

# Psychometric characteristics of the Brazilian Portuguese version of Social Phobia and Anxiety Inventory for Children (SPAI-C)

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## ABSTRACT

Social anxiety disorder (social phobia) in children can result in immediate and long-term impairment, including aspects of daily functioning and achievement of future social/professional development. The use of Social Phobia and Anxiety Inventory for Children (SPAI-C) has been used for the assessment of social anxiety disorder in children, but mainly in North-American populations. The current study revises the results of the previous validity studies for the Brazilian Portuguese language version of the SPAI-C and two novel aspects: sensitivity to treatment changes and discriminant validity. The results indicate that the SPAI-C Brazilian Portuguese version is a reliable and valid measure of social anxiety for Brazilian children.

**Keywords:** Social phobia; anxiety disorder; SPAI-C.

## RESUMO

*Características psicométricas da versão em português do Brasil do Inventário de Ansiedade Social para Crianças (SPAI-C)*

O transtorno de ansiedade social (fobia social) em crianças pode resultar em prejuízo imediato e a longo prazo, inclusive em aspectos do funcionamento diário e realização do desenvolvimento social/profissional destes pacientes. O uso do Inventário de Ansiedade e Fobia Social para Crianças (SPAI-C) vem sendo usado para a avaliação do transtorno de ansiedade social em crianças, principalmente em populações norte-americanas. O estudo atual revisa os resultados dos estudos de validade prévios para a versão em Português do Brasil do SPAI-C e dois aspectos mais atuais: sensibilidade a mudança devido ao tratamento e validade discriminante. Os resultados indicam que a versão brasileira da SPAI-C é uma medida segura e válida de ansiedade social para uso no Brasil.

**Palavras-chave:** Fobia social; inventário; crianças; validação.

## RESUMEN

*Características Psicométricas de la versión en portugués de Brasil del Inventario de Ansiedad e Fobia Social para los Niños (SPAI-C)*

El desorden de ansiedad social (fobia social) en niños puede perjudicar de inmediato y a largo plazo, incluso los aspectos del funcionamiento diario bien como el logro del desarrollo social/professional futuro. El uso del Inventario de Ansiedad e Fobia Social para los Niños (SPAI-C) se ha usado para evaluar la desorden de ansiedad social en niños, principalmente en poblaciones norte-americanas. El estudio actual revisa los resultados de los estudios de validez anteriores para la versión del SPAI-C para el idioma portugués de Brasil y dos nuevos aspectos: la sensibilidad al cambio durante el tratamiento y la validez discriminante. Los resultados indican que el SPAI-C versión portuguesa es una medida fiable y válida de ansiedad social para los niños brasileños.

**Palabras clave:** Fobia social; inventario; niños; validación.

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## INTRODUCTION

Social anxiety disorder (also known as social phobia) is the fear of being observed or evaluated by others. People with this disorder are fearful that they might say or do something that may embarrass them or expose them to criticism. As a result they tend to avoid social situations or endure them with intense anxiety or distress (American Psychiatric Association, 2000). Although mid-adolescence had been considered to be the average age of onset, others studies have shown that children as young as eight meet diagnostic criteria for the disorder (Beidel, 1991; Beidel e Turner, 1998). When evaluating the presence of social anxiety disorder in children, clinicians need to recognize that the clinical presentation may be different for children when compared with adults. For instance, children must show evidence of capability to interact with family members, in order to differentiate social anxiety disorder from autism spectrum disorder. Additionally, anxiety must occur when in contact with peer members, and not only during the interaction with adults or in public performance situations (APA, 2000).

Social anxiety disorder can result in immediate and long-term impairment involving many aspects of daily functioning and can prevent the achievement of future social and professional achievement in these children (Beidel e Turner, 1998). Nevertheless, social anxiety disorder continues to be largely ignored in clinical practice, and it is quite likely that many clinicians do not treat this disorder seriously. This is particularly unfortunate because, in many instances, social anxiety disorder in children responds positively to cognitive behavioral therapy and psychopharmacotherapy (Nathan e Gorman, 1998; Wagner, 2003). The early identification and treatment of the disorder is important, before it, there is the opportunity to negatively affect social, academic, and emotional development.

In order to detect and thus, effectively treat social anxiety disorder in children, the use of reliable and valid assessment instruments is necessary. The Social Phobia and Anxiety Inventory for Children (SPAI-C) has shown initial promise in the assessment of distress in a variety of social situations (Beidel, Turner e Morris, 1995). A study has been performed in the Netherlands (Smari et al, 2001), but the initial investigations have focused manly on North American populations. The previous studies were designed to validate SPAI-C in a different cultural group and make this instrument accessible to clinicians and researchers in the Brazilian Portuguese language.

The SPAI-C Brazilian Portuguese validation process, authorized by its authors through Multi-Health Systems Incorporation (USA) included the translation

of the original material from English into Portuguese by two bilingual psychiatrists and a back translation by a bilingual physician. Both the front and back translations were revised by a bilingual child psychiatrist. Finally, all the front and back translations were sent to the authors of the instrument for verification. The initial sample consisted of 1954 Brazilian schoolchildren enrolled between the 3rd and 8th grade attending 2 private and 11 public schools in the metropolitan area of Porto Alegre, the southernmost state capital in the country (see Figure 1). After contacting each school's principal and presenting the project to the teachers, participant recruitment began. All students aged 9-14 years were invited to participate. Hence, the sample was not randomly selected but rather included all available students. Eighty three participants were excluded because they failed to complete the questionnaire (Gauer, Picon, Vasconcellos, Turner e Beidel 2005).

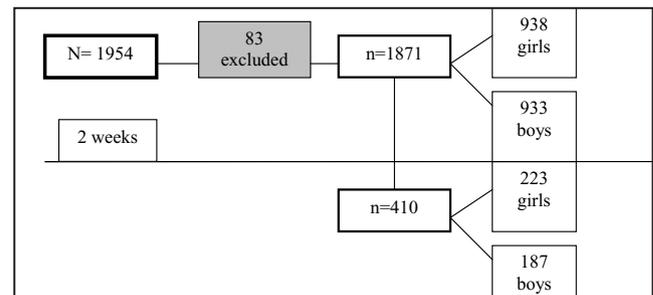


Figure 1 – Community Sample – sample selection.

The final sample consisted of 1871 children, 938 girls (50.1%) and 933 boys (49.8%). The sample ranged in age from 9 to 14 years (mean±SD=12.26±1.38 years). The majority of the students were Caucasian (89.0%) and the remainder was African-Brazilian (11.0%). The sample represented a wide range of socioeconomic levels. Two weeks after the initial administration, SPAI-C was readministered to 410 subjects of the original sample (Gauer, Picon, Vasconcellos, Turner e Beidel 2005).

This second sample consisted of 187 boys (45.6%) and 223 girls (54.4%) chosen according to convenience criteria, i.e., schools with a larger number of students. The purpose was to reach a sample size of at least 200 children to perform an adequate test-retest reliability study (Streiner e Norman 1995).

For the group of 938 girls, the minimum score was 0, the maximum 50 and the mean (±SD) was 16.90±8.51. For the group of 933 boys, the minimum score was 0, the maximum was 42, and the mean was 14.85±8.12. The difference between boys and girls was significant ( $p<0.001$ ; Student *t*-test). The mean for the total sample was 15.88±8.38 for the test and

13.92±8.67 for the retest. For the group of Caucasian children, the minimum score was 0 and the maximum 50, and the mean was 15.76 ± 8.35. For the group of African-Brazilian children, the minimum score was 0 and the maximum 41, and the mean was 16.86±8.51. There was no difference in total score according to race at the 95% level of confidence ( $p=0.075$ ; Student *t*-test) (Gauer, Picon, Vasconcellos, Turner e Beidel 2005).

Intrascale reliability was calculated by Cronbach's alpha reliability estimates. The SPAI-C reliability for the entire sample was 0.94. Reliability was 0.94 for each of the groups, i.e., boys and girls and African-Brazilian and Caucasian children separately (Gauer, Picon, Vasconcellos, Turner and Beidel 2005).

The test-retest reliability was calculated using the Pearson product-moment correlation. For the total sample of 410 children the two-week test-retest reliability coefficient was  $r=0.78$ . For both genders as a group, the two-week test-retest reliability coefficient was  $r=0.77$  for the boys and  $r=0.78$  for the girls. The two-week test-retest reliability coefficient was  $r=0.78$  for African-Brazilian children as a group and  $r=0.77$  for Caucasian children (Gauer, Picon, Vasconcellos, Turner and Beidel 2005).

The factor structure of the 26-item Portuguese version of the SPAI-C was examined using factor analysis validation with a varimax rotation based on a sample of 1871 children. There were four factors with eigenvalues higher than 1. Only items that loaded 0.40 or greater on a factor were retained within a factor. Using this criterion, only one item failed to load on a factor. Taken together, these factors accounted for 47.66% of the total variance. The first factor was labeled *Assertiveness* and accounted for 13.90% of the variance. The second factor was labeled *Avoidance/Social Encounters* and accounted for 11.99% of the variance. The third factor was labeled *Public Performance* and accounted for 11.74% of the variance. The fourth factor was called *Physical and Cognitive Symptoms* and accounted for 10.03% of the variance (Gauer, Picon, Vasconcellos, Turner & Beidel 2005). In order to increase the data regarding the SPAI-C validity, new studies were performed and are presented below.

#### DISCRIMINATIVE VALIDITY AND SENSITIVITY TO TREATMENT CHANGES IN A SAMPLE OF SOCIAL PHOBIC ADOLESCENTS TREATED WITH ESCITALOPRAN

##### Procedures and results

The study was approved by the Ethics Committee, Scientific Psychology Committee and Scientific Committee of São Lucas Hospital of the Pontifícia

Universidade Católica do Rio Grande do Sul, Brazil. After signing the informed consent and parents or responsible (correctional Brazilian facility – FASE) for the adolescents' approval, participants completed the research questionnaire, which included demographic data and the SPAI-C Portuguese Version.

##### Discriminative validity

The discriminative validity for the SPAI-C was examined using three groups of adolescents: Clinic (I), Non-clinic (II) and Confined group (III). Group I was composed of 20 social phobic participants, consisted of 30% boys and 70% girls with a mean age of 15.5 year (DP=1.5) and low levels for both educational and socio-economical parameters. The participants were included in the sample after a diagnostic using the K-SADS-E (Kiddie Schedule for Affective Disorders and Schizophrenia-Epidemiological version) and before the participants started treatment. This sample was originally recruited to participate in a study that evaluated their response to a pharmacological treatment. Group II was composed of 20 subjects without any mental disorders, which consisted of 90% boys and 10% girls with a mean age of 14.9 years old (DP=2.2) and low levels for both educational and socio-economical. The presence of some psychological disorders in the normal group were excluded through the MINI Plus version 5 (Sheehan, Lecrubier, Harnett-Sheehan, Amorim, Janavs, Weiller, Hergueta, Baker and Dunbar, 1998; Amorim, 2000). Group III consisted of 20 male individuals who were confined in a correctional Brazilian facility (FASE) due to criminal behavior, history of externalizing behavior or conduct disorder and recruited to participate in a study to validate Psychopath Checklist Young Version – PCL:YV (Gauer, Vasconcellos, Werlang, 2006). The mean age was 16.6 years old (DP=1.5) and scores for both educational and socio-economical levels were low. To differentiate from the other groups, individuals with such characteristics were chosen due to the common psychological traits of, for example, lack of empathy, callousness and shallow affect. These psychopathic traits are usually associated with low anxiety levels and compromised affective reactions. The inclusion criteria was the high score PCL:YV (Hare, 2003), mean was 28.2 (DP=5.7).

The SPAI-C I, II e III were compared using a one-way Analysis of Variance (ANOVA) test with a significance level of  $p<0.05$  (see Figure 2). There was a significant difference across SPAI-C mean scores ( $F=55.4$ ;  $p<0.01$ ) among the groups. Using the Bonferroni test for the *post hoc* analysis, children with social phobia (clinic group) scored significantly higher on the SPAI-C ( $M=33.59$ ,  $SD=7.8$ ) than

confined ( $M=12.89$ ,  $SD=9.1$ ) or non-clinical group ( $M=9.83$ ,  $SD=5.9$ ). The latter two groups did not differ significantly from each other.

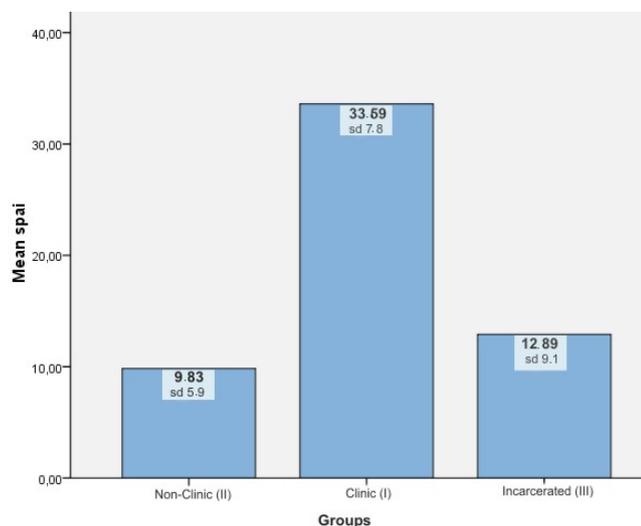


Figure 2 – ANOVA results between the groups.

### Sensitivity to treatment changes in a sample of Social Phobic Adolescents Treated with Escitalopran

In order to examine the instrument's sensitivity, the SPAI-C was administered before and after treatment. The sample consisted of 20 adolescents; 30% boys and 70% girls; mean age of 15.5 year; low school and socio-economical level. Their mean score before treatment (BT) was ( $mean \pm SD = 33.6 \pm 7.8$ ). The majority started showing symptoms of social phobia at age of 7 years old (30%), or earlier (25%) and 75% ( $n=15$ ) had a family history of Social Anxiety. All participants were treated with escitalopram. The results (Table 1) showed a significant reduction in symptoms severity, as assessed by the SPAI-C at weeks 8 and 12, when compared to scores at pre-treatment, 2 weeks and 4 weeks of treatment) (Gauer, Picon, Oliveira, Matos, Olivares, Dias, Isolan and Ronchetti, 2007).

Thus, the SPAI-C appears to have adequate sensitivity to detect clinical improvement in youth with Social Phobia.

## CONCLUSION

Various aspects of the Brazilian Portuguese version of the SPAI-C's construct validity are presented in this paper: factorial, discriminative and validity related to the sensitivity to change due the treatment improvement. However, as pointed out by Samuel Turner, assessing an instrument's construct validity is a constant process requiring multiple efforts over time. Therefore, although this study provides initial validity data for the Brazilian Portuguese version of the SPAI-C, we continue to be engaged in further prospective studies aimed at strengthening the instrument's reliability and validity.

Nevertheless, the results presented here indicate that the Brazilian Portuguese language version of SPAI-C is a reliable and valid measure of social anxiety for Brazilian children. Based on its strong psychometric properties and its clinical sensitivity to treatment changes, showed by the studies presented above, the Brazilian Portuguese version of the SPAI-C is a reliable and valid measure of social phobia in clinical and research settings.

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TABLE 1  
SPAI-C scores during clinical intervention (N=20)

SPAI-C*	Week					ANOVA for repeated measures	
	BT**	2	4	8	12	F	p
Mean (±DP)	33.6 (±7.8)	31.2 (±9.8)	29.1 (±12.0)	22.6 (±12.9)	19.6 (±12.5)	$F_{(4,16)}=6.017$	0.004

\* Social Phobia and Anxiety Inventory for Children.

\*\* Before treatment.

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