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The validation of the Bush–Francis Catatonia Rating Scale to Spanish. Argentinian version.

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ABSTRACT

Objective

The present study aims to validate the Spanish version of the Bush Francis Catatonia Rating Scale (BFCRS).

Material and methods:

The original scale in English was adapted into Spanish (Argentina) by 2 translators. Diagnostic and Psychometric properties of both subscales (the 14 signs screening tool and the 23 signs of the BFCRS) were assessed in inpatients (n=42. 24 catatonic and 18 non-catatonic), of a University Hospital in Buenos Aires, Argentina. Patients were previously evaluated for catatonia using DSM-5 criteria and then were appraised with the Spanish version of BFCRS.

Results

Using BFCSI and BFCRS, clinical discrimination between catatonic and non-catatonic patients showed significant difference.

Kappa interrater agreement was obtained with different cut-off values. When using a cut-off value ≥ 2 (suggested by the original authors) Kappa index was 0,6202. With cut-off values ≥ 3 and ≥ 4 Kappa indexes were 0,95 and 0,81 respectively.

A BFCSI cut-off value ≥ 3 , an instrument sensitivity of 83,33% and a specificity of 88,89, was achieved, using DSM-5 criteria as referenced test. A cut-off ≥ 3 has an exact value of ROC AREA of 0,8611 (+- 0,0544); CI95%:(0,75444–0,96778).

BFCRS (23 signs) showed a Rho spearman's correlation of 0,9443. In addition, DSM-5 and BFCSI showed a Rho Spearman's correlation of 0,8002.

Conclusion: Like the original version, the Argentinian Spanish version of BFCRS shows high validity, reliability, and inter-rater reliability indexes for detecting cases of catatonia.

Key words: catatonia; diagnosis; psychometric scale; validation.

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RESUMEN

Objetivo

Validar al castellano la escala de diagnóstico y cuantificación de catatonia de Bush-Francis (BFCRS).

Material y métodos

Luego del proceso de traducción y aprobación por los autores, se evaluaron las propiedades diagnósticas y psicométricas de la subescala de 14 signos (BFCSI) y la escala de 23 signos (BFCRS) en pacientes hospitalizados (n = 42; 24 catatónicos y 18 no catatónicos), de un hospital universitario. Los pacientes fueron previamente evaluados utilizando criterios DSM-5 de catatonia, y posteriormente con la versión en castellano de la BFCRS.

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Resultados

Con la utilización de la BFCSI y BFCRS la discriminación clínica entre pacientes catatónicos y no catatónicos mostró una diferencia significativa.

Se utilizó el índice de Kappa para evaluar concordancia entre evaluadores con diferentes valores de corte en la BFCSI. Con un valor de corte ≥ 2 (sugerido por los autores originales), el índice Kappa fue de 0,6202. Con valores de corte ≥ 3 y ≥ 4 , los índices de Kappa fueron 0,95 y 0,81 respectivamente.

Con un valor de corte BFCSI ≥ 3 , la sensibilidad del instrumento fue de 83,33 con una especificidad de 88,89. El punto de corte ≥ 3 presentó un valor de ROC AREA de 0,8611 (+ - 0,0544); CI 95 % : (0,75444-0,96778).

La BFCRS (23 signos) mostró una correlación de Spearman Rho de 0,9443. Además, DSM-5 y BFCSI mostraron una correlación de Rho Spearman de 0,8002.

Conclusión: Al igual que la versión original, la versión argentina en castellano de BFCRS posee alta validez, confiabilidad y confiabilidad en la detección de catatonia.

Palabras clave: catatonia; diagnóstico; escala psicométrica; validación.

INTRODUCTION

Catatonia is a syndrome of specific motor abnormalities closely associated with disorders in mood, affect, thought, and cognition that appears in many recognized psychiatric and non-psychiatric illnesses. The classic signs are mutism, a rigid posture, fixed staring, stereotypic movements, and stupor. It also presents with an agitated form¹.

Catatonia may be secondary to affective, thought, neurological, toxic, metabolic and immunological disorders. Clinical forms may be transient or "benign", with a good response to a specific treatment, but it can also have a malignant course².

There is not a gold standard for the diagnosis of catatonia and there is no agreement about the number of signs needed for an accurate diagnosis³.

To assess the prevalence of catatonia, Bush et al. developed a rating scale and a systematic method of examination for catatonia, both to detect and quantify its presence. They described the selection of items for inclusion in the rating scale and established the reliability and validity of a 23-item

rating scale (BFCRS) and a truncated 14-item screening instrument (BFCSI)³.

The authors confirmed that the instrument is reliable and valid. The Bush Francis Catatonia Rating Scale is a reference tool for the evaluation of catatonia, because it is accurate, easy to apply and takes 5 minutes to assess³.

The objective of this work is to translate and validate the Bush Francis Catatonia Rating Scale (Both the 14 signs screening (BFCSI) and the 23 sign list (BFCRS) to Spanish. As much as we know, this is the first translation and validation into Spanish.

Materials and methods

The complete BFCRS was first translated by one bilingual psychiatrist with experience in catatonia, and a professional English translator. This version was then back-translated into English by a bilingual physician, blinded from each other. These back translations were evaluated regarding their adequacy by one of the authors of the original scale (Max Fink)⁴.

A complete final version of the scale in Spanish was applied to patients in a university hospital—Hospital de Clínicas, José de San Martín, from the Universidad de Buenos Aires—in Buenos Aires. The sample was taken from Internal Medicine and Orthopedic and Traumatology Inpatients Unit, from January to October 2019. Research was conducted in compliance with the Helsinki Declaration and approved by the Ethics Committee of Clinical Research of the Hospital de Clínicas José de San Martín. The patient, or in case of impossibility the relative in charge, gave informed consent.

In spite of the fact that in Internal Medicine and Orthopedic settings catatonia is usually undetected (despite a frequent incidence), we checked patients with an initial diagnosis of temporal and/or spatial disorientation, delirium, encephalopathy, refusal attitudes (to eat, to drink, and to medical procedures) in order to improve the probability to detect patients with catatonic symptoms.

The initial criteria used to diagnose catatonia were made according to DSM-5 (three or more of the 12 signs of the A criteria for Catatonic Disorder Due to another medical condition)⁵ (see table 2 for medical etiologies). The catatonia DSM-5 diagnosis was made by only one of the researchers (FA). Once the patient or the relatives gave informed consent, the Spanish version of the instrument was applied during the same day by two independent physicians trained in diagnosis of catatonia (FRC, JMD). The sample consisted of 42 patients, 24 catatonic and n=18 non-catatonic.

Table 1	Demographic description		
Demography:			
N=42.			
Sex.	15 male.	27 women.	
Age:	Media: 83 years old	Range: 52-103 years old	
Catatonic:	n= 24 (57%);	n=6 males; n= 18 females.	Age (media 82).
Non-catatonics:	n= 18 (43%);	n= 8 males; n= 10 females.	Age (media 84)

Table 2	Medical reason of hospitalization of the sample studied	
Reason for Hospitalization	N	
Traumatologic.	14	
Cardiovascular.	4	
Infectious.	10	
Vascular.	1	
Neurologic.	4	
Metabolic.	2	
Hematologic.	1	
Gastrointestinal.	2	
Oncologic.	4	
TOTAL	42	

Statistical analysis.

The statistical analyses were conducted using the STATA software, version 14.2.⁶

MedCalc 19.1.3 was used to obtain sample size⁷. The aim was to demonstrate that, for the Spanish version of Bush Francis Catatonia Rating Scale, an AUC of =0,75 is significant from the null hypothesis value of 0,5. An Alpha value of 0.05 and a Beta of 0,20 was set. According to this analysis the number of cases required is 38.

According to the distribution of the population studied, parametric and non-parametric tests were performed.

Results.

The discrimination power between catatonic and non-catatonic patients with the BFCSI and BFCRS, compared with DSM-5, were evaluated. Both instruments were able to discriminate between catatonic and non-catatonic patients. Table 3 shows the comparison between catatonic and non-catatonic patients.

Table 3	Descriptive statistical comparison with BFCSI / BFCRS between 24 catatonics and 18 non-catatonic patients according to DSM-5 criteria.		
N = 42.			
• 24 catatonics.	Median	<i>p-value</i>	
• 18 non-catatonics			
BFCSI catatonic patients	4 (1-9)	< 0,001	
BFCSI non-catatonic patients	1 (0-4)		
BFCRS catatonic patients	12 (4-25)	< 0,001	
BFCRS non-catatonic patients	4 (0-14)		

BFCSI and BFCRS data were analyzed with Mann Whitney and Wilcoxon tests.

Kappa coefficient Indexes were also obtained with different cut-off signs in the BFCSI ($\geq 2, 3$ and 4 signs) in order to evaluate interrater agreement. The best interrater agreement was found with a cut-off value ≥ 3 (Kappa of 0,9524). See Table 4.

Table 4	Kappa Interrater agreement, with BFCSI.		
Number of signs	Agreement	Expected agreement	Kappa
≥ 2	83,33 %	56,12 %	0,6202
≥ 3	97,62 %	50 %	0,9524
≥ 4	90,48 %	50 %	0,8095

Best area under the curve, sensitivity and specificity of the instrument (BFCSI) were evaluated with different cut-off signs ($\geq 2, 3$ and 4 signs) compared with DSM-5 score (See table 5). Due to the high concordance between researchers, we decided to perform analysis of data from only one of the raters (JMD).

Table 5 Detailed report of sensitivity and specificity

Cut-off point	Sensitivity	Specificity
≥ 2	87,50 %	66,67 %
≥ 3	83,33 %	88,89 %
≥ 4	66,67 %	94,44 %

As shown in figure 1, a cut-off point ≥ to 3 in the BFCSI, has the highest AUC, when compared with DSM-5 diagnosis. Therefore, the exact value of AUC (ROC AREA) for a cut-off point ≥ to 3, was 0,8611 (SD 0,0544) with CI95%:(0,75444-0,96778), See figure 1.

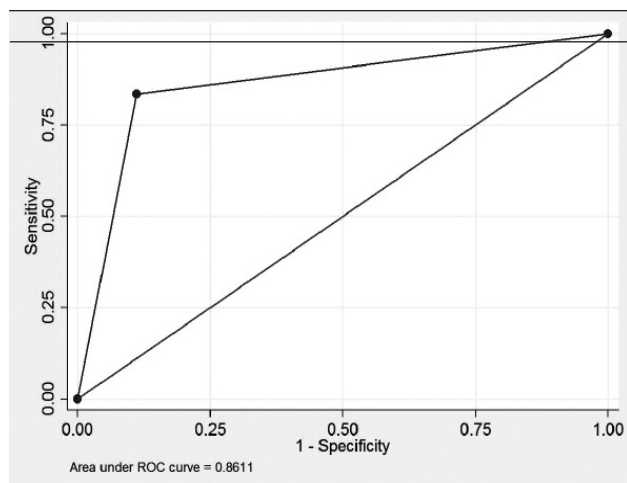


Figure 1 Area Under ROC curve

Spearman’s correlation was performed. BFCRS (23 signs) showed a Rho spearman’s correlation of 0,9443 between 2 raters (JMD and FRC)⁷. See figure 2.

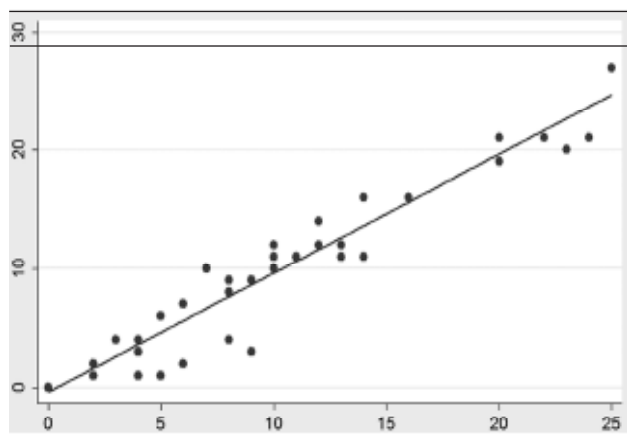


Figure 2 Spearman’s correlation of BFCRS 23 signs between (JMD and FRC)

Spearman’s correlation between DSM-5 diagnosis and BFCSI was also done. DSM-5 and BFCSI showed a Spearman’s Rho of 0,8002. Figure 3.

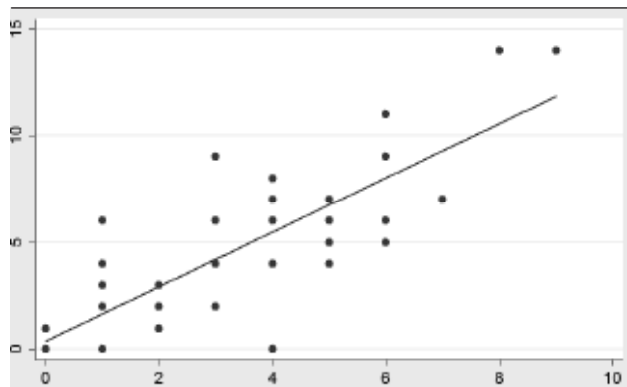


Figure 3 Spearman’s correlation of DSM-5 diagnosis (FJA) and BFCSI (JMD)

Discussion:

The aim of this study was to determine the reliability and validity of a clinical scale to diagnose and quantify catatonia. The Argentinian Spanish version was able to distinguish between catatonic and non-catatonic patients. Internal consistency measured with Kappa and Spearman’s coefficient indexes showed significant interrater correlation. It also provided structural validity with acceptable sensitivity and specificity. Therefore, the BFCRS Argentinian Spanish version proved to be highly reliable, as well.

Regarding diagnosis cut-off points, the original version of the BFCSI suggested 2 or more positives catatonic signs as a cut-off point. In our sample, (like Wilson et al findings⁸) we had better BFCSI specificity and sensitivity with at least 3 or more signs.

One of the limitations of this study is that there is no gold standard reference diagnosis for catatonia. The intended solution was to measure convergent validity by correlating Bush-Francis measures with the DSM-5 criteria.

We believe that the Spanish validated version adds another tool to improve detection of this frequent but sometimes neglected clinical disorder. The BFCSI version is a reliable and easy tool that may be applied in about five minutes by a well-trained examiner.

It is necessary to detect catatonia in psychiatric and medical settings, due to the high prevalence and a poor prognostic when it is not detected⁹. Clinicians should be trained to detect catatonia in non-psychiatric settings, taking in account that specific treatment (benzodiazepines and ECT) are highly effective.^{2, 10, 11}

Finally, it is surprising that despite the existence of clear delineated clinical presentation, effective treatment and the affordable clinical diagnostic tools, the American Psychiatric Association does not consider catatonia as an independent nosologic category yet⁵. The validation of this instrument in Spanish will contribute to a greater knowledge of this frequent syndrome.

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Conflicts of interest:

We report no conflicts of interest regarding this research.

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