

## Research Article

# Measuring Boredom during the COVID-19 Pandemic

José Ventura-León<sup>\*a</sup>, Tomás Caycho-Rodríguez<sup>b</sup>, Brian Norman Peña-Calero<sup>c</sup>, Michael White<sup>d</sup>

[a] Private University of the North, Faculty of Health Sciences, Lima, Peru / Universidad Privada del Norte, Facultad de Ciencias de la Salud, Lima, Perú.

[b] Scientific University of the South, Faculty of Psychology, Lima, Peru / Universidad Científica del Sur, Facultad de Psicología, Lima, Perú.

[c] National University of San Marcos, Group of Advanced Studies in Psychological Measurement, Lima, Peru.

[d] Peruvian Union University, Faculty of Humanities and Education, Lima, Peru.

## Abstract

The aim of this study was to translate into Spanish and validate the Boredom Proneness Scale-Short (SBPS) in a sample of young people and adults in Peru during the COVID-19 pandemic. A total of 588 people between 17 and 53 years of age ( $M = 21.70$ ;  $SD = 5.22$ ) was selected as a sample. The methodology used combined Confirmatory Factor Analysis (CFA) and Item Response Theory (IRT) to determine the internal structure, factor weights and reliability, which was estimated by means of the omega coefficient test information functioning and empirical or marginal reliability. Evidence of convergent validity of the SBPS was explored based on its relationship with the Generalized Anxiety Disorder Scale (GAD-2) and Patient Health Questionnaire (PHQ-2). Results reveal that the SBPS is a measure that should be interpreted uni-dimensionally. Reliability was excellent and convergence with the GAD-2 and PHQ-2 presented the expected relationship in both magnitude and direction.

**Keywords:** Boredom Proneness; COVID-19; Evidence of validity; Spanish; Item Response Theory.

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Handling Editor: Irina Roncaglia, Chartered Practitioner Sport & Exercise Psychologist, The National Autistic Society (NAS), United Kingdom. \*Corresponding author at: Private University of the North of Perú.

E-mail: [jose.ventura@upn.pe](mailto:jose.ventura@upn.pe)



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Boredom is one of the most common affective states experienced by people (Dursun & Tezer, 2013). Traditionally, boredom has been defined as a state derived from low interest and dissatisfaction with an unstimulating, meaningless, or monotonous situation (Mikulas & Vodanovich, 1993) or, as a personality trait similar to neuroticism and extraversion (Vodanovich, 2003). On the other hand, boredom has also been conceptualized in terms of its physiological effects and possible behavioral consequences (Vodanovich, 2003). In this sense, boredom is considered to have a behavioral regulatory function to seek more meaningful alternative situations (Bench & Lench, 2013; Elpidorou, 2018). In recent years, it has been suggested that chronically experiencing boredom has a negative impact on well-being (Fahlman et al., 2009; Goldberg et al., 2011). This has led to considerable current research on boredom proneness as a trait-like construct or a general tendency to experience boredom (Tam et al., 2021). Furthermore, boredom proneness has been associated with different negative mental health outcomes, such as increased risk of internet (Chou et al., 2018) and smartphone addiction (Wang et al., 2020; Wolniewicz et al., 2020), the presence of increased symptoms of depression and anxiety (Lee & Zelman, 2019), less purpose in life (Goldberg et al., 2011), increased impulsivity, anger traits, and aggression (Cao & An, 2020). Also, people prone to boredom are more likely to engage in risky behaviors and abuse drugs and alcohol (Sommers & Vodanovich, 2000). There is even evidence of a relationship between boredom proneness and mortality,



where people who report being bored are more likely to die younger, compared to those who are not bored (Britton & Shipley, 2010).

During the current COVID-19 pandemic, people with symptoms of boredom increased from 29.6 % to 43.2 % (Boateng et al., 2021). In this regard, quarantines, as well as, reduced social and physical contact with others, may lead to an increase in the frequency with which people become bored (Brooks et al., 2020), which in turn may lead to behaviors that break the rules of social isolation and promote the spread of COVID-19 (Boylan et al., 2021; Struk et al., 2017). Likewise, people who are highly prone to boredom also tend to be more supportive of the belief that the COVID-19 pandemic is a hoax (Boylan et al., 2021). A recent study, indicated that, people prone to boredom may endorse this belief because they lack the disposition to engage in deeper thought processes that would allow for a better appreciation of the current health crisis (Stanley et al., 2021). It also suggests that boredom is associated with increased depression, anxiety, and stress during the COVID-19 pandemic, and that this relationship is mediated by media use and meaning in life (Chao et al., 2020). Likewise, there is a positive association between boredom and fear of COVID-19; however, greater perceived control over time would allow for a reduction in the effect of boredom on fear of COVID-19 (Caci et al., 2020).

Boredom proneness is defined as a person's general tendency to experience boredom (Farmer & Sundberg, 1986). However, other authors suggest that boredom proneness is a construct made up of two factors: a person's reaction to external stimulation and the inability to generate internal stimulation (Vodanovich et al., 2005). More recently, the former model has been challenged, and boredom proneness has been considered as a unitary construct, characterized by the individual's inability to engage in sufficiently satisfying activities (Isacescu et al., 2017). Furthermore, theoretical and empirical evidence suggests that boredom proneness exhibits three characteristics associated with individual differences: (1) the frequency of experiencing boredom, (2) the intensity of boredom when an individual experiences it, and (3) the perception of how boring life is in general (Tam et al., 2021). The absence of a unified and accepted definition of boredom proneness is due to the lack of theoretical foundations and assessment problems (Fahlman et al., 2013; Gana et al., 2019; Mercer-Lynn et al., 2014).

This has led to the emergence of different instruments to assess it (Melton & Schulenberg, 2009). A review study reported the existence of 16 scales that measure boredom (Vodanovich & Watt, 2016). Among these is the Boredom Propensity Scale (BPS; Farmer & Sundberg, 1986). However, the different studies that have evaluated the psychometric evidence of the BPS have



done so with different methodologies and results, questioning its factorial structure and replicability (Dursun & Tezer, 2013; Vodanovich & Kass, 1990). Regarding its factorial structure, it has been suggested that the BPS is not unidimensional and may have a 2- or 8-factor structure (Chen et al., 2020). Despite this, two factors regularly appear in studies: lack of external stimulation and lack of internal stimulation (Melton & Schulenberg, 2009). Based on this, the Boredom Propensity Scale-Short Form (BPS-SF; Vodanovich et al., 2005) was developed. However, a subsequent study indicated that the two-factor model was not replicable (Melton & Schulenberg, 2009). Later, a study comparing six studies on the structure of the BPS indicated that most of the items in the factors lack of external stimulation and lack of internal stimulation were reverse scored and, therefore, the differences between the two factors may be a result of the content of the items and the scoring method used (Struk et al., 2017).

Based on this and additionally on Item Response Theory (IRT), Struk et al. (2017) developed the Short Boredom Propensity Scale (SBPS), formed by the 8 items of the BPS that presented the highest covariance and discriminant validity. The original study of the SBPS presented evidence of construct validity, where the 8 items are grouped into a single dimension, and reliability, in addition to positive and significant correlations with symptoms of anxiety, depression, aggression, and worry (Struk et al., 2017). Subsequent studies have indicated that the SBPS is useful for assessing individual differences in boredom and it shows relationships with Internet addiction, self-control, and problematic smartphone use (Elhai et al., 2018; Isacescu et al., 2017). The SBPS has been translated and validated in China, where results supported the presence of a unidimensional model, excellent internal consistency, and significant correlations with boredom as a state, depression, loneliness, and life satisfaction (Peng et al., 2020). A previous study with Ecuadorian athletes used only 5 of the 8 SBPS items, translated into Spanish, indicating that they cluster in a one-factor model with factor loadings above .40 and acceptable reliability ( $\alpha = .70$ ). This version of the SBPS evaluated the internal structure by means of an exploratory factor analysis (EFA) with the principal component's method and Varimax rotation. However, this procedure has been criticized in the scientific literature and constitutes a serious problem for the validation of psychological constructs (Lloret-Segura et al., 2014). Therefore, as far as is known from the literature, the psychometric properties of the full 8-item version of the SBPS in Spanish language have not been evaluated.

Based on the above information, the aim of this study was to translate into Spanish and evaluate the psychometric properties of the SBPS during the COVID-19 pandemic. Specifically,



evidence of validity based on internal structure, validity based on the relationship with other variables, and reliability were evaluated. Methods derived from classical test theory (CTT) and item response theory (IRT) will be used to evaluate the psychometric properties. There are differences between the two methods. CTT assumes that common estimation of measurement accuracy is equal for all individuals regardless of their attribute or trait levels, whereas, in IRT, measurement accuracy depends on the value of the latent attribute (Jabrayilov et al., 2016). Additionally, IRT has practical advantages for the evaluation of instruments measuring clinical constructs (Reise & Waller, 2009). In this sense, IRT methods would allow for detecting subtle changes in people's mental health indicators that would not be identified with the use of average scores, would help to overcome the sample dependence reported in CTT methods and would generate item/person invariant statistics that would allow for obtaining optimal individual scores and comparing them in different tests (Jabrayilov et al., 2016). Also, the application of IRT would help to obtain unidimensionally consistent assessments and treat symptoms, in this case of boredom proneness, as an ordinal indicator of risk scaled along a continuum. The use of IRT will allow us to further demonstrate the unidimensionality of the SBPS and to assess its local reliability, i.e., measurement precision, along the underlying continuum. Using procedures from both methods will allow for more robust results and a better understanding of the structure of the SBPS. It is expected that, like findings in the United States (Struk et al., 2017) and China (Peng et al., 2020), the SBPS will exhibit a single dimension and high reliability values. Also, it would be expected to find a gradual pattern of weak to strong relationships with the presence of anxiety and depressive symptoms (Elhai et al., 2021; Holte & Ferraro, 2020; Lee & Zelman, 2019; Wolniewicz et al., 2020). Finally, having a brief measure of boredom propensity is especially important during the current COVID-19 pandemic, where quarantine and social distancing reduce activity engagement (Brooks et al., 2020).

## Method

There were 588 participants between 17-53 years old ( $M = 21.70$ ;  $SD = 5.22$ ); 471 females (80.10 %) and 117 males (19.90 %). 141 indicated that they were diagnosed with COVID-19 (24 %) and 519 had a family member who was infected with COVID-19 (88.30 %). The sample size was selected using the 'semPower' library (Moshagen & Erdfelder, 2016) setting as parameters 20 degrees of freedom calculated using the formula  $k(k-3)/2$ ; RMSEA = .05, power of 0.80 and an alpha of .05, giving the total result of 565 observations; thus, the minimum recommended for



the study was exceeded. The sampling used was purposive because a group of participants was deliberately selected to respond to the research objective (Maxwell, 2012).

## Instruments

*Boredom Proneness Scale-Short Form* (SBPS; Struk et al., 2017), an instrument with 8 items measuring aspects of boredom. It is a derivative version of the 28-item long scale (Farmer & Sundberg, 1986). The response alternatives are Likert-type from 1 to 7 "Strongly disagree" to "Strongly agree". It shows a relationship with other variables that measure boredom such as boredom at work or mental distraction (Carriere et al., 2013; Farmer & Sundberg, 1986). The reliability obtained using Cronbach's alpha was good ( $\alpha = 0.88$ ). See Appendix A.

*Generalized Anxiety Disorder Scale* (GAD-2; Donker et al., 2011). This instrument consists of 2 items with response alternatives ranging from 0 to 3 (0 = No day, 1 = Several days, 2 = More than half of the days, 3 = Almost every day). It is a unidimensional measure that measures symptoms of worry and anxiety with a score ranging from 0 to 6, with higher scores indicating greater severity of anxiety. It has good reliability ( $\alpha = .94$ ) in Spanish (Garcia-Campayo et al., 2010).

*Patient Health Questionnaire* (PHQ-2; Yu et al., 2011). This instrument has 2 items with a scale ranging from 0 to 3 (0 = No days, 1 = Several days, 2 = More than half of the days, 3 = Almost every day). It is a unidimensional measure of depressive symptoms, with higher scores indicating greater severity of depression. It has good psychometric properties.

## Procedures

The report was developed within a research project approved by the authors' university and was executed within the framework of the Helsinki declaration (World Medical Association, 1964). The application of the instruments was done collectively using a *Google Form* link shared through social networks (e.g., Facebook and WhatsApp). A virtual form was preferred because there is still no access to groups or meetings due to health measures against COVID-19. Along with the application of the SBPS, information about age and sex was requested. There was no time limit for the application; however, the average time was 10 minutes. The data collection was carried out during the month of June to September 2021. The data is deposited in OSF free repository. The link appears in the Availability of data and material section.

The SBPS was translated into Spanish following the recommendations of Hambleton et al. (2004) for the cross-cultural validation and adaptation of psychometric tests. Thus, the SBPS



was translated into Spanish by a bilingual expert whose native language was Spanish; then, it was backtranslated to the original language (English) by another bilingual person whose native language was English. Then, two clinical subject matter experts who are fluent in English reviewed the two versions of the translation (English-Spanish). Any discrepancies were resolved by consulting a third person with English proficiency. The SBPS in Spanish is shown in Table 1.

Table 1.

*Original English version and Spanish translation of the SBPS*

Items from the original English version	Translation of the items into a Peruvian Spanish version
1 I often find myself at “loose ends” not knowing what to do.	1. A menudo me siento “perdido(a)”, sin saber qué hacer
2 I find it hard to entertain myself.	2. Me resulta difícil entretenerme.
3 Many things I have to do are repetitive and monotonous.	3. Muchas cosas que tengo que hacer son repetitivas y monótonas.
4 It takes more stimulation to get me going than most people.	4. Necesito más estimulación que la mayoría de las personas para sentirme motivado.
5 I don't feel motivated by most things that I do.	5. Me desmotiva la mayoría de las cosas que hago.
6 In most situations, it is hard for me to find something to do or see to keep me interested.	6. En la mayoría de las situaciones, es difícil para mí encontrar algo que hacer o ver que me mantenga interesado.
7 Much of the time, I just sit around doing nothing.	7. La mayor parte del tiempo me encuentro sentado sin hacer nada.
8 Unless I am doing something exciting, even dangerous, I feel half-dead and dull.	8. A menos que esté haciendo algo emocionante, incluso peligroso, me siento medio muerto y aburrido.

The data analysis was performed with the R programming language in its RStudio environment (RStudio Team, 2020). Specifically, the libraries 'mirt' (Chalmers, 2012), 'ggplot2' (Wickham et al., 2020), 'lavaan' (Rosseel, 2012), 'tidyverse' (Wickham, 2019), 'semPlot' (Epskamp, 2015) and 'jrt' (Myszkowski, 2021) were used. Initially, descriptive information was reported, such as response rates given the ordinal nature of the variables under study.

Secondly, the internal structure was examined using Confirmatory Factor Analysis (CFA) with the *Robust Weighted Least Squares* estimator (WLSMV) because the variables were ordinal (Brown, 2015). The goodness-of-fit indices used were: Chi-square ( $\chi^2$ ), degrees of freedom (gl), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR) where values below .08 (RMSEA, SRMR)



and above .95 (CFI, TLI) are indicators of good model fit. The reliability of the SBPS was estimated using the omega coefficient ( $\omega$ ; Ventura-León & Caycho-Rodríguez, 2017) and considering strong factor loadings ( $\lambda = .50$ ).

Additional psychometric testing was conducted with Item Response Theory (IRT). Specifically, with the two-parameter Graded Response Model (GRM-2PL; Samejima, 1997). The discrimination parameter ( $\alpha$ ) which indicates the ability of the test to differentiate between high and low trait individuals ( $\theta$ ) is often in the range of -3 to 3; but values greater than 1 are indicators of high discrimination. The location parameter ( $\beta$ ) indicates the value on the  $\theta$  scale where the individual is likely to respond between one response alternative and another. Prior to the implementation of the IRT model, the assumptions of local independence were examined using the  $Q3^*$  statistic taking as a critical score residual values lower than 0.20 (Christensen et al., 2017) and the Monotonicity assumption, through the inspection of the characteristic curve of the categories. The algorithm to determine the dimensionality reduction was MCEM (Monte Carlo EM estimation). The fit was checked at two levels: (a) At the model level, through the recommendations of Cai et al. (2006): 2-log likelihood, comparative index, (CFI > .95), Tucker-Lewis (TLI > .95) and root mean square error of approximation (RMSEA) and (b) At the items level, through the RMSEA index which can be considered as a measure of effect, whose values  $\leq .03$  can be indicators of excellent fit (Xu et al., 2017); that is, it establishes the magnitude of the difference between the observed and estimated score in the IRT model. The generalized  $S-\chi^2$  statistic (Kang & Chen, 2007) is not used as a measure of item misfit given that it is an inferential procedure, which takes the p-value as a decision criterion and requires random sampling (Hirschauer et al., 2020); something that was not performed in the study; moreover, the p-value is sensitive to sample size (Lin et al., 2013). Reliability was estimated using the test information function, the items and the empirical or marginal reliability ( $r_{xx}$ ) which consists between the *factor scores* and the model estimates (Du Toit, 2003).

Finally, the predictive ability of the instrument was examined through its relationship with other variables (e.g. Anxiety and Depression) using the GAD-2 and PHQ-2 to examine the degree of association between the variables and whether they are consistent with previous theoretical postulates (Lee & Zelman, 2019).



## Results

### Descriptive analysis

Table 2 shows the percentages of responses. It is observed that the highest values occur in alternative 1 ("Strongly disagree"), 3 ("Disagree") and 4 ("Neutral") and the lowest in 6 ("Somewhat agree") and 7 ("Strongly agree"). Similarly, the moderate correlations observed between the items indicate that the similar responses of people to each of them are due to the existence of an underlying factor that explains them.

Table 2.

*Descriptive statistics, response rates, and correlation matrix*

	Response rate							Correlation matrix						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
1	.23	.14	.13	.20	.14	.10	.06	-						
2	.22	.14	.18	.20	.14	.06	.06	.54	-					
3	.09	.07	.09	.17	.27	.13	.19	.51	.57	-				
4	.18	.13	.14	.21	.17	.09	.09	.60	.59	.60	-			
5	.28	.12	.21	.19	.10	.06	.04	.62	.64	.57	.73	-		
6	.19	.12	.17	.21	.16	.08	.05	.60	.67	.58	.69	.71	-	
7	.29	.11	.21	.17	.11	.06	.04	.55	.53	.51	.54	.64	.65	-
8	.36	.10	.21	.17	.08	.06	.03	.52	.53	.45	.64	.65	.62	.56

Note: Numbers in the response rate section denote Likert scale percentage. Correlations are polychoric.

### Confirmatory factor analysis

The dimensionality of the SBPS was tested based on the hypothesis that a single factor explains the item scores. This model produced excellent goodness-of-fit indices:  $\chi^2(20) = 73.347$ ; CFI = .992; TLI = .989; RMSEA = .068; SRMR = .023. The factor loadings were greater than .70 (see Figure 1), with item 5 having the highest factor loading and item 3 the lowest. The reliability of the model was excellent ( $\omega = .91$ ).



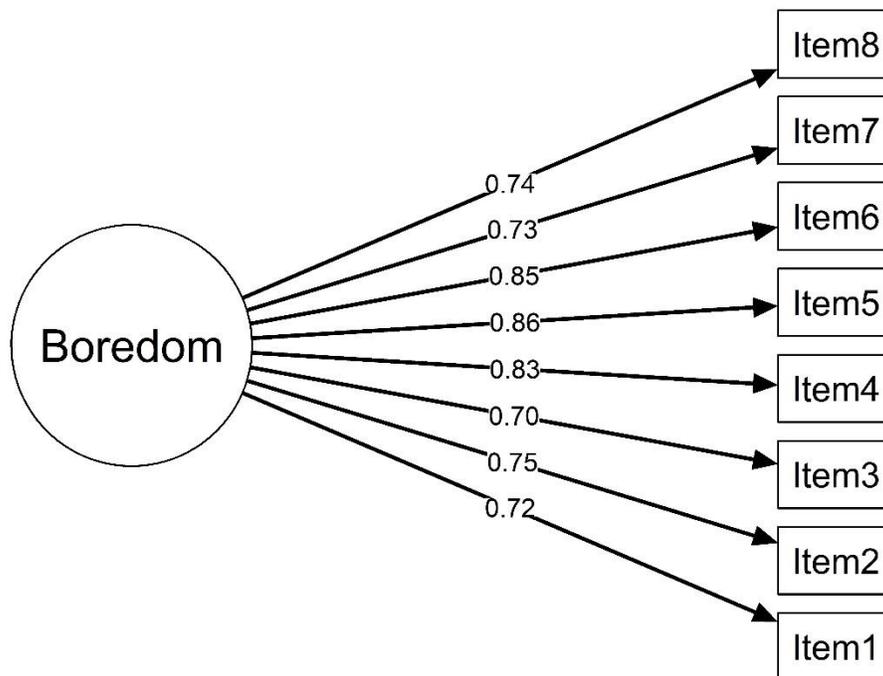


Figure 1. Factor structure of the SBPS

### Item Response Theory

A visual inspection of the characteristic curves of the categories allows us to observe that the SBPS items appear to be monotonous (see Figure 2) and the  $Q3^*$  statistic presented a value of 0.16 suggesting the presence of local independence. One aspect to highlight is item 3 ("Many things I have to do are repetitive and monotonous") where response alternatives 2, 3 and 4 were less likely to be selected with respect to the other response options (see Table 3).

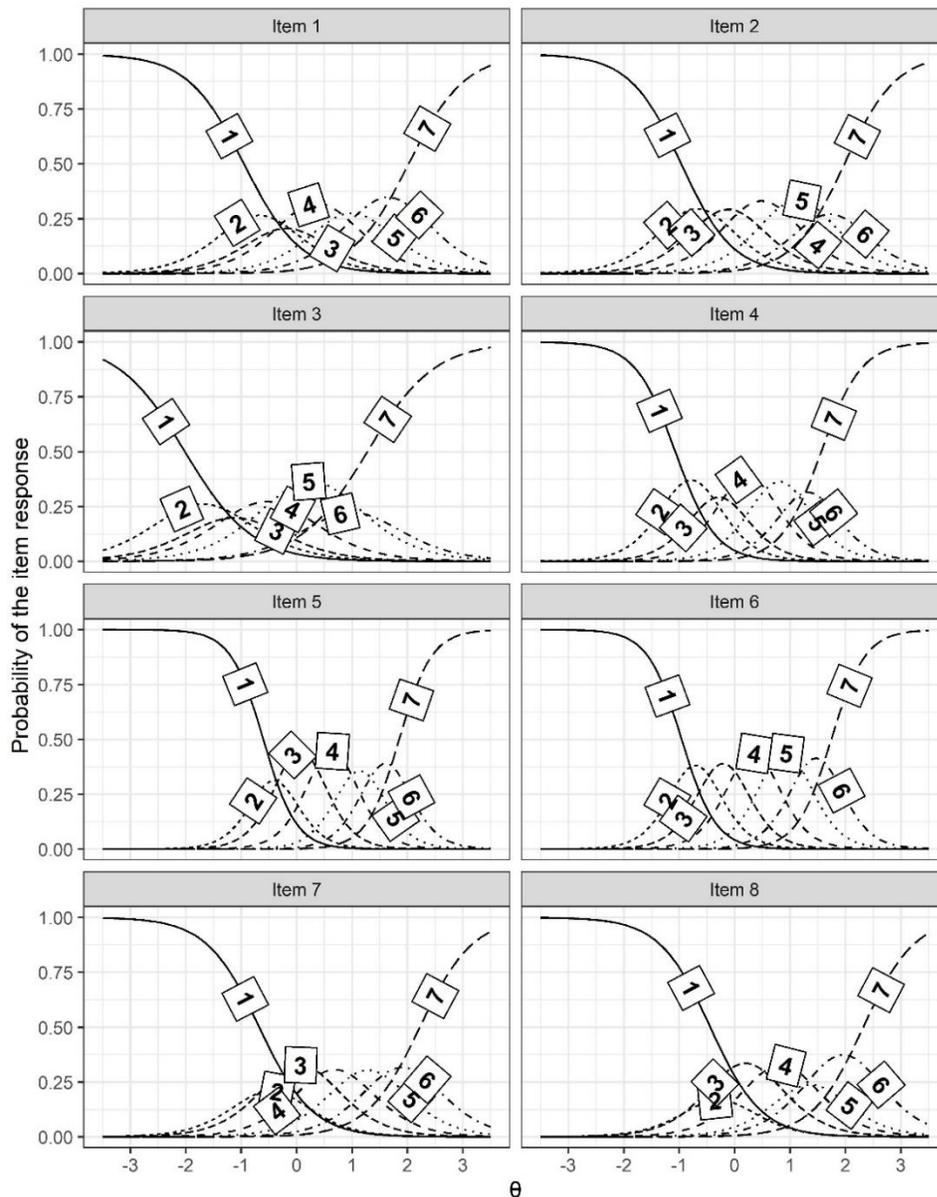
Table 3.

Item statistics for the graduated response model of the SBPS

Items	$\alpha$	$\beta_1$	$\beta_2$	$\beta_3$	$\beta_4$	$\beta_5$	$\beta_6$	RMSEA
Item1	1.98	-0.94	-0.39	0.04	0.71	1.28	2.02	.030
Item2	2.15	-0.95	-0.39	0.17	0.81	1.46	1.98	.016
Item3	1.66	-2.00	-1.35	-0.86	-0.19	0.73	1.27	.026
Item4	2.76	-1.06	-0.49	-0.06	0.54	1.09	1.57	.028
Item5	3.39	-0.59	-0.21	0.36	0.92	1.37	1.86	.004
Item6	3.26	-0.94	-0.45	0.05	0.62	1.21	1.76	.022
Item7	2.10	-0.66	-0.26	0.39	0.99	1.59	2.23	.000
Item8	2.19	-0.43	-0.12	0.52	1.15	1.60	2.32	.023

Note.  $\alpha$ : discrimination parameter;  $\beta$ : difficulty parameter; RMSEA (measure of effect).

Discrimination parameters ( $\alpha$ ) were high for each of the items (i.e.,  $> 1.0$ ), whereas, the fit of the 2PL unifactor model revealed good goodness-of-fit indices:  $M2(20) = 54.30$ ;  $RMSEA = .054$ ;  $SRMR = .054$ ;  $TLI = .990$ ,  $CFI = .993$ . Item fit was calculated using the RMSEA index, which indicated that the differences between the observed and estimated scores of each SBPS item were minimal ( $RMSEA \leq .030$ ).



Note. The numbers inside the lines indicate the answer alternative.

Figure 2. Characteristic curves of the categories

## Reliability

The reliability obtained through the empirical (marginal) coefficient revealed a good internal consistency of the test at the peak of the trait assessment ( $r_{xx} = .92$ ). These results are supported by the information and standard error function of the test which evidences a maximum value of 15.24 ( $SE = 0.26$ ) when the trait level is  $\theta = -0.20$ , indicating that the instrument is more accurate for medium levels of the latent trait (Figure 3).

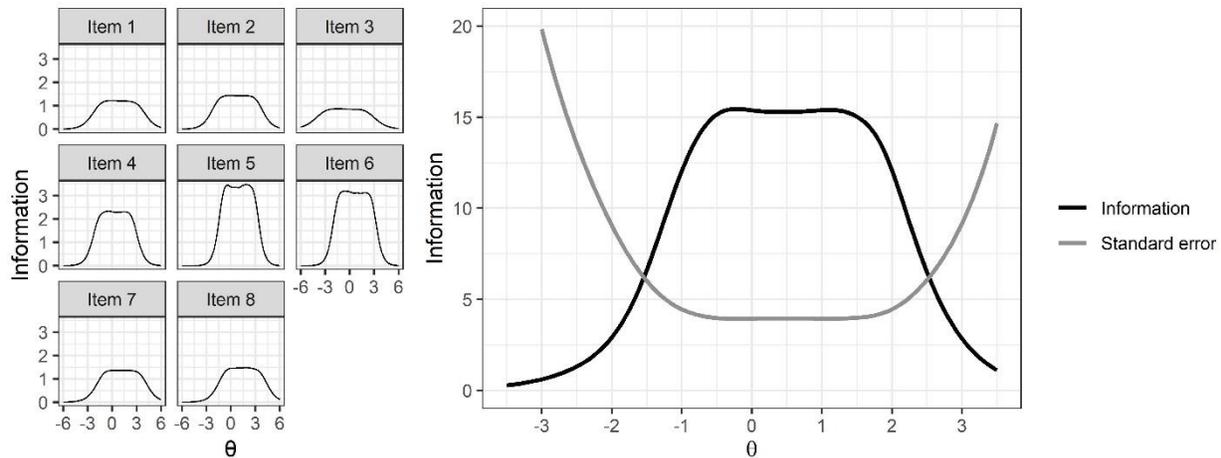


Figure 3. *Item and Test information Function*

## Validity in relation to other variables

The literature review proposed an SEM model to examine the relationship between boredom with anxiety and depression. The goodness-of-fit indices were optimal:  $\chi^2(51) = 241.50$ ; CFI = .981; TLI = .975; RMSEA = .080; SRMR = .042. In the measurement model, the items correctly represent the constructs. As seen in Figure 4, Boredom is found to be related to anxiety ( $r = .55$ ) and depression ( $r = .83$ ). These results indicate that the SBPS scores exhibit convergent validity with the scores of the constructs that are theoretically expected to converge.

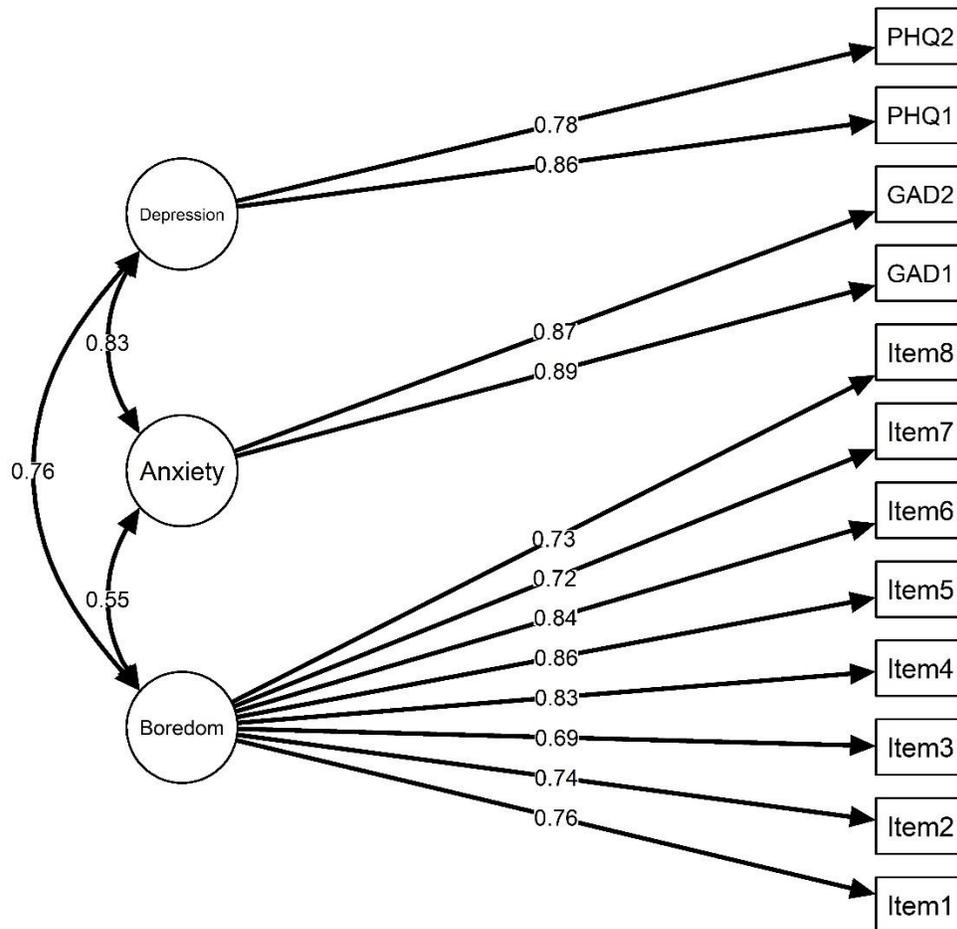


Figure 4. Explanatory model of SBPS with depression and anxiety

## Discussion

The aim of this research study was to examine whether the Spanish version of the SBPS has good psychometric evidence for its validity. In general, the results indicate that the SBPS is a reliable and valid measure of the propensity or tendency towards boredom. There were different versions of the BPS (Dursun & Tezer, 2013; Vodanovich et al., 2005; Vodanovich & Kass, 1990) that regularly contain two factors such as lack of internal and external stimulation (Melton & Schulenberg, 2009). However, these can be summarized in a solid unidimensional short-form measure with eight items (Struk et al., 2017). Thus, high scores on the SBPS indicate a greater tendency towards boredom (Farmer & Sundberg, 1986).

At a descriptive level and based on the response rates, it is observed that participants have a general preference for choosing response categories between 1 and 3 (disagree); with the

exception of item 3 ("*Many things I have to do are repetitive and monotonous*") where most people tend to choose positive response categories (5 to 7). This indicates a strong identification with the construct measured (boredom proneness); suggesting that even those with an average or slightly lower level of boredom have gone through this situation and tend to respond with a high degree of agreement. However, as it is the only item with this characteristic, it is also possible that the item is not measuring solely boredom, but also other factors that are situational and/or external to the construct that cause this alteration in the response pattern of the participants. In this case, such behaviour may be part of depressive symptomatology (Lee & Zelman, 2019) or a reduced purpose in life (Goldberg et al., 2011); that is, the perception of a boring life in general (Tam et al., 2021).

The goodness-of-fit results of the CFA indicate that a unifactorial structure can explain the analysis of the inter-item correlations, in addition to presenting high factor loadings, especially in items 5 (*I am demotivated by most of the things I do*), 6 (*in most situations, it is difficult for me to find something to do or see that keeps me interested*) and 4 (*I need more stimulation than most people to feel motivated*). These items refer to situations of motivation-demotivation and activity permanence, an important aspect within boredom studies because demotivation is a trigger for boredom proneness and can motivate goal seeking, novel stimuli, and even risky situations (Bench & Lench, 2013; Farmer & Sundberg, 1986; Struk et al., 2017; Tam et al., 2021; Vodanovich, 2003; Vodanovich & Watt, 2016). From a CTT analysis, they would be the most important and relevant to measure the boredom proneness construct.

The 2PL IRT GRM model revealed results concordant with those shown by the CFA. Its goodness-of-fit indices also supported a one-factor configuration for the measurement of boredom proneness. In the analysis of item fit with a 2PL model, using the RMSEA index as a measure of effect, it was shown that the differences between observed and estimated scores are minimal for the 2PL model ( $RMSEA \leq .030$ ). Despite this, item 1 ( $RMSEA = .030$ ; *I often feel "lost," not knowing what to do*) came close to having a mismatch. A tentative explanation is the complexity in its translation into Spanish specifically, of the term "*loose ends*" from the original English scale. This would reflect possible problems of semantic equivalence; that is, the transfer of the meaning to Spanish does not seem to achieve a similar effect in the respondents (Bolaños-Medina & González-Ruiz, 2013). In future studies, if RMSEA values equal to or higher than those found here are found, a thorough analysis of the item content is suggested.



However, in general terms, the IRT model is valid and therefore its calculated parameters ( $\alpha$  and  $\beta$ ) are also valid.

According to the discrimination parameter ( $\alpha$ ) of the 2PL GRM model, the highest values occur in item 5 (*I am demotivated by most of the things I do*) and 6 (*in most situations, it is difficult for me to find something to do or watch that keeps me interested*). This means that test takers can better differentiate their responses based on their level of the boredom proneness trait; that is, a person with a very high level of boredom proneness will respond differently than a person with a low level of boredom proneness. This characteristic in the items enhances the test and allows us to evaluate with greater amplitude different levels of this trait in different people. Figure 3 shows that there is an excellent measurement of boredom proneness in theta values from -1 to 1.5, and as the trait goes lower than the lower point or higher than the upper point, the responses obtained from those evaluated tend to be less differentiated and therefore to have less precision in their measurement.

Reliability was estimated from CTT through the omega coefficient (Ventura-León & Caycho-Rodríguez, 2017) whose magnitude was excellent ( $\omega = .91$ ). Additionally, the information function and standard error of the test was estimated from IRT which showed that the test performs better for medium levels of the trait (Chalmers, 2012). This makes sense, since the selected sample are people who do not present some clinically diagnosed trait, where perhaps a different performance could be observed, as occurs in people with depressive symptomatology (Lee & Zelman, 2019; Wolniewicz et al., 2020) or with little purpose with respect to their life (Goldberg et al., 2011).

Once the internal structure and internal consistency of the test were demonstrated, we proceeded to establish relationships with variables that theoretically show a relationship with boredom proneness, such as anxiety and depression (Holte & Ferraro, 2020; Lee & Zelman, 2019; Wolniewicz et al., 2020). In this sense, a relational model was established from SEM with the PHQ-2 and GAD-2. The results showed that the magnitude and direction was as expected. According to this finding, SBPS scores are related to negative affect (e.g., anxiety and depression); that is, to people who are unable to satisfy their needs or desires (Struk et al., 2017) or who present different levels of boredom because of a clinical condition (Lee & Zelman, 2019; Wolniewicz et al., 2020). Overall, the findings seem to suggest that boredom may be associated with poor psychological health (Brooks et al., 2020). The results of the relationships



between boredom proneness, anxiety and depression allow us to contribute to the current body of knowledge on the subject during the current COVID-19 pandemic, which is scarce in Latin American countries. The associated social distancing regulations, isolation and quarantine during the pandemic reduced social contacts, which may explain the increase in boredom and anxiety in the population (Taylor et al., 2020). Also, boredom may lead to loneliness and the presence of depressive symptoms, which may have indirect effects on the health of the population, such as substance use or drug abuse (Boateng et al., 2021).

### Limitations and future research suggestions

Although interesting findings were found, the study has the following limitations. First, the sampling used was intentional due to a criterion of accessibility of the sample under study; it is suggested that future studies should carry out random sampling to generalize the results to the population of young people and adults in Peru. Second, it was not feasible to perform factorial invariance or differential functioning of the items according to sex, due to the absence of equivalence between the groups; however, such exploration is recommended to be able to use the SBPS in comparative studies.

### Conclusion

It is concluded that the SBPS is a reliable and valid measure of boredom proneness or tendency and can be used in future studies in Spanish-speaking countries. In fact, from a practical aspect, having a measure of boredom proneness could foster strong contributions to mental health prevention, because this construct favours the acquisition of behavioural addictions (Chou et al., 2018; Wang et al., 2020; Wolniewicz et al., 2020), as well as to psychoactive substances (Sommers & Vodanovich, 2000); it appears with greater intensity in clinical disorders such as anxiety, depression, stress (Holte & Ferraro, 2020; Lee & Zelman, 2019; Wolniewicz et al., 2020) and aggressiveness (Cao & An, 2020); in addition, it impacts personal well-being, life purpose and decreases the probability of dying (Britton & Shipley, 2010; Fahlman et al., 2009; Goldberg et al., 2011; Tam et al., 2021). From a theoretical aspect, a unidimensional measure contributes to having a parsimonious model; that is, less complex and with fewer parameters for the benefit of a better fit (Lúcio et al., 2021); of course, considering that it is also conceptually relevant, because the few items of the SBPS are a representative sample of factors of lack of internal and external stimulation (Melton & Schulenberg, 2009) and measure the individual's capacity or situational disposition to access or find solutions to an unsatisfactory experience (Struk et al., 2017). In summary, the SBPS is a useful measure for future research in Spanish.



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## About the Authors

**José Ventura-León** - Bachelor of Psychology and Doctor of Psychology. Full professor and researcher at the Private University of the North, Lima, Peru.

**Tomás Caycho-Rodríguez** - Bachelor of Psychology and Doctor of Psychology Full professor and researcher at the Scientific University of the South, Lima, Peru.

**Brian Norman Peña-Calero** - Bachelor of Psychology at National University of San Marcos. Independent researcher and data analyst.

**Michael White** - master's degree from Andrews University, Michigan, USA. In charge of Scientific Publications and Translations at the General Direction of Research of the Universidad Peruana Union.

**Corresponding Author's Address:** [\[TOP\]](#)

Email: [jose.ventura@upn.pe](mailto:jose.ventura@upn.pe)



**Appendix A**  
**Short Boredom Proneness Scale Spanish version**

Totalmente en desacuerdo	Algo en desacuerdo	En desacuerdo	Neutral	De acuerdo	Algo de acuerdo	Totalmente de acuerdo
1	2	3	4	5	6	7

1. A menudo me siento “perdido(a)”, sin saber qué hacer	1	2	3	4	5	6	7
2. Me resulta difícil entretenerme.	1	2	3	4	5	6	7
3. Muchas cosas que tengo que hacer son repetitivas y monótonas.	1	2	3	4	5	6	7
4. Necesito más estimulación que la mayoría de las personas para sentirme motivado.	1	2	3	4	5	6	7
5. Me desmotiva la mayoría de las cosas que hago.	1	2	3	4	5	6	7
6. En la mayoría de las situaciones, es difícil para mí encontrar algo que hacer o ver que me mantenga interesado.	1	2	3	4	5	6	7
7. La mayor parte del tiempo me encuentro sentado sin hacer nada.	1	2	3	4	5	6	7
8. A menos que esté haciendo algo emocionante, incluso peligroso, me siento medio muerto y aburrido.	1	2	3	4	5	6	7

