

Adaptation of Social Phobia Inventory (SPIN) in Nepali Language

Research article

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Abstract

Social Phobia Inventory (SPIN) is a popular standard psychological test to measure social anxiety disorder that was designed to measure three factors -fear, physiological arousal and avoidance. This paper is about validation of this psychological test into Nepali language. SPIN was first translated to Nepali language and then administered by survey to 696 persons studying in high school level. Two previous models of factor structure have been tested by CFA and a new factor structure has been shown by EFA. Internal consistency of the items was good. Validities have not been established in this research.

Keywords: EFA, CFA, Nepali language, Social Anxiety Disorder (SAD)

Introduction

Social phobia inventory (SPIN) is a psychological inventory that assesses social phobia which is now called social anxiety disorder (SAD). Originally, it was made to measure three factors/dimensions- avoidance, fear and physiological arousal [1] but the test had five factors [2]. It has good internal consistency, test-retest reliability, convergent validity and divergent validity. SPIN has 17 items with 5-point Likert scale, ranging from 0 to 4. 0 means not at all and 4 means extremely. Evaluations of factor structure of SPIN have not produced consistent results [3].

The test is translated to Nepali language for the first time. Validation is the need and hence importance.

Method

Translation

An assistant to researchers translated the test to Nepali first. One of the researchers translated to Nepali too. The translations were integrated and translated back to English

by another research assistant. The back-translated version was nearly same as the original version of test agreed in a discussion. Two experts were consulted if the wordings would be appropriate to Nepali audience. The final Nepali version of the test is given in the appendix.

The translated version was administered to 696 persons of Kathmandu come from all over Nepal. The data were collected from high school students studying in a big high school in Kathmandu in secondary level (i.e. grades 9,10,11 and 12).

JASP 0.11.1.0 was used for exploratory and confirmatory factor analyses.

Results

Exploratory Factor Analysis (EFA)

Since original authors had estimated three factors and many studies [4,5] have shown three factors of SPIN. In this research also, manually three factors were fed into JASP for EFA. Factor loadings are given below (Table 1)

Table 1: Factor loadings in orthogonal varimax rotation

Item No.	Factor 1	Factor 2	Factor3
03			0.775
08			0.765
04			0.461
05		0.700	
15		0.633	
12		0.619	
06		0.556	
13	0.630		
10	0.554		
17	0.538		
11	0.537		
02	0.494		
14	0.452		

Factor 1 can be named hesitation, factor 2 fears and other emotions, and factor 3 avoiding social events. Items 1, 7, 9, and 16 did not have adequate factor loading. Loadings below .45 were suppressed (Table 2) (Figure 1).

	Factor 1	Factor 2
Factor 2	0.234	-
Factor 3	0.142	0.023

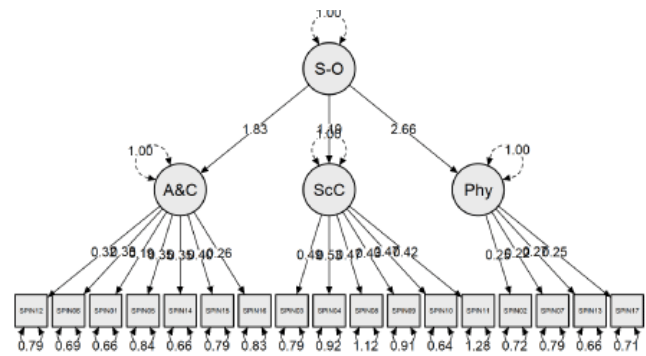


Figure 1: CFA for factor structure of Tsai et al. (2009)

The low correlations between factors mean that the factors are distinct. The 3-factor model provided reasonable overall fit [$\chi^2(88) = 310.03, p < .001$; RMSEA = .061(90%CI .053-.068)]. More indices are given in the following table 3.

RMSEA	RMSEA 90% confidence	TLI	BIC
Model	0.061	0.908	-265.957

Here all the indices indicate good fit. It is not wise to use EFA to validate or confirm the measure [6]. So, Confirmatory Factor Analysis (CFA) is also a necessity here (Table 4).

Factor	Indicator	Symbol	Estimate	Std. Error	z-value	p	95% Confidence Interval		Std. Est. (all)
							Lower	Upper	
Authority & Criticism	SPIN12	λ_{11}	0.318	0.035	8.977	<.001	0.248	0.387	0.597
	SPIN06	λ_{12}	0.382	0.040	9.428	<.001	0.302	0.461	0.693
	SPIN01	λ_{13}	0.194	0.025	7.870	<.001	0.146	0.242	0.446
	SPIN05	λ_{14}	0.349	0.038	9.108	<.001	0.274	0.424	0.622
	SPIN14	λ_{15}	0.352	0.038	9.342	<.001	0.278	0.426	0.672
	SPIN15	λ_{16}	0.399	0.043	9.388	<.001	0.316	0.482	0.683
	SPIN16	λ_{17}	0.263	0.031	8.462	<.001	0.202	0.324	0.517
Social Contact	SPIN03	λ_{21}	0.490	0.036	13.663	<.001	0.420	0.560	0.652
	SPIN04	λ_{22}	0.528	0.039	13.641	<.001	0.452	0.603	0.651
	SPIN08	λ_{23}	0.472	0.038	12.314	<.001	0.397	0.547	0.570
	SPIN09	λ_{24}	0.431	0.035	12.387	<.001	0.363	0.499	0.574
	SPIN10	λ_{25}	0.466	0.033	13.940	<.001	0.400	0.531	0.671
Physiological	SPIN11	λ_{26}	0.424	0.038	11.132	<.001	0.350	0.499	0.505
	SPIN02	λ_{31}	0.249	0.053	4.734	<.001	0.146	0.352	0.642
	SPIN07	λ_{32}	0.223	0.047	4.696	<.001	0.130	0.316	0.581
	SPIN13	λ_{33}	0.272	0.057	4.751	<.001	0.160	0.384	0.690
	SPIN17	λ_{34}	0.253	0.053	4.738	<.001	0.148	0.358	0.650

Confirmatory Factor Analysis (CFA)

Two models have been tested by CFA.

Model 1: The first model has three factors in SPIN-authority & criticism, social contacts, and physiological response [7]. Their model was tested in CFA.

Table 5: Second-order factor loadings

							95% Confidence Interval		
Factor	Indicator	Symbol	Estimate	Std. Error	z-value	p	Lower	Upper	Std. Est. (all)
Second Order	Authority & Criticism	γ11	1.832	0.231	7.949	< .001	1.381	2.284	0.878
	Social Contact	γ12	1.192	0.106	11.197	< .001	0.984	1.401	0.766
	Physiological	γ13	2.664	0.614	4.338	< .001	1.460	3.868	0.936

Table 6: Factor loadings

							95% Confidence Interval		
Factor	Indicator	Symbol	Estimate	Std. Error	z-value	p	Lower	Upper	Std. Est. (all)
Physical Symptoms	SPIN02	λ11	0.261	0.055	4.779	< .001	0.154	0.368	0.641
	SPIN07	λ12	0.234	0.049	4.740	< .001	0.137	0.331	0.583
	SPIN13	λ13	0.284	0.059	4.797	< .001	0.168	0.400	0.687
	SPIN17	λ14	0.267	0.056	4.784	< .001	0.157	0.376	0.652
Uncertainty Fear	SPIN03	λ21	0.589	0.038	15.670	< .001	0.515	0.662	0.710
	SPIN09	λ22	0.448	0.036	12.399	< .001	0.378	0.519	0.542
	SPIN04	λ23	0.589	0.040	14.762	< .001	0.511	0.668	0.659
	SPIN08	λ24	0.578	0.041	14.271	< .001	0.499	0.658	0.633
	SPIN10	λ25	0.485	0.034	14.273	< .001	0.419	0.552	0.633
Negative Evaluation	SPIN01	λ31	0.190	0.026	7.213	< .001	0.138	0.242	0.447
	SPIN05	λ32	0.342	0.042	8.125	< .001	0.260	0.425	0.624
	SPIN06	λ33	0.371	0.045	8.330	< .001	0.284	0.458	0.690
	SPIN12	λ34	0.312	0.039	8.030	< .001	0.236	0.388	0.599
	SPIN14	λ35	0.343	0.041	8.275	< .001	0.262	0.424	0.670
	SPIN15	λ36	0.391	0.047	8.319	< .001	0.299	0.484	0.686
	SPIN16	λ37	0.256	0.034	7.635	< .001	0.190	0.321	0.515

Table 7: Second-order factor loadings

							95% Confidence Interval		
Factor	Indicator	Symbol	Estimate	Std. Error	z-value	p	Lower	Upper	Std. Est. (all)
Second Order	Physical Symptoms	γ11	2.522	0.585	4.314	< .001	1.376	3.668	0.930
	Uncertainty Fear	γ12	0.993	0.088	11.306	< .001	0.821	1.166	0.705
	Negative Evaluation	γ13	1.888	0.270	6.980	< .001	1.358	2.418	0.884

Table 8: Fit indices for two models of factor structure for SPIN

Model	CFI	SRMR	X ²	df for X ²	p for X ²	RMSEA	90% CI for RMSEA
1	.858	.062	648.588	116	<.001	.081	.075-.087
2	.876	.062	537.162	101	<.001	.079	.072-.085

All factor loadings are significant. Factor loading for the last factor are less than .3.

The factor loadings are significant for second order structure too (Table 6).

Model 2: Second model by Campbell-Sills et al. (2015) also had three factors – Fear of negative evaluation, fear of physical symptoms and fear of uncertainty in social situations. CFA with this model in this research showed pattern as shown in figure 2.

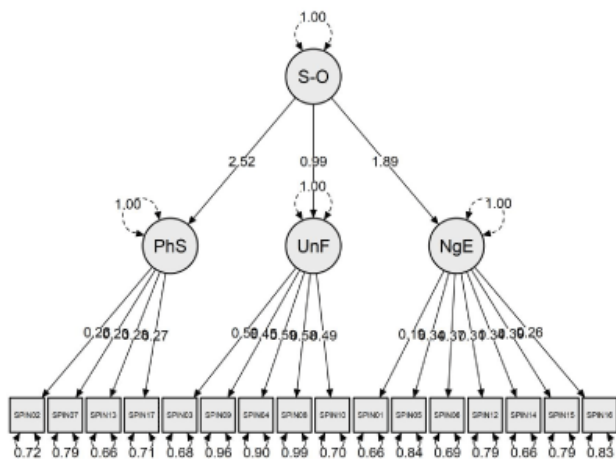


Figure 2: Model plot

The factor loadings are significant. They are less than .3 for the first factor.

Second order loadings are significant too.

The major fit indices have been summarized in the following table 7:

Based on the criteria summarized by Schreiber et al. (2010), SRMR is acceptable for both models, and RMSEA is satisfactory for model 2. CFI does not fall in acceptance zone for both models. Model 2 is better than model 1 but both models are not satisfactory to accept as factor structure of SPIN in Nepalese context.

Reliability

The standardized Cronbach alpha was .883 for initial 17 items and its unstandardized value was .882. These indicate the items have good internal consistency (Table 8).

Discussion

EFA was conducted to see the factor structure. With elimination of four items, a 3-factor latent structure was seen. The data were collected from normal school-going persons. So, the structure might not address clinical population and other sections of society. Generalizability

is questionable. We tested two models by CFA but fit indices were not very acceptable. The future researches can focus to test the factor structure in the direction to which this research has pointed out. Various validities (like content, criterion-related, and construct) have not been established. Such establishment warrants for another research. Establishing test-retest reliability is also a future possibility.

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