Automatic Thoughts in Social Situations Scale for Adolescents: Factor structure and psychometric properties

Céu Salvador¹, Marina Cunha², José Pinto-Gouveia¹, & Carla Bento¹
¹Universidade de Coimbra, Portugal
²Instituto Miguel Torga, Portugal

Abstract
Given the importance and difficulty of assessing automatic thoughts in social situations, and the scarcity of instruments in this area for adolescents, the aim of the present study was to explore the factor structure and psychometric properties of the newly developed Automatic Thoughts in Social Situations Scale for Adolescents. A sample of 1,095 adolescents (14-18 years old) obtained in 17 schools from the centre of Portugal participated in the study. Several self-report questionnaires were used. An initial exploratory factor analysis suggested a three-factor structure, responsible for 56.40% of the total variance. This structure was corroborated in the confirmatory factor analysis, and the model was invariant across genders. Acceptable to high internal consistencies for the factors and total, high temporal stability, and good convergent and discriminant validities were obtained. There were no significant differences in the distribution of the variables according to gender.

Keywords: social anxiety, automatic thoughts, assessment, adolescents.

Social anxiety disorder (SAD) is characterized by an intense fear of performance and interaction situations in which the individual may be scrutinized by others, which tends to follow a chronic course (American Psychiatric Association, 2013).

Although adolescence is associated with a normative increase of social fears (Westenberg, Drews, Goedhart, Siebelink, & Treffers, 2004), due to issues related to the maturity of cognitive functions and self-identity (Holmbeck, O'Mahar, Abad, Colder, & Updegrove, 2006; Sebastian, Burnett, & Blakemore, 2008), and to the huge importance peer relationships and peer approval present at that period (Parker, Rubin, Erath, Wojslawowicz, & Buskirk, 2006), if these social fears and social anxiety persist over time, are too frequent and intense, and involve the avoidance of social or performance situations, causing clinical distress or impairment in important areas of functioning we will thus be facing SAD (APA, 2013). In fact, the probable onset of SAD is in adolescence (APA, 2013; Wittchen & Fehm, 2003), being considered one of the most common mental disorders in this period, with prevalence ranging from 2% to 10% (Essau, Conradt, & Petermann, 2002; Kessler, Berglund, Jin, Merikangas, & Walters, 2005). Furthermore, SAD is responsible for numerous problems in several areas of the adolescent’s life (for a thorough review, see Salvador, 2009).

The role of cognitions in the development and maintenance of psychological disorders and the cognitive specificity hypothesis (according to which specific disorders would be characterized by specific cognitions) are emphasized since the early times of cognitive therapy.
The aim of the present study was to explore its frequency of automatic thoughts that may cross people’s minds. This version was adapted from the same scale for adults (Pinto-Gouveia et al., 2003) and the Social Phobia Safety Behaviours Scale (SPSBS; Pinto-Gouveia et al., 2003). In the adaptation of the ATSSS-A, also part of a wider protocol to assess SA in adolescents, the instructions and the wording of some of the items were modified to ensure its adequate understanding, some items were withdrawn, and a few more items were introduced, to better suit the age of the subjects. The scale was applied to 30 adolescents for facial validity. No other modifications were needed. The experimental version of the ATSSS-A was therefore left with 29 items, rated in a 4-point scale (0 = never; 1 = sometimes; 2 = many times; 4 = most of the times). The aim of the present study was to explore its factor structure and psychometric properties.

The Social Anxiety and Avoidance Scale for Adolescents (SAAS-A; Cunha, Pinto-Gouveia, & Salvador, 2008) is a 34-item self-report instrument to assess the degree of anxiety and frequency of avoidance in social situations, divided in 2 subscales: the anxiety subscale and the avoidance subscale. Each subscale has 6 factors (interaction in new situations, interaction with the opposite sex, performance in formal situations, assertive interaction, being observed by others, and eating and drinking in public). The scale describes 34 social situations and the subjects have to rate each situation, item according to the degree of anxiety/discomfort felt in that situation and the frequency with which that same situation is avoided (in a 5-point scale, from 1 = none/never to 5 = very much/always). Higher scores indicate higher the anxiety and avoidance. The SAAS-A revealed high values of internal consistency for both subscales, high test-retest reliability, good convergent and divergent validity, and good sensitivity, specificity and discriminant validity (Cunha et al., 2008), as well as a good sensitivity to the results of a cognitive-behaviour treatment (Salvador, 2009). In this study, the SAAS-A was only used in the second sample to assess convergent validity, and only the total scores of the two subscales were used, with Cronbach’s alphas of .93 for the anxiety subscale and .91 for the avoidance subscale.

**General Anxiety**

The Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997) is a 39-item scale, rated in a four-point scale (from 0 = never to 3 = often), to assess anxiety symptoms in children and adolescents. The higher the scores, the higher the anxiety experienced by the subject. The scale revealed 4 factors, three of which with 2 sub-factors: Physical Symptoms (12 items), with the sub-factors Tense/Restless and Somatic/Autonomic; Social Anxiety (9 items), with the sub-factors Humiliation/Rejection and Performance Anxiety and Avoidance Scale (SIPAAS; Pinto-Gouveia, Cunha, & Salvador, 2003) and the Social Phobia Safety Behaviours Scale (SPSBS; Pinto-Gouveia et al., 2003). In the adaptation of the ATSSS-A, also part of a wider protocol to assess SA in adolescents, the instructions and the wording of some of the items were modified to ensure its adequate understanding, some items were withdrawn, and a few more items were introduced, to better suit the age of the subjects. The scale was applied to 30 adolescents for facial validity. No other modifications were needed. The experimental version of the ATSSS-A was therefore left with 29 items, rated in a 4-point scale (0 = never; 1 = sometimes; 2 = many times; 4 = most of the times). The aim of the present study was to explore its factor structure and psychometric properties.

The Social Anxiety and Avoidance Scale for Adolescents (SAAS-A; Cunha, Pinto-Gouveia, & Salvador, 2008) is a 34-item self-report instrument to assess the degree of anxiety and frequency of avoidance in social situations, divided in 2 subscales: the anxiety subscale and the avoidance subscale. Each subscale has 6 factors (interaction in new situations, interaction with the opposite sex, performance in formal situations, assertive interaction, being observed by others, and eating and drinking in public). The scale describes 34 social situations and the subjects have to rate each situation, item according to the degree of anxiety/discomfort felt in that situation and the frequency with which that same situation is avoided (in a 5-point scale, from 1 = none/never to 5 = very much/always). Higher scores indicate higher the anxiety and avoidance. The SAAS-A revealed high values of internal consistency for both subscales, high test-retest reliability, good convergent and divergent validity, and good sensitivity, specificity and discriminant validity (Cunha et al., 2008), as well as a good sensitivity to the results of a cognitive-behaviour treatment (Salvador, 2009). In this study, the SAAS-A was only used in the second sample to assess convergent validity, and only the total scores of the two subscales were used, with Cronbach’s alphas of .93 for the anxiety subscale and .91 for the avoidance subscale.

**Method**

**Participants**

Participants were obtained from 17 public and private schools (3rd cycle and secondary schools, 9th to 12th grade) of Portugal centre area. The two samples for this study, resulted from an initial sample of 1095 subjects, aged from 14 to 18 years old, from the 9th to the 12th grade that was subjected to a split-half procedure. The first half of the sample, used for the Exploratory Factor Analysis (EFA), included 542 adolescents, 230 (42.40%) boys and 321 (57.60%) girls, with a mean age of 16.01 (SD = 1.07, p = .28) or on school years (p = .10).

The second half of the sample, used for the Confirmatory Factor Analysis, reliability and validity, included 553 adolescents, 277 (50.10%) boys and 276 (49.90%) girls, with a mean age of 16.01 (SD = 1.32), from the 9th to the 12th grade. Again, no differences were found between genders either on age (t = 1.07, p = .28) or on school years (χ² (540) = 6.28; p = .10).

The second half of the sample, used for the Confirmatory Factor Analysis, reliability and validity, included 553 adolescents, 277 (50.10%) boys and 276 (49.90%) girls, with a mean age of 16.01 (SD = 1.32), from the 9th to the 12th grade. Again, no differences were found between genders either on age (t = 1.07, p = .28) or on school years (χ² (540) = 6.28; p = .10).

**Measures**

Several questionnaires assessing social anxiety and general anxiety were used in this study.

**Social anxiety**

Participants completed the experimental version of the Automatic Thoughts in Social Situations Scale for Adolescents (ATSSS-A). This version was adapted from the same scale for adults (Pinto-Gouveia, Cunha, & Salvador, 2000), a self-report instrument to assess the frequency of automatic thoughts that may cross people’s minds when they are in social situations, especially if they feel anxious in those situations. This scale belonged to a wider protocol to assess SAD relevant information which also included the Social Interaction and Performance Anxiety and Avoidance Scale (SIPAAS; Pinto-Gouveia, Cunha, & Salvador, 2003) and the Social Phobia Safety Behaviours Scale (SPSBS; Pinto-Gouveia et al., 2003). In the adaptation of the ATSSS-A, also part of a wider protocol to assess SA in adolescents, the instructions and the phrasing of some of the items were modified to ensure its adequate understanding, some items were withdrawn, and a few more items were introduced, to better suit the age of the subjects. The scale was applied to 30 adolescents for facial validity. No other modifications were needed. The experimental version of the ATSSS-A was therefore left with 29 items, rated in a 4-point scale (0 = never; 1 = sometimes; 2 = many times; 4 = most of the times). The aim of the present study was to explore its factor structure and psychometric properties.

The Social Anxiety and Avoidance Scale for Adolescents (SAAS-A; Cunha, Pinto-Gouveia, & Salvador, 2008) is a 34-item self-report instrument to assess the degree of anxiety and frequency of avoidance in social situations, divided in 2 subscales: the anxiety subscale and the avoidance subscale. Each subscale has 6 factors (interaction in new situations, interaction with the opposite sex, performance in formal situations, assertive interaction, being observed by others, and eating and drinking in public). The scale describes 34 social situations and the subjects have to rate each situation, item according to the degree of anxiety/discomfort felt in that situation and the frequency with which that same situation is avoided (in a 5-point scale, from 1 = none/never to 5 = very much/always). Higher scores indicate higher the anxiety and avoidance. The SAAS-A revealed high values of internal consistency for both subscales, high test-retest reliability, good convergent and divergent validity, and good sensitivity, specificity and discriminant validity (Cunha et al., 2008), as well as a good sensitivity to the results of a cognitive-behaviour treatment (Salvador, 2009). In this study, the SAAS-A was only used in the second sample to assess convergent validity, and only the total scores of the two subscales were used, with Cronbach’s alphas of .93 for the anxiety subscale and .91 for the avoidance subscale.

The Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997) is a 39-item scale, rated in a four-point scale (from 0 = never to 3 = often), to assess anxiety symptoms in children and adolescents. The higher the scores, the higher the anxiety experienced by the subject. The scale revealed 4 factors, three of which with 2 sub-factors: Physical Symptoms (12 items), with the sub-factors Tense/Restless and Somatic/Autonomic; Social Anxiety (9 items), with the sub-factors Humiliation/Rejection and Anxious Coping (March et al., 1997). The original version revealed reasonable to good Cronbach’s alphas for the total score and factors (and week to acceptable for the sub-factors), good test-retest reliability, and good convergent and divergent validity (Baldwin & Dadds, 2007; March et al., 1997; Rynn et al., 2006), which was also confirmed in the Portuguese version (Salvador et al., 2016). In this study, the MASC was also only used in the second sample, as a concurrent measure, and only the factors were used. The Cronbach’s alphas found were: .88 for the Social Anxiety and Physical Symptoms factors, .75 for the Separation Anxiety factor, and .131 for the Harm Avoidance factor. This last factor was dropped in the analysis due to its very poor internal consistency.
Procedure

Before the study was conducted, all the necessary permissions from national entities, school boards, adolescent’s parents, and the informed consents from the adolescents were obtained, ensuring confidentiality and the voluntary character of the study. The questionnaire was applied in a classroom setting.

Data analysis

Data was explored using the Statistical Package for the Social Sciences (SPSS), version 20 (IBM Corp., 2011) and AMOS, version 20 (Arbuckle, 2011). Items descriptive statistics and distributions were computed to examine the items characteristics. Descriptive statistics were conducted to explore the sample’s characteristics. Gender differences were tested using independent sample t-tests, and chi-square tests. Item-total Pearson correlations and Cronbach’s alpha calculation were carried out to determine the items’ internal consistency. Exploratory Factor Analysis (EFA) were performed, using a Principal Component Analysis with Oblimin oblique rotation (once the factors were thought to be correlated) to assess items homogeneity (Carretero-Dios & Pérez, 2005). Confirmatory Factor Analysis (CFA) was performed to corroborate the factor structure obtained through the EFA, using a significance level of .05. A maximum likelihood method was the estimation method used. Goodness of fit was verified using the following indices: chi-square (χ²) statistics, χ²/df degrees of freedom ratio (χ²/df), Comparative Fix Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA; 90 % confidence interval [CI]). According to Byrne (2010), χ² values should not be significant, the value of the χ²/df should approach to zero (values between 2 and 5 indicate an acceptable fit), CFI and TLI should be higher than .90, and RMSEA should be lower than .08. Pearson correlations coefficients were performed to explore the association between the variables. Internal consistencies were explored using Cronbach’s alpha value. Descriptive statistics and t-tests were used to obtain descriptive and concerning gender, age and grade, and to compare groups according to gender on the ATSSS-A variables.

Results

Preliminary Analysis

None of items revealed severe violations to normality. All values of the response scale were represented in each item, and values of kurtosis and skewness were within normal values (values below 1) (Carretero-Dios & Pérez, 2005; DeVellis, 2011).

Exploratory Factor Analysis

Item-total correlations ranged between .35 and .72, and the alpha value for the total scale (.95) would not improve should any of the items be removed. Therefore, all the 29 items were maintained in the subsequent EFA.

Preliminary analysis confirmed the sample adequacy for a Principal Components (Kaiser-Meyer-Olkin = .95; Bartlett’s test: p < .001). The initial solution indicated 5 factors with eigenvalues greater than one, explaining 58.20 % of the variance, although the scree plot analysis suggested 2 factors. In the subsequent refinement, factors were retained if they had eigenvalues greater than 1, conforming to the scree plot analysis, and had no less than 3 items (Costello & Osborne, 2005). Items were retained if they had loadings greater than .30, and did not have multiple loadings (Abell, 2009). The final model ended up with 3 factors (19 items), explaining 56.40% of the variance, with the scree plot also suggesting 3 factors. The first factor, with 10 items, was responsible for 41.60% of the variance, with its items assessing thoughts related to expectancies of a negative performance and the subsequent negative evaluation (e.g., “I’ll go look like a fool”, “People will think I’m an idiot”). It was therefore called “Expectancies for negative performance and evaluation”. The second factor, left with 4 items, explaining 7.9% of the variance, regarded rigid rules for social performance (e.g., “I have to say something interesting”), and it was called “Rigid Rules”. Finally, the third factor, with 5 items, explained 6.9% of the variance. Its items seemed to assess thoughts related to the experience of physical symptoms and its subsequent expectancy of others noticing these symptoms (e.g., “I am shaking/blushing/sweating”, “People will see me shaking/blushing/sweating”). We chose to name it “Felt Sense”, in accordance with Clark and Wells (1995) definition.

Regarding correlations between factors, the highest correlation was found between factor 1 and factor 3 (r = .67). The correlations of factor 2 with factor 1 and 3 were, respectively, .48 and .47 (all with p < .001). Table 1 presents the results of the EFA (pattern matrix), for the final three-factor solution, as well as items’ media and standard deviations, variance explained, Cronbach’s alphas and communalities.

<table>
<thead>
<tr>
<th>Item content</th>
<th>M (SD)</th>
<th>% variance explained</th>
<th>F₁</th>
<th>F₂</th>
<th>F₃</th>
<th>h²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1 - Expectancies for negative performance and evaluation (α = .91)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Nerd</td>
<td>0.78 (.87)</td>
<td></td>
<td>.90</td>
<td></td>
<td></td>
<td>.69</td>
</tr>
<tr>
<td>19. Abnormal</td>
<td>0.58 (.86)</td>
<td></td>
<td>.77</td>
<td></td>
<td></td>
<td>.51</td>
</tr>
<tr>
<td>14. Make fun</td>
<td>0.90 (.87)</td>
<td></td>
<td>.77</td>
<td></td>
<td></td>
<td>.60</td>
</tr>
<tr>
<td>18. Screw up</td>
<td>0.96 (.87)</td>
<td></td>
<td>.77</td>
<td></td>
<td></td>
<td>.61</td>
</tr>
<tr>
<td>04. Idiot</td>
<td>0.98 (.91)</td>
<td></td>
<td>.75</td>
<td></td>
<td></td>
<td>.58</td>
</tr>
</tbody>
</table>
Confirmatory Factor Analysis

In the CFA, a one-dimensional model was first tested. There were two reasons for this procedure. First, because the ATSSS-A had been developed without a specific theory to create the items, and second, because the one-dimensional model would serve as a baseline model to evaluate the proposed three-factor model that resulted from the EFA.

Poor fit values were obtained for the one-dimensional model: \( \chi^2 \) of \( 888.18, p < .001 \); \( \chi^2 / df = 5.84 \); CFI = .84; TLI = .82; RMSEA = .09; CI 90% = .09 - .10. We then tested the three-factor model, including a second order factor representing the total score. This model obtained a significantly better model fit (\( \chi^2diff = 308.32, \Delta df = 3, p < .001 \)). Although the chi-square value was still significant (\( \chi^2(145) = 579.86, p < .001 \)), since this value is highly sensitive to the sample size, we relied on the remaining indices which were considered good: \( \chi^2 / df = 3.89 \); CFI = .91; TLI = .89; RMSEA = .07; CI 90% = .07 - .08. The modification indices provided by AMOS suggested the correlation of the error residuals of four pairs of items to improve the model fit. Since these suggestions were plausible considering the phrasing of the items to be correlated, these correlations have been added to the model. The final model is shown in Figure 1.

The four added error covariances (items 7 and 8; items 10 and 12; items 14 and 15; and items 13 and 17) significantly improved the model fit (\( \chi^2diff = 218.14, \Delta df = 4, p < .001 \)), which showed good fit indices: \( \chi^2(145) = 361.72, p < .001 \); \( \chi^2 / df = 2.50 \); CFI = .95; TLI = .95; RMSEA = .05; CI 90% = .05 - .06. Additionally, this model also showed high factorial weights (\( \lambda \geq 0.5 \)) and suitable individual reliability (R2 ≥ 0.25).

The intercorrelations between the factors revealed moderate to high correlations. The highest correlation was again between factor 1 (negative expectancies of performance and evaluation) and factor 3 (felt sense) (\( r = .71, p < .001 \)). The correlations between factor 1 and factor 2 (rigid rules) and between factor 2 and factor 3 were moderate (respectively, \( r = .50 \) and \( r = .49, p < .001 \)).

Multi-Group analysis for gender invariance

In order to assess if the factor structure of the ATSSS-A would be equivalent for boys and girls, a multigroup CFA for gender invariance was computed, comparing the unconstrained model and the constrained model, by constraining various parameters across both groups. Although the chi-square was significant (\( \chi^2 = 590.46, p < .001 \)), all the other indices revealed a very good model fit for both boys and girls: \( \chi^2/df = 2.036 \); CFI = .94; TLI = .93; RMSEA = .04; CI 90% = .04 - .05. Furthermore, the results obtained confirm the invariance of measurement across genders for measurement weights (\( \chi^2diff(45) = 20.44, p = .20 < \chi^2(19) = 26.30 \)), for structural covariances (\( \chi^2diff(19) = 21.84, p = .29 < \chi^2(145) = 30.14 \) and for measurement residuals (\( \chi^2diff(45) = 22.68, p = .42 < \chi^2(145) = 61.66 \)).

Internal consistency and temporal stability

Cronbach’s alpha was computed to assess the total scale and factors internal consistency. The alphas obtained revealed a very good internal consistency for the total score (\( \alpha = .92 \)), good internal consistencies for factor 1 and factor 3 (respectively, \( \alpha = .91 \) and \( \alpha = .82 \)), and an acceptable internal consistency for factor 2 (\( \alpha = .67 \)).

To assess temporal stability, 30 adolescents were asked to complete the scale again, 4 to 5 weeks after the first application. Significant and moderate to high Pearson correlations were found (\( r = .88 \), for factor 1; \( r = .52 \), for factor 2; \( r = .82 \), for factor 3; and \( r = .88 \), for the total score, all with \( p < .001 \)). Also, paired t-tests between scores showed no significant differences in means between both
time points (factor 1: \( t_{(29)} = .41, p = .68 \); factor 2: \( t_{(29)} = -.77, p = .45 \); factor 3: \( t_{(29)} = -1.32, p = .20 \); total score: \( t_{(29)} = -.56, p = .58 \)).

**Convergent and discriminant validity**

To assess convergent validity Pearson correlations between the ATSSS-A, and other measures of social anxiety (total, and anxiety and avoidance subscales of the SAAS-A, and social anxiety factor from the MASC) were computed. The factor physical symptoms from the MASC was also used (even if it is not a specific measure of social anxiety), considering that the physiological expression of anxiety is similar in social anxiety as in other anxiety disorders, regardless of the feared stimulus. To assess discriminant validity, the MASC factor of separation anxiety was used. Results are presented in Table 2.

Overall, results show that the ATSSS-A revealed significant, positive and moderate correlations with all the measures of social anxiety and physical symptoms measure, and these correlations were higher than those obtained between the ATSSS-A and the MASC factor of separation anxiety, used for discriminant validity. Fisher’s Z values compared correlations between the ATSSS-A, and convergent measures with correlations between the ATSSS-A and discriminant measures (Lee & Preacher, 2013). All differences were significant (\( p < .05 \), with correlations with the convergent measures being significantly higher than correlations with the discriminant measure, except for the comparison rigid rules-MASC physical symptoms with rigid rules-separation anxiety.

<table>
<thead>
<tr>
<th>ATSSS-A</th>
<th>Automatic Thoughts (Total)</th>
<th>Negative Expectancies and Evaluation</th>
<th>Rigid Rules</th>
<th>Felt Sense</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAAS-A (anxiety)</td>
<td>.68***</td>
<td>.65***</td>
<td>.44***</td>
<td>.59***</td>
</tr>
<tr>
<td>SAAS-A (avoidance)</td>
<td>.60***</td>
<td>.58***</td>
<td>.39***</td>
<td>.52***</td>
</tr>
<tr>
<td>SAAS-A (total)</td>
<td>.68***</td>
<td>.65***</td>
<td>.44***</td>
<td>.59***</td>
</tr>
<tr>
<td>MASC (social anxiety)</td>
<td>.74***</td>
<td>.72***</td>
<td>.54***</td>
<td>.55***</td>
</tr>
<tr>
<td>MASC (physical symptoms)</td>
<td>.63***</td>
<td>.56***</td>
<td>.37***</td>
<td>.62***</td>
</tr>
<tr>
<td>MASC (separation anxiety)</td>
<td>.36**</td>
<td>.32**</td>
<td>.29**</td>
<td>.31**</td>
</tr>
</tbody>
</table>

**Table 2. Convergent and discriminant validity.**

ATSSS-A: Automatic Thoughts in Social Situations Scale for Adolescents; SAAS-A: Social Anxiety and Avoidance Scale for Adolescents; MASC: Multidimensional Anxiety Scale for Children.

\* \( p < .01 \); \*** \( p < .001 \)
Descriptive data

Table 3 presents the media and standard deviation for boys and girls on ATSSS-A factors and total score as well as t-tests to explore possible mean values differences according to gender. T-tests revealed no statistically significant differences between boys and girls on any of the variables.

Discussion

The aim of the present study was to develop an instrument to assess adolescents’ cognitions in social situations. The ATSSS-A was developed, starting from its adult version, adapting or withdrawing some items and adding some others. The initial number of items was 29. After the EFA, the scale remained with 19 items, with 3 factors, explaining 56.40% of the variance. The three factors seem to reflect important maintenance factors in SAD (Clark & Wells, 1985), at different levels: the anticipation of a negative social performance, followed by a negative evaluation (factor 1), which is the most striking feature of SAD; rigid rules for social behaviour (factor 2), believed to have to be followed to avoid rejection from others, and according to which people with SAD compare their social performance; anxiety symptoms and the assumed visibility they will have for other people, an aspect the authors called “felt sense” (factor 3), the sensation that what is felt, resulting from anxiety activation and self-focused attention, will be noticed by others.

A CFA, performed in another sample, confirmed a good model fit for this 3-factor structure, invariant regarding gender. The ATSSS-A showed a good and very good internal consistency for the total score and for factors 1 and 3 (between .82 and .92). Although the internal consistency of factor 2, (α = .67) was slightly below what is considered an acceptable value, (α = .70), some authors (e.g., DeVellis, 2011) defend that in some cases of the social sciences, particularly with a reduced number of items, values below .70 may be acceptable. The temporal stability was also good, as well as the convergent and discriminant validity, with significantly higher correlations with other measures of social anxiety than with a measure of separation anxiety disorder. Although we were expecting higher scores for girls, like other studies have found (e.g., Essau, Conradt, & Petermann, 1999), T-tests analysis did not confirm this hypothesis.

The most important limitations of this study regard the fact that it was a Portuguese community sample with a limited age range. Cross cultural studies, with extended age ranges and clinical samples are needed. Despite these limitations, the ATSSS-A may be a promising instrument for prevention, assessment, intervention, and evaluation of therapeutic gains resulting from treatment, given the fact that it directly assesses cognitive products reflecting some of the most important maintenance factors in SAD.

Received manuscript: 15/05/2016
Accepted: 13/06/2016

Conflict of interests

None of the authors have academic, personal or political relationships with the participants or participating institutions. No financial, employment, consultancies or honoraria were involved in the relationships between participants or participating institutions and the research team.

References