



Portuguese Version of the Suicidal Behaviors Questionnaire-Revised

Validation Data and the Establishment of a Cut-Score for Screening Purposes

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Abstract: The aim of the present study is to provide validation data regarding the Portuguese version of the Suicidal Behaviors Questionnaire-Revised in nonclinical individuals. Two studies were undertaken with two different nonclinical samples in order to demonstrate reliability, concurrent, predictive, and construct validity, and in order to establish an appropriate cut-score for nonclinical individuals. A sample of 810 community adults participated in Study 1. Results from this study provided information regarding scale internal consistency, confirmatory factor analysis, and concurrent validity. Receiver operating characteristic curve analysis established a cut-off score to be used for screening purposes with nonclinical individuals. A sample of 440 young adults participated in Study 2, which demonstrated scale score internal consistency and 5-month predictive validity. Further, 5-month test-retest reliability was also evaluated and the correlations of SBQ-R scale scores with two other measures that assess constructs related to suicidality, depression and psychache, were also performed. In addition, confirmatory factor analysis was undertaken to demonstrate the robustness of the result obtained in Study 1. Overall, findings supported the psychometric appropriateness of the Portuguese Suicidal Behaviors Questionnaire-Revised.

Keywords: Suicidal Behaviors Questionnaire-Revised, Portuguese version, validation data, nonclinical samples, cut-score

Suicide and suicidal behaviors are an important public health problem, not only in clinical populations but also in community populations. Worldwide, almost 1 million die by suicide each year (National Institute of Mental Health, 2009). In Portugal, over 1,000 people die by suicide every year (10.3 per 100,000 in the population; National Institute of Statistics, 2013). For every death by suicide, there are many times more attempted suicides and, further, a previous suicide attempt is the single most relevant risk factor for subsequent death by suicide in the general population (World Health Organization, 2014).

Suicide is the third primary cause of death in the university and college age group (Troister, D'Agata, & Holden, 2015), with research indicating that 9.5% of students have seriously considered suicide in the previous year and 1.5% have attempted to die by suicide (American College Health Association, 2000). In demonstrating the occurrence of suicidal behaviors in nonclinical populations, another investigation of over 26,000 students at 70 US colleges (Drum, Brownson, Burton Denmark, & Smith, 2009) found that 6% of undergraduate and 4% of graduate students had seriously considered suicide and 0.85% of undergraduate

and 0.30% of graduate students had attempted to die by suicide in the previous 12 months. Despite the importance of predicting suicidal behaviors, their prediction remains an extremely difficult task (Overholser, Braden, & Dieter, 2012) because suicidal behaviors are regarded as a multifactorial phenomenon (e.g., Hawton & van Heeringen, 2009).

Many attempts to develop measures for assessing suicide risk have been undertaken (Brown, 2001), in particular developing instruments focused on suicidal behaviors or other behaviors that are closely associated with suicidal risk. Brief screening measures are useful in order to include or exclude at-risk participants in clinical samples, or to screen and detect potentially suicide at-risk individuals in the community and in epidemiological studies. Examples of these short screening measures (Brown, 2001) are the Paykel Suicide Items, the Suicidal Ideation Screening Questionnaire, and the suicide item of the Hamilton Rating Scale for Depression. The Paykel Suicide Items (Paykel, Myers, Lindenthal, & Tanner, 1974) consist of five interviewer-administered questions that have increasing levels of intent. The Suicidal Ideation Screening Questionnaire

(Cooper-Patrick, Crum, & Ford, 1994) is comprised of four interviewer-administered questions that assess sleep disturbance, mood disturbance, guilt, and hopelessness during the past year. Finally, the suicide item of the Hamilton Rating Scale for Depression (Hamilton, 1960) is another example of an interviewer-administered screening suicide item. These brief measures are all interview-based items, however, there are other circumstances where the use of a short self-report measure would have highly practical benefits. The suicide item of the Beck Depression Inventory-II (Beck, Steer, & Brown, 1996) is an option, but relying on just one item to detect suicide risk may be insufficient and psychometrically inappropriate (Hom, Joiner, & Bernert, 2015).

Osman, Bagge, Guitierrez, Konick, and Barrios (2001), reported validation data and a cut-score for a brief four-item self-report suicide risk measure that is appropriate for use with both clinical and nonclinical populations, the Suicidal Behaviors Questionnaire-Revised (SBQ-R). This measure is composed of four multiple choice response items:

“Have you ever thought about or attempted to kill yourself?”

“How often have you thought about killing yourself in the past year?”

“Have you ever told someone that you were going to commit suicide, or that you might do it?” and,

“How likely is that you will attempt suicide someday?”

The original version of the instrument, the Suicidal Behaviors Questionnaire (SBQ; Linehan, 1981), is a self-report measure comprised of 34 items, and that assesses the frequency and severity of present and past history of suicidal behaviors (Linehan & Addis, 1983). Linehan and colleagues also developed a 4-item version of the questionnaire (e.g., Linehan, Goodstein, Nielsen, & Chiles, 1983; Linehan & Nielsen, 1981). To date, there have been a number of different versions of the 4-item SBQ in the suicide literature, with this proliferation indicating a widespread need in the suicide research field (Osman et al., 2001). That there was a lack of consensus on a well-validated version of the SBQ for use with adolescents and adults in clinical and nonclinical settings led Osman et al. (2001) to modify the SBQ and to develop and systematically establish the psychometric properties of the SBQ-R for use with clinical and nonclinical adolescents and adults.

The results of Osman et al.'s (2001) research provided empirical support for the usefulness of the SBQ-R as a self-report indicator that could differentiate between suicide at-risk and nonsuicidal participants. Their receiver operating characteristic (ROC) curve analyses provided an optimal cut-score of 7 as best distinguishing suicide at-risk individuals in nonclinical samples.

Aim of the Studies in This Paper

The aim of the studies in this paper is to provide validation data regarding the Portuguese version of the Suicidal Behaviors Questionnaire-Revised in nonclinical individuals and to establish a cut-score for screening purposes. Identifying at-risk individuals in nonclinical populations is an important public health endeavor because these populations do demonstrate substantial suicidal behavior.

With the aim of demonstrating cross-cultural robustness and cross-validating results over different groups, two studies were undertaken with two different nonclinical samples in order to demonstrate reliability, concurrent, predictive, and construct validity, and in order to establish an appropriate cut-score for nonclinical individuals. In Study 1, coefficient alpha reliability was computed to assess scale internal consistency, and confirmatory factor analysis was performed to investigate the factor structure of the measure. In addition, scale means and standard deviations were compared for suicide attempters and non-attempters in order to assess concurrent validity and ROC analysis was performed in order to establish a cut-off point to be used for screening purposes with nonclinical individuals. In Study 2, we again assessed coefficient alpha reliability and evaluated 5-month predictive validity by correlating SBQ-R scores at time 1 with scores on a measure of suicide ideation at time 2, controlling for suicide ideation at time 1. Further, we assessed 5-month SBQ-R scale test-retest reliability and correlated SBQ-R scores with two other measures that assess constructs related to suicidality, depression and psychache. Another confirmatory factor analysis was undertaken to replicate the result obtained in Study 1. Finally, we compared SBQ-R total scale scores for suicide ideators and non-ideators, as indicated by Suicide Ideation Questionnaire total scores.

Study 1

Method

Participants and Procedures

A convenience sample of 810 adults, 403 men, 407 women, ranging in age from 19 to 67 years ($M = 36.34$, $SD = 12.46$) participated in this study. The sample's education level ranged from 6 to 21 years ($M = 11.74$, $SD = 5.14$). Participants (19.1%) were unemployed and 49.5% was married or living with a romantic partner. Participants were contacted directly in public places and asked to participate in a study concerning personality and mood. Of the 966 individuals initially contacted, 108 declined to participate. Protocols of 48 individuals initially assessed were eliminated due to missing socio-demographic information

or an elevated number of missing responses, yielding a final sample of 810 participants. Participation was voluntary, participants gave written informed consent and they were not compensated for their participation. All protocols contained a socio-demographic form and several questionnaires as part of a larger study concerning suicide risk. Protocols were collected individually by trained research assistants and instructions were provided in written form. The questionnaires were presented in a counterbalanced order, but the socio-demographic form was always the first to be answered. Data collection fulfilled all recommended ethical guidelines of the Portuguese Psychologists Board and of the American Psychological Association. Participants were given the opportunity to discontinue their participation at any time. Participants provided information regarding socio-demographics and also provided information regarding previous suicide attempts. Contact information for organizations that respond to at-risk individuals was provided to participants at the time of data collection.

Measure

The Suicidal Behaviors Questionnaire-Revised (SBQ-R) The four items of the SBQ-R are responded to on Likert scales, with ratings varying between 1 and 4, 1 and 5, 1 and 3, and 0 and 6 for items 1-4, respectively. Items were translated to Portuguese by the first author, three additional clinical psychologists, a master's student, and a doctoral student in clinical psychology. The translation was a straightforward procedure because items represent very clear concepts and, as such, no particular problems occurred. After the translation to Portuguese, a back-translation was performed by a bilingual translator. The original English form and the back-translation form were quite similar and both authors agreed that no subsequent significant changes were required.

Results

Because SBQ-R items have varying response scales, a standardized coefficient alpha was computed for the 4-item SBQ-R scale scores and its value was .77. Corrected item-total correlations for the four items were .60, .58, .54, and .55, respectively.

Because SBQ-R item distributions were strongly positively skewed, a square root transformation of responses to the four items of the SBQ-R was applied. Subsequently, a maximum likelihood confirmatory factor analysis of the SBQ-R items was undertaken using AMOS 21 and it revealed that a one-factor solution fit the data well: $\chi^2/df = 2.138$, CFI = 0.997; NFI = 0.995, SRMR = 0.013, RMSEA = 0.038.

Comparing the mean (untransformed) value in the SBQ-R ($M = 9.65$; $SD = 2.56$) of the 35 attempters with

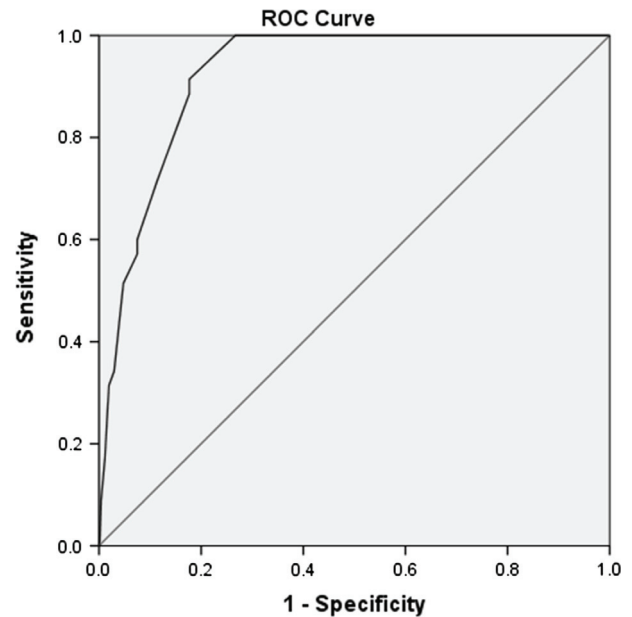


Figure 1. Receiver operating characteristic curve for predicting suicide attempter vs non-attempter status from SBQ-R Scale Score (AUC = .924).

non-attempters ($M = 4.73$; $SD = 2.23$) revealed a significant difference $t(808) = 12.65$, $p < .001$, Cohen's $d = 2.19$. In this sample 10.7% of the participants had previously attempted suicide or had a suicide plan, and 27.9% had some lifetime suicidal ideation.

To develop an optimal cut-off point for SBQ-R scale scores, a receiver operating characteristic (ROC) curve analysis was undertaken to identify suicide attempters from non-attempters. ROC curve analyses are independent of prevalence rates and do not require assumptions of normality or homoscedasticity. Diagnostic accuracy for these analyses is summarized as the area under the curve (AUC) with AUCs of .50-.70, .70-.90, or over .90 interpreted as low, moderate, or high accuracy, respectively (Fischer, Bachmann, & Jaeschke, 2003; Streiner & Cairney, 2007). For identifying suicide attempters, the AUC (see Figure 1) for the SBQ-R was .924, $p < .001$, and represented a high degree of accuracy. A cut-score for indicating suicide attempters that optimized the balance between sensitivity and specificity was a SBQ-R scale score greater than or equal to 7 (sensitivity = .89; specificity = .82; relative risk ratio = 29.62).

Study 2

Method

Participants and Procedures

In this second study, an initial sample of convenience of 440 young adults, undergraduate students of a Portuguese

university, participated. Forty-four protocols were excluded: 24 potential participants failed to give identification that allowed for linking of protocols at time 2 and 20 participants provided an elevated number of missing values or invalid protocols, resulting in a final sample at time 1 of 396. The second time of data collection occurred 5 months later. This time interval was arbitrary and was chosen as a matter of convenience. Among the 396 valid protocols at time 1, 82 did not participate at time 2. Due to an inability to pair protocols across times, 32 additional participants' data were excluded, resulting in time 2 in 282 participants. Of these, another two were removed due to excessive missing data, thus resulting in a final sample of 280 participants at time 2. Among the participants, 5.4% was working at the time of assessment; 52.3% was freshman, 19.4% was in the second year of studies, 20.8% was in the third year, and 6.5% was in the fourth year. One percent did not provide this information. Participants were volunteers and they completed questionnaires after signing an informed consent form. All protocols were collected in groups in classrooms and instructions were presented in written form. Data collection complied with all ethical guidelines of the Portuguese Psychologists Board. Participants had the opportunity to discontinue participation at any time. Participants were not compensated monetarily for their participation.

Measures

The Suicidal Behaviors Questionnaire-Revised

This measure was previously described in Study 1.

The Psychache Scale

This scale is a 13-item self-report measure (Holden, Mehta, Cunningham, & McLeod, 2001) developed to assess Shneidman's (1979) construct of psychological pain (psychache) as a relevant dimension for suicide risk. Psychache Scale scores have adequate psychometric properties, with coefficient alpha reliabilities above .90. The Portuguese version of the scale (Campos & Holden, 2015) demonstrates adequate psychometric properties regarding internal consistency and validity, correlating significantly with the Beck Hopelessness Scale. In the present sample, the coefficient alpha was .93.

Center for the Epidemiological Studies of Depression Scale (CES-D; Radloff, 1977)

The CES-D assesses the severity of depressive symptoms and was developed for use with nonclinical populations. Responses to items indicate the frequency with which each of 20 symptoms was experienced over the previous week on a 4-point scale (0–3). CES-D scale scores have acceptable levels of internal consistency reliability and validity for various populations. The Portuguese adaptation of the CES-D (Gonçalves & Fagulha, 2004) has adequate

psychometric properties with coefficient alpha varying between .87 and .92 in different samples. In the present sample, the coefficient alpha was .90.

Suicide Ideation Questionnaire (SIQ; Reynolds, 1988)

This measure is a 30-item self-report questionnaire. Items are scored on 7-point Likert scales, ranging from 0 (= *I have never had this thought*) to 6 (= *Almost every day*). The measure asks about suicide ideation in the previous month. The SIQ was adapted for a Portuguese population by Ferreira and Castela (1999). Coefficient alpha for scale scores on the Portuguese version was .96. In the present study, coefficient alpha was .97. A cut-off score of 40 is usually used to designate clinically significant suicide ideation (Reynolds, 1988).

Results

SBQ-R scale scores had a standardized coefficient alpha reliability of .69 and a 5-month test-retest reliability correlation of .65. As in Study 1, SBQ-R item distributions were positively skewed and a square root transformation was applied prior to a maximum likelihood confirmatory factor analysis using AMOS 21. A one-factor solution again fit the data well: $\chi^2/df = 1.98$, CFI = 0.994; NFI = 0.989, SRMR = 0.018, RMSEA = 0.050.

Correlations between the SBQ-R and the CES-D ($r = .39$) and the Psychache Scale ($r = .53$) at time 1 were significant ($p < .001$) and represented medium-to-large and large effect sizes, respectively. The correlation between SBQ-R scores obtained at time 1 and SIQ scores at time 2 was .49 ($p < .001$) and this large effect size correlation remained significant when controlling for SIQ scores at time 1, $\beta = .22$, $p < .005$ - $R^2 = .30$. In this sample 6.1% of the participants had previously attempted suicide or had a past suicide plan, and 20.2% had some lifetime suicidal ideation.

Comparing scale scores on the SBQ-R ($M = 10.21$; $SD = 2.49$) of the 14 suicide ideators (who had SIQ scale scores greater than the scale's cut-off score) with non-ideators ($M = 4.15$; $SD = 1.76$) revealed a significant difference $t(394) = 12.47$, $p < .001$, of a very large effect size, Cohen's $d = 3.40$.

Discussion and Conclusions

The aim of the present study was to provide validation data regarding the Portuguese version of the Suicidal Behaviors Questionnaire-Revised in nonclinical individuals. Two studies were undertaken with two nonclinical samples in order to demonstrate reliability, concurrent, predictive, and construct validity, and in order to establish an appropriate cut-score for nonclinical individuals.

Results support the internal consistency reliability of the Portuguese SBQ-R scale scores and their construct, predictive and criterion validity. Further, total scores on the SBQ-R predict changes in suicide ideation over 5 months as assessed by the SIQ. SBQ-R scores are also related to measures of depression and psychache. In addition, previous suicide attempters and nonattempters demonstrate significantly different total scores on the measure. Suicide ideators and non-ideators as indicated by Suicide Ideation Questionnaire total scores also demonstrate significantly different total scores on the SBQ-R. Confirmatory factor analyses revealed the existence of just one factor that could be designated as general suicidality or suicide risk. All the fit indexes fell within acceptable ranges as proposed by Schweizer (2010). In yielding a single factor, results suggest that, as measured by the SBQ-R, suicidality appears to be a continuum rather than a multifaceted construct. Analyses also permitted the establishment of a Portuguese SBQ-R cut-score of 7 for screening purposes in a nonclinical population. The relative risk ratio for this cut-score indicates that those scoring at or above 7 are approximately 29 times more likely to be a suicide attempter than those scoring below 7. Of note, the cut-score is similar to that proposed by Osman et al. (2001) and, as such, attests to the cultural and linguistic appropriateness of the translated version of the SBQ-R.

Limitations and Conclusion

The present study may have some limitations. A first consideration pertains to our use of maximum likelihood confirmatory factor analysis. It should be noted that, if data are not normally distributed, minor departures from normality are not problematic but that more severe departures from normality result in underestimation of fit (Brown, 2006). As such, our obtained good fit may, in fact, underestimate the goodness of fit for our one-factor model. Second, Study 2 was undertaken with an undergraduate student sample, not a community sample. Third, only one criterion of suicidal behavior was used: a previous suicide attempt. Finally, we did not evaluate the validity of the measure and/or develop a cut-score for clinical individuals. Future research can seek to establish the generalizability of the present results with other community and clinical samples, and using other criteria of suicide risk.

Despite these potential limitations, our results support the validity of the Portuguese version of the Suicidal Behaviors Questionnaire-Revised with nonclinical individuals. We believe that this version of the SBQ-R could be an important tool for research in suicidology conducted with Portuguese speakers and for detecting potentially suicide at-risk individuals in epidemiological studies. With its

briefness (four items), the simplicity of its wording and administration, and its self-report nature, the SBQ-R has the practical advantage of being a measure that can be administered in groups and that can screen simultaneously a large number of individuals.

Acknowledgments

We would like to acknowledge the research assistants of the University of Évora, Portugal for their valuable help with the data collection. Grateful thanks are also extended to all of the participants in this study.

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Received November 19, 2015

Revision received March 18, 2016

Accepted June 20, 2016

Published online December 29, 2016

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