Identifying sub-categories of social fears using an alternative factor analytic structure of the Social Phobia and Anxiety Inventory

Georgia Panayiotou*, Michalis P. Michaelides, Marios Theodorou, Klavdia Neophytou

University of Cyprus, Cyprus

ARTICLE INFO

ABSTRACT

Aims: This study evaluates an alternative factor structure of the Social Phobia and Anxiety Inventory (Turner et al., 1989), a widely used measure of social anxiety. Existing models ignore variance due to the different social contexts where social fears are expressed.

Method: Taking a different approach to scoring than previous studies, this investigation proposes a new model, which, in addition to 4–5 symptom dimensions, is able to capture the situations (strangers, authority figures, members of the opposite sex and people in general) that are of concern to the examinee. To test this model, all 96 items of the Social Phobia scale, rather than the average of the sub-items of its 23 questions were subjected to confirmatory factor analysis.

Results: The model shows good fit and is superior to models ignoring the "situation" factors, which show good predictive validity in respect to real life demographics.

Conclusion: Utilization of all single questions of the SPAI can capture a wider range of social fears related to social anxiety than using the average of the items, which has implications for the understanding and clinical assessment of social anxiety.

1. Introduction

The widely used Social Phobia and Anxiety Inventory (SPAI; Turner et al., 1989a; Turner et al., 1996) is a highly reliable tool in the differential diagnosis of social phobia (e.g. Beidel et al., 1989; Herbert et al., 1991; Peters, 2000) and social anxiety assessment in the general population, claiming to measure "aspects of social phobia across a wide range of social situations and settings" (Turner et al., 1996, p. 2). Its 109 items are rated on a 7-point scale (1=never, 7=always; Turner et al., 1989a), and, following an averaging procedure during scoring, make up a 32-item Social Phobia (SP) subscale and a 13-item Agoraphobia (AG) subscale. SP assesses cognitive, physiological, affective, and behavioral (avoidance and escape) social anxiety symptoms. The AG subscale is subtracted from SP to derive a purer social anxiety difference score (Turner et al., 1996).

Seventeen SP items contain multiple questions each (pertaining to four situations - strangers, authority figures, members of the opposite sex and people in general), which are averaged to derive a single score for each set of items. For example, item 15 has the stem "I have trouble expressing my opinion to" followed by four questions each answered separately: "strangers", "people in authority", "members of the opposite

sex", "people in general". The item is scored by averaging the rating of the four separate questions.[1] We propose that the potentially valuable clinical information provided by these separate questions, of the 17 quadruple-items assessing distress in different social settings, is typically not adequately utilized to accurately describe the concerns of the person assessed when using the averaging procedure described in the manual, in contrast with the manual's claim that it assesses social anxiety in different situations. Previous efforts at the psychometric evaluation of the SPAI have also ignored this source of variance, at odds with current conceptualizations of social anxiety (SA) suggesting that this may best be represented on a continuum, where the number of different social fears reported correlates with severity (Skocic et al., 2015). This study addresses the factor structure of the SPAI, when all 109 questions are taken into consideration.

The SPAI has shown excellent psychometric properties in both clinical and community samples (Turner et al., 1989a, 1996), including high reliability with adults and adolescents (a > 0.85 for all subscales, Clark et al., 1994; Turner et al., 1989a), test-retest reliability and discriminant and convergent validity with other SA measures (Beidel et al., 1989; García-López et al., 2001; Herbert et al., 1991; Olivares et al., 2002; Osman et al., 1995, 1996; Rodebaugh et al., 2000). It has

---

Table 1
Summary of previous factor analytic results for the SPAI.

Source	Method	Sample	Factors Extracted	Items in each factor	Excluded items
Turner et al. (1989b)	CFA (all items)	308 college students	2; SP, AG	32 SP, 9 AG items, 4 AG items cross-loaded on SP	33,34,41
	EFA (on SP items)	72 socially anxious individuals	5; II, GI, CS, A, AF	II:9,12–20,23; GI:1–4, 9–11;CS:20,21,26–28,30–32;A:7,8,24,25,29;AF:3–6,22	33, 37, 45
	CFA (all items)		2; SP, AG	SP:1–30,32; AG:34–36, 38–44	
	EFA (SP items)		3; SP, S, A	SP:1–6,9–27,29–30; S:28,31,32;A:7,8	
Olivares et al. (1999)	CFA (all items)	3440 high school students	2; SP, AG	32 SP, 13 AG items	21, 29
	EFA (SP items)		4; SI, CS, A, AF	SI:9–23;CS:26–32;A:7[a],8,24,25;AF:1–7,9[a],10[a]	
	CFA (SP items)		5; II, GI, CS, A, AF	model did not fit the data	
	CFA (SP items)		4; SI, CS, A, AF	SI:9–23;CS:26–32;A:7,8,24,25;AF:1–7,9,10	
			1; social anxiety	All SP items	
Osman et al. (1995)	CFA (all items)	200 & 210 college students	2; SP, AG	32 SP, 13 AG items	21,29, 5,6,22,25
	CFA (SP items)		5; II, GI, CS, A, AF	II: 9[a],12–20,23; CS:26–28,30–32;GI:1–4,10,11; A:7,8,24;AF not defined	
	EFA (SP items)		1; social anxiety	All SP items	
			5; II, GI, CS, A, AF	II:9[a],10[a],12–20,23;CS:26–28,30–32;GI:1–4[a],9–11;A:7,8,24,25;AF:3[a]–6,22	
Osman et al. (1996)	CFA (all items)	Community and college adults	2; SP, AG	32 SP, 13 AG items	
Clark et al. (1994)	CFA (all items)	Adolescents, 102 clinical 121 control Adolescents	2; SP, AG	32 SP, 13 AG items, item 34 loaded on both factors	
Olivares et al., (2004)	CFA				
Baños et al. (2007)		198 community, 72 social phobic patients	2; SP, AG	32 SP, 13 AG items	
Caballo et al. (2013)	EFA (109 individual items, with no averaging)	1036 college students	6;IOG, A, DW, ISA, NTP, AG	[b] IOG:1–3,6, sub-items c and d of 9–12, 16–19,22; A:7,8, all sub-items of 24,25; DW: all sub-items of 20, 21; NTP: 27,28, most sub-items of 26,30,31,32; ISA:5, most sub-items a and b of items 9–19 and 22,23; AG:33–45	4,29
Bunnell et al. (2013)	CFA/invariance (all items)	200 control 220 social phobic adults	2; SP, AG	32 SP, 13 AG items	

Note: II=individual interactions, GI=group interactions, CS=cognitive and somatic complaints, A=avoidance, AF=being the focus of attention, SI=social interactions, S=Somatic symptoms, IOG=interactions with opposite sex/people in general, DW=Drinking/Writing in public, NTP=Negative Thoughts/Physiological symptoms, ISA=Interactions with strangers/ people in authority, AG=Agoraphobia Subscale, SP=Social Phobia Subscale;
[a] item cross-loaded on more than one factors;
[b] some mis-fitting sub-items are also contained in factors NTP, ISA, IOG.

been found useful for assessing treatment outcome (Beidel et al., 1993; García-López et al., 2005), while international standardizations have yielded further evidence for its psychometric soundness and utility, e.g. its Dutch (Bögels and Reith, 1999), German, (Fydrich, 2002), Spanish (García-López et al., 2001), Chilean (Olivares et al., 2010) and other versions.

1.1. SPAI factor structure

Several studies have examined the SPAI factor structure, (Table 1) either to confirm the validity of the two subscales (SP, AG), or to explore additional dimensions (Baños et al., 2007; Olivares et al., 1999; Osman et al., 1995, 1996). Findings are for the most part consistent, supporting the integrity of SP and AG and the existence of 4 or 5 sub-dimensions within SP. Specifically, Turner et al. (1989b) confirmed the occurrence of SP and AG and suggested a five-factor SP structure (i.e. individual interactions, group interactions, cognitive and somatic complaints, avoidance, and being the focus of attention). Osman et al., (1995, 1996), replicated both the five-factor structure for SP (but with several items having to be excluded for poor fit), the two-factor structure (SP/AG) and the viability of a one-factor model for SP. Similar findings were obtained by Baños et al. (2007) in a Spanish sample. Olivares et al. (1999) confirmed the existence of two oblique factors corresponding to SP and AG, did not find support for a one-factor solution for SP, and did not replicate the five-factor SP model. Instead, they suggested a four-factor model, of social interactions, avoidance and escape, physical and somatic symptoms and focus of attention. Recently, Bunnell et al. (2013) supported the invariance of SP/AG in clinical and non-clinical samples and between genders.

To date, the only published study to our knowledge that has examined the factor structure that emerges if all 109 SPAI items are taken into account is by Caballo et al. (2013) who found, using EFA, that in addition to the factors describing SA symptoms, a 6th factor emerged describing anxiety in specific situations dealing with members of the opposite sex and people in general (i.e. sub-items of the 17 quadruples). However, the use of EFA, rather than CFA, which would have allowed for second order and/or distinct latent factors to describe these "situation" effects, may have resulted in only a glimpse of these factors, and in fact let the authors to question the validity of the SPAI. They suggested, however, as we do in the present study, that using only the mean scores of the quadruple items may sacrifice the richness of the assessment information that this tool can obtain. The present study explores an alternative factor structure, allowing the utilization of all items, highlighting the ability of the SPAI to capture a comprehensive profile of social fears.

This goal is in line with the DSM-5 revision of the criteria for social anxiety disorder diagnosis (APA, 2013), where the distinction between generalized and specific social phobia was dropped in recognition of the wide diversity of social fears presented by patients. Instead, the specifier of "performance situations only" was set to characterize the subset of patients who present with only a specific fear of public performance, most commonly public speaking. According to Kessler and Stein (1998), this subtype is much less prevalent and impairing and therefore the focus of prevention and treatment should be on the majority of individuals who present with multiple social fears, as number of social fears seems to correlate with severity (Skocic et al., 2015). The SPAI, given the large breadth of situations it addresses, may be a valuable tool in determining the range of such social fears.