

## The Social Phobia Inventory (SoPhI): Validity and reliability in an adolescent population

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**Título:** Social Phobia Inventory (SoPhI): Validez y fiabilidad en una población adolescente.

**Resumen:** A pesar de la existencia de numerosas escalas para evaluar ansiedad social en adultos, y un número creciente de ellas para medir esta psicopatología en adolescentes, sólo se dispone de una escala desarrollada durante la última década, *Social Phobia Inventory* (SoPhI; Moore & Gee, 2003), que ha incluido un ítem para examinar el criterio F del trastorno de ansiedad social de acuerdo con el DSM-IV-TR (el trastorno debe estar presente durante al menos seis meses). Pese a esto, no se ha examinado la validez del SoPhI en otras lenguas y culturas. Para cubrir esta laguna, se administró el SoPhI en dos estudios: en el primero de ellos, a 457 adolescentes de una muestra comunitaria, con el fin de determinar su consistencia interna y estructura factorial; en el segundo caso, a una muestra clínica de 114 adolescentes con un diagnóstico clínico principal de trastorno de ansiedad social y a 78 adolescentes sin este trastorno. Los resultados revelaron que la escala mostró buenas propiedades psicométricas, tanto al respecto de su fiabilidad test-retest, validez convergente, consistencia interna, y una estructura factorial similar a la obtenida en el estudio original. Por ello, todos estos datos apoyan el uso del SoPhI en un idioma diferente al inglés, y para otro rango de edad que el inicialmente desarrollado.

**Palabras clave:** Adolescencia, evaluación, estructura factorial, transcultural, detección, ansiedad social.

**Abstract:** Although there are numerous self-report measures to assess social anxiety in adults, and an increasing number in adolescents, only one scale designed during the last decade, the Social Phobia Inventory (SoPhI; Moore & Gee, 2003) has included an item to tap DSM-IV criterion F of social anxiety disorder (i.e. social anxiety must be present for at least six months). However, questions remain regarding the validity of the SoPhI in other languages and cultures. To address this problem the SoPhI was administered in two studies: firstly, to 457 adolescents from a community sample in order to test the internal consistency and factor analysis of the scale; and secondly, to a clinical sample comprising 114 participants with a principal diagnosis of social anxiety disorder, and a control group consisting of 78 adolescents with no diagnosis of social anxiety disorder. The scale showed good psychometric properties, including test-retest reliability, convergent validity, internal consistency, and a single-factor structure similar to the original study. Together these findings support the use of the SoPhI in a language other than English and for this range of ages.

**Key words:** Adolescence; assessment; factor structure; cross-cultural; screening; social anxiety

Social anxiety disorder (SAD, hereafter) also known as social phobia, tends to be a chronic condition that severely disrupts long-term functioning (García-López, Piqueras, Diaz-Castela, & Inglés, 2008; Sanchez, Rosa, & Olivares, 2004). Lifetime prevalence of social anxiety disorder in adolescents typically ranges between 2 and 9% (Essau, Conradt, & Petermann, 1999; Fehm, Pelissolo, Furmark, & Wittchen, 2005). During childhood and adolescence, social phobia is commonly associated with depression, substance abuse, low social-efficacy, and other anxiety disorders (Beidel, Turner, & Morris, 1999; Essau, Conradt, & Petermann, 2002; Essau et al., 1999; Wittchen, Stein, & Kessler, 1999). Cognitive-behavioral therapies (CBT) for Spanish-speaking adolescents with SAD are highly efficacious (García-López, 2007; García-López et al., 2002, 2006; Olivares et al., 2002).

According to DSM-IV-TR (American Psychiatric Association, 2000) the essential feature of social anxiety disorder is a marked and persistent fear of social or performance situations in which embarrassment may occur. For children and adolescents the diagnostic Criterion F states that the duration of social anxiety disorder must be at least six months. Even more, the article commissioned by the *DSM-V Anxiety, Obsessive-Compulsive Spectrum, PostTraumatic, and Dissociative Disorders workgroup*, recommend this criterion to

be extended to all ages (Bögels et al., 2010). To date, only one self-report scale has included an additional item to cover this criterion: the Social Phobia Inventory (SoPhI; Moore & Gee, 2003). This 21-item scale was designed to measure social anxiety according to DSM-IV criteria and included an additional item to assess whether most or all of the social anxiety symptoms had been experienced for a period of more than six months. The authors demonstrated the psychometric properties of the scale in an Australian population, but to the best of our knowledge no further studies have been published, despite its promising findings and innovative format.

The purpose of this study was therefore to establish the validity of the SoPhI (in terms of its factor structure) when translated and applied in a Spanish-speaking population, as well as its test-retest reliability. To achieve these objectives two studies were conducted: study one examined the factor structure and internal consistency of a Spanish version of the SoPhI and sought to identify any gender and age differences in a large community sample; a second study then aimed to describe the psychometric properties of this Spanish version (SoPhI-S) in more detail, including its concurrent and discriminant validity against well-established scales of SAD, as well as evaluating its utility as a screening instrument for social anxiety in a clinical sample, and its test-retest reliability.

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## Study 1

### Method

#### Design

This cross-sectional study was designed to determine the construct validity and reliability of a Spanish translation of the SoPhI.

**Table 1:** Study one: Means and Standard Deviations on SoPhI by age and gender.

		14 years	15 years	16 years	17 years	Total
Boys	<i>M</i>	43.67	48.13	45.33	42.77	44.76
	<i>SD</i>	14.08	14.69	13.90	12.49	13.60
	<i>n</i>	15	32	89	71	207
Girls	<i>M</i>	50.60	49.08	51.02	50.11	50.22
	<i>SD</i>	12.18	14.59	15.87	12.49	14.54
	<i>n</i>	30	74	99	47	250
Total	<i>M</i>	48.29	48.79	48.32	45.69	47.75
	<i>SD</i>	13.11	14.56	15.20	13.19	14.36
	<i>n</i>	45	106	188	118	457

#### Participants

Schools were selected by a clustered random sampling method from the school lists of the Department of Education at Jaen. The sample consisted of 457 adolescents (45.3% boys) aged 14 to 17 years ( $M = 15.83$  years,  $SD = .93$ ) attending grades 9 to 12 in three private and eight public secondary and high-schools in the south of Spain (Jaen, Andalusia). Due to the clustered random sampling method, the sociodemographic characteristic of the overall sample was representative of the community.

#### Measures

The *Social Phobia Inventory* (SoPhI; Moore & Gee, 2003) is a 21-item scale which measures social anxiety according to DSM-IV-TR criteria (American Psychiatric Association, 2000). Items are rated on a 5-point scale, ranging from 1 "never" to 5 "mostly". The SoPhI has strong internal reliability ( $\alpha = .93$ ). The authors suggested that while not diagnostic, SoPhI scores greater than 56 indicate high social anxiety, while scores above 65 indicate social phobia.

The SoPhI was translated into Spanish using the back-translation method (Hambleton, 1994; Hambleton & Kanjee, 1995). First, the original version was translated from English into Spanish by a bilingual psychologist with a degree in translation and knowledge of both cultures. Once complete, the Spanish translation was back-translated from Spanish into English by another bilingual psychologist who also had knowledge of both cultures. The original versions were then compared with the back-translations, the two translators discussing and resolving any discrepancies be-

tween the original and back-translated versions. An inter-translation agreement of .97 was reached in the first case and .99 in the second. In addition, the entire process was supervised by the first author. No items were eliminated or significantly changed during the translation process.

#### Procedure

Approval was obtained from the Department of Education to conduct both studies in schools from the southern region of Jaen, Spain and to use its register of schools to randomly select potential participants. Eleven schools were randomly selected from the register and the principals of these schools were approached for permission to conduct the study. All parents of all students in grades 9 and 12 were asked to sign an informed consent form allowing their child to participate in a study looking at interpersonal problems. Students whose parents or legal guardian signed the consent form and returned it by the stated deadline were invited to participate in the study (parent acceptance rate: 87%). Participation was strictly voluntary and student refusal following parental permission was minimal, approximately .15%.

A total of 457 students from grades 9 to 12 agreed to participate in the study. Pairs of research assistants attended classes, along with the second author who acted as project coordinator. Students completed the self-report inventory in their classrooms. In order to reduce the likelihood that the group situation could artificially increase levels of anxiety or creating a situation in which social desirability might influence the results, a space was left between seats. The few students who did not wish to participate in the study continued with an independent activity. Students took approximately eight minutes to complete the SoPhI-S.

### Results

#### Confirmatory factor analysis

The correlation matrix for the 21 items of the SoPhI-S was subjected to confirmatory factor analysis using LISREL (V.8.2; Jöreskog & Sörbom, 1999) in order to confirm its unidimensionality in the current sample of Spanish adolescents. The chi square value ( $\chi^2 = 1980.54$ ,  $df = 189$ ,  $p < .001$ ,  $N = 457$ ) obtained was significant. However, as this statistic is sensitive to large sample sizes (Kline, 2005) weight was also given to other indicators which, in this case, supported the fit of the data to the model (goodness of fit (GFI) = .97, adjusted goodness of fit (AGFI) = .97, standardised root mean-square residual (SRMR) = .078, root mean square error of approximation (RMSEA) = .079, normed fit index (NFI) = .97, non-normed fit index (NNFI) = .98, and the comparative fit index (CFI) = .98). All items loaded  $\geq .50$ , the factor loadings were .66, .71, .63, .71, .79, .73, .65, .74, .69, .73, .68, .74, .54, .55, .62, .76, .55, .56, .68, .56, and .76 for items 1 to 21.

### Internal consistency

The internal consistency of the scores on the 21 items was high (Cronbach's alpha coefficient = .93).

### Gender and age differences

The sample was divided into four age groups: 14, 15, 16, and 17 years, which approximate to the grade levels. A two-way analysis of variance (ANOVA) showed no interaction between age and gender for scores on the SoPhI-S ( $F 3,334 = .95, p = .415$ ), and neither was there a main effect for age across the four years ( $F 3,449 = .51, p = .675$ ). There was, however, a main effect for gender ( $F 1, 449 = 10.85, p = .001$ ), with girls overall reporting higher scores than boys (Table 1), although the effect size was moderate ( $d = .39$ ).

## Study 2

### Method

#### Design

This repeated-measures study was designed to assess: 1) the construct validity of the SoPhI-S in terms of its convergent validity with respect to other well-established measures of social anxiety and its ability to discriminate between participants with and without a diagnosis of SAD; and 2) the temporal stability of the SoPhI-S.

#### Procedure

Those students from Study 1 who scored higher than the cut-off values of the SPAI and SAS-A, as established by Olivares, García-López, Hidalgo et al. (2002), were interviewed, along with a random sample. To do so, participants were provided with an informed consent sheet and an explanation sheet approximately one month before the assessment day. These participants were also told that the nature of the study was to further survey adolescents' beliefs and feelings about interpersonal relationships. Students with consent forms signed by a parent or legal guardian and returned by the assessment date participated in the study. Parent consent rates varied by classroom (range: 61%-79%). After consent and assent were obtained in class, students left the classroom and were allocated in different locations of the school centre to be interviewed. In addition, all participants completed the package of counterbalanced questionnaires at Time 1. Six months after the administration, all participants ( $N=192$ ) completed the SoPhI again in order to assess test-retest reliability.

### Participants

The sample consisted of 192 adolescents (63% girls), ages 14 to 17 years ( $M = 15.91, SD = .81$ ) derived from the larger sample used in Study 1. All students participated voluntarily and their parents gave informed written consent allowing them to participate. One-third of the adolescents lived in a rural area and two-thirds resided in urban locations. A broad range of socioeconomic levels were represented in this sample.

**Table 2:** Study two: Means and Standard Deviations on SoPhI-S by age and gender for clinical and control participants

		<i>Clinical sample</i>			
		15 years	16 years	17 years	Total
Males	<i>M</i>	56.84	63.91	57.35	58.95
	<i>SD</i>	15.80	13.74	13.18	14.17
	<i>n</i>	13	11	17	41
Females	<i>M</i>	62.73	61.46	60.58	61.68
	<i>SD</i>	11.10	11.91	14.98	12.36
	<i>n</i>	26	28	19	73
Total	<i>M</i>	60.77	62.15	59.06	60.70
	<i>SD</i>	12.95	12.32	14.05	13.05
	<i>n</i>	39	39	36	114
		<i>Control subsample</i>			
		15 years	16 years	17 years	Total
Males	<i>M</i>	36.47	46.50	40.43	39.40
	<i>SD</i>	7.96	10.21	6.53	8.80
	<i>n</i>	17	6	7	30
Females	<i>M</i>	40.41	44.53	44.92	43.17
	<i>SD</i>	8.48	12.41	9.49	10.43
	<i>n</i>	17	19	12	48
Total	<i>M</i>	38.44	45.00	43.26	41.72
	<i>SD</i>	8.34	11.74	8.61	9.95
	<i>n</i>	34	25	19	78

### Measures

The *Social Phobia Inventory – Spanish Version (SoPhI-S)* (translated from Moore & Gee, 2005 and described above).

The *Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu, & Stanley, 1989)* is a self-report inventory to assess behavioural, physiological and cognitive symptoms associated with social anxiety disorder. The SPAI is comprised of two scales: the 32-item Social Phobia (SP) subscale and the 13-item Agoraphobia subscale. Several studies have demonstrated that the SPAI is a valid and reliable measure for use with Spanish-speaking adolescents (García-López, Olivares & Hidalgo, 2005; García-López, Olivares, Hidalgo, Beidel & Turner, 2001; Olivares, García-López, Hidalgo, Turner & Beidel, 1999, Olivares et al., 2002). Only the social phobia subscale was used in the current study.

The *Social Phobia and Anxiety Inventory-Brief (SPAI-B)* is a brief 16-item version of the SPAI for adolescents (García-López, Hidalgo, Beidel, Olivares, & Turner, 2008). Like the original scale it assesses cognitive, somatic and behavioural symptoms of social anxiety.

The *Social Anxiety Scale for Adolescents (SAS-A)* (La Greca & López, 1998) is an adaptation of the Social Anxiety for Children-Revised (SASC-R; La Greca & Stone, 1993) for an adolescent population. The SAS-A contains 22 items: 18 descriptive self-statements and four filler items across three subscales: Fear of Negative Evaluation (FNE; 8 items), Social Avoidance and Distress specific to new situations or unfamiliar peers (SAD-New; 6 items) and Social Avoidance and Distress that is experienced more generally in the company of peers (SAD-General; 4 items). A similar factor structure was found in a Spanish-speaking population by Olivares et al. (2005).

The *Social Phobia Inventory (SPIN)* (Connors et al., 2000) has 17 items designed to assess avoidance, fear, and physiological symptoms of social anxiety. Psychometric properties among adolescents have been reported in four studies in different languages and countries: Finland, Spain, Brazil and the USA (respectively, Ranta, Kaltiala-Heino, Rantanen, Tuomisto, & Marttunen, 2007; García-López, Bermejo, & Hidalgo, 2010; Vilete, Coutinho, & Figueroa, 2004; Johnson, Merritt, Anderson, & Inderbitzen-Nolan, 2004).

The *Social Anxiety Scale for Adolescents (SASA)* (Puklek, 1997; Puklek & Vidmar, 2000) is a 28-item Slovenian scale for measuring adolescents' worries, fears (AFNE subscale) and avoidance behaviours (TIC subscale) in different social situations. The original scale has demonstrated good psychometric properties, as well as the Spanish version (García-López, Inglés, Puklek, García-Fernández, Hidalgo & Bermejo, 2010; Puklek, 2004; Puklek & Videc, 2008; Puklek & Vidmar, 2000).

The *Anxiety Disorders Interview Schedule for Children for DSM-IV (ADIS-C-IV)* (Silverman & Albano, 1996; Silverman, Albano, & Sandin, 2001) is designed to assess anxiety and mood disorders, as well as to screen for the presence of disruptive behaviour disorders, psychosis, and eating disorders. The Social Phobia (SP) module assesses the extent to which a child fears and avoids various social interaction and performance situations. In the SP module, 22 situations are assessed and the informant assigns a fear rating to indicate the extent to which the child fears that situation. The ADIS-C has moderate to strong inter-rater reliability, adequate concurrent validity and strong retest reliability (Lyneham & Rapee, 2005; Pulifiano, Comer, & Kendall, 2007; Rapee, Barrett, Dadds, & Evans, 1994; Silverman, Saavedra, & Pina, 2001; Wood, Piacentini, Bergman, McCracken, & Barrios, 2002). A diagnosis is assigned if a severity rating of 4 or greater is given on a 0-8 rating of distress/impairment.

### Classification into groups

Based on the ADIS-C, further subdivision of the sample (N=192) resulted in 78 adolescents without social anxiety disorder (non-socially anxious sample) and 114 adolescents who met DSM-IV criteria for social anxiety disorder, namely, the socially anxious sample.

## Results

### Gender and age differences

There were no interaction, age or gender effects for either the clinical or control groups as regards their scores on the SoPhI-S (Table 2).

### Convergent validity of the SoPhI-S

The inter-correlations among the SoPhI-S and the SPAI, the SPAI-B, the total score of the SAS-A, the SPIN and the total score of the SASA were all high ( $r = .89, .87, .83, .80$  and  $.80$ , respectively). The SoPhI-S also correlated with the AFNE subscale of the SASA ( $r = .75$ ), the SAS-A/FNE ( $r = .75$ ) and both the SAD subscales of the SAS-A: SAD-N ( $r = .78$ ) and SAD-G ( $r = .74$ ). Correlations between  $.50$  and  $.60$  were found for the SASA/TIC subscale ( $r = .53$ ). The elevated correlations (above  $.50$ ) suggest that all scores and subscales are highly correlated. The correlation coefficients were statistically significant in all cases ( $p < .01$ ).

### Discriminant Validity

Scores on the SoPhI-S discriminated between the 114 socially-phobic participants and the 72 control participants, yielding a 'hit rate' of 78.1% (Wilks' lambda =  $.62$ ,  $\chi^2 = 91.60$ ,  $df = 1$ ;  $p < .001$ ). An independent sample *t*-test confirmed a significant difference between these two groups:  $t(191) = 11.42$ ;  $p < .001$ , with the clinical sample scoring higher ( $M = 60.70$ ,  $SD = 13.04$ ) than the control sample ( $M = 41.72$ ,  $SD = 9.94$ ).

### Cut-off scores

At each potential cut-off score on the SoPhI-S (social phobia diagnosed by the ADIS-C-IV), sensitivity was operationalised as the percentage of adolescents meeting the social phobia criteria who were correctly classified as having social phobia. Specificity was operationalised as the percentage of adolescents not meeting the criteria for social phobia who were correctly identified as not having social phobia. Given the inverse relationship between sensitivity and specificity, determining an optimal cut-off score requires a favourable balance between both values. To determine the positive predictive value (PPV) we calculated the percentage of adolescents classified at each cut-off score as having social phobia who in fact met social phobia criteria. To determine the negative predictive value (NPV) we calculated the percentage of adolescents classified as non-socially phobic who did not in fact meet diagnostic criteria for social phobia. A receiver operating characteristic (ROC) curve and area under the curve (AUC) were examined to determine the best possible cut-off score. A value higher than  $.80$  for an AUC is considered an indicator of usefulness (Holmes, 1998).

It should be noted, however, that although the AUC is the most widely used global index of diagnostic accuracy, the Youden Index (Youden, 1950) is a commonly used measure of overall diagnostic effectiveness. The Youden Index, a function of sensitivity and specificity, is the maximum vertical distance or difference between the ROC curve and the diagonal or chance line; it corresponds to the cut-off point that optimises the biomarker's differentiating ability when equal weight is given to sensitivity and specificity. As a result, the Youden Index was mainly used here to choose the appropriate cut-off score.

The results revealed that the area under the ROC curve was .86 (95% CI, .81-.91). Given that no cut-off scores were reported by the authors of the scale, multiple cut-off scores were examined. The results showed that a cut-off score of 48 points produced the best balance, with good sensitivity (82.76%; 95% CI, 75.45-90.06), good specificity (77.50; 95% CI, 67.72-87.28), a PPV of 84.21 (95% CI, 77.08-91.34) and a NPV of 75.61 (95% CI, 65.71-85.51). The corresponding Youden Index was .60 (see Table 3).

**Table 3:** Youden Index, sensitivity, specificity PPV NPV, and likelihood ratios, with corrected 95% confidence intervals of selected SoPhI-S cut-off scores.

Cut-off	Sensitivity	Specificity	PPV	NPV	Youden Index	LR+	LR-
42	91.38 (85.84-96.92)	53.75 (42.20-65.30)	74.13 (66.60-81.65)	81.13 (69.66-92.61)	0.45	1.98	0.16
45	87.93 (81.57-94.29)	65.00 (53.92-76.08)	78.46 (71.01-85.91)	78.79 (68.17-89.41)	0.53	2.51	0.19
48	82.76 (75.45-90.06)	77.50 (67.72-87.28)	84.21 (77.08-91.34)	75.61 (65.71-85.51)	0.60	3.68	0.22
50	79.31 (71.51-87.11)	78.75 (69.16-88.34)	84.40 (77.13-85.03)	72.41 (62.45-82.38)	0.58	3.73	0.26
53	72.41 (63.85-80.98)	87.50 (79.63-95.37)	89.36 (82.60-96.13)	68.63 (59.13-78.12)	0.59	5.79	0.32
56	65.52 (56.44-74.60)	91.25 (84.43-98.07)	91.57 (84.99-98.15)	64.60 (55.34-73.86)	0.57	7.49	0.38
59	56.03 (46.57-65.50)	92.50 (86.10-98.90)	91.55 (84.38-98.72)	59.20 (50.18-68.22)	0.49	7.47	0.48

Note: PPV: positive predictive value; NPV: negative predictive value; NPV = negative predictive value; PPV = positive predictive value; LR+ = positive likelihood ratio; LR- = negative likelihood ratio

#### Test-retest reliability

The original 192 participants also completed the SoPhI-S six months later. The Pearson product-moment correlation was  $r = .70$ , indicating the temporal stability of the scale.

## Discussion

The factor structure, internal consistency, and gender and age differences for the Spanish translation of the Social Phobia Inventory (SoPhI) were examined in Study One. In Study Two the concurrent and discriminant validity and the temporal stability of this version of the SoPhI were examined. Despite the SoPhI being administered in another language, culture, and age range, its psychometric properties were similar to those found by the original authors. Therefore, the present study provides support for the utility of the Spanish version of the SoPhI as a valid and reliable scale for assessing social anxiety in Spanish adolescents.

The results of the factor analysis replicate the single-factor structure of the original scale, with item loadings in a range similar to the original study (.50-.79 vs. .50-.88). The one-factor solution adopted for the SoPhI-S, viewed in conjunction with the high level of internal consistency ( $\alpha = .93$ ), which is the same as that reported by Moore and Gee (2003), also suggests that all the items are assessing aspects of a single higher-order dimension, i.e. "social anxiety". This view is consistent with previous research in both adolescents (García-López et al., 2001, García-López, Piqueras et al., 2008; Inglés, Hidalgo, & Mendez, 2005; Olivares et al., 2004) and adults (Caballo, Salazar, Arias Iruña, Calderero y Equipo Investigación CISO-A, 2010; Cox, Ross, Swinson & Dorenfeld, 1998; Mattick & Clarke, 1998; Roberson-Nay et al., 2007; Safren, Turk & Heimberg, 1998).

There was no effect for age across the four years (14-17 years) and the magnitude of the gender differences was moderate. The latter is consistent with previous research which has suggested no need for separate normative data for boys and girls (García-López, Inglés, & García-Fernandez, 2008; Inglés et al., 2010). These findings could not be contrasted with the original study as no analysis of gender difference was reported by Moore and Gee (2003).

In sum, the psychometric properties of the Spanish version of the SoPhI (SoPhI-S) are strong and support its use in the second study. In Study Two, the convergent validity of the SoPhI-S was supported by its correlation with other scales of social anxiety (all  $r$ 's  $\geq .80$ ). However, the magnitude of the correlations suggests that although these scales provide similar information, there are also discrete elements to each scale. It appears that some scales, such as the SoPhI-S, particularly assess behavioural symptoms rather than the cognitive aspects of social anxiety, even though authors such as Van Dam-Baggen, van Heck and Kraaimaat (1992) have pointed out the consistency of both overt behaviours and reported cognitions in socially anxious people. The correlation between the SoPhI-S and the SPAI, a scale used by Moore and Gee for validity purposes, was similar to their finding (.86 vs. .89).

Using cut-off scores on the ADIS-C to form clinical and non-clinical groups, discriminant function analysis revealed that the SoPhI-S is capable of discriminating between adolescents with and without social anxiety disorder as classified by the ADIS-C. The hit rate here was 78.1%, suggesting the diagnostic utility of the SoPhI-S. As would be expected, scores on the SoPhI-S for each of these groups differed significantly.

It seems that the SoPhI-S may be valuable as a screening tool and can be easily administered in community (school)

and clinical settings, as SPAI-B and SAS-A have already proven (see García-López et al., 2008). In this regard, the AUC value (.86) revealed good diagnostic performance of the SoPhI-S, being higher than .80 value suggested by Holmes (1998) for an AUC to be considered as an indicator of usefulness. This result further supports the overall diagnostic validity of the SoPhI-S as a screening instrument for social anxiety. Although the choice of a cut-off score will depend on the purpose of a study, the present results suggest a cut-off score of 48 points for Spanish-speaking adolescents based on Youden and other indices. This score seems to be especially useful as a screening value, since 82% of cases were correctly detected. This contrasts with higher cut-off scores reported by Moore and Gee (2003) in an Australian adult population. They suggested a cut-off score around 65, which is their mean ( $M$ ) minus one standard deviation, for the phobic group, while for their socially anxious group the cut-off was 49 ( $M$  minus one  $SD$ ). Interestingly, use of that same criterion ( $M$  minus one  $SD$ ) yields a very similar score of 47.65 (60.70 – 13.05) in the current sample. Similar to the original study, 83% (in comparison to 85%) of participants with social anxiety disorder scored higher than the suggested cut-off score. Taken together, these data suggest that a score of 48 would be the best cut-off score for screening an adolescent population.

The results reveal high test-retest reliability of the SoPhI-S over a six-month period, and this suggests the stability of social anxiety, a finding similar to other studies (García-López et al., 2001; García-López, Hidalgo et al., 2008; Oli-

vares et al., 2004). As DSM-IV-TR states that adolescents must present social phobia criteria for a minimum of six months, the present findings highlight the stability of untreated social anxiety symptomatology and, therefore, suggest that the time criterion may be adequate and valid for this population. In addition, this finding is consistent with the recommendations provided by the *DSM-V Anxiety, Obsessive-Compulsive Spectrum, PostTraumatic, and Dissociative Disorders workgroup*, who recommend this criterion to be extended to all ages (Bögels et al., 2010).

Clearly, the psychometric properties of the SoPhI-S appear to be very good. One limitation to the findings is the lack of additional groups of adolescents with other anxiety or mental disorders that would have enabled us to examine further the construct validity of the SoPhI-S. Another limitation is the absence of scales measuring divergent validity (i.e. including scales that measure depression or other anxiety disorders). Future studies are warranted to replicate these findings in other languages and cultures.

Despite these limitations, however, the SoPhI-S has good psychometric properties and may be especially helpful as a screening measure due to its brevity but in contrast with previous ones, include the time criterion. As Simon and Bögels (2009) note, screening tools, such as self-report measures, enable to clinicians and researchers alike to assess anxiety in a time- and cost-effective manner. In conclusion, this is the first study to provide data on the validation of a recent measure, the SoPhI, for use in another language and with an adolescent sample.

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## References

- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders* (fourth revision, revised text). Washington, DC: APA.
- Beidel, D.C., Turner, S.M., & Morris, T.L. (1999). Psychopathology of childhood social phobia. *Journal of the American Academy of Child and Adolescent Psychiatry*, 38, 643-650.
- Bögels, S.M., Anden, L., Beidel, D.C., Clark, L.A., Pine, D.S., Stein, M.B., & Voncken, M. (2010). Social anxiety disorder: Questions and answers for the DSM-V. *Depression and Anxiety*, 27, 168-189.
- Caballo, V.E., Salazar, I.C., Arias, B., Iruñia, M.J., Calderero, M. y Equipo Investigación CISO-A (2010). Validación del “Cuestionario de Ansiedad Social para Adultos” (CASO-A30) en universitarios españoles: similitudes y diferencias entre carreras universitarias y comunidades autónomas. *Behavioral Psychology/Psicología Conductual*, 18, 5-34.
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. Hillsdale, NY, Erlbaum.
- Connor, K.M., Davidson, J.R.T., Churchill, E., Sherwood, A., Foa, E., & Weisler, R.H. (2000). Psychometric properties of the Social Phobia Inventory (SPIN). *British Journal of Psychiatry*, 176, 379-386.
- Cox, B.J., Ross, L., Swinson, R.P., & Drenfeld, D.M. (1998). A comparison of social phobia outcome measures in cognitive-behavioural group therapy. *Behavior Modification*, 22, 285-297.
- Cronbach, L. (1951). Coefficient alpha and the internal consistency of tests. *Psychometrika*, 16, 297-334.
- Essau, C.A., Conradt, J., & Petermann, F. (1999). Frequency and comorbidity of social phobia and social fears in adolescents. *Behaviour Research and Therapy*, 37, 831-843.
- Essau, C.A., Conradt, J., & Petermann, F. (2002). Course and outcome of anxiety disorders in adolescents. *Journal of Anxiety Disorders*, 16, 67-81.
- Fehm, L., Pelissolo, A., Furmark, T. & Wittchen, H-U. (2005). Size and burden of social phobia in Europe. *European Neuropsychopharmacology*, 15, 453-462.
- García-López, L. J. (2007). *Examining the efficacy of three cognitive-behavioural treatments aimed at overcoming social anxiety in adolescents*. University of Murcia: Publication Service.
- García-López, L.J., Bermejo, R., & Hidalgo, M.D. (2010). The Social Phobia Inventory: Screening and cross-cultural validation in Spanish adolescents. *Spanish Journal of Psychology*, 968-978.
- García-López, L.J., Hidalgo, M.D., Beidel, D.C., Olivares, J., & Turner, S.M. (2008). Brief form of the Social Phobia and Anxiety Inventory (SPAI-B) for adolescents. *European Journal of Psychological Assessment*, 24, 150-156.
- García-López, L.J., Inglés, C.J., & García-Fernández, J.M. (2008). Exploring the relevance of gender and age differences in the assessment of social fears in adolescence. *Social Behavior and Personality*, 36, 385-390.
- García-López, L.J., Inglés, C.J., Puklek, M., García-Fernández, J.M., Hidalgo, M.D. & Bermejo, R.M. (2010). Psychometric properties and clinical cut-offs of the Spanish version of the Social Anxiety Scale for Adolescents. *Journal of Personality Assessment*. Manuscript accepted for publication.

- García-López, L.J., Olivares, J., & Hidalgo, M.D. (2005). A pilot study on sensitivity of outcome measures for treatments of generalized social phobia in adolescents. *International Journal of Clinical and Health Psychology*, 5, 385-392.
- García-López, L.J., Olivares, J., & Vera-Vilarroel, P.E. (2003). Fobia social: Revisión de los instrumentos de evaluación validados para población de lengua española. *Revista Latinoamericana de Psicología*, 35, 151-160.
- García-López, L.J., Olivares, J., Albano, A.M., Beidel, D.C., Turner, S.M., & Rosa, A.I. (2006). Efficacy of three treatment protocols for adolescents with social anxiety disorder: A 5-year follow-up assessment. *Journal of Anxiety Disorders*, 20, 175-191.
- García-López, L. J., Olivares, J., Turner, S. M., Beidel D. C., Albano, A. M., & Sánchez-Meca, J. (2002). Results at long-term among three psychological treatments for adolescents with generalized social phobia (II): Clinical significance and effect size. *Behavioral Psychology / Psicología Conductual*, 10, 165-179.
- García-López, L.J., Olivares, J., Hidalgo, M. D.; Beidel, D. C. & Turner, S. M. (2001). Psychometric properties of the Social Phobia and Anxiety Inventory, the Social Anxiety Scale for Adolescents, the Fear of Negative Evaluation Scale and the Social Avoidance Distress Scale in an adolescent Spanish speaking population. *Journal of Psychopathology and Behavioral Assessment*, 23, 51-59.
- García-López, L.J., Piqueras, J.A., Diaz-Castela, M.M., & Inglés, C.J. (2008). Social anxiety disorder in childhood and adolescents: Current trends, advances, and future directions. *Behavioral Psychology / Psicología Conductual*, 16, 501-533.
- Hambleton, R. K. (1994). Guidelines for adapting educational and psychological tests: A progress report. *European Journal of Psychological Assessment*, 10, 229-244.
- Hambleton, R. K., & Kanjee, A. (1995). Increasing the validity of cross-cultural assessment: Use of improved methods for test adaptations. *European Journal of Psychological Assessment*, 11, 147-157.
- Herbert, J.D., Bellack, A.S., & Hope, D.A. (1991). Concurrent validity of the Social Phobia and Anxiety Inventory. *Journal of Psychopathology and Behavioral Assessment*, 4, 39-51.
- Holmes, W.C. (1998). A short, psychiatric, case-finding measure for HIV seropositive outpatients: Performance characteristics of the 5-item mental health subscale of the SF-20 in male, seropositive sample. *Medical Care*, 36, 237-243.
- Inglés, C. J., Hidalgo, M. D. & Méndez, F. X. (2005). Interpersonal difficulties in adolescence: A new self-report measure. *European Journal of Psychological Assessment*, 21, 11-22.
- Inglés, C. J., Piqueras, J.A., García-Fernandez, J.M., García-López, L.J., Delgado, B., & Ruiz-Esteban, C. (2010). Diferencias de género y edad en respuestas cognitivas, psicofisiológicas y motoras de ansiedad social en la adolescencia. *Psicothema*, 22, 376-381.
- Kline, R.B. (2005). *Principles and practice of structural equation modelling* (2nd. Ed). Guilford Press: London.
- Jöreskog, K.G., & Sörbom, D. (1999). *LISREL 8.20*. Chicago, IL: Scientific Software International.
- La Greca, A.M., & López, N. (1998). Social anxiety among adolescents: Linkages with peer relations and friendships. *Journal of Abnormal Child Psychology*, 26, 83-94.
- La Greca, A.M., & Stone, W.L. (1993). Social Anxiety Scale for Children – Revised: Factor structure and concurrent validity. *Journal of Clinical Child Psychology*, 17, 84-91.
- Lynham, H.J., & Rapee, R.M. (2005). Agreement between telephone and in-person delivery of a structured interview for anxiety disorders in children. *Journal of the American Academy of Child and Adolescent Psychiatry*, 44, 274-282.
- Moore, K.A., & Gee, D.L. (2003). The reliability, validity, discriminative and predictive properties of the Social Phobia Inventory (SoPhI). *Anxiety, Stress and Coping*, 16, 109-117.
- Olivares, J., García-López, L. J., Beidel, D. C., Turner, S. M., Albano, A. M., & Hidalgo, M. D. (2002). Results at long-term among three psychological treatments for adolescents with generalized social phobia (I): Statistical significance. *Behavioral Psychology / Psicología Conductual*, 10, 147-164.
- Olivares, J., García-López, L.J., & Hidalgo, M.D. (2001). The Social Phobia Scale and the Social Interaction Anxiety Scale: Factor structure and reliability in a Spanish-speaking population. *Journal of Psychoeducational Assessment*, 19, 69-80.
- Olivares, J., García-López, L. J., Hidalgo, M. D., La Greca, A. M, Turner, S. M., & Beidel, D. C. (2002). A pilot study on normative data for two social anxiety measures: The Social Phobia and Anxiety Inventory and the Social Anxiety for Adolescents. *International Journal of Clinical and Health Psychology*, 2, 467-476.
- Olivares, J., García-López, L.J, Hidalgo, M.D., & Caballo, V.E. (2004). Relationships among social anxiety measures and its invariance: A Confirmatory Factor Analysis. *European Journal of Psychological Assessment*, 20, 172-179.
- Olivares, J., García-López, L.J, Hidalgo, M.D., Turner, S.M., & Beidel, D.C. (1999). The Social Phobia and Anxiety Inventory: Reliability and validity in an adolescent Spanish population. *Journal of Psychopathology and Behavioral Assessment*, 21, 67-68.
- Olivares, J., Ruiz, J., Hidalgo, M.D., García-López, L.J., Rosa, A. I., & Piqueras, J. A. (2005). Social Anxiety Scale for Adolescents (SAS-A): Psychometric properties in a Spanish-speaking population. *International Journal of Clinical and Health Psychology*, 5, 85-97.
- Puklek, M. (1997). *Sociocognitive aspects of social anxiety and its developmental trend in adolescence*. Unpublished master's thesis, University of Ljubljana, Slovenia.
- Puklek, M. (2004). Development of the two forms of social anxiety in adolescence. *Horizons of Psychology*, 13, 27-40.
- Puklek, M. & Videc, M. (2008). Psychometric properties of the Social Anxiety Scale for Adolescents (SASA) and its relation to positive imaginary audience and academic performance in Slovene adolescents. *Studia Psychologica*, 50, 49-65.
- Puklek, M. & Vidmar, G. (2000). Social anxiety in Slovene adolescents: Psychometric properties of a new measure, age differences and relations with self-consciousness and perceived incompetence. *European Review of Applied Psychology*, 50, 249-258.
- Puliafico, A.C., Corner, J.S., & Kendall, P.C. (2007). Social phobia in youth: the diagnostic utility of feared social situations. *Psychological Assessment*, 19, 152-158.
- Ranta K., Kaltiala-Heino R., Koivisto A.M., Tuomisto M.T., Pelkonen M., & Marttunen, M. (2007). Age and gender differences in social anxiety symptoms during adolescence: the Social Phobia Inventory (SPIN) as a measure. *Psychiatry Research*, 153, 261-270.
- Rapee, R. M., Barrett, E. M., Dadds, M. R., & Evans, L. (1994). Reliability of the DSM-III-R childhood anxiety disorders using structured interview. *Journal of the American Academy of Child and Adolescent Psychiatry*, 33, 984-992.
- Ries, B.J., McNeil, D.W., Boone, M.L., Turk, C.L., Carter, L.E., & Heimberg, R.G. (1998). Assessment of contemporary social phobia verbal report instruments.
- Roberson-Nay, R., Strong, D.R., Nay, W.T., Beidel, D.C. & Turner, S.M. (2007). Development of an abbreviated Social Phobia and Anxiety Inventory (SPAI) using Item Response Theory: The SPAI-23. *Psychological Assessment*, 19, 133-145.
- Safren, S.A., Turk, C.L., & Heimberg, R.G. (1998). Factor structure of the Social Interaction Anxiety Scale and the Social Phobia Scale. *Behaviour Research and Therapy*, 36, 443-453.
- Sanchez-Meca, J., Rosa, A.I., & Olivares, J. (2004). El tratamiento de la fobia social específica y generalizada en Europa: Un estudio meta-analítico. *Anales de Psicología*, 20, 55-68.
- Silverman, W.K., Albano, A.M., & Sandin, B. (2001). *Entrevista clínica ADIS-IV-C. Entrevista para el niño*. Madrid: UNED-Klinik.
- Silverman, W. K., Saavedra, L., & Pina, A. A. (2001). Test-retest reliability of anxiety symptoms and diagnoses with the Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent Versions. *Journal American Academy Child adolescent Psychiatry*, 40, 937-944.
- Silverman, W.K. & Albano, A.M. (1996). *The Anxiety Disorders Interview Schedule for DSM-IV-Child and Parent Versions*. London: Oxford University Press.
- Simon, E., & Bögels, S.M. (2009). Screening for anxiety disorders in children. *European Child and Adolescent Psychiatry*, 18, 625-634.
- Suldo, S.M., and Shaffer, E.J. (2007). Evaluation of self-efficacy questionnaire for children in two samples of American adolescents. *Journal of Psychoeducational Assessment*, 25, 341-355

- Turner, S. M., Beidel, D. C., Dancu, C. V., & Stanley, M. A. (1989). An empirically derived inventory to measure social fears and anxiety: The Social Phobia and Anxiety Inventory. *Psychological Assessment, 1*, 35-40.
- Van Dam-baggen, van Heck, G.L., & Kraaimaat, F. (1992). Consistency of social anxiety in psychiatric patients: Properties of persons, situations, response classes and types of data. *Anxiety, Stress and Coping, 5*, 285-300.
- Vilete, L.M., Coutinho, E.S., & Figueroa, I.L. (2004). Confiabilidade da versao em Portugues do Inventario de Fobia Social (SPIN) entre adolescentes estudantes do Município do Rio de Janeiro [Reliability of the Portuguese-language version of the SPIN among adolescent students in the city of Rio de Janeiro]. *Cadernos de Saude Publica, 20*, 89-99.
- Wittchen, H. U., Stein, M. B., & Kessler, R. C. (1999). Social fears and social phobia in a community sample of adolescents and young adults: prevalence, risk factors and co-morbidity. *Psychological Medicine, 29*, 309-323.
- Wood, J.J., Piacentini, J.C., Bergman, L.R., McCrackne, J. y Barrios, V. (2002). Concurrent validity of the anxiety disorders section of the ADIS for DSM-IV: Child and parent versions. *Journal of Clinical Child and Adolescent Psychology, 31*, 335-342.
- Youden, W.J. (1950). Index for rating diagnostic tests. *Cancer, 3*, 32-35.

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