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Self-Report Version of the Liebowitz Social Anxiety Scale: Psychometric Properties of the French Version

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One of the most popular measures of social anxiety is the Liebowitz Social Anxiety scale (LSAS). Recently, the LSAS has been converted into a self-reported format (LSAS-SR). Yao et al. (1999) has adapted the LSAS and LSAS-SR into French. They reported no difference between both versions. However, Yao et al. (1999) did not assess the score reliability and structural validity of the scale. In addition, no study to date has examined the test–retest reliability of the French version LSAS-SR. The present study was designed to overcome these limitations. In a first sample, 428 French speaking volunteers (292 women) were administered the French version of the LSAS-SR. In a second sample, 114 participants were administered the LSAS-SR twice over an 8-week period. Confirmatory factor analyses establish the structural validity of the French version of the LSAS-SR. Good psychometric properties, including test–retest reliability, are also observed.

Keywords: social phobia, French-speaking sample, self-report, psychometric

Social anxiety (SA) is a common and incapacitating disorder that has been associated with seriously impaired career, academic, and general social functioning (e.g., Katzelnick et al., 2001; Schneier et al., 1994). For instance, individuals with SA are more likely to have a job below their actual level of educational attainment, and to believe that their supervisors do not think they fit with the work environment (Bruch, Fallon, & Heimberg, 2003). Regarding epidemiological data, SA has a lifetime prevalence of 12.1% and is the fourth most common psychopathological disorder (Kessler et al., 2005).

As noted by Safren, Heimberg, Horner, Schneier, and Liebowitz (1999), when SA first emerged as a psychological disorder, its central feature was fear of evaluation in performance situations and in situations involving observation or scrutiny by others. Latter developments of the *DSM–III–R* and *DSM–IV* (American Psychiatric Association, 1987; 1994) have shed light on fear and the avoidance of social-interaction. As SA is a situation-heterogeneous disorder (Rapee, 1995), SA psychotherapeutic interventions have to be tailored to particular feared situations in the client's life. This approach presents a genuine measurement challenge, as precise instruments are needed to explore each client's specific fears and avoided situations.

Among the most promising measures of SA is the Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987). The LSAS is a 24-item semistructured interview that measures the fear and avoidance experienced in a range of social and performance situations. As noted by Oakman, Van Amerigen, Mancini, and Farvolden (2003), the LSAS differs from most other measures of SA as it is explicitly situation-based. In the interview, the assessor asks the client to rate his or her fear experienced in a broad array of social situations, as well as to rate the degree to which he or she avoids the situation. The client rates each of the 24 social situations on a 4-point Likert-type scale, once for the intensity of fear (0, *None*; 1, *Mild*; 2 *Moderate*; 3 *Severe*) and once for frequency of avoidance of the situation (0, *Never*; 1, *Occasionally*; 2 *Often*; 3 *Usually).* Items of the LSAS that refer to social and performance situations are summed separately, as are scores for fear and for avoidance. A global score is also proposed, summing all items. Heimberg et al. (1999) reported good internal consistency and reliability for fear and avoidance ratings as well as for the global scale. Good convergent and discriminant validity were also reported.

Although the LSAS was constructed on the basis of two main factors (i.e., fear and avoidance), Heimberg et al. (1999) proposed two distinct subscales for each factor: social-interaction situations and performance situations. Using structural equation modelling,

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Safren et al. (1999) reported poor fit for this model. Further, they observed that for the fear and avoidance ratings tested separately, a four-factor solution fitted well. The factors were as follows: (a) social interaction (e.g., *talking with people you don't know very well*), (b) public speaking (e.g., *giving a report to a group*), (c) observation by others (e.g., *writing while being observed*), and (d) eating and drinking in public (e.g., *eating with others in public spaces*).

The semistructured interview version of the LSAS has also been converted into a self-report format (LSAS-SR; e.g., Cox, Ross, Swinson, & Direnfeld, 1998; Fresco et al., 2001), which is easier to administrate. It has been repeatedly shown (e.g., Fresco et al., 2001; Oakman et al., 2003) that the LSAS and LSAS-SR have very similar structure and psychometric properties (including similar subscale and full-scale reliabilities), present convergent and concurrent validity, and produce similar means. Moreover, the four-factor model proposed by Safren et al. (1999) for the LSAS has been replicated for the LSAS-SR (Oakman et al., 2003).

Yao et al. (1999) have adapted the LSAS and LSAS-SR into French. They reported that there were no differences between the French LSAS and the French LSAS-SR in both group of social phobics and nonclinical volunteers, either on fear or on avoidance. Further, they also found that the French version of the LSAS appears to be an appropriate outcome measure to assess change in symptoms of SA after cognitive and behavioural therapies.

Although the French version presents good psychometric properties, including convergent and divergent validity, three aspects are still unclear concerning this version. First, as Yao et al. (1999) did not report confirmatory factor analysis, the structural validity of the French LSAS-SR is not established. Structural validity is crucial as it ensures that we actually measure the same construct as measured in the initial version. Further, at a more fundamental level, structural validity is a very critical point. It refers to the degree to which the scale measures the theorized psychological construct that it purports to measure. In other words, structural validity involves generalising from your measure to the concept of your measure. Second, Yao et al. (1999) did not assess scale score reliability. Assessing the reliability across items within the same scale or subscale is a critical step in test construction and adaptation. Finally, to our knowledge, the test–retest reliability of the French LSAS-SR has not been explored yet, which limits its clinical research applications. For instance, recent advances in statistical approaches to assess change in psychotherapeutic and pharmacological treatments recommend weighting each individual clinical change by the test–retest reliability (e.g., Christensen & Mendoza, 1986; Jacobson & Truax, 1991). This approach ensures that the clinical changes reflect more than the fluctuation of an imprecise measuring instrument.

The present study was designed to overcome these three central limitations by answering three questions. First, which previous factor structure has the best fit with the data in a nonclinical French-speaking sample? As a consequence of previous findings (Oakman et al., 2003; Safren et al., 1999), our primary prediction was that the four-factor model observed by Oakman et al. (2003) best fits with the data of the French LSAS-SR. Second, regarding the best fitting model, what are the internal consistencies of the global scale as well as each subscale? Finally, does the French LSAS-SR exhibit good test–retest reliability?

Overview

In a first sample, the structural validity of the French version of the LSAS-SR was tested with confirmatory factor analyses. We also assessed internal consistency. With a second sample, we examined the measure's test–retest reliability.

Structural Validation

Method

Participants. Four hundred and twenty-eight French speaking volunteers (292 women) were administered the French version of the LSAS-SR. Participants were selected among a large students and staff (i.e., academic, technical, administrative, and research) community from the Université Catholique de Louvain (Belgium). The recruitment was electronically delivered. Participants received an informational e-mail inviting them to participate in the study. Participants filled in the questionnaires individually, either at home or in a university labouratory. All participants had at least a secondary school degree and were predominantly university graduates (83.1%). Their age ranged from 17 to 44 years of age ($M = 21.11$, $SD = 3.67$). Only native French speakers filled in the questionnaire.

Measures and procedure. We asked participants to complete the French version of the LSAS-SR (Yao et al., 1999), the Trait version of the Spielberger State–Trait Anxiety Inventory (STAI-Trait; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), and the short version of Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). For the construct validity, the Fear of Negative Evaluation scale (FNE; Watson & Friend, 1969) was used. We selected these scales in order to ensure that the LSAS-SR best differentiate SA from general anxiety proneness and depressive symptoms. Previous findings reported that the STAI-Trait and the BDI are both relevant measures for the assessment of the construct validity of a multifaceted scale referring to a sample of emotional behaviours (e.g., Heeren, Douilliez, Peschard, Debrauwere, & Philippot, 2011; Monestès, Villatte, Mouras, Loas, & Bond, 2009).

The STAI-Trait is a 20-item self-report questionnaire assessing anxiety proneness. Bruchon-Schweitzer and Paulhan (1993) have reported good psychometric and structural properties of the French adaptation of the scale. Cronbach's alpha in the current sample was .88.

The BDI is a 13-item self-report measure of symptoms of depression. Bourque and Beaudette (1982) have reported good psychometric and structural properties of the French version of the scale. Cronbach's alpha in the current sample was .81.

The FNE is a 30-item self-report questionnaire that measures a person's apprehension about negative evaluation. We selected this scale because, as argued by Turk, Heimberg, and Magee (2008), it precisely targets the core construct of SA. Studies have reported good psychometric properties as well as structural validity of the French adaptation of the scale (Douilliez, Baeyens, & Philippot, 2008; Musa, Kostogianni, & Lépine, 2004). Cronbach's alpha in the current sample was .85.

Data analysis. Confirmatory factor analysis, using AMOS 16 software (Arbuckle, 2007), was used to test the factorial validity of the LSAS-SR. Before performing the analysis, we conducted the

Kolmogorov–Smirnov test on each item of the LSAS-SR. These analyses revealed that normality was achieved for all items (all *p*s >.05).

For the confirmatory factor analyses, goodness of fit was tested with a χ^2 test (a statistically nonsignificant value corresponds to an acceptable fit). However, the problem with the χ^2 is that it is sensitive to sample size. Byrne (1994) has noticed that it is unusual to obtain statistically nonsignificant χ^2 when performing confirmatory factor analyses, even if the discrepancy of the observed from the implied data is trivial. We preferred a derived fit statistic, the normed χ^2 which is less dependent on the sample size. The normed χ^2 is achieved by computing the ratio of the model χ^2 and the degrees of freedom (Wheaton, Muthén, Alwin, & Summers, 1977). A normed χ^2 below 2 usually suggests good model fit and below 3 acceptable fit (Bollen, 1989).

Many other solutions to the dependency to sample size have been proposed, and consequently, many different fit indices are available. As recommended by Schweizer (2010), we decided to report the Standardized Root Mean Square Residual (SRMR), the Root Mean Square Error of Approximation (RMSEA), and the Comparative Fit Index (CFI). SRMR and RMSEA are both residuals-based absolute fit measures. CFI is an incremental relative fit measure. As argued by Hu and Bentler (1998), the combination of RMSEA and SRMR is valuable because the SRMR is sensitive to the misspecification of the factor covariances, and the RMSEA is sensitive to the misspecification of factor loadings. In that way, if both indices were accepted, then the latent and the measurement model would be considered to be well specified. Further, the RMSEA has the advantage of being usually associated with a confidence interval. RMSEA values less than .05 were found to indicate a good model of fit (Brown & Cudeck, 1993). The SRMR are expected to stay below .01 (Kline, 2005). The CFI indicates a good model fit for values in the range between .95 and 1.0, whereas values in the range of .90 and .95 signify acceptable fit (Bentler, 1990; Hu & Bentler, 1999).

We also reported Goodness of fit Index (GFI). GFI is an absolute fit index developed by Jöreskog and Sörbom (1984), which is analogous to R^2 and performs better than any other absolute fit index regarding the absolute fit of the data (Hoyle & Panter, 1995; Marsh, Balla, & McDonald, 1988). GFI values are between 0 and 1, with 1 indicating a perfect fit. As suggested by Cole (1987), a value of .80 has usually been considered as a minimum for model acceptance.

Finally, the present context requires comparing fit across models that are not necessarily nested (i.e., meaning that one model is not simply a constrained version of the other). Therefore, we also reported the Akaike Information Criterion (AIC, Akaike, 1987), the Browne-Cudeck Criterion (BCC; Browne & Cudeck, 1989), and the Expected Cross-Validation Index (ECVI; Browne & Cudeck, 1989) that are the most suited for comparison of non-nested models (Blunch, 2008). AIC, BCC, and ECVI are fit measures based on information theory. These indices are not used for judging the fit of a single model, but are used in situations where you have to choose among several realistic but different models. These indices are a function of both model complexity and goodness of fit. For these indices, low scores referred to simple well-fitting models, whereas high scores referred to complex poor-fitting models. Therefore, in a comparison-model approach, the model with the lower score is to be preferred.

Results

Structural Validity

To be consistent with previous studies, we first imposed on the data the four-factor model implied by the design of the LSAS-SR (fear and avoidance of both social interaction and performance situations; Model A). Then, all models investigated in previous studies (mentioned above) were imposed on the data and compared with Model A. This latter model was used as a baseline comparison-model, because all other models are constrained versions of Model A. Finally, given the high significant positive correlations between first-order factors (see Table 3), we also imposed on the data hierarchical structural modelling involving second-order factors.

Model A. The first structural model we imposed on the data was the four-factor model implied by the design of the LSAS-SR (fear and avoidance of both social interaction and performance situations; Model A). To be consistent with previous studies, we considered both fear and avoidance data simultaneously. As done in previous studies examining the structural validity of the LSAS-SR, we also modelled correlated errors for the two responses to each item. For example, the first item of the LSAS is *Telephoning in public*, which is rated first for fear or anxiety experienced in the situation, and second for the frequency of avoidance of the situation. We allowed correlated errors between each such pair of responses (24 correlated errors in all, 1 for each situation). As shown in Table 1, analyses indicated a good overall fit of the measurement model.

Model B. Then, we compared the fit of Model A with a two-factor model, one factor for the social-interactions situations and the other for the performance situations (Model B), without distinction between fear and avoidance scales. The analyses indicated that, despite the reasonable overall fit of the model, Model B fit significantly less well than Model A ($\Delta\chi^2 = 112.020$, $\Delta df = 5$, $p < .001$). In addition, the AIC, BCC, and ECVI were favourable (i.e., lower) to Model A.

Model C. We compared the previous model with a single-factor model assessing SA (Model C). Again, a reasonable overall fit of the model was observed. However, Model C fit significantly less well than Model A, $\Delta\chi^2 = 221.05$, $\Delta df = 06$, $p < .001$, and the AIC, BCC, and ECVI were not favourable to Model A (see Table 1).

Model D. We compared the previous model with a two-factor model as implied by the items, one for the fear scale, one other for the avoidance scale. Again, a good overall fit of the model was observed. However, Model D fit significantly less well than Model A, $\Delta\chi^2 = 100.743$, $\Delta df = 5$, $p < .001$. Again, the AIC, BCC, and ECVI were favourable to Model A (see Table 1).

Model E. We tested the model proposed by Safren et al. (1999) and replicated by Oakman et al. (2003). As mentioned before, the model they proposed has four factors, one for social interaction, one for public speaking, one for observation by others, and one for eating and drinking in public for both fear and avoidance subscales. A good fit of the measurement model was observed. Further, the AIC, BCC, and ECVI (see Table 1) suggested that Model E is preferable to Model A. In addition, Model E fit significantly better than Model A ($\Delta\chi^2 = 117.906$, $\Delta df = 22$, $p < .001$).

Table 1
Fit Index Values for the Different Tested Models

Models	χ^2	*df*	Normed-χ^2	SRMR	RMSEA	RMSEA 90% CI	GFI	CFI	AIC	BCC	ECVI
Model A	1990.973	1050	1.856	.008	.046	[.043, .059]	.806	.547	22242.973	2275.639	5.329
Model B	2111.993	1055	2.002	.005	.048	[.045, .051]	.794	.491	2353.990	2385.364	5.586
Model C	2112.023	1056	2.000	.005	.048	[.045, .051]	.794	.492	2353.023	2383.134	5.581
Model D	2001.716	1055	1.897	.006	.046	[.043, .048]	.805	.544	2243.716	2275.086	5.255
Model E	1873.067	1028	1.822	.008	.044	[.041, .047]	.817	.593	2169.067	2207.438	5.080
Model F	**1906.099**	**1047**	**1.821**	**.007**	**.044**	**[.041, .047]**	**.814**	**.586**	**2164.099**	**2197.543**	**5.068**
Model G	1943.799	1048	1.855	.010	.045	[.042, .048]	.810	.569	2199.799	2232.984	5.152

Note. *df* = degree of freedom; CI = confidence interval. Model *F*(being emphasized by a bold font) is the best fitting model.

Models F and G. Although Model E had a closer fit with the data than the others, acceptable overall fit for Model D was also observed. Therefore, we further investigated a second-order level of the data measurement. In Model *F*, we tested a hierarchical model with the eight-factor solution of Model E as a latent variable and fear and avoidance as second-order factors. As shown in Table 1, a good fit of the measurement model was observed. Further, Model F fit significantly better than Model E ($\Delta\chi^2 = 33.03$, $\Delta df = 19$, $p < .01$). Congruently, the AIC, BCC, and ECVI (see Table 1) were lower than previous models. However, it should be noted that the CFI of Model F was not as high as other fit indices. As argued by Blunch (2008), CFI has the weakness that the baseline model is a very unrealistic independent model.

Given the high correlations between the two second-order factors of Model F ($r = .72$, $p < .001$), we decided to test an alternative hierarchical model with the eight-factor solution of Model E as a latent variable and a global latent factor for social phobia as second-order factor (Model G). As shown in Table 1, the elevated SRMR suggested that the factor covariance did not fit the data. In addition, the AIC, BCC, and ECVI were higher than those of Model E and Model F. Consequently, Model G fit significantly less than both Model E, $\Delta\chi^2_{\text{G-E}} = 73.73$, $\Delta df_{\text{G-E}} = 20$, $p < .001$, and Model *F*, $\Delta\chi^2_{\text{G-F}} = 36.81$, $\Delta df_{\text{G-F}} = 1$, $p < .001$.

These confirmatory factor analyses clearly suggested that Model F fit the best. The standardized factor loadings of Model F were statistically significant ($p < .001$, see Appendix A for further for loadings). Six items, however, showed loading below .40 (i.e., item 2-fear, item 5-fear, item 7-fear, item 14-fear, item 14-avoidance, and item 21-avoidance).

Descriptive Statistics and Internal Consistency Reliability

Table 2 displays the descriptive statistics and scale score reliability indices of the French version of the LSAS-SR factors and global score. However, the fear and avoidance factors of eating and drinking in public only include two items. Therefore, we used correlations rather than Cronbach's alpha coefficients. In addition, we also reported the 95% confidence intervals of Cronbach's alpha coefficients. These confidence intervals were computed using the procedure of Koning and Franses (2003). Although both fear and avoidance scales of being observed by others exhibited less than ideal Cronbach's alphas (.61 and .63, respectively), alphas were higher than .75 (Nunnally, 1978) and suggested good scale and subscale score reliabilities. The correlations between the first-order and second-order factors are displayed in Table 3. These findings clearly support the relevance of measuring factors separately.

Correlations Between the LSAS-SR and Other Constructs

Table 3 displays the zero-order correlations between the dimensions of the LSAS-SR and the FNE, the BDI as well as the STAI-Trait. Fisher's *r*-to-*z* transformation was used to assess, using a *Z* test, the difference of Pearson *r*-values. The LSAS-SR correlated significantly better with the FNE and the BDI than with anxiety proneness. In accordance with previous findings, the present data suggested the French version of the LSAS-SR shows good construct validity. Further, regarding the significant correlation between the LSAS-SR and the BDI, it replicates previous findings noting that most of the individuals with SA reported symptoms of depression (e.g., Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992). One cannot exclude that the impaired career, academic, and general social functioning observed among these individuals, as mentioned above, may led to these depressive symptoms.

Test–Retest Reliability

The temporal stability of the scale was examined in an independent sample of 114 French-speaking volunteers (53 women) over an 8-week period. Their age ranged from 18 to 76 years old ($M = 32.27$, $SD = 13.85$). All participants had at least a secondary school degree and were predominantly university graduates. Participants filled in the questionnaires individually, either at home or in a university labouratory. The test–retest reliability was assessed using correlation coefficients between Time 1 and Time 2.

Good test–retest reliabilities were observed for the LSAS total score, $r(114) = .93$, $p < .001$; fear subscale, $r(114) = .84$, $p < .001$, and avoidance subscale, $r(114) = .86$, $p < .001$. For the fear ratings, there were medium to strong correlations, social-interaction situation: $r(114) = .86$, $p < .001$; public speaking: $r(114) = .45$, $p < .001$; observation by others: $r(114) = .65$, $p < .001$; eating and drinking in public: $r(114) = .60$, $p < .001$. For the avoidance ratings, correlations ranged from medium to strong, social-interaction situation: $r(114) = .80$, $p < .001$; public speaking: $r(114) = .76$, $p < .001$; observation by others: $r(114) = .37$, $p < .001$; eating and drinking in public: $r(114) = .41$, $p < .001$.

Overall, these results suggest that the individual differences on LSAS-SR are stable over time.

Table 2
Descriptive Statistics and Cronbach's Alphas

Dimensions	Items	Minimum	Maximum	*M*	*SD*	α	α 95% CI
SI (fear)	12	1.00	29.00	12.13	5.17	.76	[.73, .79]
SI (avoidance)	12	0.00	27.00	11.19	5.97	.78	[.76, .80]
PS (fear)	5	0.00	14.00	6.16	2.97	.75	[.71, .80]
PS (avoidance)	5	0.00	14.00	5.57	3.16	.76	[.71, .81]
O (fear)	5	0.00	13.00	6.17	2.94	.61	[.58, .67]
O (avoidance)	5	0.00	15.00	5.12	3.08	.63	[.60, .66]
ED (fear)	2	0.00	6.00	2.16	1.59	.82	[.85, .89]
ED (avoidance)	2	0.00	6.00	2.18	1.71	.81	[.83, .87]
Fear	24	2.00	64.00	27.69	11.48	.90	[.89, .91]
Avoidance	24	0.00	61.00	25.12	12.75	.91	[.90, .92]
LSAS total score	48	3.00	123.00	52.81	22.22	.94	[.93, .95]
FNE	30	1.00	37.00	15.74	5.58	.85	[.82, .88]
BDI	13	0.00	20.00	4.22	4.06	.81	[.78, .84]
STAI-Trait	20	24.00	70.00	50.75	5.68	.88	[.87, .89]

Note. SI = social interaction; PS = public speaking; O = observation by others; ED = eating and drinking in public; CI = confidence interval. For ED (fear) and ED (avoidance), we used Pearson's correlations rather than Cronbach's alpha coefficients.

Discussion

The main goal of the present study was to answer three major questions: Which factor structure best captures the LSAS-SR items' covariance in a nonclinical French-speaking sample? What are the scale score reliabilities of the global scale and of the specific subscales? What is the test–retest reliability of the French LSAS-SR?

Regarding the factor structure of the LSAS-SR, we investigated whether the structure found by Oakman et al. (2003) could be replicated in a French-speaking sample. Confirmatory factor analyses revealed an eight-factor solution including social interaction, public speaking, observation by others, and eating and drinking in public, distinguishing each time fear and avoidance ratings, separate as first-order factors and both fear and avoidance as second-order factors. The first-order factors replicate the structure found by Oakman et al. (2003), and extended it to a hierarchical model including fear and avoidance as second-order factors. These data suggest there is little reason to interpret subscale scores of the French version of the LSAS-SR according to the typical scoring. As mentioned above, the LSAS-SR is typically scored by summing scores for the social-interaction situations, performance situations, and keeping fear and avoidance ratings separate. Results of the present confirmatory factor analyses are consistent with an eight-factor solution: social interaction, public speaking, observation by others, and eating and drinking in public, distinguishing each time both fear and avoidance ratings. This results in 11 scores: fear of social interaction, fear of public speaking, fear of observation by others, fear of eating and drinking in public, avoidance of social interaction, avoidance of public speaking, avoidance of observation by others, avoidance of eating and drinking in public, a total fear score, a total avoidance score, and a global summary score. Therefore, distinguishing both fear and avoidance ratings for each subscale appears to be relevant to the scoring system.

Second, as Yao et al. (1999) did not assess the scale scores reliability of the French version of the LSAS-SR, we measured the Cronbach's alphas of the global scale as well as each subscale. In

Table 3
Correlations Between the First-Order Factors, the Second-Order Factors, and Other Psychological Constructs

Dimensions	SI (F)	SI (A)	PS (F)	PS (A)	O (F)	O (A)	ED (F)	ED (A)	F	A	Total
SI (a)	.676**	—	.504**	.658**	.540**	.730**	.353**	.542**	.643**	.932**	.853**
PS (f)	.714**		—	.731**	.695**	.503**	.562**	.352**	.871**	.624**	.805**
PS (a)	.525**			—	.549**	.628**	.396**	.461**	.648**	.824**	.796**
O (f)	.752**				—	.663**	.469**	.348**	.865**	.628**	.804**
O (a)	.582**					—	.346**	.510**	.628**	.853**	.801**
ED (f)	.575**						—	.482**	.695**	.439**	.611**
ED (a)	.414**							—	.456**	.672**	.610**
F	.933**								—	.715**	.924**
A	.676**									—	.928**
Total	.867**										—
FNE	.243**	.313**	.206**	.287**	.216**	.231**	.228**	.235**	.216**	.294**	.260**
STAI-Trait	.020	.035	.028	.093	.041	.011	.066	.027	.001	.040	.022
BDI	.239**	.227**	.196**	.147*	.156*	.189**	.251**	.085	.244**	.211**	.246**

Note. SI = social interaction; PS = public speaking; O = observation by others; ED = eating and drinking in public; A = Avoidance subscale; F = Fear subscale; Total = Global LSAS-SR scale.
* $p < .05$. ** $p < .01$.

general, although they tended to be moderate rather than high, good scale and subscale score reliabilities were observed. However, it should be noted that both fear and avoidance scales of *being observed by others* exhibit less than ideal Cronbach's alphas (.61 and .63, respectively). One cannot exclude that the very wide range of situations which are included on the *being observed by others* factors (e.g., *telephoning in public, urinating in public bathroom, taking a test*) negatively affects the intercorrelations of these items, and therefore leads to a decrease in Cronbach's alpha.

Third, we examined the test–retest reliability of the French LSAS-SR. With statistically significant strong correlations (except for the avoidance ratings, ranging from medium to strong), our data suggest that the individual differences on LSAS-SR are globally stable over time. Regarding the lower test–retest correlations for the fear of *public speaking* and the avoidance of both being *observed by others* and *eating and drinking in public*, one cannot exclude that environmental factors (e.g., events, meetings) have engendered variability on the frequency of these specific situations over the 8-week period. However, test–retest findings have critical consequences for treatment research. As mentioned above, recent statistical advances to assess change in treatments recommend weighting each individual clinical change by the test–retest reliability (e.g., Christensen & Mendoza, 1986; Jacobson & Truax, 1991). While the LSAS appears as one the most frequently cited scales in published work assessing the efficacy of psychopharmacological treatment of social phobia, this is the first study assessing the test–retest reliability of the French version of scale.

At a fundamental level, results of the structural modelling are congruent with Mowrer's (1939, 1960) two-stage theory for the acquisition and maintenance of emotional disorder. According to Mowrer (1960), fear and avoidance behaviours are functionally different. In a first stage, a neutral event becomes, through classical conditioning processes, associated with fear by being paired with a stimulus that by its nature provokes discomfort or anxiety. In a second stage, escape or avoidance responses are developed to reduce the anxiety or discomfort evoked by the various conditioned stimuli; these responses are maintained by their success in doing so. This functional distinction is clinically critical. Indeed, from a cognitive and behavioural therapy perspective, clients have to be exposed to a feared situation, while escape behaviours in avoided situations have to be detected and strictly prevented. Therefore, a measure that distinctly rates fear and avoidance may be more appropriate for tailored treatments and ideographic approach of clinical change.

In contrast, the present findings are inconsistent with Heimberg et al. (1999), who indicated that fear and avoidance ratings might not measure distinct constructs. However, it should be noted that Heimberg et al.'s (1999) observation was made on a clinical sample of social phobics. One cannot exclude that the internal structure of LSAS-SR collected on individuals who suffer from clinical social phobia is different from the one observed in nonclinical individuals.

The present study suffers from several limitations. First, our sample only comprises nonclinical participants. Future studies should assess the structural validity of the French version of the LSAS-SR among a clinical sample. Second, we only assessed the construct validity with self-report measures. Future studies should examine the correlation between the French version of the LSAS-SR and behavioural as well as psychophysiological (e.g., skin conductance, cortisol release) responses to social stressor. Third, the test–retest sample was relatively small, thereby limiting statistical power and increasing the likelihood of a Type II error. Future studies with larger samples are clearly needed. Fourth, none of the models reported in Table 1 appears to provide very optimal fit. Specifically, the CFI values were below .90. However, the CFI depends in large part on the average size of the correlations in the data. If the average correlation between variables is not high, then the CFI will not be very high. Fifth, some of the factor loadings reported in the Appendix, were very high (i.e., the second-order factors). One cannot eliminate the possibility that overextraction may be an issue. However, as observed by Frazier and Youngstrom (2007), although CFI and χ^2 may lead to overextraction, AIC and RMSEA are more useful to derived factor structures examined with confirmatory factor analyses. In order to more adequately measure additional factors and, therefore, structural validity, researchers may increase the length of the scale. Further, in order to best approach the construct validity of each factor, they may use multitrait-multimethod matrix strategies (Campbell & Fiske, 1959). Future studies should investigate this question.

In conclusion, the French version of the LSAS-SR provides a valid measure of SA for French-speaking clinicians as well as researchers. Regarding its structural validity, confirmatory factor analyses replicated the model of Oakman et al. (2003) and extended it to a hierarchical model with fear and avoidance as second-order factors. These results suggest that there is little reason to interpret subscale scores of the French version of the LSAS-SR according to the scoring instructions. Based on our data, an alternative scoring system was proposed. Good scale and subscales reliabilities as well as good test–retest reliability were observed for each factor. These findings have critical clinical consequences for the evaluation of SA with the LSAS-SR.

Résumé

L'échelle d'Anxiété Sociale de Liebowitz (LSAS) est une des mesures les plus courantes d'évaluation de l'anxiété sociale. Récemment, la LSAS a été convertie dans un format auto-rapporté (LSAS-SR). Yao et al. (1999) ont adapté la LSAS et la LSAS-SR en français. Ils n'ont rapporté aucune différence entre les deux versions. Cependant, Yao et al. (1999) n'ont évalué ni la consistance interne ni la validité structurale de l'échelle. En outre, aucune étude n'a, à ce jour, examiné la fiabilité test-retest de la version francophone de la LSAS-SR. La présente étude a été élabourée en vue de surmonter ces limites. Dans un premier échantillon, la version francophone de la LSAS-SR a été administrée à 428 volontaires francophones (292 femmes). Dans un deuxième échantillon de 114 participants, l'échelle a été administrée deux fois sur une période de 8 semaines. Des analyses factorielles confirmatoires soutiennent la validité structurale de la version francophone de la LSAS-SR. De bonnes propriétés métriques, incluant la fiabilité test-retest, sont également observées.

Mots-clefs : Phobie Sociale, échantillon Francophone, Mesure auto-rapportée, psychométrie.

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Appendix

Standardized Factor Loadings of Each Item After the Analysis of the Hierarchical Model with Four Factors and Two Second-Order Factors

Items	Latent facets	Loadings
i5-fear	Social Interaction (fear)	.305
i7-fear	Social Interaction (fear)	.346
i10-fear	Social Interaction (fear)	.635
i11-fear	Social Interaction (fear)	.501
i12-fear	Social Interaction (fear)	.471
i14-fear	Social Interaction (fear)	.385
i18-fear	Social Interaction (fear)	.614
i19-fear	Social Interaction (fear)	.674
i21-fear	Social Interaction (fear)	.401
i22-fear	Social Interaction (fear)	.567
i23-fear	Social Interaction (fear)	.820
i24-fear	Social Interaction (fear)	.771
i5-avoidance	Social Interaction (avoidance)	.529
i7-avoidance	Social Interaction (avoidance)	.597
i10-avoidance	Social Interaction (avoidance)	.453
i11-avoidance	Social Interaction (avoidance)	.553
i12-avoidance	Social Interaction (avoidance)	.691
i14-avoidance	Social Interaction (avoidance)	.276
i18-avoidance	Social Interaction (avoidance)	.798
i19-avoidance	Social Interaction (avoidance)	.825
i21-avoidance	Social Interaction (avoidance)	.372
i22-avoidance	Social Interaction (avoidance)	.755
i23-avoidance	Social Interaction (avoidance)	.781
i24-avoidance	Social Interaction (avoidance)	.775
i2-fear	Public Speaking (fear)	.521
i6-fear	Public Speaking (fear)	.379
i15-fear	Public Speaking (fear)	.525
i16-fear	Public Speaking (fear)	.545
i20-fear	Public Speaking (fear)	.530
i2-avoidance	Public Speaking (avoidance)	.458
i6-avoidance	Public Speaking (avoidance)	.446
i15-avoidance	Public Speaking (avoidance)	.538
i16-avoidance	Public Speaking (avoidance)	.530

(*Appendix continues*)

Appendix (*continued*)

Items	Latent facets	Loadings
i20-avoidance	Public Speaking (avoidance)	.596
i3-fear	Eating and Drinking (fear)	.837
i4-fear	Eating and Drinking (fear)	.771
i3-avoidance	Eating and Drinking (avoidance)	.843
i4-avoidance	Eating and Drinking (avoidance)	.767
i1-fear	Observation (fear)	.484
i8-fear	Observation (fear)	.483
i9-fear	Observation (fear)	.471
i13-fear	Observation (fear)	.559
i17-fear	Observation (fear)	.492
i1-avoidance	Observation (avoidance)	.505
i8-avoidance	Observation (avoidance)	.621
i9-avoidance	Observation (avoidance)	.620
i13-avoidance	Observation (avoidance)	.577
i17-avoidance	Observation (avoidance)	.558
Observation (avoidance)	Avoidance	.992
Social Interaction (avoidance)	Avoidance	.998
Eating and Drinking (avoidance)	Avoidance	.837
Public Speaking (avoidance)	Avoidance	.959
Observation (fear)	Fear	.962
Social Interaction (fear)	Fear	.981
Eating and Drinking (fear)	Fear	.617
Public Speaking (fear)	Fear	.996

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