Spanish adaptation and validation of the Brief Negative Symptoms Scale


Abstract

Negative symptoms prevalent in schizophrenia are associated with poor outcome. Developing new instruments to identify new treatments was highlighted at the NIMH-MATRICS Consensus Development Conference on Negative Symptoms. The new Brief Negative Symptoms Scale (BNSS) demonstrated strong psychometric properties, but there is a need for validating it in non-English languages. A multi-center study was conducted to validate the Spanish version of the BNSS (BNSS-Sp) in 20 schizophrenia patients, following the original BNSS validation methodology. We found strong inter-rater, test–retest and internal consistency properties (for the total BNSS-Sp, intraclass correlation coefficient = 0.97, Pearson’s correlation coefficient r = 0.95 (p < 0.001), Cronbach’s alpha = 0.98). © 2014 Elsevier Inc. All rights reserved.

1. Introduction

Negative symptoms have long been recognized as core symptoms of schizophrenia and are associated with poor outcome [1]. To date, no current pharmacological treatment has the indication for treating negative symptoms. In order to advance treatments of schizophrenia, the National Institute of Mental Health (NIMH), an agency of the United States government responsible for mental health related research, organized the NIMH-MATRICS Consensus Development Conference on Negative Symptoms [2]. Five domains of negative symptoms were defined, including blunted affect, alogia, asociality, anhedonia and avolition. Crucially, the need for developing new instruments was highlighted, as the first step to identify new treatments that would target negative symptoms. The Brief Negative Symptoms Scale (BNSS) is one of two scales derived from this initiative, along with the Clinical Assessment Interview for Negative Symptoms (CAINS). Both measures have shown strong inter-rater, test–retest and internal consistency properties in English [3–5].

The BNSS is a concise 13-item scale that is organized into 6 subscales, that include those negative domains agreed at the NIMH-MATRICS Consensus, plus the distress item. All the items are rated on a 7-point scale (0–6), with total scores ranging from 0 to 78. The administration of this scale takes approximately 15 minutes. The brevity of this scale makes it a feasible tool for use in multicenter clinical trials as well as in daily clinical routine [5].

At present, there is a need to validate the BNSS into different languages. Clinical trials that license new drugs involve different regions. Spanish is the primary language of 20 countries, ranking as the second most widely spoken language in terms of native speakers [6]. Here we present the translation and validation of the Spanish version of the BNSS.
2. Subjects and methods

2.1. Subjects

Twenty patients with a diagnosis of schizophrenia (Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition; DSM-IV) from outpatient units at three settings (Parc de Salut Mar Barcelona, Hospital Clinic de Barcelona and Universidad de Oviedo) were recruited. Patients with IQ below 80, neurological disorders or substance dependence except tobacco and cannabis, were excluded. All subjects gave written informed consent in accordance with the respective clinical ethical committees.

2.2. Procedures

2.2.1. Translation of the scale

The BNSS Spanish adapted version (BNSS-Sp) was developed using the translation–backtranslation method. The manual, scoresheet and workbook were translated into Spanish by native Spanish-speaking psychiatrists (available on request). The translated version was then backtranslated into English by an English psychiatrist fluent in Spanish (GS). The backtranslated version was reviewed and approved by one of the original developers of the scale (BK).

2.2.2. Validation

We followed the original BNSS validation methodology [4]. At baseline, all subjects were interviewed and assessed with the BNSS-Sp, the Positive and Negative Syndromes Scale (PANSS) [7] and the Scale for the Assessment of Negative Symptoms (SANS) [8] by four psychiatrists (AM, CGR, DB, PGP) and one psychologist (LGA) from their corresponding outpatient units. Assessments were based on information referring to a one-week period, determined from self-report and direct patient observation. All interviews were videotaped for later rating. Sociodemographic and other clinical characteristics were also assessed.

Ratings of all patients from videotapes were carried out independently by six psychiatrists (AM, CGR, DB, EFE, GS, PGP) and one psychologist (LGA) from four different settings (Parc de Salut Mar Barcelona, Hospital Clinic de Barcelona, Universidad de Oviedo, University of Cambridge).

One-week test–retest reliability was performed on ten of these patients by four psychiatrists and one psychologist (LGA) from these four settings (AM, CGR, EFE, PGP).

A pre-validation exercise was conducted, which included two pilot patients with the same inclusion criteria. Patients were interviewed with the BNSS-Sp and videotaped by AM. They were later assessed by all participant raters. Ratings were discussed to ensure that BNSS-Sp criteria were understood.

2.3. Statistical analysis

To determine baseline interrater reliability, intraclass correlation coefficients (ICCs) were calculated for the BNSS-Sp total score and for each subscale. Internal consistency was calculated with Cronbach’s alpha. To assess test–retest reliability, Pearson correlations for the total BNSS-Sp and subscale scores between baseline and week 1 scores were calculated.

Concurrent validity was assessed by correlating the total BNSS-Sp score with the PANSS negative subscale and the SANS total scores. Discriminant validity was assessed by correlating the BNSS-Sp total score, with the total, general psychopathology, and positive subscale scores from the PANSS.

3. Results

Twenty subjects were included with a mean age (standard deviation) of 37.34 (11.71) year-old and a mean illness duration of 11.6 (10.37) years. 70.0% were male. The test–retest was performed on 10 subjects (5 from Parc de Salut Mar Barcelona and 5 from Universidad de Oviedo), with a mean age of 42.25 (10.03). 50.0% were male. BNSS-Sp descriptive statistics for the full sample of patients are presented in Table 1.

3.1. Interrater reliability

The ICC for the BNSS-Sp total score was 0.97, and ICC for anhedonia 0.96, distress 0.86, asociality 0.94, avolition 0.93, blunted affect 0.94 and alogia 0.96.

3.2. Internal consistency

Cronbach’s alpha for the BNSS-Sp total scale was 0.98. Additionally, all the items were significantly correlated with the BNSS-Sp total scale score, and values ranged from r = 0.63 for distress, to r = 0.89 for spontaneous elaboration of the speech. When any item was removed, alpha coefficients ranged from 0.96 to 0.97, suggesting no benefits from excluding any individual item.

<table>
<thead>
<tr>
<th></th>
<th>Total score</th>
<th>Anhedonia</th>
<th>Distress</th>
<th>Asociality</th>
<th>Avolition</th>
<th>Blunted affect</th>
<th>Alogia</th>
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<tbody>
<tr>
<td>Mean</td>
<td>19.79</td>
<td>5.09</td>
<td>1.08</td>
<td>3.81</td>
<td>4.23</td>
<td>6.42</td>
<td>3.39</td>
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<tr>
<td>Median</td>
<td>15.21</td>
<td>4.43</td>
<td>.86</td>
<td>3.50</td>
<td>3.79</td>
<td>4.93</td>
<td>1.93</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>12.64</td>
<td>4.27</td>
<td>.99</td>
<td>2.26</td>
<td>2.48</td>
<td>4.40</td>
<td>3.19</td>
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</table>
3.3. Test–retest reliability

Test–retest Pearson’s correlation coefficient for the total BNSS-Sp score was $r = 0.95$ ($p < 0.001$). Test–retest Pearson’s correlation coefficients for each subscale were: anhedonia ($r = 0.77$, $p = 0.010$), distress ($r = 0.619$, $p = 0.056$), asociality ($r = 0.77$ $p = 0.009$); avolition ($r = 0.92$ $p < 0.001$), blunted affect ($r = 0.97$ $p < 0.001$) and alogia ($r = 0.99$ $p < 0.001$).

3.4. Concurrent validity

BNSS-Sp total score Pearson’s correlation coefficient with SANS total score was $r = 0.68$ ($p = 0.001$) and with PANSS negative subscale score was $r = 0.74$ ($p < 0.001$).

Subscale concurrent validity was assessed by analyzing correlations between BNSS-Sp subscale scores and SANS subscale scores. The results were: BNSS-Sp Anhedonia-SANS Anhedonia/Asociality: $r = 0.66$ $p = 0.001$; BNSS-Sp Asociality-SANS Anhedonia/Asociality: $r = 0.7$ $P = 0.001$; BNSS-Sp Avolition-SANS Avolition: $r = 0.44$ $p = 0.05$; BNSS-Sp Blunted Affect-SANS Blunted Affect: $r = 0.74$ $p < 0.001$; BNSS-Sp Alogia-SANS Alogia: $r = 0.65$ $p = 0.002$.

3.5. Discriminant validity

Correlations between the BNSS-Sp total score with total, general, and positive subscale scores from the PANSS are presented in Table 2.

4. Discussion

We found that the Spanish adapted version of the BNSS (BNSS-Sp) had strong interrater, internal consistency and test–retest properties. It also had appropriate concurrent and discriminant validity properties.

The range of ICCs is similar to those found in the original validation of the scale, which also ranked from 0.89 to 0.96 [4]. The strong interrater capacity was seen for the total BNSS-Sp and all subscales, with ICCs scoring above 0.85 in all cases.

We also found an excellent internal consistency with Cronbach’s alpha for the total BNSS-Sp above 0.9 (0.98).

5. Conclusions

This multicenter study demonstrates that the Spanish adaptation of the BNSS has adequate psychometric properties both in terms of reliability and validity, similar to the original scale.

<table>
<thead>
<tr>
<th>Table 2 Discriminant validity.</th>
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<tr>
<td>PANSS positive subcale</td>
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<tr>
<td>PANSS general psychopathology subcale</td>
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<tr>
<td>PANSS total</td>
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<td>--------------------------------</td>
</tr>
<tr>
<td>BNSS total</td>
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<tr>
<td>SANS total</td>
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<tr>
<td>PANSS negative subcale</td>
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Pearson’s correlation coefficients between scale scores.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.  

Additionally, all the items were highly correlated with the BNSS-Sp total scale score.

The strong test–retest properties were seen through high test–retest Pearson correlations for the total BNSS-Sp and all subscales, except for the distress subscale, in which the correlation was substantially lower. The distress subscale only included one item. Raters agreed that the distress item assessment was very dependent on the environment and it was difficult to evaluate the full range of severity, especially when important distressing events had not happened during the previous week. In the workbook, to rate this item, lifetime distressful events are suggested to be asked, but patients had difficulties remembering or feeling the emotions related to those events, as been previously pointed out [9].

Regarding its concurrent validity, the BNSS-Sp was moderately correlated but not redundant with the present standardized scales to measure negative symptoms. When analyzing concurrent validity of subscales, we observed that the avolition subscale in the SANS and BNSS-Sp avolition subscale were less correlated than the other subscales. The lesser the value that SANS scale gives to abulia internal experience to the total abulia subscale score in comparison to the BNSS-Sp may help explain this weaker correlation.

Concerning discriminant validity, the BNSS-Sp did not have a significant correlation with the PANSS positive and general psychopathology subscales, suggesting a more specific evaluation of negative symptomatology than the present standardized scales that measure negative symptoms. However, the study design does not allow for the primary–secondary negative symptoms distinction. The item distress has been suggested to serve this purpose, as a lack of normal distress is characteristic of deficit patients [10]. Other studies evaluating BNSS-Sp correlation with depression, extrapyramidal symptoms and deficit syndrome scales, should be carried out to address this issue.

The study has some limitations. We did not use data from informants and all the included subjects were outpatients. Moreover, the small sample size could have decreased the power of the study. However, we should take into account that, as in the original BNSS validation, we increased the power of the study by increasing the number of raters with raters from different settings with different professional training. Moreover, it is important to highlight that, in the present study, the inclusion criteria were not too restrictive, which may support the external validation of these results.
Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

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References