Revising and Validating the Social Interaction Anxiety Scale and Social Phobia Scale

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Introduction

- The Social Interaction Anxiety Scale and Social Phobia Scale (SIAS and SPS; Mattick & Clarke, 1998) are companion measures for assessing social anxiety and social phobia.
- The SIAS assesses fears of social interaction situations (e.g., meeting people at parties), whereas the SPS assesses fears of performance or evaluation during daily activities (e.g., eating).
- The scales have good reliability and validity across several samples (Brown et al., 1997; Mattick & Clarke, 1998).
- Exploratory (EFA) and confirmatory factor analyses (CFA) have yielded substantially different factor structures (Habke et al., 1997; Osman et al., 1998).
- Further, multiple discrepancies exist, likely resulting from
  - Differences in published item content during 1997/1998/2006 (particularly in the SIAS)
  - Differences regarding analyzing the items together or as separate scales
  - The use of now obsolete analytic techniques
- This investigation assessed, revised, confirmed, and validated the scales.

Method

- Participants included 317 University of Regina students
  - 240 women (*Mean* age = 21.3; *SD* = 5.1)
  - 78 men (*Mean* age = 21.2; *SD* = 3.4)
- Demographics were supplemented with:
  - Anxiety Sensitivity Index (ASI; Peterson & Reiss, 1992)
  - Brief Fear of Negative Evaluation Scale-II (BFNE-II; Carleton et al., 2006)
  - Center for Epidemiologic Studies Depression Scale (CESD; Radloff, 1977)
  - Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1989)
- Participant data were randomly assigned to either an EFA (Group A; *n*=160) or a CFA (Group B; *n*=159).
- EFA used principal axis factoring with promax rotation; Costello and Osborne (2005) item removal criteria: communalities<.40, loadings≤.45, or cross-loadings≥.35.
- CFA fit indices (Hu & Bentler, 1999): χ^2/df ratio (χ^2/df; should be < 2.0); Comparative Fit Index (CFI; should be close to .95); Root Mean Square Error of Approximation (RMSEA; should be close to .06); Expected Cross Validation Index (ECVI; lower values, better fit).
- Correlations between the original, revised, and associated measures assessed construct fidelity.

Results

- Groups A and B were not significantly different
- EFA with the SIAS and SPS entered and refined separately at first, thereafter combined and refined, resulted in 15-items with a readily interpretable 3-factor structure accounting for 59% of the variance. EFA with both the SIAS and SPS entered simultaneously (40 items total) and refined resulted in 19-items with a readily interpretable 3-factor structure accounting for 57% of the variance. In both EFAs, SIAS items comprised one factor, exclusive of SPS items, which comprised the other two (Table 1).
- The 19-item 3-factor model CFA tested with Group B resulted in acceptable fit indices, $\chi^2(149) = 323.98$, $p < .01$, χ^2/df = 2.17, CFI = .90, RMSEA = .09 (90% CI = .07; .10), ECVI = 2.81 (90% CI = 2.51; 3.16). The 19-item 3-factor model CFA was significantly improved relative to a unitary model. Further, independent SIAS and SPS CFAs each had some improved and some worsened fit indices. CFA correlations between factors were moderate to high, Factors 1 and 2 (r = .62), Factors 2 and 3 (r = .76), Factors 1 and 3 (r = .74).
- The 20-item SIAS correlated well, $r(306)$= .97, with Factor 1; the 20-item SPS also correlated well with Factor 2, $r(299)$ = .85, and Factor 3, $r(299)$ = .97. The 19-item 3-factor model (Group B) demonstrated good convergent validity (Table 2).

Discussion

- Despite some differences regarding the independent use of either the SIAS or SPS, the results suggest either dependent or independent assessment may be appropriate.
- The 19-item simultaneous solution contained the 15-item solution; therefore, we decided to err on the side of caution and proceed with the 19-item solution, rather than risk a reduction in sensitivity.
- The first factor, comprised of SIAS items, can readily be conceptualized as social interaction anxiety. The second and third factors, comprised of SPS items, may be conceptualized as fear of observable anxiety and fear of overt evaluation, respectively.
- High correlations between the reduced and original measures provide initial support for their validity and utility. Correlations with typically associated measures were all moderate, as expected (Safren et al., 1998).
- This is the first study to have evaluated the factor structure of the 39 items suggested by Mattick and Clark (1998).
- Further, these findings support the use of reduced items and suggest a correlated 3-factor structure, irrespective of whether the items are analyzed simultaneously or as separate measures.

Table 1: Revised Items and Factor Loadings

		Factor 1 **(α = .94): Social Interaction Anxiety**	**Loading**	***M***	***SD***
SIAS	4	I find difficulty mixing comfortably with the people I work with.	.77	.86	1.00
SIAS	6	I tense-up if I meet an acquaintance in the street.	.65	.70	.84
SIAS	7†	When mixing socially I am uncomfortable.	.89	.99	1.04
SIAS	8	I feel tense if I am alone with just one other person.	.65	.74	.97
SIAS	10	I have difficulty talking with other people.	.85	.96	.99
SIAS	12 †	I worry about expressing myself in case I appear awkward.	.74	1.22	.96
SIAS	15	I find myself worrying that I won't know what to say in social situations.	.82	1.32	1.13
SIAS	16	I am nervous mixing with people I don't know well.	.77	1.66	1.16
SIAS	17	I feel I'll say something embarrassing when talking.	.77	1.25	1.10
SIAS	19	I am tense mixing in a group.	.86	1.07	1.08
		Factor 2 **(α = .82): Fear of Observable Anxiety**	**Loading**	***M***	***SD***
SPS	9	I get panicky that others might see me to be faint, sick or ill.	.72	.49	.91
SPS	10 †	I would find it difficult to drink something if in a group of people.	.45	.29	.68
SPS	14	I worry I'll lose control of myself in front of other people.	.73	.46	.79
SPS	17 †	I can feel conspicuous standing in a queue.	.60	.49	.73
SPS	19	I worry my head will shake or nod in front of others.	.79	.29	.78
		Factor 3 **α = .83: Fear of Overt Evaluation**			
SPS	4	I get nervous that people are staring at me as I walk down the street.	.59	1.10	1.01
SPS	6	I feel self-conscious if I have to enter a room where others are already seated.	.89	1.56	1.13
SPS	13	I would get tense if I had to carry a tray across a crowded cafeteria.	.52	.91	.97
SPS	20	I feel awkward and tense if I know people are watching me.	.53	1.39	1.07
		19-Item Total **α = .94**		17.22	12.42

† Items ***not*** in the separated 15-item EFA solution; Item numbers are as per Mattick and Clark, 1998

Table 2: Pearson Correlations

	Factor 1	Factor 2	Factor 3	Total
Factor 2	.57	-	.66	.78
Factor 3	.65	.66	-	.83
Total	.94	.78	.83	-
ASI-SOM	.43	.46	.39	.48
ASI-COG	.61	.62	.56	.68
ASI-SOC	.54	.42	.50	.58
ASI Total	.59	.58	.54	.65
BFNE-II	.59	.43	.68	.65
CESD	.51	.44	.45	.54
RSES	-.22	-.28	-.34	-.29

ASI-SOM – ASI Fear of somatic sensations subscale; ASI-COG – ASI Fear of cognitive dyscontrol subscale; ASI-SOC – ASI Fear of socially observable anxiety reactions subscale

All correlations were statistically significant ($p < .01$)

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