Cross-cultural validation of the Brazilian Portuguese version of the Social Phobia Inventory (SPIN): study of the items and internal consistency

Validação transcultural da versão para o português do Brasil do Social Phobia Inventory (SPIN): estudo dos itens e da consistência interna

Flávia de Lima Osório[1], José Alexandre S. Crippa[1], Sonia Regina Loureiro[1]

Abstract

Objective: The objective of the present study was to carry out the cross-cultural validation for Brazilian Portuguese of the Social Phobia Inventory, an instrument for the evaluation of fear, avoidance and physiological symptoms associated with social anxiety disorder. **Method:** The process of translation and adaptation involved four bilingual professionals, appreciation and approval of the back-translation by the authors of the original scale, a pilot study with 30 Brazilian university students, and appreciation by raters who confirmed the face validity of the Portuguese version, which was named "Inventário de Fobia Social". As part of the psychometric study of the Social Phobia Inventory, analysis of the items and evaluation of the internal consistency of the instrument were performed in a study conducted on 2314 university students. **Results:** The results demonstrated that item 11, related to the fear of public speaking, was the most frequently scored item. The correlation of the items with the total score was quite adequate, ranging from 0.44 to 0.71, as was the internal consistency, which ranged from 0.71 to 0.90. **Discussion/Conclusions:** The authors conclude that the Brazilian Portuguese version of the Social Phobia Inventory proved to be adequate regarding the psychometric properties initially studied, with qualities quite close to those of the original study. Studies that will evaluate the remaining indicators of validity of the Social Phobia Inventory in clinical and non-clinical samples are considered to be opportune and necessary.

Descriptors: Phobia, social; Social behavior; Psychometrics; Scale, manifest anxiety; Personality inventory

Resumo

Objetivo: O objetivo deste estudo foi realizar a validação transcultural para o português do Brasil do Social Phobia Inventory, *um instrumento para avaliação e mensuração dos sintomas de medo, evitação e sintomas fisiológicos associados ao transtorno de ansiedade social.* **Método:** *O processo de tradução e adaptação envolveu quatro profissionais bilíngües, apreciação e aprovação da* back-translation *pelos autores da escala original, estudo piloto com 30 universitários brasileiros e apreciação por juízes que atestaram a validade de face da versão para o português, a qual foi denominada de Inventário de Fobia Social. Como parte do estudo psicométrico do* Social Phobia Inventory, *realizou-se a análise dos itens e a avaliação da consistência interna numa amostra de 2.314 estudantes universitários.* **Resultados:** *Os resultados evidenciaram que o item mais pontuado foi o 11, relativo ao medo de falar em público. A correlação dos itens com o escore total foi bastante adequada, variando entre 0,44 e 0,71, bem como a consistência interna, que variou entre 0,71 e 0,90.* **Discussão/Conclusões**: *Concluiu-se que o* Social Phobia Inventory *na versão para o português do Brasil mostrou-se adequado quanto às propriedades psicométricas inicialmente estudadas, com qualidade bastante próxima à do estudo original. Considera-se oportuno e necessário estudos que avaliem os demais indicadores de validade do* Social Phobia Inventory, *com amostras clínicas e não-clínicas.*

Descritores: Fobia social; Comportamento social; Psicometria; Escala, ansiedade manifesta; Inventário de personalidade

[1] Faculdade de Medicina de Ribeirão Preto (FMRP), Universidade de São Paulo (USP), Ribeirão Preto (SP), Brazil

Correspondence
Flávia de Lima Osório
Av. dos Bandeirantes, 3900
14048-900 Ribeirão Preto, SP, Brazil
Phone: (+55 16) 3602-2837
E-mail: flaliosorio@ig.com.br

Introduction

Most of the scales aiming at the evaluation of social anxiety disorder (SAD) started to be developed after the introduction of this diagnosis in the DSM-III in 1980. Particularly outstanding among these instruments is the Social Phobia Inventory (SPIN), elaborated by Connor et al[1]. This is a self-applicable instrument proposed in order to satisfy the need for a brief and easily applicable evaluation that would also consider jointly the physiological symptoms of fear and avoidance related to SAD. It consists of 17 items evaluated on a five-point Likert scale (0-4) with a maximum total score of 68.

The psychometric qualities of the SPIN, demonstrated in the original study[1] on samples of healthy individuals and subjects with SAD, were quite satisfactory, as shown by the following properties: test-retest reliability (0.78 to 0.89, p < 0.0001); internal consistency (Cronbach alpha) ranging from 0.68 to 0.94 for cases and from 0.57 to 0.90 for non-cases; convergent validity with the Brief Social Phobia Scale (r = 0.47 to 0.82, p < 0.0001), with the Liebowitz Social Anxiety Scale (r = 0.55, p < 0.0001), and with the Fear Questionnaire (r = 0.42 to 0.78, p < 0.0001); sensitivity of 0.72 and specificity of 0.84 for the 19 cut-off point. Factorial analysis of the instrument for the case sample indicated the extraction of five factors with self-values ranging from 5.51 to 1.06, namely: 1) talking to strangers and social situations; 2) criticisms and embarrassment; 3) physiological changes; 4) authority figures; 5) avoiding being the center of attention, and public speaking. The SPIN and its subscales also demonstrated sensitivity for the identification of pharmacological and psychotherapeutic treatments, proving in general to be an excellent instrument for the quantification of SAD symptoms and of the therapeutic effects of various treatment approaches.

Other studies were later conducted with the SPIN in order to determine its psychometric qualities in different contexts[2-6], These studies were conducted on three versions of the instrument in addition to the original one (Brazilian[2], Finnish[6] and French[5] versions) applied to samples of the clinical and non-clinical population of adults and of the non-clinical population of adolescents. The values detected for all the psychometric qualities studied were quite close to and in agreement with the findings of the original study by Connor et al.[1], supporting the adequacy of the SPIN for the evaluation of SAD in different languages, countries and cultures.

Thus, the objective of the present study was to report the process of cross-cultural validation of the SPIN for a population of Brazilian university students and to describe the study of internal consistency and item analysis in this population sample.

Method

The SPIN was translated and adapted to Brazilian Portuguese according to the steps described below in accordance with standardized technical recommendations[7-9]. The instrument was first translated from its original English version into Portuguese by an experienced translator and was then independently translated by two Brazilian psychiatrists with good knowledge of the English language. The three versions were compared and discussed by two bilingual raters with wide experience in the rating of anxiety disorders and in psychiatric evaluation scales, who performed the verification of semantic equivalence and, after reaching a consensus, proposed a translated version of the inventory. This version was then independently back translated by a bilingual psychiatrist with eight years of research on psychiatric disorders in the United Kingdom, who had no access to the original English version, and was presented to the authors of the original scale for appreciation. The authors did not suggest any modification, considering the version of the scale to be adequate, and formally authorized the official use of this Portuguese version.

In order to further establish the adequacy of the instrument, for convenience four Brazilian psychiatrists with substantial competence in the use of scales acted as raters, evaluating the instrument in terms of item pertinence and formulation, confirming its face validity.

Pilot testing with a reduced number of students from a public university (n = 30) was performed in order to determine the semantic understanding of the instructions and of item formulation. No suggestions of modifications to be incorporated into the final version of the instrument were necessary. This step was thus considered to conclude the translation and adaptation stage of the SPIN.

The data were collected during the second semester of 2004 and throughout the year of 2005. The sample used for the evaluation of items and internal consistency of the SPIN was composed by convenience, according to authorization for data collection granted by the Undergraduate Committees of the different courses of a public and a private Brazilian university from northeast São Paulo.

Table 1 – Distribution of the items of the Social Phobia Inventory (SPIN) as a function of mean score, standard deviation, percentage of 0 to 4 scores, and rate of correlation with the total score in a sample of university students (n = 2314)

Item	Mean	(SD)	Score (%)					Item-total correlation
			0	1	2	3	4	
1. Fear of the authorities	0.83	(0.86)	42	38	16	03	01	0.46
2. Blushing in public	1.24	(1.14)	30	36	17	12	05	0.52
3. Fear of parties and social events	0.41	(0.78)	74	17	06	02	01	0.55
4. Avoiding talking to strangers	1.04	(1.02)	36	37	17	07	03	0.47
5. Fear of being criticized	1.43	(1.13)	21	39	21	13	06	0.64
6. Avoiding being ashamed	1.10	(1.12)	37	35	14	10	04	0.68
7. Perspiring in public	0.95	(1.15)	47	29	10	10	04	0.46
8. Avoiding parties	0.40	(0.86)	75	15	05	03	02	0.44
9. Avoiding being the center of attention	1.09	(1.22)	42	29	13	10	06	0.60
10. Fear of talking to strangers	0.53	(0.80)	62	27	07	03	01	0.59
11. Avoiding public speaking	1.63	(1.37)	26	27	17	17	13	0.56
12. Avoiding criticisms	1.32	(1.22)	32	31	18	12	07	0.53
13. Feeling palpitations in public	0.73	(1.02)	56	26	10	6	02	0.61
14. Fear of being watched	1.27	(1.09)	26	41	18	11	04	0.71
15. Fear of being ashamed	1.13	(1.21)	40	30	14	10	06	0.69
16. Avoiding speaking to authorities	0.51	(0.84)	65	23	08	03	01	0.58
17. Trembling in public	1.00	(1.11)	41	34	13	08	04	0.66

SD = standard deviation; % = percentage

Effort was made to include courses of the three areas of knowledge: exact, human, and biological sciences.

The instrument was collectively applied in the classroom following authorization by the institution and the students, who provided signed informed consent to participate. Initially, 2614 students were contacted, out of which 201 did not agree to take part in the study. Exclusion criteria were age over 35 years, use of neuroleptics, and incorrect filling of the instrument. A total of 99 students were excluded, and the final sample consisted of 2,314 students.

Regarding the sociodemographic characteristics of the sample, there was a slight predominance of women (55.8%). Mean age was 21.4 years (SD = 3.3). Of all students included, 1281 belonged to a private institution (55.3%), and 1033 to a public university (44.7%). Most students (51.5%) were in the first and second years, 60% pertaining to the area of biological sciences, 26% to exact sciences, and 14% to human sciences.

For the study of SAD prevalence in this population the Portuguese version of the Mini-SPIN[10], which is a self-administered screening tool derived from the SPIN, was initially used. This assessment showed that 10.4% of the students had the disorder, taken as evaluation parameter the Module F of the Structured Clinical Interview for DSM-IV (SCID-IV)[11].

The data were coded using an optic reading software and stored in a data bank. Descriptive statistics (simple frequencies, mean, standard deviation and percentage) and the Cronbach alpha were used for the statistical analysis of data, adopting values higher than 0.60 as acceptable[12].

The study was approved by the local Research Ethics committee (Nº HCRP 11570/2003) and all subjects gave written informed consent to participate.

Results

The Brazilian Portuguese version of the SPIN was named *"Inventário de Fobia Social"* and is available for use (Appendix 1).

Mean scoring, standard deviation, percentage of scores from 0 to 4 and correlations with total score were calculated for each item of the instrument and are presented in Table 1.

Mean scores ranged from 0.40 to 1.63. In general, the highest mean scoring frequencies were obtained for items 11, 5 and 12, which were also those most commonly receiving the maximum scores. However, the scoring frequency in this category did not exceed 30% in any of these items. The items with the lowest mean scoring were 8, 3, 16 and 10, with at least 89% of the scores between 0 and 1. The correlation of the items with the total score was also quite adequate, ranging from 0.44 to 0.71.

The Cronbach alpha was applied for analysis of internal consistency and the values obtained were 0.90 for the total scale, 0.80 for the fear subscale, 0.78 for the avoidance subscale, and 0.71 for the physiological symptoms.

Discussion

The present work deals with the cross-cultural adaptation and the study of some of the psychometric properties of the Brazilian Portuguese version of the SPIN, specifically item analyses and internal consistency. Other studies that evaluate the concurrent and discriminative validity, factor analysis, and reliability are underway, which may further reinforce the present findings in respect to the adequacy of the instrument.

The SPIN was translated into Portuguese according to a careful process followed by experienced professionals, with back translation, as well as approval by the authors of the original scale. As opposed to the methodological process adopted by other studies[13], the face validity study was performed only with specialists (Brazilian psychiatrists) rather than with the sample to which the instrument was being validated. This aspect can be highlighted as one of the limitations of the present study, although it is not likely to have interfered with the validity of the SPIN, since both the experts and the sample had high and equivalent educational levels. This was confirmed during the pilot study, as no comprehension difficulties or further suggestions of modifications in the instrument were made by the students. Thus, no adaptations were necessary, with the same components of the original version being maintained in the translation of the instrument and proving to be adequate for the evaluation of Brazilian university students in the pilot testing.

The values obtained for internal consistency were quite close and satisfactory, being higher than 0.71. The total scale showed the best internal consistency, followed by the fear subscale. In general, the items showed adequate correlation with the total scale and contributed to increasing the internal consistency of the latter. Comparison of these findings to those of the original study[1] revealed quite close internal consistency values both for the total scale and the subscales.

The study by Antony et al.[4] with the Finnish version also revealed the same pattern of internal consistency for samples of SAD cases, as also observed in the study by Radomsky et al.[5] with the French version, and the study by Vilete[2] with another Brazilian version of the SPIN. These findings support the internal consistency of the instrument when applied to different contexts and samples, as well as the coherence and integration of its items, suggesting that they evaluate the same construct, i.e., fear, avoidance and the physiological symptoms associated with SAD. It is important to highlight that Vilete's translation and adaptation work[2] was the first Portuguese-language version of the SPIN, which was applied to adolescent students from public schools.

Regarding the frequency of items, the most frequently scored item was item 11 (avoiding public speaking), followed by items 5 and 12, related to fear and avoidance of criticisms. Compared to the original study[1] conducted on the American population, item 11 was also the most frequently scored for the cases, followed by items 9, 6, 15 and 5, denoting a similar pattern of fear and avoidance in the two contexts studies and indicating the homogeneity of SAD symptoms in the different cultures studied.

The item least frequently scored in the study by Connor et al.[1] was item 13 (feeling palpitations in public), in contrast to the findings of the present study, in which the items receiving the lowest scores were item 8 (avoiding social events), followed by item 3 (fear of social events) and by item 16 (avoiding talking with authorities).

It is important to stress that the most prevalent fear was that of public speaking, in agreement with the international literature[14-17], demonstrating the relevance of this manifestation also within the Brazilian context.

Conclusions

The Brazilian Portuguese version of the SPIN proved to be adequate regarding the psychometric properties initially studied, with qualities quite close to those of the original study. Studies evaluating the remaining indicators of validity of the SPIN are currently underway in clinical and non-clinical samples and in other samples from the general population, with other educational levels and the data obtained will be soon made available. Moreover, further test-retest reliability studies of this version of the SPIN are still necessary and opportune.

Disclosures

Writting group member	Employment	Research grant[1]	Other research grant or medical continuous education[2]	Speaker's honoraria	Ownership interest	Consultant/ Advisory board	Other[3]
Flávia de Lima Osório	FMRP-USP		---	---	---	---	---
Sonia Regina Loureiro	FMRP-USP	FAEPA** CNPq**	---	---	---	---	---
José Alexandre de Souza Crippa	FMRP-USP	FAPESP** CNPq** CAPES** FAEPA*	FAEPA*	---	---	---	FUNPEC* Pfiser* Elli-Lilly* Bristol* THC-Pharm*

Modest
** Significant
*** Significant. Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.
Note: FMRP-USP = Faculdade de Medicina de Ribeirão Preto, Universidade de São Paulo, FAEPA = Fundação de Apoio ao Ensino, Pesquisa e Assistência do HC-FMRP-USP; CNPq = Conselho Nacional de Desenvolvimento Científico e Tecnológico; FAPESP = Fundação de Amparo à Pesquisa do Estado de São Paulo; CAPES = Coordenação de Aperfeiçoamento de Pessoal de Nível Superior; FUNPEC = Fundação de Pesquisas Científicas de Ribeirão Preto.
For more information, see Instructions for authors.

References

1. Connor KM, Davidson JR, Churchill LE, Sherwood A, Foa E, Weisler RH. Psychometric properties of Social Phobia Inventory (SPIN). New self-rating scale. *Br J Psychiatry.* 2000;176:379-86.
2. Vilete LMP. *Tradução, adaptação para o português e estudo da qualidade de uma escala para a identificação da fobia social em uma população de adolescentes* [dissertação]. Rio de Janeiro: Escola Nacional de Saúde Pública; 2002.
3. Johnson HS, Inderbitzen-Nolan HM, Anderson ER. The social phobia inventory: validity and reliability in an adolescent community sample. *Psychol Assess*. 2006;18(3):269-77.
4. Antony MM, Coons MJ, McCabe RE, Ashbaugh A, Swinson RP. Psychometric properties of the social phobia inventory: further evaluation. *Behav Res Ther.* 2006;44(8):1177-85.
5. Radomsky AS, Ashbaugh AR, Saxe ML, Ouimet AJ, Golden ER, Lavoie SL, O'Connor KP. Psychometric properties of the French and English versions of the Social Phobia Inventory. *Can J Behav Sci*. 2006;38(4):354-60.
6. Ranta K, Kaltiala-Heino R, Rantanen P, Tuomisto MT, Marttunen M. Screening social phobia in adolescents from general population: the validity of the Social Phobia Inventory (SPIN) against a clinical interview. *Eur Psychiatry*. 2007;22(4):244-51.
7. Flaherty JA, Gaviria FM, Pathak D, Mitchell T, Wintrob R, Richman JA, Birz S. Developing instruments for cross-cultural psychiatric research. *J Nerv Ment Dis*. 1988;176(5):257-63.
8. Fachel JMG, Camey S. Avaliação psicométrica: a qualidade das medidas e o entendimento dos dados. In: Cunha JA, organizador. *Psicodiagnóstico V.* Porto Alegre: Artmed; 2000. p. 158-70.
9. Streiner DL, Norman GR. *Health measurement scales – a pratical guide to their development and use.* 3th ed. London: Oxford University Press; 2003.
10. de Lima Osório F, Crippa JA, Loureiro SR. A study of the discriminative validity of a screening tool (MINI-SPIN) for social anxiety disorder applied to Brazilian university students. *Eur Psychiatry*. 2007;22(4):239-43.
11. Baptista, CA. Estudo da prevalência do Transtorno de Ansiedade Social em estudantes universitários [dissertação]. Ribeirão Preto: Faculdade de Medicina, Universidade de São Paulo, Ribeirão Preto; 2007.
12. Cortina JM. What is Coefficient Alpha? An examination of theory and applications. *J Applied Psychol.* 1993;78(1):98-104.
13. Souza FP, Foa EB, Meyer E, Niederauer KG, Raffin AL, Cordioli AV. Obsessive compulsive inventory and obsessive compulsive inventory-revised scales: translation into brazilian portuguese and cross-cultural adaptation. *Rev Bras Psiquiatr.* 2008;30(1):42-6.
14. Stein MB, Walker JR, Forde DR. Setting diagnostic thresholds for social phobia: considerations from a community survey of social anxiety. *Am J Psychiatry.* 1994;151(3):408-12.
15. Stein MB, Walker JR, Forde DR. Public speaking fears in a community sample. Prevalence, impact on functioning and diagnostic classification. *Arch Gen Psychiatry.* 1996;53(2):169-74.
16. Furmark T, Tillfors M, Everez P, Marteinsdottir I, Gefvert O, Fredrikson, M. Social phobia in the general population: prevalence and sociodemographic profile. *Soc Psychiatry Psychiatr Epidemiol.*1999;34(8):416-24.
17. Osório F, Crippa JA, Loureiro SR. Experimental models for the evaluation of speech and public speaking anxiety: a critical review of the designs adopted. *J Speech Lang Pathol Applied Behav Anal.* 2008;3:97-121.

APPENDIX 1 – Portuguese version of the Social Phobia Inventory (SPIN)

Inventário de Fobia Social (SPIN)
Tradução e adaptação para o Português: Crippa JAS, Graeff FG, Zuardi AW, Hetem LA, Busatto GF, Loureiro SR (2003).

Iniciais	ID	Data		Visita

*Idade*___	*Estado Civil*	O Casado O Separado O Viúvo *Nº Protocolo*_____
		O Solteiro O Divorciado

Sexo
  O Masculino
  O Feminino
	Cor	O Branco O Negro O Hispânico
		O Amarelo O Índio O Outro O Não sabe

INSTRUÇÕES: Por favor, indique quanto os seguintes problemas incomodaram você durante a última semana. Marque somente um item para cada problema, e verifique se respondeu a todos os itens.

		Nada	Um pouco	Moderado	Bastante	Extremamente
1)	Tenho medo de autoridades	0	1	2	3	4
2)	Incomodo-me por ficar vermelho na frente das pessoas	0	1	2	3	4
3)	Festas e eventos sociais me assustam	0	1	2	3	4
4)	Evito falar com pessoas que não conheço	0	1	2	3	4
5)	Fico muito assustado ao ser criticado	0	1	2	3	4
6)	Evito fazer coisas ou falar com certas pessoas por medo de ficar envergonhado	0	1	2	3	4
7)	Transpirar na frente das pessoas me incomoda	0	1	2	3	4
8)	Evito ir a festas	0	1	2	3	4
9)	Evito atividades nas quais sou o centro das atenções	0	1	2	3	4
10)	Conversar com estranhos me assusta	0	1	2	3	4
11)	Evito falar para uma platéia ou dar discursos (ex. apresentações em sala de aula)	0	1	2	3	4
12)	Faço qualquer coisa para não ser criticado	0	1	2	3	4
13)	Sentir palpitações cardíacas me incomoda quando estou no meio de outras pessoas	0	1	2	3	4
14)	Tenho receio de fazer coisas quando posso estar sendo observado	0	1	2	3	4
15)	Ficar envergonhado ou parecer bobo são meus maiores temores	0	1	2	3	4
16)	Evito falar com qualquer autoridade	0	1	2	3	4
17)	Tremer ou estremecer na frente das outras pessoas me angustia	0	1	2	3	4