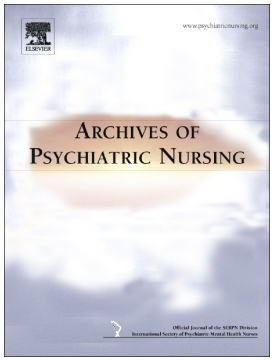

The Resilience Questionnaire for Bipolar Disorder: Development and validation

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The Resilience Questionnaire for Bipolar Disorder: Development and Validation

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The Resilience Questionnaire for Bipolar Disorder: Development and Validation.

Abstract

The goal of this research project was to develop a new questionnaire to assess resilience in Bipolar Disorder (BD), the Resilience Questionnaire for Bipolar Disorder (RBD). To examine its psychometric properties, a sample of 125 patients diagnosed with BD and a comparison sample of 107 people completed the new RBD and established measures of generic resilience and health-related outcomes. Exploratory factor analysis for the RBD yielded a 23-item 5-factor solution, and confirmatory factor analysis indicated adequate fit indices. Internal consistency, stability, concurrent validation and known-groups' validity were also supported. The RBD obtained higher responsiveness (6-month follow-up) than the generic resilience scale (BD sample). The RBD is a robust measure to monitor resilience in BD.

Keywords: resilience, bipolar disorder, questionnaire development, psychometrics, reliability

The Resilience Questionnaire for Bipolar Disorder: Development and Validation.

Bipolar Disorder (BD) is characterized by recurrent and cyclical periods of extreme moods, including depression and mania (American Psychiatric Association [APA], 2000), affecting up to 2.4% of the worldwide population (Merikangas et al., 2011). A serious public health problem, it accounts for 2.5% of total global Years Living with Disability and is the sixth leading cause of disability (Woods, 2000). Consistent with these reports, BD has a strong impact on patients' family, work, social functioning, and quality of life (Hirschfeld, Lewis, & Vornik, 2003), even during euthymia (Michalak, Yatham, & Lam, 2005).

The construct of resilience has received increasing attention over the last decades. Resilience is "a dynamic process in which psychological, social, environmental, and biological factors interact to enable an individual at any stage of life to develop, maintain or regain their mental health, despite exposure to adversity" (p.10, Wathen et al. (2012). Thus resilience applies beyond resistance to the development of illness to include the ways in which the individual responds once illness has developed. Resilience relates to salutogenic and positive psychology approaches, as it contributes to promoting and maintaining mental health and quality of life (Grotberg, 2003).

Evidence supports the importance of resilience in overcoming the challenges associated with mental health issues, such as depression (Dowrick, Kokanovic, Hegarty, Griffiths, & Gunn, 2008), schizophrenia (Torgalsbøen, 2012), and other mental disorders (Edward, Welch, & Chater, 2009). For instance, Torgalsbøen (2012), in a 15-year follow-up study, found a robust relationship between resilience,—measured with the Connor Davidson Resilience Scale ([CD-RISC] Connor & Davidson, 2003)—well-being, and psychosocial functioning in schizophrenia. Few studies have explicitly explored resilience in patients with BD. For example, Edward et al. (2009) found

resilient qualities in a sample of eight participants with various mental disorders, including BD, in remission. Choi et al. (2015) have recently studied resilience—also using the CD-RISC resilience questionnaire—in 62 euthymic outpatients with BD, and concluded that, given the inverse relationship between resilience and impulsivity, enhancing resilience may significantly contribute toward patient treatment by reducing impulsivity (a known risk factor for worse clinical outcomes in BD, (Jimenez et al., 2012).

Several scales to measure resilience have been developed. A recent systematic review of the psychometric properties of resilience measures concluded that no measure was satisfactory in psychometric terms, and most measures—such as the CD-RISC—were questionable on theoretical grounds; for example, the literature review on which the CD-RISC was based is limited and furthermore, resilience was defined as a personal quality reflecting the ability to cope with stress (Windle, Bennett, & Noyes, 2011) whereas established definition highlights that resilience is a dynamic process encompassing multidimensional factors (e.g. psychological, environmental and biological factors) that includes other attributes (e.g., self-esteem, self-efficacy, competence, hope, self-determination, and pro-social attitude) apart from coping (Windle, 2011). In addition, resilience and coping are conceptually distinct constructs, "resilience influences how an event is appraised, whereas coping refers to the strategies employed following the appraisal of a stressful encounter" (Fletcher & Sarkar, 2013 p. 16), and not all outcomes of coping are mirrored in resilience (Glennie, 2010). Another limitation of theoretically adequate resilience measures (i.e. questionnaires that for their development were based in a sound revision of the literature on resilience, and therefore covered appropriately the theoretical understanding of resilience)—such as the Resilience Scale for Adults ([RSA] Friborg, Hjemdal, Rosenvinge, & Martinussen,

2003)—is that, in fact, they were developed focusing on protective factors against psychopathology (Windle et al., 2011), therefore excluding the assessment of resilience in people with an ongoing psychological disorder.

Therefore, instead of exploring resilience in people with a mental illness, most research has studied recovery (Drake & Whitley, 2014), resulting in a knowledge gap in regards to the experience of resilience in people with a mental disorder. The limited amount of quantitative research in this area such as the Choi et al. (2015) and Torgalsbøen (2012) studies above is that they measured resilience using existing questionnaires developed for individuals without mental disorders. Few studies have qualitatively explored resilience in mental disorders (Edward et al., 2009). Previous qualitative research (Echezarraga et al., 2014) described a variety of resilience factors experienced by recovered BD patients. These factors were not covered in the existing measures of resilience, indicating the need for developing a questionnaire of resilience specific to BD that covers them. In addition, past research has pointed out the need for resilience measures intended for people diagnosed with a mental disorder, and the need for developing disease-specific scales that target psychological variables, as it is resilience (Michalak & Murray, 2010; Ungar, 2008).

The development of a resilience measure specific for BD patients would improve the monitoring of patient responses and evolution better than using existing generic measures of resilience. Unspecific measures of resilience may not be able to capture specific changes in resilience, given the unique fluctuating course of the disorder, since they do not contain the specific items that are considered relevant by BD patients when conceptualizing resilience. Thus, this paper reports the development and psychometric validation of a new measure, the Resilience Questionnaire for Bipolar Disorder (RBD). The development of this new measure was based on resilience

experiences reported by both people living with BD and experienced clinicians during qualitative interviews (Echezarraga et al., 2015; Echezarraga et al., 2014).

The objectives of this study are to (1) develop an instrument to measure resilience in BD, (2) explore its construct validity, (3) analyze its reliability, (4) explore its concurrent validity with measures of mental health, hypothesizing positive associations with quality of life and personal experience of recovery, and negative associations with bipolar symptomatology, (5) explore its known-groups validation, and (6) determine its responsiveness at follow-up.

Methods

Participants and Procedure

The study was approved by the Basque Country Mental Health Ethical Committee. It also satisfied ethical requirements of informed consent, voluntary participation, and confidentiality.

Inclusion criteria for the clinical BD patient sample of this study were: (1) a confirmed diagnosis of BD according to Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (APA, 2000) criteria; (2) age 18–65 years; (3) sufficient fluency in Spanish for completing the battery of tests; (4) no clinically serious multi-organic disorder, acute psychosis, or cerebral organic deterioration that would prevent the participant from completing the questionnaires; (5) informed consent for voluntary participation after being personally informed by his/her therapist.

The patient sample (N = 125, 62.10% female, mean age = 46.13 years old, SD = 10.89) was recruited from nine public mental health services distributed across the three regions of the Basque Country (Spain) and through non-governmental BD associations of several regions in Spain (i.e.,, the associations of BD “El Ascensor” from Murcia, “Esperanza Bipolar” from Vizcaya, “Bipolares Andalucía Oriental” from Andalucía).

The therapists or coordinators of the associations of people with BD invited the patients to participate in the study, based on inclusion criteria. Patients coming from non-governmental associations participated in the study through a web based portal. Participants recruited from the public mental health services completed the questionnaire either by the web based portal, by telephone (a psychologist called the participant, read the questions and took note of responses), by paper at their homes, or in the company of a psychologist if required.

Participating patients received detailed information about the purpose of the study, signed the informed consent and were free to leave the study at any time.

A control group sample (N = 107, 77.60% female, mean age = 35.42, SD = 10.61) was recruited from the general population. Inclusion criteria were identical to those for the BD sample, except that diagnosis of BD as exclusion criterion (screening negatively for bipolar pathology when they were asked about being diagnosed of any mental illness including BD). Participants in the control group sample were younger than BD patients ($t(232) = -7.56$, $p = <.05$) and that the proportion of women was also higher in the control group than in the patient sample (X^2 (1, N = 231) = 6.46, < .05). The control sample recruitment process was online, displaying the survey's URL link in different TV panels at the University of Deusto, as well as by sending emails to colleagues and posting information in public websites and social media, like Facebook. They also completed the battery of test only via online.

The website hosting the battery of tests included information about the research's purpose and characteristics, the study's voluntary nature, inclusion criteria for participation, and stating the freedom to withdraw from the study at any time. Participants agreed to participate by simply checking a box, a prerequisite for access to the battery of tests. To facilitate a 6-month follow-up assessment (T2), all participants

provided a contact address. This was saved in an independent database which only the main researcher could access using an encrypted access code. The participants' identity was safeguarded by an alphanumerical identification code. Four modes for completing the questionnaire at baseline (T1) and follow-up (T2) were offered, depending on participant preferences: via telephone interview with a clinical psychologist paper and pencil in their mental health center (a clinical psychologist interviewed participant, or the battery was self-completed with the personal help of a clinical psychologist if required) in their home (self-completed, returning the questionnaires by post using pre-stamped envelopes provided), or online (self-completed). Two reminders were sent at 1-month intervals to the participants who failed to complete the survey at both T1 and T2.

Sixty three (50.40%) BD participants and 54 (50.47%) controls completed T2 assessment. with an inter-measurement time lapse of between least six months to one year (window time: 6 months) due to sending reminders. Table 1 shows sociodemographic and clinical characteristics of the BD patients at T1 and T2.

Table 1

Sociodemographic and Clinical Data of the BD Sample

	T1		T2	
Variables	*n*	%	*n*	%
Sex (Female)	77	62.10	36	58.10
Age (Mean, *SD*)	46.13	10.89	45.13	11.06
Marital status				
Single	38	30.60	18	29.00
Stable partner	17	13.70	8	12.90
Civil union/Married	42	33.90	23	37.10
Separated/Divorced/Widowed	27	21.70	13	20.90
Educational level				
No studies	1	.80	0	0
Primary education	10	8.40	5	8.10
Secondary education/High school	17	14.30	9	14.50
Professional training	35	29.40	18	29.00
University education	45	37.80	23	37.10
Postgraduate studies	11	9.20	7	11.30
Employment status				
Unemployed	69	58.00	24	38.80
Employed	50	42.00	38	61.20
BD onset age (Mean, *SD*)	29.46	10.79	na	na
Number of hospitalizations due to bipolar episodes				
0	23	19.00	11	17.70
1-3	62	51.30	36	58.10
4-6	16	13.20	7	11.30
7-9	10	8.30	7	11.20
≥10	10	8.20	1	1.60
≥ 4 bipolar episodes in the last year	15	12.30	9	14.5
Time (in months) passed since the last bipolar episode (Mean, *SD*)	44.13	63.89	34.31	36.96
Medication prescribed for BD				
Antidepressants with/without mood stabilizers or antipsychotics	32	27.10	22	35.50
Mood stabilizers with/without antipsychotics	84	71.20	46	74.20
Antipsychotics	54	45.80	26	41.90
Anticonvulsants	19	16.10	10	16.10
Other medication for BD	28	23.70	16	25.80
No medication for BD	3	2.50	1	1.60
Has received any psychotherapy for BD	78	63.90	36	58.10

Note. $N_{T1} = 125$, $N_{T2} = 63$. The number of responses to the RBD (N = 113) does not match the number of participants (n =125) because some individuals did not respond to all questionnaires. na = not asked.

RBD Questionnaire Development (Version 1)

RBD Questionnaire development took place in three phases. The first stage of development for the RBD questionnaire involved a series of qualitative interviews and focus groups with patients with BD and experienced clinicians. Thus, semi-structured in-depth interviews were carried out, asking participants about the resilience process in BD: (1) nine patients recovered from BD participated in individual interviews, (2) another six patients recovered from BD participated in a focus group, and (3) six clinical experts who had witnessed the resilience process in their patients with BD took part in two different focus groups (n = 4 and n = 2). A qualitative analysis as per the grounded theory (Corbin & Strauss, 2015) was used with all interview-transcribed content. The phase is reported in detail elsewhere (Echezarraga et al., 2014). The key resilience themes in BD identified were: antecedent conditions, turning point, self-awareness and redefinition, reconsideration of the direction of their life, self-management of BD, lifestyle balance, positive personality qualities and interpersonal support.

Second, an extensive literature review was carried out for the present study (Echezarraga et al., 2014) in order to examine articles and questionnaires assessing resilience [see for example the studies by Ahern, Kiehl, Lou Sole, & Byers (2006) and Windle et al. (2011) in which they provide an extensive review of resilience tools]. Next, the main factors of the already developed questionnaires were listed and compared with the themes identified in the previous qualitative study. It was concluded that there were resilience specific topics in BD not covered in existing resilience tools for adults.

Third, based on the information from phases one and two, a 41-item Spanish language version of the RBD was generated to measure resilience in patients with BD, creating between three and five items for each main resilience theme emerged from the qualitative study. To test content validity of the RBD, cognitive interviews were carried out with five mental health experts experienced in research and with four BD patients. Based on their feedback, the research team reworded some items and added two additional items to assess retrospective (finally 41 items were developed for the draft version of the RBD) and current levels of resilience prior to the quantitative phase reported here.

Measures

All measures were completed in relation to the "last two weeks". All participants completed the following measures.

Sociodemographic and clinical data. All participants provided self-reported sociodemographic data on age, sex, education, and marital and employment status. Patients also provided self reports data on age at BD onset, number of psychiatric hospitalizations due to bipolar episodes, whether or not they had experienced four or more bipolar episodes in the last year, time elapsed since the last bipolar episode, medication prescribed for BD, and whether or not they had received psychological therapy. Controls answered four clinical questions about their mental health, and whether they had ever been diagnosed with a mental disorder.

The 41-item RBD. The questionnaire was comprised 41 items, in Spanish, gathering information about resilience in BD across the following domains: antecedents of resilience, turning point, self-awareness and redefinition, reconsideration of life direction, self-management of BD, lifestyle balance, positive personality qualities, and interpersonal support. Each item was scored on a five-point Likert scale of agreement

that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). All items were scored positively, thus higher scores indicated higher resilience. The scale instructions included a brief definition of resilience ("Resilience is a dynamic process in which the person aims to overcome or adapt to adverse situations, through the development and/or regaining of positive strategies and skills"). Participants also rated two independent items: one about their degree of certainty of having experienced resilience at some time ("Do you consider that you have experienced (at any time in your life) this resilience process to manage your BD?") on a scale ranging from 1 (*not at all*) to 5 (*yes, for sure*) and one about their current level of resilience ("Thinking about the last two weeks, my present level of resilience to BD is:…") on a scale ranging from 1 (*very low*) to 5 (*very high*).

The Resilience Scale -25 (RS-25). The Spanish version (Las Hayas et al., 2014) of the RS-25 (Wagnild & Young, 1993) consists of a bi-factorial structure called Personal Competence and Acceptance of Self and Life used to measure generic resilience. The scale responses range from 1 (*totally disagree*) to 7 (*totally agree*). The total score for the scale ranges from 25 to 175 (the higher the score, the higher the resilience). RS-25 total scores of 145 or greater indicate moderately high to high resilience; total scores from 116 to 144 indicate moderately low to moderate resilience; and total scores of 115 and below indicate very low resilience. Different reviews of resilience instruments (Ahern et al., 2006; Windle et al., 2011) have identified the RS-25 as the best in terms of psychometric properties and broadest application. Therefore, the RS-25 was selected as the criterion measure of resilience for this study. The RS-25 has been validated in Spanish by other authors (Heilemann, Lee, & Kury, 2003; Rodríguez et al., 2009; Ruiz-Párraga, López-Martínez, & Gómez-Pérez, 2012), but only Las Hayas et al.´s version was successful in reproducing the bi-factorial structure of the

original RS-25 and in retaining the 25 items based on a general population sample and on an eating disorder sample (Las Hayas et al., 2014). The Cronbach alphas for the total score and the two factors of the RS-25 were satisfactory both in current BD samples (alphas ranging from .84 to .95) and in the current comparison sample from the general population (alphas ranging from .84 to .93).

The Brief Quality of Life in Bipolar Disorder (Brief-QoL.BD). This is a 12-item BD-specific measure of quality of life (one item per each basic domain: physical, sleep, mood, cognition, leisure, social, spirituality, finances, household, self-esteem, independence, and identity) with a single-factor solution (Michalak & Murray, 2010). The Brief-QoL.BD is rated on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), providing a total score ranging from 12 to 60 (higher scores indicating higher quality of life). Cronbach alphas were adequate (from .87 to .89) for this brief version (Michalak & Murray) as well as for the Spanish version (Cronbach´s α = .95) validated by Morgado and Tapia (2013). The internal reliability of the Brief-QoL.BD was also satisfactory in the present BD sample (Cronbach´s α = .89).

The Internal States Scale (ISS). This 15-item scale measures co-occurring manic and depressive symptoms through four subscales or indexes: Activation (ACT), Well-Being (WB), Perceived Conflict (PC), and Depression (DI) (Bauer, Vojta, Kinosian, Altshuler, & Glick, 2000). ISS provides indicators of (hypo)mania, mixed state, euthymia, or depression, depending on ACT and WB index scores. The validity of the ISS subscales as a discriminator of mood states and as identifier of mixed episodes has been confirmed (Bauer et al., 2000). Only the ACT and DI indexes were used for the current study. Participants rated the degree of internal state experienced on a rating scale ranging from 0 (*not at all*/*rarely)* to 100 (*very much so*/*much of the time*). Thus, the ACT (5 items) and the DI (2 items) subscale scores range between 0-500 and 0-200,

respectively. The Spanish version of ISS had psychometric results comparable to the English version (Ruggero, Johnson, & Cuellar, 2004), and adequate internal reliability (Cronbach´s α = .84 for ACT, and α = .78 for DI) for our study's BD sample.

The Bipolar Recovery Questionnaire (BRQ). This instrument is a reliable and valid measure of personal experiences of recovery in BD (Jones, Mulligan, Higginson, Dunn, & Morrison, 2013). The original version of the BRQ consists of a 100mm visual analogue scale where the total score ranges from 0 to 3600, which our study replaces with a 10-point Likert scale ranging from 1 (*strongly disagree*) to 10 (*strongly agree*) to facilitate its completion. The BRQ contains 36 items, of which 12 are reversed. Thus, once these 12 items are recoded and the individual scores across the 36 items are summed, a total score ranging from 36 to 360 is calculated (according with the changes in the type of answering and scoring way), where higher scores indicate higher degree of recovery. The BRQ presented good psychometric properties of internal consistency and reliability (Cronbach´s α = .88) in participants diagnosed with BD-I or BD-II (Jones et al., 2013). The BRQ was translated and back-translated to and from Spanish for the current study, as recommended by Acquadro, Conway, Hareendran, and Aaronson (2008). Cronbach´s alpha (α = .90) for the translated BRQ in our BD sample (N = 109) supported its reliability. Regarding the validity of the BRQ in the current BD sample, bivariate correlations indicated that BRQ total score correlated negatively with ISS DI scores (r = -.57, p < .01) and positively with QoL.BD (r = .72, p < .01) scores.

Stages of change. A self-reported question to assess the stage and processes of change referring to BD (for the clinical sample) or to a problem (for the comparison sample from the general population) was created for the present study, drawing on Prochaska and DiClemente (1986) stages of change model. This question had six response options each representing a stage of change. Thus, participants chose, from

the following options, the sentence that best described their actual level of change: (1) *"Other people think that I have a BD/problem, but I don't agree."* (Precontemplation); (2) *"I realize that I have a BD/problem, but I don't feel confident about being ready to change it."* (Contemplation); (3) *"I am considering acting towards changing the BD/ problem in the next six months."* (Preparation); (4) *"I have taken specific actions towards the BD/ problem in the last six months."* (Action); (5) *"I am doing my best to maintain the changes I have made towards the BD/ problem."* (Maintenance), and (6) *"I have taken actions towards the BD/ problem and now I am recovered."* (Recovery). The first five options were developed according to Prochaska and DiClemente's stages of change, and the last option was added in this study. The information derived from this questionnaire was considered relevant for categorizing participants as "improved", "unchanged" and "worsened" with respect to their stage of change reported at T1 and that reported at T2. If a change in the score (T2 score – T1 score) resulted positive, that reflected improvement; otherwise, if the difference resulted negative it reflected deterioration or worsening. A difference of zero between T1 and T2 reflected the "unchanged" group.

Statistical Analysis

Construct validity. Exploratory factor analysis (EFA) is appropriate when developing a new questionnaire (Field, 2013) for identifying the underlying empirical structure and the relationships among variables. Principal axis EFA with oblique rotation (Promax) was conducted to determine the RBD's underlying structure. An oblique rotation was used because, based on the literature of resilience (Wathen et al., 2012) it was assumed that factors will be correlated and oblique rotation allows for correlations between factors. EFA was carried out with the responses of the participants who completed the 41-item RBD. Items were retained in the questionnaire if they

showed: (a) communalities of >.40, (b) factor loadings of >.40 in their corresponding domain, and (c) cross-loads of <.40 in other factors. Item retention was also determined according to its psychometric functioning within the scale (corrected item total correlation [ITC] and item discriminant validity), and qualitatively, according to the clinical relevance of item content (i.e., based on the existing literature of resilience). Corrected ITC were acceptable if they were ≥ .40. Multitrait-scaling analyses were carried out to calculate convergent and discriminant validity (Fayers & Machin, 2013). Convergent validity was supported when the item-to-own-subscale correlations were ≥ .40. Discriminant validity was supported when correlations between the items and the hypothesized RBD subscale were higher than their correlations with other RBD subscales (Fayers & Machin, 2013).

Additionally, confirmatory factor analysis (CFA) using the least squares estimation (LS) method was carried out with EQS 6.1 for Windows, testing three models based on the final EFA solution. Comparative fit index (CFI), non-normative fit index (NNFI) and root mean square error of approximation (RMSEA) were assessed for the goodness of fit of the models. According to (Hu & Bentler, 1999), in general, CFI and NNFI values of .90 or above, and RMSEA values between .60 and .08, indicate an acceptable fit. The model was tested in the clinical sample.

Reliability and stability. Internal consistency of each subscale was assessed using Cronbach's alpha coefficient. Stability was measured by performing a test-retest with a clinical subsample of patients who completed the final RBD a second time (N = 9) approximately 15 days after the first time, and who also indicated that no major event—which might have influenced their physical and/or mental state—had occurred since the last time they completed the questionnaire by responding negatively to the question "Has any major event occurred in your life since the last time you completed

the questionnaire, which might influence your current physical and/or mental state?" Thus, for the total RBD and for each scale, intraclass correlation coefficients (ICC) were calculated between the T1 and test-retest scores.

Concurrent validation. Despite the absence of a current gold standard measure of resilience, the RS-25 was used as the criterion measure to explore the concurrent validity of the RBD. It was hypothesized that the RBD Questionnaire would correlate positively with generic resilience measured by the RS-25, with quality of life measured with the Brief QoL.BD, and with personal recovery measured with the BRQ, and negatively with measures of bipolar symptoms measured with the ACT and DI subscales of the ISS.

Known-groups validity. Patients were grouped according to their total scores on the BRQ. Patients with total scores above the percentile 75 (BRQ $\geq$ 277) were labeled as "recovered", while patients with scores below this percentile were labeled as "not recovered". It was hypothesized that recovered patients would score higher than not recovered patients on the RBD because, according to Zautra (2009), recovery is a sign of resilience. Cohen´s *d* values were calculated to indicate the magnitude of the differences between means of each group on the RBD. Cohen's *d* values of 0.2 are considered small effect, around 0.5 medium effect and above 0.8 large effect (Cohen, 1992). Analysis of variance (ANOVA) with Tukey post hoc test for multiple comparisons and nonparametric Welch post hoc test (as applicable) were used to compare scores on the RBD and RS-25 of the recovered (N = 28), not recovered (N = 83), and control group (from the general population) (N = 71). Items were adapted for the general population group so that references to Bipolar Disorder were substituted by 'the personal problem'. To facilitate interpretation of the comparison between these two measures, RBD and RS-25 scores were standardized to range from 0 to 100 (exclusively

for the ANOVA). It was hypothesized that recovered patients would score higher in resilience than not recovered patients and the general population group.

Responsiveness. Responsiveness is understood as a measure of an instrument's sensitivity to changes in health status or other outcome being measured or as the ability of a measure to detect change in an individual over time. The question about the stage of change, based on Prochaska and DiClemente (1986), was used to measure whether the participant had changed from baseline (T1) to follow-up (T2). Using the scores of the difference between T1 and T2 on this question, the clinical sample was divided into three groups: “improved” (if T2 - T1 ≥ 0), “unchanged” (if T2 - T1 = 0), and “worsened” (if T2 - T1 ≤ 0). Then, one way ANOVA analyses were carried out to compare the differences between the RBD and RS-25 between each group.

Responsiveness indexes (Effect Size [ES], standardized response mean [SRM] and responsiveness statistic) of the RBD were compared with the RS-25. Effect sizes (calculated as the score difference between follow-up and baseline divided by the SD of the group's baseline), standardized response mean (SRM; calculated as the score difference divided by the SD of the group's score differences), and the responsiveness statistic (calculated as the score difference between follow-up and baseline divided by the SD of the general population’s score differences) (Deyo, Diehr, & Patrick, 1991) were calculated for each scale. To obtain the responsiveness indexes the clinical sample was divided into improved (N = 20), unchanged (N = 21), and worsened (N =20). Positive values reflect (standardized) improvements in resilience. ES, SRM, and responsiveness statistic values of 0.00-0.19 are considered very small, 0.20-0.49 small, 0.50-0.79 moderate, and ≥ 0.80 large (Kazis, Anderson, & Meenan, 1989).

Results

Construct Validity of the RBD

113 patients fully completed the 41-item RBD questionnaire. Analyses for construct validity were carried only with the patient sample. The Kaiser-Meyer-Olkin (KMO) measure verified sampling adequacy, which was .84 for the total index (Kaiser, 1970). Bartlett´s sphericity test ($p < .001$) indicated that the principal axis EFA was appropriate for the sample size (Bartlett, 1950). First, EFAs (with Promax rotation) were carried out to explore the number of factors to retain. Items that did not comply with the requirements for retention were eliminated. EFA analyses were repeated after the elimination of each item, as the deletion of a single item may greatly impact the overall internal structure. A final EFA was performed with the retained 23 items (i.e., removing 18 items in total), extracting five factors, which conjointly explained 57.04% of the variance. All items loaded >.46 on their corresponding domain, the cross-loads were < .40, and all items presented communalities >.40. Table 2 shows factor loadings, corrected ITC, means and standard deviations for each item. Factors of the RBD were intercorrelated.

Of the total variance, the first factor explained 35.46%; the second explained 11.39%; the third explained 7.82%; the fourth explained 6.08%; and the fifth factor explained 5.44%. The corrected ITC with the total RBD (> .54) were acceptable (see Table 2). Regarding the multitrait-scaling analyses, convergent validity was supported, as item-to-own subscale correlations were .40 or greater (range self-management of BD factor of the RBD = .64 - .83; range turning point factor of the RBD = .73 - .80; range self-care factor of the RBD = .70 - .86; range self-confidence factor of the RBD = .79 - .85; range interpersonal support factor of the RBD = .81- .83; $p < .05$).

The factor structure of the 23-item RBD derived from the final EFA was examined within the clinical sample by carrying out a CFA using LS estimation. Because multivariate kurtosis revealed that the distribution was not normal, robust

methods were used to analyze the data. Apart from this model, two alternative models were also estimated: a unifactorial model, and a first-order five-factor model; the unifactorial model reported unsatisfactory fit index: $\chi^2(230, N = 113) = 683.91$, $p = .000$, RMSEA = .133 (90% confidence interval, CI [.121, .144]), NNFI = .78, CFI = .80. The first-order five factor model reported more satisfactory fit indices than the previous, but still poor: $\chi^2(220, N = 113) = 395.68$, $p = .000$, RMSEA = .084 (90% CI [.071, .097]), NNFI = .91, CFI = .92.The hierarchical CFA model with five first-order latent factors and one second-order factor produced acceptable fit indexes: $\chi^2(225, N = 113) = 374.38$, $p = .000$, RMSEA = .077 (90% CI [.063, .090]), NNFI = .93, CFI = .93. All factor loadings were significant (see Figure 1). Appendix 1 and 2 include the Spanish and English versions, respectively, of the 23-item RBD questionnaire.

Reliability

The Cronbach alpha coefficient of the total score of the RBD was satisfactory ($\alpha = .91$) as well as for all the RBD domains (ranging from .76 to .87; i.e., higher than the required .70). Regarding test-retest stability (N = 9), ICC was satisfactory for the total score (ICC = .97; $p \leq .001$) as well as for the RBD domains (self-management of BD = .95, $p \leq .001$; self-care = .97, $p \leq .001$; self-confidence = .78, $p \leq .01$; interpersonal support = .88, $p \leq .01$). The turning point factor's ICC was not significant ($p = .68$).

Table 2

Exploratory Factorial Structure of the 23-item RBD with the BD Sample

Item content	Corrected ITC	Communalities	Mean (*SD*)	Factor loadings (Inter-factor correlations [r]) SM	TP	SC	SCF	IS	r
6. Identifying and managing trigger symptoms	.67	.59	3.92 (1.10)	**.87**	-.02 (.35)	-.03 (.65)	-.13 (.51)	-.05 (.30)	SM
14. Active seeking and taking creative actions to manage bipolar disorder	.75	.68	3.56 (1.19)	**.70**	-.07	.00 (.25)	.26 (.33)	-.07 (.05)	TP
16. Regulating emotions	.64	.47	3.43 (1.11)	**.66**	-.04	-.04	-.01 (.39)	.16 (.39)	SC
12. Adapting to setbacks as a result of BD	.60	.41	2.89 (1.18)	**.64**	-.07	.05	-.01	.00 (.16)	SCF
20. Self-understanding	.54	.52	4.05 (.90)	**.59**	.05	-.24	.35	-.02	
7 Seeking empowerment, responsibility and active management of BD	.65	.59	3.58 (1.17)	**.51**	-.12	.37	-.03	.03	
13. Analyzing problems and resources	.69	.59	3.66 (1.07)	**.46**	-.01	.23	.16	.10	
1. Suffering BD transforms into the determination to change the situation	.66	.61	3.98 (1.13)	-.04	**.82**	-.09	-.06	.02	
3. Expecting to feel more positive in the future	.60	.54	4.47 (.84)	-.25	**.75**	-.05	.16	.03	
2. Experiencing ups and downs transforms into the determination to struggle with BD	.54	.44	3.67 (1.32)	-.02	**.68**	.11	-.16	-.01	
4. Hoping to face up to my BD to improve my life	.59	.46	3.90 (1.08)	.07	**.56**	.06	.15	-.05	
15. Trying to go on with daily life	.58	.61	3.91 (1.03)	.38	**.50**	-.10	.17	.05	

10. Prioritizing and caring for my mental health and well-being	.55	.54	4.27 (.92)	-.35	.03	**.74**	.30	.06
11. Maintaining healthy habits for my well-being	.63	.49	3.90 (1.02)	.15	-.04	**.67**	-.14	-.04
9. Setting limits as regards harmful situations	.75	.71	3.77 (1.17)	.32	-.12	**.61**	-.02	.07
5. Making the utmost effort to minimize the impact of BD on my life	.68	.73	3.62 (1.14)	.35	.32	**.52**	-.19	-.03
8. Get involved in self-managing my BD	.68	.63	4.11 (.90)	.32	.03	**.49**	.16	-.11
19. Unchanging identity	.63	.70	4.08 (.94)	-.02	-.01	-.03	**.86**	.01
17. Confiding in my self-efficacy	.58	.51	4.07 (.87)	.13	.08	.12	**.56**	-.09
18. Persevering in the face of difficulties	.61	.55	3.88 (1.11)	.05	-.05	.35	**.50**	.05
22. Feeling loved (by at least one person)	.64	.72	4.36 (.97)	-.14	-.08	.06	.14	**.83**
21. Feeling supported (by at least one person)	.57	.58	4.12 (1.16)	.02	.16	.08	.22	**.72**
23. Being alerted by someone when symptoms of BD become active/apparent	.54	.46	3.71 (1.37)	.33	-.05	-.15	.03	**.59**

Note. N = 113. Factor loadings over .40 appear in bold. Items are in descending order by factor loadings.
Abbreviation: 23-item Resilience to Bipolar Disorder Questionnaire (23-item RBD); SM: self-management of BD, TP: turning point, SC: Self-Care, SCF: Self-Confidence, IS: Interpersonal Support.

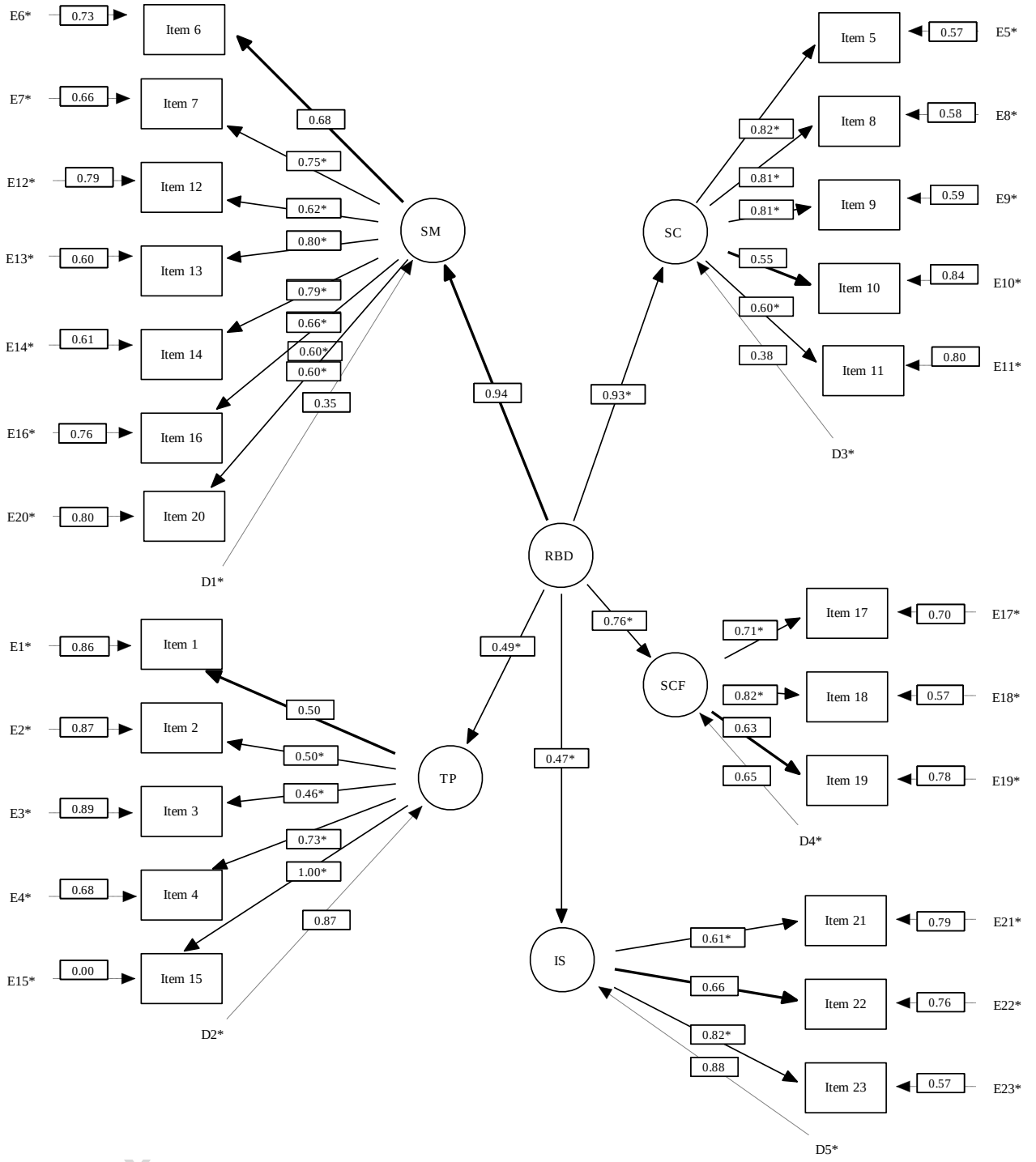

Figure 1. Confirmatory factor analysis results of the theoretical model of the internal structure of the RBD. *Note*. *N* = 113. Fixed variables and factors lines are in bold. Abbreviation: 23-item RBD: 23-item Resilience to Bipolar Disorder Questionnaire. SM: self-management of BD, TP: turning point, SC: Self-Care, SCF: Self-Confidence, IS: Interpersonal Support.
*All factor loadings were significant.

Concurrent Validity

The correlation coefficients between the RBD factors and the RS-25 total scores ranged from .20 to .68, $p < .05$. Also, RBD factors (except the turning point factor) correlated positively with the Brief QoL.BD ($.27 < r > .65$, $p < .01$) and with the BRQ ($.23 < r > .74$, $p < .05$). The DI index from the ISS showed negative correlations with both the total RBD score and with its factors ($-.35 < r > -.46$, respectively, $p < .01$) (except with the turning point factor). The ACT index from the ISS neither correlated with the total RBD score nor with its factors. The Turning point factor from the RBD only correlated significantly with the RS-25.

Known-groups Validity

Recovered (N = 28) patients scored significantly higher ($p < .001$) on total score of the RBD ($M = 100.07$, $SD = 10.16$) and its factors than not recovered (N = 83) patients ($M = 85.33$, $SD = 13.58$), except for the turning point factor, where differences were statistically non-significant (not recovered patients: $M = 19.77$, $SD = 3.81$; recovered patients: $M = 20.32$, $SD = 4.82$; comparison sample: $M = 19.11$, $SD = 3.61$). Post hoc Tukey analysis revealed that most of the differences were between not recovered and recovered patients, and between not recovered and the comparison sample (N = 71). Cohen´s *d* ranged from -0.71 for the interpersonal support factor to -1.42 for the self-care factor.

ANOVA comparing mean scores in both the RBD and the RS-25, standardized scores (only used for this particular analysis), showed that both resilience scores were higher for patients recovered from BD than for the general population and for patients not recovered from BD (who scored the lowest). Mean standardized scores (and *SD)* in the global indexes of the RBD versus RS-25 for recovered patients were 83.77 (11.04) versus 85.62 (9.36), respectively; for the comparison group from the general population,

they were 75.72 (11.23) versus 79.80 (13.74), respectively; and for not recovered patients, they were 67.74 (14.76) versus 61.83 (17.72), respectively, and all these mean group differences were statistically significant ($p < .001$). Thus, both resilience measures indicated similar levels of resilience.

Responsiveness

Descriptive data (Mean and *SD*), one way ANOVA and post hoc Tuckey test results at baseline (T1), follow-up (T2) and their difference (T2-T1) for the clinical subsamples (improved N = 20; unchanged N = 21; and worsened N = 20) on the RBD are presented in Table 3. Additionally, to compare the responsiveness of the RBD within these clinical groups with the responsiveness of the RS-25, the ES, SRM and responsiveness statistic are also presented in Table 3.

Table 3

Responsiveness Data for the Clinical Sample that responded both at T1 and T2, grouped as Improved, Unchanged, and Worsened in RBD and RS-25 Scores at Follow-up

		T1		T2		Difference (T2-T1)		Responsiveness Coefficients		
Clinical samples	Measures	Mean	*SD*	Mean	*SD*	Mean	*SD*	ES	SRM	Responsiveness Statistic
Improved [a]	RBD	92.10	11.89	98.60	11.60	6.50 [c]	14.16	**.55**	.46	.65
(*N* = 20)	RS-25	128.75	28.36	140.10	26.50	11.35	23.52	.40	**.48**	**.76**
Unchanged [b]	RBD	89.91	13.01	90.05	10.13	.24	11.27	**.02**	**.02**	**.03**
(*N* = 21)	RS-25	125.57	24.87	124.62	23.86	-.95	26.30	-.04	-.04	-.06
Worsened [c]	RBD	88.80	9.19	83.35	13.38	-5.45 [a]	11.49	**-.59**	**-.47**	**-.55**
(*N* = 20*)	RS-25*	127.45	26.01	125.44	29.94	-1.67	22.71	-.06	-.07	-.11

Note. Total N = 61. * N_{RS-25} = 18. Clinical subsamples were identified using the difference score (T2-T1) in the question about change stages following Prochaska and DiClemente`s question: Improved: score > 0; Unchanged: score = 0; Worsened = score < 0. RBD range: 23-115; RS-25 range: 25-175. When comparing the responsiveness coefficients of the clinical samples in both resilience measures (RBD and RS-25), the best value is highlighted in bold.
Abbreviations: RBD: Resilience to BD; RS-25: Resilience scale 25; MCID: Minimal Clinically Important Difference in units of the ES (Effect Size), SRM (Standardized Response Mean).
[a,b,c]Post hoc Tukey test, $p < .05$.

One-way ANOVA showed statistically significant differences between the clinical groups for the RBD at T2 ($p < .05$) but not for the RS-25 at T2. Multiple comparison post hoc Tukey test for the RBD indicated statistically significant ($p < .05$) differences between improved and worsened clinical samples (Table 3).

ES for RBD was higher than that reported by the RS-25 for the improved and worsened group (ES for RBD: .55 and -.59, respectively; ES for RS-25: .40 and -.06, respectively).

Discussion

In contrast to other measures of resilience created so far, the theoretical basis of resilience on which the questionnaire is grounded considers resilience as a process that occurs in patients diagnosed with a BD. This study reports the development of a resilience measure specific for people with BD. The RBD is content-specific, given that its items stem from a qualitative study involving patients with BD and clinical experts, and from a literature review. The final EFA maintained 23 items of the initial RBD, divided into five factors.

The first factor was named Self-Management of BD (SM) because it dealt with a sense of personal agency in the management of BD (e.g., *"I try to watch and manage the early warning signs to anticipate and regulate the symptoms of bipolarity"*). The second was named Turning Point (TP) because it dealt with the determination and commitment to change (*"I have suffered so much because of having bipolar disorder that I am determined to change the situation and get over it").* The third factor was called Self-Care (SC) because it dealt with taking care of one's own health through a balanced and structured lifestyle (*"My mental health and well-being comes first and I have to take care of that before anything else"*). The fourth was named Self-Confidence (SCF) because it dealt with self-reliance and self-respectful attitudes and behaviors (*"I*

am confident that I can do most things if I try"), as well as with perseverance. The fifth factor was called Interpersonal Support (IS), as it dealt with feeling supported and loved by significant others (*"I feel that at least one person (friend, spouse, family) loves me unconditionally"*). This factor also referred to having supportive health practitioners or clinicians involved in the patient´s BD treatment. Therefore, this domain included both formal and informal support. As a whole, the RBD scale content appears to capture dimensions noted in the more extensive literature on resilience (Everly, McCormack, & Strouse, 2012; Fletcher & Sarkar, 2013; Friborg et al., 2003; Garcia-Dia, DiNapoli, Garcia-Ona, Jakubowski, & O'Flaherty, 2013; Garmezy, 1991; Lee et al., 2013; Rutter, 2013; Shastri, 2013; Windle et al., 2011).

Conjointly, the RBD factors explained more than half of the total variance, with SM as the factor explaining the highest percentage of the total variance. On the basis of literature on resilience (Wathen et al., 2012), it was hypothesized that the RBD factors would intercorrelate. The EFA and CFA results confirmed its factorial structure. Furthermore, the corrected ITCs with the total RBD were acceptable. The 23-item RBD also presented good reliability (Cronbach´s alpha) both for the total score and for the five RBD domains.

Because the RBD works well as a total score and as a collection of subscales, it is suggested to use the total score to achieve a broad idea of the resilience level, and the subscales to obtain more precise knowledge of the strengths and weakness in resilience. Hence, subscales of the RBD could provide important clinical knowledge for interventions that promote resilience.

Concurrent validity of the 23-item RBD with the RS-25 was supported, as the RBD presented positive significant correlations with the instrument measuring generic resilience. It also correlated positively with health-related measures (i.e., quality of life

and personal recovery) and negatively with measures indicating dysfunctionality (i.e., depression). This is in line with studies reporting that resilience contributes to the promotion and maintenance of quality of life (Choi et al., 2015; Dowrick et al., 2008; Torgalsbøen, 2012). Nevertheless, neither the RBD nor the RS-25 correlated significantly with the Activation index, suggesting that the experience of resilience is different from the experience of a manic episode.

Another notable result is that the turning point factor did not show significant correlations with quality of life, personal recovery, depression, or activation. The inclusion of this factor in our measure is in line with other studies (Las Hayas et al., 2015). Rutter (1999) described a turning point in the context of resilience as the determination to give up the disadvantageous situation and to move constructively toward a new situation. Bennett (2010), after re-examining data of two studies on widowhood, concluded that one of the groups experienced resilience following a turning point. Therefore, based on the literature, it is speculated that the inexistent relationship between the turning point factor and quality of life, personal recovery, depression and activation may suggest that the turning point is a key to activate the resilience process, but this does not necessarily mean that the person has already achieved other positive outcomes in quality of life, personal recovery, and/or symptomatology.

The 23-item RBD reproduces significantly different scores in different populations, showing statistically higher scores of resilience for recovered patients than for the comparison and not recovered patient groups. This result is consistent with those of Las Hayas et al. (2014) reporting higher levels of resilience in individuals recovered from eating disorders. A possible explanation is that recovered patients present higher

levels of resilience than healthy control subjects because the adversity implicated in BD prompts stronger resilience development.

We detected some noteworthy issues when comparing the RBD's structure, content and length with other sound resilience measures such as the RS-25 (Wagnild & Young, 1993), RSA (Friborg et al., 2003) and the CD-RISC (Connor & Davidson, 2003). Each questionnaire measures a different aspect of the concept of resilience. The RS-25 is a measure of personality characteristics related to resilience, the RSA is a measure of protective factors, and the new RBD measures resilient factors developed during the course of the BD. Despite good psychometric properties of the RS-25, RSA and CD-RISC, these measures have a higher number of items, with none developed for people experiencing psychopathology. In addition, according to Windle et al. (2011), the development methods and theoretical adequacy of the CD-RISC are questionable.

Our study compared the outcomes reported by the RBD with those reported by the criterion measure, RS-25. Despite the fact that both presented good psychometric properties and were similar in length, the RBD was more sensitive to changes occurring in the patient with BD than the RS-25. Most likely, the RBD tapped some unique aspects of resilience in BD that the generic instrument of resilience (RS-25) did not.

Limitations and Recommendations

Intergroup differences regarding age and sex could be linked to the differences in the recruitment approaches for each sample (clinical vs control). The clinical sample was invited individually by a therapist/coordinator, whereas the control sample was invited in a more impersonal way, via flyers and TV panels with the invitation and Facebook. This different approached to recruitment may partially explain that participants from the control group were younger and generally female since participating in a study on psychology may result more attractive for a younger

population, and in females than males. The sample size recruited was not large enough to divide it randomly into two subsamples in order to perform an EFA in one sample and the CFA in the other. Therefore, CFA results reported here are considered as preliminary results to be replicated in future studies. Test-retest analyses were carried out with a small sample size.

Another limitation refers to the lack of statistically significant correlation between the turning point factor of the RBD and the RS-25. Also, this factor did not discriminate between not recovered and recovered BD subsamples. A possible explanation is that the turning point factor could have been misunderstood when the participants completed the corresponding items, and that they forgot the timeframe of the last two weeks and, instead, answered with regards to their whole lifetime. This bias could be corrected adding the phrase 'the last few days' to the turning point items to help participants to base their answers on their recent situation.

Future research on resilience should include differentiating between Type I and II BD to analyze the relationships between resilience and activation and impulsivity symptomatology, depending on each disorder type.

Conclusions and Clinical Implications

The 23-item RBD has proven to be a valid, reliable, and responsive instrument of resilience in BD. Clinicians should consider relevant to measure resilience in BD patients because our results show that there is a positive association of resilience with health-related measures, that resilience is higher in recovered patients than in not recovered patients, and that resilience is higher in those patients who are more advanced in their stage of change in relation to BD.

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Highlights

- The Resilience Questionnaire for Bipolar Disorder (RBD) is a new scale to measure resilience specifically in Bipolar Disorder (BD). Its content is based in a previous qualitative study.
- The 23 items that compose the RBD provide both a single score and a score per each domain: self-management of BD, turning point, self-care, self-confidence, and interpersonal support.
- Psychometric analyses of the RBD were satisfactory in terms of validity and reliability in a clinical sample of patients diagnosed with BD, and a control sample (general population).
- Patients recovered from BD scored statistically higher in resilience than the control sample and than patients not recovered from BD.
- The RBD is content specific and is more responsive to changes in resilience in BD patients than a generic resilience measure.