS-ANX = Hospital Anxiety and Depression Scale – Anxiety subscale; HADS-DEP = Hospital Anxiety and Depression Scale – Depression subscale; OAS2 = Other as Shamer Scale 2; SWLS = Satisfaction With Life Scale; PANAS-PA = Positive Affect subscale of the Positive and Negative Affect Scale; PANAS-NA = Negative Affect subscale of the Positive and Negative Affect Scale.

\*\* p ≤ .01; \* p ≤ .05.

**Table 4:** Differences between bipolar disorder type I (n=52) and II (n=20). Means (M), Standard Deviations (SD), and independent samples t-test.

	Bipolar I		Bipolar II		t	p
	(n = 52)		(n = 20)			
	M	SD	M	SD		
Age	42.92	11.77	48.30	10.13	-1.8	.076
Years of sch.	13.92	4.13	14.83	4.296	-.822	.414
Brief QoL.BD	40.23	7.88	34.1	8.98	2.844	.006**
	(n = 24)		(n = 8)			
	M	SD	M	SD	t	p
SWLS	18.42	7.95	19.13	6.38	-.228	.821
	(n = 48)		(n = 14)			
	M	SD	M	SD	t	p
HADS-ANX	7.29	3.95	9.79	4.63	-1.999	.050*
HADS-DEP	6.1	4.58	9.79	5.07	-2.583	.012*
	(n = 48)		(n = 14)			
	M	SD	M	SD	t	p
PANAS-PA	24.02	8.27	19.64	8.26	1.744	.086
PANAS-NA	19.56	10.18	23.57	10.54	-1.287	.203
	(n = 44)		(n = 9)			
	M	SD	M	SD	t	p
OAS2	9.32	7.56	14.22	7.76	-1.766	.083

Note. Years of sch. = years of schooling successfully completed; QoL.BD = Quality of Life in Bipolar Disorder brief questionnaire; SWLS = Satisfaction With Life Scale; HADS-ANX = Hospital Anxiety and Depression Scale – Anxiety subscale; HADS-DEP = Hospital Anxiety and Depression Scale – Depression subscale; PANAS-PA = Positive Affect subscale of the Positive and Negative Affect Scale; PANAS-NA = Negative Affect subscale of the Positive and Negative Affect Scale.; OAS2 = Other as Shamer Scale 2.

\*\* p ≤ .01; \* p ≤ .05.



## Differences between people with BD type I and II

When compared, the two BD types have no statistically significant differences in age, gender or years of schooling. Statistically significant differences were found in QoL.BD, showing that BD type I scored higher than BD II and that anxiety and depression were significantly lower in BD I (cf. Table 4). In order to better understand the impact of anxiety and depression on quality of life in both BD types, simple linear regressions were performed, showing that depression alone explained 28.9 % of the Brief QoL.BD in participants with BD I ( $R^2 = .289$ ;  $F_{(1,46)} = 18.696$ ,  $p < .001$ ), and 45.5% in BD II ( $R^2 = .455$ ;  $F_{(1,12)} = 10.017$ ,  $p = .008$ ). Also, anxiety alone explained 31.2 % of the Brief QoL.BD in participants with bipolar type I disorders ( $R^2 = .312$ ;  $F_{(1,46)} = 20.814$ ,  $p < .001$ ), and 34.6% in participants with bipolar type II ( $R^2 = .346$ ;  $F_{(1,12)} = 6.341$ ,  $p = .027$ ).

## Discussion

Given the increasing attention towards QoL, as an important outcome measure in BD [17,9,13,14] several studies discuss the importance of having disorder-specific instruments to measure it in this population [33,34,9,19,18,35]. The Brief QoL.BD was developed based on those principles and assesses changes in QoL in the different phases of BD, and as far as we know, no equivalent measure is available in Portugal. Our study aimed to adapt and assess the validity and reliability of the Portuguese Brief QoL.BD, which demonstrated satisfactory and adequate psychometric properties. Akin to the original Brief QoL.BD [19], our version corroborated a one-factor solution and a good fit, through confirmatory factor analysis. Even though two items (8. "Had enough money for extras" and 11. "Travelled around freely [e.g., driving, using public transport]") showed unacceptable factor loadings, they were kept since each one represents a domain of the 12 QoL dimensions that constitute the original scale (Finances and Independence, respectively), which were considered important to maintain a comprehensive understanding of QoL.

The assessment of the internal consistency revealed good reliability. Positive significant correlations between quality of life and both satisfaction with life [19] and positive affect [19] assured convergent validity, and negative significant moderate correlations with negative affect [19], depression [36-39], anxiety [41] supported divergent validity.

Additionally, our study meant to address the associations between QoL and other variables under study and to describe the differences between BD type I and II. Participants with type II BD showed significantly lower QoL when compared to individuals with type I BD and significantly higher anxiety and depression in line with what was described by Maina and collaborators (2007). This result is also consistent with the findings that type II BD is harder to stabilise [42], making it more difficult to function and possibly contributing to a lower quality of life perception [43].

Compared with the general population, BD Portuguese patients have demonstrated significantly lower scores in the physical, psychological, and social domains. More surprisingly, Brisos et al [44] also demonstrated that QoL in these patients was similar to or worse than that of patients with schizophrenia, in contrast with what would be expected, and according to the authors, it was not only due to a preponderance of mood symptoms in the BD group, since the depressive symptom scores in both patient groups were very similar. Even though QoL in BD

patients is significantly higher between episodes [4,5] it is still impaired in remitted euthymic patients [6,9,7]. Research thus far mentions lower levels of education [45,33,34,46] and a lack of good social support [45,33,34,46]; however, further research might help understand what else makes QoL in BD so deteriorated and using specific instruments such as Brief QoL.BD will undoubtedly contribute to it.

As mentioned by Michalak and collaborators [9], using non-specific instruments to measure QoL in BD may miss important characteristics of these patients and unique aspects of their routine, independence, spirituality, stigma [3], and sense of self or identity [47,48]. In fact, diagnostic-specific tailored instruments can help determine patients' preferences (regarding values and priorities), allow more accurate comparisons between conditions and detect subtle variations in response to treatment [9]. Thus, we hope that our study will contribute to achieve both the understanding of QoL determinants and outcomes optimisation strategies [33].

## Limitations, Clinical Implications and Future Studies

The present findings should be considered in light of some limitations. Namely, some sample size limitations in some variables (due to completion inconsistencies of some participants). Additionally, for the clinical sample, the phases of BD were not discriminated - whether patients were assessed during or between episodes - or the type of episode they were in or out at the time of the assessment. Thus, self-report bias must be considered since the diverse symptoms present in this disorder might have different consequences for the patient's QoL. Therefore, future research is needed to understand how the scale behaves across different phases of BD.

Another limitation to be acknowledged is that the effect of some psychiatric comorbidities was not controlled regarding the patients who were not assessed by the research team, which could have an impact on quality of life. Regarding the psychometric study of the scale, future research is needed to analyse the test-retest reliability of the Portuguese version of the Brief QoL.BD.

## Conclusion

The Portuguese version of the Brief QoL.BD proved to be a reliable and valid questionnaire to use in people with BD and it is recommended for assessing quality of life, both in clinical and research settings. Additionally, this is a brief version of a disorder-specific instrument which requires a short time to respond and has been described as sensitive to change in psychological interventions.

Finally, this study reveals the differences in QoL within BD types, with type II showing significantly worse QoL, and higher depression and anxiety symptoms compared to type I, which may be used for future reference in upcoming studies.

*The questionnaire can be downloaded here: <https://www.crestbd.ca/research/research-areas/quality-of-life/>*

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