



Revista Latinoamericana de Psicología

<http://revistalatinoamericanadepsicologia.konradlorenz.edu.co/>



ORIGINAL

Evidences of validity of the Brief Resilience Scale for Brazil

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Received 5 June 2021; accepted 3 November 2021

KEYWORDS

Resilience,
scale,
validation,
recovery,
Brief Resilience Scale

Abstract Introduction: Resilience is the ability to adapt or recover after adverse situations. This study aimed to adapt and investigate evidence of the validity of the Brief Resilience Scale (BRS) for the Brazilian context. **Method:** The total sample comprised 1,937 people who participated in the study and the validity analysis was carried out with 1,480 people between 18 and 78 years of age. It was carried out using translation, back-translation, descriptive analysis, reliability analysis, confirmatory factor analysis, Item Response Theory, the ROC curve and BRS correlation with the Connor-Davidson Resilience Scale - 10-item version (CD-RISC-10), the Social Support Perception Scale, the Patient Health Questionnaire - 2-item version (PHQ-2), and sociodemographic data. **Results:** The results showed the adequacy of the Brazilian version of the BRS (BRS-BR), α of 0.80, $\omega = 0.81$, one factor, good information capacity of the items (except for item 5) and correlation with the CD-RISC-10 ($\rho = 0.64$), PHQ-2 ($\rho = -0.38$) and Social Support ($\rho = 0.14$). There was also a correlation with sex ($\rho = 0.11$), age ($\rho = 0.13$), marital status ($\rho = 0.15$) and schooling ($\rho = 0.15$). The ROC curve shows a cutoff point at 10 points for low resilience and 21 points for high resilience. **Conclusions:** The investigation of the psychometric characteristics of the BRS-BR showed that the instrument can be useful for the evaluation of resilience in the Brazilian context.

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PALABRAS CLAVE

Resiliencia,
escala,
validación,
recuperación,
Escala Breve de Resiliencia

Evidencias de validez de la Escala Breve de Resiliencia para Brasil

Resumen Introducción: La resiliencia es la capacidad de adaptarse o recuperarse ante situaciones adversas. Este estudio tuvo como objetivo adaptar e investigar la evidencia de la validez de la Escala Breve de Resiliencia (BRS) para el contexto brasileño. **Método:** La muestra total fue de 1937 personas que participaron del estudio y el análisis de validez se realizó con 1480 personas entre las edades de 18 y 78 años. Se realizó con traducción, retrotraducción, análisis descriptivo, análisis de confiabilidad, análisis factorial confirmatorio, Teoría de Respuesta al Ítem, curva ROC y correlación BRS con la Escala de Resiliencia Connor-Davidson - versión de 10 ítems (CD-RISC-10), Apoyo Social Escala de percepción, cuestionario de salud del paciente - versión de 2 ítems (PHQ-2) y datos sociodemográficos. **Resultados:** Los resultados mostraron adecuación de la versión brasileña de BRS (BRS-BR), α de 0.80, $\omega = 0.81$, un factor, buena capacidad de información de los ítems (excepto el ítem 5) y correlación con CD-RISC-10 ($\rho = 0.64$), PHQ-2

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<https://doi.org/10.14349/rlp.2021.v53.19>

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($\rho = -0.38$) y Apoyo Social ($\rho = 0.14$). También hubo correlación con el sexo ($\rho = 0.11$), la edad ($\rho = 0.13$), el estado civil ($\rho = 0.15$) y la escolaridad ($\rho = 0.15$). La curva ROC muestra el punto de corte en 10 puntos para baja resiliencia y 21 puntos para alta resiliencia. **Conclusiones:** La investigación de las características psicométricas del BRS-BR mostró que el instrumento puede ser útil para la evaluación de la resiliencia en el contexto brasileño.

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In the humanities and health sciences, psychological resilience is understood as an ability to adapt to stress and to recover positively from adverse life situations (American Psychological Association, 2016; Rodríguez-Rey et al., 2016; Smith et al., 2008). The idea behind resilience is not to return to a previous level of well-being, but to be able to recover from adversities and life changing confrontations in the best possible way, considering personal characteristics and the socio-historical-spatial moment in which individuals live (Frazier et al., 2013). Smith et al. (2013) clarify that resilience can be understood as a capacity for bouncing back quickly or more completely from stressing situations. The authors indicate that the process of bouncing back from stress involves three stages: confronting a stressful event; orienting oneself towards a positive outcome in the future; and engaging in efforts to cope, without resorting to avoidance or denial.

Resilience was initially associated with the ability to overcome traumatic situations. Studies on resilience indicate that people who are more resilient can better overcome stress and recover more quickly from adverse and even extreme situations (Platt et al., 2016). But some studies have shown that stressful everyday situations also require an overcoming capacity (Bouteyre et al., 2007; Leys et al., 2020) and resilience is a useful skill for those who experience stressful or life-shattering situations, such as chronic illness, job loss, sudden relationship break-ups, situations of social vulnerability, trauma, among others (Galatzer-Levya et al., 2018; Johnston et al., 2015; Silverman et al., 2015).

At the outset, studies on resilience understood it as a personality trait and current studies vary between this understanding and perceiving it as a skill developed throughout life (Chmitorz, Wenzel, et al., 2018). There is no consensus on the nature of resilience and the underlying mechanisms that it uses to protect the individual (Chmitorz, Kunzler, et al., 2018; Leys et al., 2020; Liu et al., 2017; Vanderbilt-Adriance & Shaw, 2008). Regardless of its nature, studies have shown that it is possible to develop resilience, which represents great potential for health promotion and disease prevention (Chmitorz, Wenzel, et al., 2018; Leys et al., 2020; Masten, 2001). Loprinzi et al. (2011), evaluated an intervention of two 90-minute sessions aimed at improving resilience and which showed an improvement of resilience and a decrease of anxiety. Reivich et al. (2011) carried out an intensive resilience training programme with the anticipation of ways of thinking, feeling and acting in the face of possible future traumatic situations and observed an improvement in the resilience of the US military. Chmitorz, Kunzler, et al. (2018) conducted a literature review of various resilience development intervention programmes published between 1979 and 2014. The authors evaluated 43 randomised clinical trials conducted with adults and pre-

sented positive results, but also many difficulties in comparing them and generalising the findings regarding resilience, given the conceptual and methodological variability between the studies.

One of the indispensable conditions to consider improving resilience is to be able to measure it. Chmitorz, Kunzler, et al. (2018) indicated that only 15 of the 43 studies they reviewed used formal instruments to assess resilience. Windle et al. (2011) surveyed the instruments for assessing resilience and noted that there were 15 major scales being used in different countries for evaluating general resilience. They also noted that most of these instruments were multifactorial, which makes it difficult to differentiate resilience from concepts such as optimism and self-efficacy, which were also present on the scales assessed. The absence of a gold standard, the existence of instruments with different concepts of resilience and which evaluate many aspects simultaneously, hinders the advancement of the area and the generalisation of knowledge (Liu et al., 2017; Vanderbilt-Adriance & Shaw, 2008).

The Brazilian reality is even more precarious than that of other countries in terms of assessing resilience. Currently in Brazil, the main instruments available for assessing resilience are the Resilience Scale (Pesce et al., 2005), the Connor-Davidson Resilience Scale - 25-item version (Solano, 2016; Solano et al., 2016), the Connor-Davidson Scale of Dispositional Resilience (Solano, 2016), and the Connor-Davidson Resilience Scale - 10-item version - CD-RISC-10 (Lopes and Martins, 2011). However, the Resilience Scale, the Dispositional Resilience Scale, and the Connor-Davidson Resilience Scale - 25-item version are multifactorial, including in their evaluation factors such as personal competence, acceptance of life and self, self-confidence and adaptability (Pesce et al., 2005), tenacity, adaptability-tolerance, and support and intuition (Solano, 2016).

There are few validated instruments, and the ones most used are multifactorial, leaving a scarcity in validated instruments that understand resilience in a single factor. In this regard, a highly promising instrument is the Brief Resilience Scale (BRS), developed by Smith et al. (2008), as it is an instrument originally composed of only six items, mono-factorial, which evaluates resilience as the capacity and perceived time for recovering from difficult or stressful situations. Three of its alternatives are positive affirmations and the other three were constructed with phrases in the negative sense, with the objective of controlling the effect of social desirability when responding. This instrument was validated with four different samples (undergraduates, cardiac rehabilitation patients, and women who either had fibromyalgia or healthy controls) and presented good psychometric qualities in its English version (Smith et al., 2008) and in the adaptations for Germany (Leontjevas et al., 2014;

Chmitorz, Wenzel, et al., 2018), Spain (Rodríguez-Rey et al., 2016), Malaysia (Amat et al., 2014), Mexico (Hidalgo-Rasmussen & González-Betanzos, 2019) and Poland (Konaszewski et al., 2020). There is also a study on the psychometric properties of the BRS when applied with elderly Brazilians (Silva-Sauer et al., 2021).

The use of this instrument has increased in studies on resilience (Soer et al., 2019; Taylor et al., 2020) and its validation for Brazil represents a possibility for comparing Brazilian findings with results from different contexts and countries. Considering this context, the present study aimed to adapt and investigate evidence of the validity of the Brief Resilience Scale (BRS) for the general Brazilian population.

Method

Participants

A total of 1,480 people of both genders participated in the study, with a predominance of women (64.8%), single (55.3%), with a mean age of 42.85 years ($SD = 13.04$), ranging from 18 to 78 years of age. Participants were residents of the states of Minas Gerais, São Paulo, Rio de Janeiro (Southeastern region of the country) and Goiás (Midwestern region) and Tocantins (Northern region).

The schooling included complete or incomplete elementary school (13.1%), high school (24.6%), undergraduate (45.1%) and graduate (17.2%). The mean income was five minimum wages ($SD = 15.62$). Considering the country's income distribution, 23.10% of the sample belonged to the lower class and 76.90% to the middle class in Brazil.

Instruments

The BRS - developed by Smith et al. (2008), is a scale originally comprised of six items, that contains a 5-point response format, ranging from 1 (*I totally disagree*) to 5 (*I totally agree*). For the correction, Smith et al. (2008) propose that initially items 2, 4 and 6 be recoded as 1 = 5; 2 = 4; 3 = 3; 4 = 2; 5 = 1. Following this recoding, the sum of the points of the scale is carried out and the higher values indicate greater resilience.

The CD-RISC-10 is a scale composed of 10 items, developed by Connor and Davidson, in 2003 and validated for Brazil by Lopes and Martins (2011). Its answers are on a Likert scale of five points, ranging from 0 (*never true*) to 4 (*always true*) with higher values indicating better resilience. In the present sample the Cronbach alpha of the instrument was 0.78.

The Social Support Perception Scale - Developed by Siqueira (2008), is a 29-item scale, containing 4-point response alternatives, ranging from 1 (*never*) to 4 (*always*). In the present sample, Cronbach's alpha of the instrument was 0.71.

The Patient Health Questionnaire - 2-item version (PHQ-2) is derived from the PHQ 9-item version and based on the most discriminating criteria for Major Depression episodes, referring to anhedonia and depressed moods. The scale is composed of 2-items and refers to the 14 days prior to its application. Responses are on a 4-point Likert scale, ranging from zero (*never*) to three (*almost every day*). The psycho-

metric characteristics of the PHQ-2 in Brazil were investigated by Osório et al. (2009), and Gaya (2011), showing suitability for use in the Brazilian population for the screening of depressive symptoms. In this study its internal consistency was 0.77.

Questionnaire - The questionnaire contained questions concerning age, gender, education and income.

Procedure and data analysis

Authorisation for validation, translation, and back-translation.

Initially, Dr. Bruce Smith was contacted to obtain authorisation to adapt the BRS for Brazil. The original scale was subsequently translated by a bilingual Brazilian native. Then the instrument was back-translated by another bilingual specialist of US origin and the versions were compared until reaching a consensus version. There was 93% agreement between versions. A meeting was organised between the experts, via Google Meet, to resolve the differences and reach a final version. This version was sent to the instrument's creator, who did not make any requests for changes.

This consensus version was applied to 50 participants in a pilot study and exposed no doubt among respondents and good initial internal consistency ($\alpha = 0.76$). But in the second stage the translated scale was applied to a sample of 357 people and evidenced difficulty in understanding item 5 for the participants with less formal education (Original item: I usually come through difficult times with little trouble / First Translation: Eu enfrente poucas dificuldades ao atravessar problemas.) Some participants with less education had difficulty understanding the item and asked for explanations about what the expression "with little trouble" meant, which evidenced the need for adjustments.

After identifying this problem, two solutions were examined: (1) A new translation of item 5 by two new bilingual professionals; (2) The removal of item 5 from the Brazilian version. Item 5 was independently translated and back-translated by two other bilingual translators. But the professionals had access to the first translation and to the problems identified with participants with a low level of education. The two versions presented were similar, but a meeting was scheduled to define the final version of the item. Thus, the 6 items for the Brazilian version of the BRS were defined.

A new application was conducted with 50 people and as the internal consistency values of the two solutions were adequate and close (0.73 and 0.75), it was decided to proceed with the scale validation with the six items. This decision aimed to permit the comparison of the future results of Brazilian studies regarding the BRS with international investigations using the same instrument. Table 1 presents the original items of the BRS and the consensus translation into Brazilian Portuguese.

Evidences of validity

After correcting item 5, the scale was applied to a larger number of people ($n = 1480$) and the evidence of validity was analysed. Data collection was carried out between July 2018 and June 2019, using a version of the scale available on the Internet.

Table 1. Translation of the items in the Brief Resilience Scale

Original Item	Brazilian Portuguese Item *
1 I tend to bounce back quickly after hard times.	Eu me recupero rapidamente após viver momentos difíceis.
2 I have a hard time making it through stressful events.	Eu tenho dificuldade para vivenciar eventos estressantes.
3 It does not take me long to recover from a stressful event.	Eu me recupero rapidamente de eventos estressantes.
4 It is hard for me to snap back when something bad happens.	É difícil me recuperar quando algo ruim acontece.
5 I usually come through difficult times with little trouble.	Eu costumo atravessar momento difíceis com pouco estresse.
6 I tend to take a long time to get over set-backs in my life.	Eu levo muito tempo para superar situações difíceis na minha vida.

* = The BRS-BR scale is free for any interested professional and will be provided by the author upon request by email.

Descriptive analyses were conducted followed by an assessment of the internal consistency of the BRS by means of Cronbach's alpha and the Omega of MacDonald to check reliability and Item Response Theory (IRT) for discrimination capacity of the items. Cronbach's alpha values obtained from a measure of 0.7 or higher were considered adequate, indicating an association between the items and representation within the construct (Kline, 2011). The relationship between the alpha (α), omega (Ω) and reliability (P) estimators of a scale or test can be established using the following equation: $\alpha < \Omega < P$. Omega gives the closest reliability estimate and alpha the smallest value.

As half the BRS items are written positively and the other half negatively, before the reliability analysis the negative items were recoded. The discrimination capacity of the items was considered according to the proposal of Couto and Primi (2011), in which it is considered that items with $\alpha = 0$ have no discrimination capacity, items between 0.01 and 0.34 have very low discrimination, items between 0.35 and 0.64 indicate low discrimination, items between 0.65 and 1.34 indicate moderate discrimination, items between 1.35 and 1.69 show high discrimination and items with 1.70 or more show very high discrimination capacity.

The normality of the data was assessed using the Shapiro-Wilk test and indicated non-normal distribution ($SW = 0.98$; $p < 0.001$). The internal structure of the BRS was evaluated by means of exploratory factor analysis of the main components and Varimax rotation was carried out with 100 participants. Other forms of rotation were tested in the exploratory factor analysis but with similar results, so the simplest solution, with a single factor, was maintained, as indicated by Tabachnick and Fidell (1996).

We also carried out a confirmatory factor analysis (Analysis of Moment Structures) with another 1,380 subjects, using polychoric correlation, the robust maximum likelihood method, which does not require multivariate normality following Kline's (2011) proposal for analysing the adequacy of the models. Following information from the literature to adjust the model (Jackson et al., 2009; Kline, 2011), adjustment indexes of 0.08 or less for Root Mean Square Error of Approximation (RMSEA) were considered acceptable, as were 0.95 or more for Comparative Fit Index (CFI) and 0.06 or less for Standardised Root Mean Squared Residual (SRMR). To define the model, the Parsimony Normative Fit Index - PNFI (0.50+) and the Expected Cross Validation Index (ECVI with the lowest value among the analysed models) were also considered (Kline, 2011).

ROC curve analysis was conducted to try to obtain a cut-off point, considering as standard value the two standard deviations, one above and one below the mean value in the CD-RISC-10. Spearman correlation analyses were also conducted among the BRS and the CD-RISC-10, the Social Support Scale, the PHQ-2, gender, age, schooling, income and marital status. The external constructs chosen were depression and social support, because the scientific literature indicates that more resilient people have fewer depressive symptoms (Silverman et al., 2015) and tend to have more social support (Gerino et al., 2017). Analyses of group differences (chi-square or Kruskal Wallis) were conducted when personal variables showed a relationship with resilience.

The IRT analysis was conducted in the IRT Pro programme and the other statistical analyses were conducted in SPSS version 23, AMOS and JASP.

Ethical aspects

Subsequent to the authorisation of the original author, the project was approved by the Research Ethics Committee of the Federal University of the Triângulo Mineiro (CAAE: 74669317.5.0000.5154) and all participants signed the Free and Informed Consent Form.

Results

Adaptation and descriptive analysis

The mean score for the BRS was 19.99 ($SD = 4.25$; range 6 - 30) and median of 20. The descriptive results of the BRS demonstrate the non-normality of the data, confirmed by means of the Shapiro-Wilk test (0.98 ; $p < 0.001$).

The means for the other instruments were 20.92 ($SD = 4.89$; range 6 - 33) for the CD-RISC-10, mean of 78.52 ($SD = 14.70$; range 36 - 110) and median of 81 for the Social Support Perception Scale, and 3.23 ($SD = 1.27$; range 1 - 6) and median of 3.0 for the PHQ-2.

Factorial structure and reliability

The BRS internal consistency analysis indicated an alpha value of 0.80 and an omega value of 0.81 for the scale (Table 2). Considering the six items a single factor explained 60.77% of the variation of the data and good adequacy of the exploratory model. Items 2 and 5 showed lower values of item-total correlation ($r_{ho} = 0.69$ and 0.45) and common-

Table 2. Exploratory Factorial Analysis of the Brief Resilience Scale and Reliability

Items	Item-Total Correlation	Communality
I tend to bounce back quickly after hard times.	-0.77	0.59
I have a hard time making it through stressful events.	0.69	0.47
It does not take me long to recover from a stressful event.	-0.70	0.59
It is hard for me to snap back when something bad happens.	0.86	0.75
I usually come through difficult times with little trouble.	-0.45	0.44
I tend to take a long time to get over set-backs in my life.	0.84	0.70
Cronbach's Alpha		0.80
McDonald's Omega		0.81
Explanation of variance		60.77%
Kaiser-Meyer-Olkin (KMO)		0.82
Bartlett's Sphericity Test		1012.31 ($p < 0.001$)

ality close to the cutoff point (0.47 and 0.44), but still within the acceptable range.

Table 3 shows the standardised estimates of the confirmatory factor analysis model. Confirmatory analysis ratified the presence of a single latent trait ($\chi^2(9) = 35.92$; $p = 0.002$; $\chi^2/df = 3.99$; $RMSEA = 0.08$; $SRMR = 0.04$; $CFI = 0.97$; $TLI = 0.95$; $PNFI = 0.60$; $ECVI = 2.15$). These results showed a single factor and good adequacy of the confirmatory model.

IRT analysis of items

In the IRT analysis of the Brazilian version of the BRS (Table 4) shows the item's ability to discriminate latent trait and level of difficulty attributed to each item. All items on the scale contributed with information on resilience. The discrimination capacity scores varied between low (item 5), high (items 2, 3), to very high discrimination capacity (items 1, 4 and 6). The information curves of the items showed that the items "It is hard for me to snap back when something bad happens." ($\alpha = 3.78$) and "I tend to take a long time to get over set-backs in my life." ($\alpha = 3.49$) contributed

more information to the understanding of resilience. The item with the lowest discriminative capacity was "I usually come through difficult times with little trouble" ($\alpha = 0.41$), because most people responded "strongly disagree", but the analysis of parameter b showed the relevance of this item for understanding resilience.

The analysis of parameter b is carried out considering the comparison between the actual response point observed on the scale, and a probability of 50% of participants responding to any other option (Embretson & Reise, 2013). It was observed that the modal responses for all the BRS items were "strongly disagree", "disagree" and "neutral", given by people with latent traits between - 3.0 and zero. People with a higher latent trait tended to choose the alternatives "agree" and especially "strongly agree". The item "I usually come through difficult times with little trouble" was among the items that required higher levels of latent trait for participants to respond "agree" ($b = 2.09$) and "strongly agree" ($b = 4.99$). This indicates that only people with a greater resilience trait respond to these two alternatives (agree and strongly agree) in this item. For the other items, only the greater presence of resilience was required to answer "strongly agree".

Correlations and ROC Curve

The results of the BRS-BR were also correlated with another scale that evaluates resilience, other related constructs and sample characteristics (Table 5). The BRS-BR showed significant positive correlations with the CD-RISC-10 ($\rho = 0.64$), perception of social support ($\rho = 0.14$) and negative correlations with the PHQ-2 ($\rho = - 0.38$). There was also a correlation with gender ($\rho = 0.11$), age ($\rho = 0.12$), schooling ($\rho = 0.15$) and marital status ($\rho = 0.15$). The results evidenced that male and married/living with someone had higher scores on the resilience scale. Men showed a mean resilience of 20.56 ($SD = 4.45$) and women of 19.69 ($SD = 4.10$), which was a statistically significant difference ($\chi^2 = 33.95$; $p = 0.046$).

People with a university education (complete or incomplete) showed greater resilience than people with high school and people with elementary school education ($KW = 36.44$; $p = 0.003$). The means were 22.03 ($SD = 4.23$), 20.59 ($SD = 4.45$) and 18.11 ($SD = 6.01$), respectively. Singles obtained 19,28 ($SD = 4.44$) mean of points in the BRS-BR, divorced obtained 20.17 ($SD = 4.25$), married /living with

Table 3. Confirmatory Factorial Analysis of the Brief Resilience Scale ($n = 1380$)

Items	Standard estimate	Standard Deviation	95% Confidence Interval	
			Lower	Upper
1 I tend to bounce back quickly after hard times.	0.69**	0.01	0.66	0.73
2 I have a hard time making it through stressful events.	-0.66**	0.02	-0.70	-0.62
3 It does not take me long to recover from a stressful event.	0.66**	0.02	0.62	0.70
4 It is hard for me to snap back when something bad happens.	-0.94**	0.02	-0.98	-0.90
5 I usually come through difficult times with little trouble.	0.29**	0.02	0.24	0.34
6 I tend to take a long time to get over set-backs in my life.	-0.90**	0.02	-0.94	-0.86

** $p < 0.001$

Table 4. Estimation of the parameters of the Gradual Resilience Response Model ($n = 1480$)

	a^1 (SD) ²	b^3 (SD) ²	b_1^4 (SD) ²	b_2^5 (SD) ²	b_2^6 (SD) ²
I tend to bounce back quickly after hard times.	2.20 (0.25)	- 2.38 (0.25)	- 0.93 (0.12)	- 0.28 (0.09)	1.43 (0.14)
I have a hard time making it through stressful events.	1.54 (0.18)	- 2.03 (0.24)	- 0.21 (0.11)	0.49 (0.11)	2.55 (0.28)
It does not take me long to recover from a stressful event.	1.62 (0.19)	- 3.24 (0.40)	- 0.94 (0.14)	- 0.06 (0.11)	2.09 (0.22)
It is hard for me to snap back when something bad happens.	3.78 (0.54)	- 1.91 (0.18)	- 0.45 (0.09)	0.09 (0.08)	1.51 (0.12)
I usually come through difficult times with little trouble.	0.41 (0.12)	- 5.70 (1.69)	- 0.59 (0.34)	2.09 (0.67)	4.99 (1.06)
I tend to take a long time to get over set-backs in my life.	3.49 (0.49)	- 2.17 (0.22)	- 0.84 (0.11)	- 0.24 (0.08)	1.44 (0.12)

1 = Discrimination parameter; 2 = Standard error; 3 = Point of intersection between response categories 1 and 2; 4 = Point of intersection between response categories 2 and 3; 5 = Point of intersection between response categories 3 and 4; 6 = Point of intersection between response categories 4 and 5.

someone obtained 21.45 ($SD = 4.02$), it is underscored that people married or living with someone were more resilient than others ($\chi^2 = 75.27$; $p = 0.007$).

Despite observing a correlation between resilience and age, which indicated that older people are more resilient, no differences were identified ($KW = 10.59$; $p = 0.060$) when age was analysed by groups (up to 20 years of age; 21 - 30; 31 - 40; 41 - 50; 51 - 60; 61 or older). And income did not show a correlation with resilience.

Table 5. Correlations of the Brief Resilience Scale with other instruments ($n = 1480$)

	BRS	p
Income	0.06	0.480
Gender	0.11	0.019
Age	0.12	0.006
Schooling	0.15	0.001
Marital status	0.15	0.001
CD-RISC-10	0.64	< 0.001
Social Support Scale	0.14	0.007
PHQ-2	- 0.38	< 0.001

The last measurement taken was the ROC Curve to identify cutoff points for the BRS-BR. We sought to identify two cutoff points, one indicative of low resilience and the other of high resilience. The results showed a statistically significant curve ($AUC = 0.84$; $SD = 0.03$; $p < 0.001$; $95\%CI = 0.81 - 0.88$) and an estimated cutoff point for the BRS at 10 points for low resilience (with *sensitivity* of 0.98 and *specificity* of 0.90) and at 21 points for high resilience (with *sensitivity* of 0.75 and *specificity* of 0.67).

Considering these cutoff points in the results of the sample participating in this study, 1.5% ($n = 23$) of people with low resilience, 50% ($n = 740$) with moderate resilience and 48.5% ($n = 717$) of people with high resilience are indicated.

Discussion

This article aimed to present the process of adaptation and evidence of BRS validity for Brazil. The maintenance of the mono-factorial structure and the observation of the discrimination capacity of the BRS-BR items indicated its relationship with the resilience construct as proposed by

Smith et al. (2008) and observed in the validation of the instrument in different contexts (Amat et al., 2014; Chmitorz, Wenzel, et al., 2018; Hidalgo-Rasmussen & González-Betanzos, 2019; Konaszewski et al., 2020; Leontjevas et al., 2014; Rodríguez-Rey et al., 2016; Silva-Sauer et al., 2021).

The information obtained in the factorial analyses showed evidence of construct validity by indicating a single factor explaining the observed variation of the data, and the correlation with the CD-RISC-10 corroborates that resilience is this construct. Smith et al. (2013) clarify that resilience does not imply the prevention of suffering, but rather the ability to go through difficult situations or periods with a greater chance of quickly recovering from stress or mobilising active resources for good adaptation to a new situation. This is the capacity that the BRS was created to measure.

The negative correlation observed with depression also corroborates this interpretation, since higher resilience is a protective factor against the appearance of depressive symptoms (Leontjevas et al., 2014; Silverman et al., 2015). In the present study a weak negative correlation was observed between depressive symptoms and resilience, but the direction of the relationship was in accord with the literature as expected, which shows the convergent validity of the BRS-BR.

Another observed relationship that corroborates the literature on resilience was the association with the measure of social support (Chmitorz, Wenzel, et al., 2018b). According to Smith et al. (2013) having social support helps individuals mobilise resources and adopt active coping strategies (focused on solving the problem), which is a characteristic of more resilient people. Gerino et al. (2017) also identified that resilience helps the elderly to more positively perceive their affective relationships and the support they receive from other people. In addition, resilience acts as a mediator for loneliness and the emergence of physical and emotional problems in the elderly.

In the present study, a correlation between gender and resilience was observed, with men showing the best results on the scale. This result corroborates the findings of Rodríguez-Rey et al. (2016), Chmitorz, Wenzel, et al. (2018) and Konaszewski et al. (2020), in which men also have a higher mean in the BRS but is contrary to the results of Smith et al. (2008), in which resilience is not associated with gender. Future studies may clarify the relationship between gender and resilience to a greater degree.

The weak positive association between resilience and age has also been identified in other studies on the BRS (Chmitorz,

Wenzel, et al., 2018; Konaszewski et al., 2020). But the impact of increasing age on resilience was small and needs to be further investigated in the future. The research regarding resilience can contribute to the understanding of how this ability reduces depressive and anxiety symptoms (Moreno-Agostino et al., 2021). It can also assist in the development of interventions to build resilience and make the results of different populations comparable, giving visibility to regional differences and the social and individual aspects linked to resilience.

No other studies were identified with the BRS that investigated the relationship between resilience and higher education or income, which made it difficult to compare our results. The results of previous studies regarding resilience and income are contradictory, several studies show that poorer people benefit from resilience for better life outcomes (Orthner et al., 2004; Taylor & Distelberg, 2016) but do not always indicate that there is a difference in the level of resilience between people with higher and lower incomes.

It is necessary to present some limitations concerning this work. The research sample was not a random sample, being composed of participants linked to different projects of the university where the research was developed. In addition, models with inverted items were not tested, as carried out by Hidalgo-Rasmussen and González-Betanzos (2019), which may be a suggestion for future studies. Despite this, there was good variability in the sample regarding age and education. In addition, the BRS-BR was not reapplied to the participants, which prevented the assessment of the measure's temporal stability capacity.

Conclusions

The results of this investigation warranted the conclusion that the Brazilian version of the BRS (BRS-BR) represents a useful instrument for the evaluation of resilience in Brazil, being of quick and easy application, which can concur with research on resilience and condone its clinical use. The scale is free to use provided that the copyright is respected and is annexed at the end of this manuscript.

Conflict of Interest Declaration

The author avows no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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