



Construct and Criterion Validation of Social Phobia Inventory Indonesian Version

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Abstract

Social anxiety disorder or SAD is a condition of abnormal anxiety experienced by individuals when they are facing a social situation. People with SAD usually tend to avoid social situations because they are afraid or anxious of getting a negative evaluation from other people. The negative impact for people with SAD is important for the need for measuring instruments that can detect the symptoms. The lack of SAD measurement tools in Indonesia is the reason why this validation study (SPIN) is important. The Social Phobia Inventory or SPIN is a self-report measurement tool for SAD symptoms and has good both in reliability and validity in several countries. This study aims to prove the validity and reliability of SPIN in Indonesia with 118 participants. The participants include people with SAD and healthy people. The result of this study that they are a convergent validity between SPIN and Social Cognition Questionnaire (SCQ), discriminant validity between SPIN and Patient Health Questionnaire (PHQ) that evaluate eating disorder and alcohol abuse symptoms, and also SPIN have 66% of sensitivity and 100% of specificity using Liebowitz Social Anxiety Scale (LSAS). This study can be used by professionals to assist in determining an objective diagnosis in individuals with symptoms of SAD using SPIN since SPIN is one of the gold standard to measure social anxiety symptoms.

Introduction

Humans are social creatures who have a need to adapt and communicate with each other. However, there are some individuals who are disturbed in terms of social interaction, as experienced by AN. This case is a case raised by one of the psychologists at a *case conference* at a psychology clinic in Jakarta. A few months ago, AN decided to pay a visit to a psychologist, he reported that he had unbearable anxiety when in the work environment. He always delays having *meetings* with his boss who supervises his performance. This makes AN feel that its performance is declining more and more. Over time AN feels depressed, afraid to wake up, afraid to work and afraid to interact with others. In fact, when he works *online*, he is anxious and feels uncomfortable when meeting on *camera*. After going to a psychologist, AN said that he received a diagnosis of *Social Anxiety Disorder* from the psychologist who treated him (Pariarta, *personal commucations*, November 24, 2022).

Social anxiety disorder or *social phobia* is an unnatural anxiety condition experienced by individuals when facing the social environment (Amies et al., 1983). *Social anxiety disorder* or abbreviated as SAD is not only characterized by feeling very depressed in anticipation of social interactions. However, it is also usually described as laughing or smiling less with friends and partners, and feeling less connected to the world around them (Barber & Moscovitch, 2022). This condition occurs continuously and without any stimulation of negative events. SAD is also a condition in which individuals fear or worry about negative evaluations from

others of themselves, which is characterized by excessive worry, avoidance of social situations, and physical discomfort when experiencing them (Connor et al., 2000).

The prevalence of *social anxiety* continues to surge in some countries. *The Anxiety and Depression Association of America* (2021), reports that there are approximately 15 million adult populations who experience symptoms of *social anxiety*. Men and women alike have symptoms of *social anxiety* beginning at age 13, and it is even reported that many of them experience symptoms of *social anxiety* for more than 10 years before seeking professional help. In Indonesia, there are 41.7% of the population who experience symptoms of *social anxiety* starting from the COVID-19 era in 2020 (Wanto & Jalwis, 2021).

Individuals with SAD tend to experience higher loneliness when compared to healthy individuals (Danneel et al., 2019; Ho & Moscovitch, 2021). If this loneliness is not handled properly, then individuals with SAD can experience depression. Several studies explain that individuals with SAD are particularly susceptible to depression (Maleki et al., 2020; Kobezak & Gibb, 2020; Kraft & Grant, 2021). It was found that the presence of disturbances in the mindset of individuals with SAD will cause dysfunction in social communication skills and lead to *major depressive disorder* or MDD (Maleki et al., 2020). These symptoms of depression if not handled properly will result in individuals having *suicidal thought* or even *suicidal behavior* (Jimenez et al., 2022).

In an effort to overcome and prevent the occurrence of SAD, professionals need measurable assessment methods. With measurable assessments, efforts to overcome and prevent SAD can be monitored and also evaluated for effectiveness. Assessment to measure SAD can be done in several ways, such as conducting interviews, observations, and also providing standardized tests that are *self-report*.

Measuring instruments for conducting SAD assessments are quite diverse, including: *Social Phobia and Anxiety Inventory* (SPAI; Beidel et al., 1989); *Social Phobia Scale* & *Social Interaction Anxiety Scale* (SPSSIA; Mattick & Clarke, 1998); *Liebowitz Social Anxiety Scale* (LSAS; Heimberg et al., 1999); *Social Phobia Inventory* (SPIN; Connor et al., 2000); *Social Phobia Diagnostic Questionnaire* (SPDQ; Newman, 2003); and *the Social Anxiety Questionnaire for Adults* (SAQA; Caballo et al., 2015).

Among the six measuring instruments, as many as four measuring instruments (LSAS, SPIN, SPDQ, SAQA) are administered by *self-report*. Among the four measuring instruments administered by *self-report*, here are two measuring instruments that become the "*gold standard*" (NICE Guideline, 2013). The two scales are LSAS (Heimberg et al., 1999) and SPIN (Connor et al., 2000). Between the two "*gold standard*" measuring instruments, only one measuring instrument has been adapted in Indonesia, namely LSAS (Heimberg et al., 1999). LSAS has been validated in Indonesian but the domain measured is only two dimensions: *fear or anxiety* and *avoidance*. Psychometric information on LSAS measuring instruments that have been validated in Indonesia, namely having a *Cronbach's Alpha* value of 0.92 and *convergent validity* of 0.38 tested with *The Brief Fear of Negative Evaluation Scale* (BFNE) and 0.49 with *The Taijin Kyofusho Scale* (TKS) which means that in the study, LSAS still has *convergent validity* which can be said to be low (Srisayekti et al., 2022).

Unlike LSAS, SPIN is a measurement tool that has measured three domains of *social anxiety*, namely *fear*, *avoidance*, and *physiological discomfort*, and has met the standard criteria for *social anxiety disorder* set in the DSM-IV (Connor et al., 2000). *Gold standard* SPIN measuring instruments (Connor et al., 2000) have good psychometric information and are more economical. In England, SPIN had a *two-week apart, test-retest reliability* of 0.74 - 0.89 in subjects with SAD; *internal consistency reliability* with *Cronbach's Alpha* range of 0.82 –

0.94; *Cronbach's Alpha* range in fear dimensions of 0.68 – 0.79, avoidance of 0.70 – 0.81, and physiological discomfort of 0.57 – 0.73; construct validity (convergent validity) with a Brief Social Phobia Scale (BSPS) of 0.57, $p < 0.0001$, and with LSAS of 0.55, $p < 0.0001$; construct validity (divergent evidence) with Fear Questionnaire (FQ) of 0.34, $p < 0.002$; and construct validity (divergent evidence) with Sheehan Disability Scale [SDS] of 0.33, $p < 0.03$.

SPIN has been validated nationally in several countries, such as in Nebraska, Nigeria and Sweden. The results of SPIN testing in Nebraska showed good *internal consistency* (*Cronbach Alpha* = 0.92 for total score), *construct validity* (convergent evidence with the Social Anxiety Scale for Adolescents [SAS-A]) of 0.82 and *construct validity* (divergent evidence) with the Depression Inventory of 0.58 (Johnson et al., 2006). In Nigeria, SPIN has a *sensitivity value* of 82.2% and a *specificity* of 77.6%, this figure indicates that SPIN is an efficient measuring instrument to detect SAD in patients and is a good measurement tool to distinguish patients with SAD and healthy individuals (Chukwujekwu & Olose, 2018). SPIN has *information reliability* (*internal consistency* of 0.84) and *construct validity* (convergent evidence with Personal Report of Public Speaking Anxiety [PRPSA] of 0.52, $p < 0.001$) and *divergent evidence* with Brunnsvikén Brief Quality of life scale [BBQ] of -0.40, $p < 0.001$) (Mortberg & Frojmark, 2019). Based on these various studies, SPIN has quite good psychometric information. SPIN is also an appropriate measuring tool used to measure *social anxiety* in student subjects or in the age range of young adults in Sweden (Mortberg & Frojmark, 2019).

Although SPIN in various countries has been tested and has good psychometric information, it seems that SPIN is still not a measure of *social anxiety* in Indonesia. There are still few measuring instruments used by practitioners in Indonesia, especially for *social anxiety*, namely LSAS which has a Indonesian version. The Indonesian version of the measuring instrument is needed because the mother tongue of the Indonesian people is not a foreign language (English). If people work on instruments that are in foreign languages, there is a potential that they do not understand the question items and can cause perception bias in filling out or completing the measuring instruments. This is also due to cultural differences in Indonesian society with foreign communities, misunderstanding of understanding the statements on SPIN items may occur if, for example, one of the SPIN items that reads "*I avoid going to parties*", the word "*parties*" in this sentence is a party that may have a different understanding from Indonesian people who do not have a partying culture like in Western society.

Compared to SPIN, it appears that LSAS is still not informative enough to measure the symptoms of SAD. LSAS measures two dimensions (*fear/anxiety & avoidance*), while SPIN measures three dimensions (*evaluate fear, avoidance, and physiological discomfort*). *Evaluate fear* is when individuals with *social anxiety* will feel anxious about something such as anxiety or fear of getting negative evaluations from others; *Avoidance* is a response to the *fear* or fear they experience that causes the individual to avoid; and *physiological discomfort* is the physical discomfort that the individual feels, such as flushed face and palpitations. The existence of these three domains on SPIN, makes SPIN more informative than LSAS. Aspects of *physiological discomfort* that are not yet present in LSAS are said to be the most distressing aspects in individuals with SAD (Connor et al., 2000).

Based on the explanation above, the SPIN measuring instrument, which is useful for measuring SAD symptoms, needs to be adapted and validated in the Indonesian version. The SPIN measuring instrument in version Indonesian is expected to complement LSAS as a social anxiety measurement tool. In addition, research on SPIN measuring instruments is expected to be useful as a reference in studying *social anxiety*, especially in identifying symptoms or symptoms of *social anxiety disorder*. Practically, the Indonesian version of the SPIN measuring instrument can be an additional instrument for professionals, especially clinical psychologists.

Professionals (clinical psychologists) can be helped in determining the diagnosis of *social anxiety symptoms* experienced by individuals.

Homogeneity Evidence & Internal Consistency Social Phobia Inventory (SPIN) version Indonesian

Homogeneity evidence from Johnson et al. (2006) tested using *internal consistency Cronbach Alpha* has a fairly good and strong number of 0.92. Other research from Mortberg & Frojmark (2019) shows that SPIN has a *Cronbach Alpha* value between 0.82 - 0.95; Both studies can explain that SPIN has good *homogeneity evidence*. Based on this, then:

H1a: The measurement results of the *Social Phobia Inventory (SPIN)* version Indonesian have good *homogeneity*.

H1b: The measurement results of the *Social Phobia Inventory (SPIN)* version Indonesian have good *internal consistency reliability (Cronbach Alpha)*.

Construct Validity (Convergent Evidence & Discriminant Evidence) Social Phobia Inventory (SPIN) version Indonesian

Research conducted by Chiu et al. (2021) explained that *social anxiety* is one of the psychological disorders that can be a predictor of depression and *suicidality*. Chiu et al. (2021) also said that there is a strong relationship between *negative social cognitions* and *social anxiety*. This is explained that the relationship is formed because individual cognition plays a role in the development of *social anxiety*, where *social anxiety* will continue to arise when individuals have *negative social cognitions* (Leigh & Clark, 2021). In addition, previous studies also suggested that SPIN has *convergent validity* for symptoms of *depression* ($r = 0.38$, $p = 0.000$), *generalized anxiety* ($r = 0.32$, $p = 0.000$), *somatization* ($r = 0.23$, $p = 0.01$) and *panic symptoms* ($r = 0.26$, $p = 0.004$) on PHQ measuring instruments (Mortberg & Frojmark, 2019; Carleton et al., 2010), then:

H2b1: *Social Phobia Inventory (SPIN)* measurement results Indonesian *convergent (construct validity)* version of the *Social Cognition Questionnaire (SCQ)* and *Patient Health Questionnaire (PHQ)* measurements on items that measure *depression, generalized anxiety, somatization* and *panic symptoms*.

Discriminant validation conducted by Wiltink et al. (2017) by correlating SPIN with the *Patient Health Questionnaire (PHQ)* said that SPIN only has a correlation in some symptoms measured (*depression, generalized anxiety* and *somatization*) but not in symptoms of *eating disorder* and *alcohol abuse (discriminant)*. Based on this, then:

H2b2: *Social Phobia Inventory (SPIN)* measurement results Indonesian *discriminant (construct validity)* version of the *Patient Health Questionnaire (PHQ)* measurement results on symptoms of *eating disorder* and *alcohol abuse*.

Criterion Validity Social Phobia Inventory (SPIN) version Indonesian

Based on Chukwujekwu & Olose (2018), SPIN has a *sensitivity* of 82.2% which explains that SPIN is a measuring instrument that when compared to other measuring instruments that measure the same construct, SPIN can identify *social anxiety* well. SPIN is also said to have a *specificity* of 77.6% (Chukwujekwu & Olose, 2018) which indicates that SPIN can identify healthy individuals and individuals with *social anxiety*, then:

H3a: The measurement results of the *Social Phobia Inventory (SPIN)* version Indonesian have a high *sensitivity (criterion validity)* by comparing the *Social Phobia Inventory (SPIN)* score with the *Liebowitz Social Anxiety Scale (LSAS)* score.

H3b: The measurement results of the *Social Phobia Inventory* (SPIN) version Indonesian have a high *specificity* (*criterion validity*) by comparing the *Social Phobia Inventory* (SPIN) score with the *Liebowitz Social Anxiety Scale* (LSAS) score.

Methods

This research uses a quantitative approach with *non-experimental methods*. In this part of the method, participant characteristics and psychometric information (validity and reliability) will be presented from the measuring instrument used to validate the Indonesian version of SPIN.

Participants

This study used *non-probability sampling* with *convenience sampling techniques*, this is because this study not only took samples or participants who already had a diagnosis of SAD but also participants who had diagnoses other than SAD and healthy participants. Participant data is collected based on the ease of access by researchers as long as the characteristics of participants are still in accordance with the criteria. The criteria for participants in this study were at least 18 years old and the last level of education was at least high school. Based on research that discusses SPIN validation, the number of research participants needed can range from 86 (Nagata et al., 2013) to 161 participants (Mortberg & Frojmark, 2019). The total number of participants in this study was 118 participants. Most participants were female (73.7%), average age was 25.15 (SD = 3.56); and the average level of education is Bachelor or S1 (70.4%). Further description of participants in this study can be seen in Table 1 below

Table 1. Description of Participants by Gender, Education Level, and Diagnosis

Variable	Sum N = 118	Percentage
Gender		
Man	31	26.3%
Woman	87	73.7%
Last Level of Education		
SMA	15	12.7%
D1/D2/D3/D4	15	12.7%
S1	83	70.4%
S2/S3	5	4.2%
Diagnosis		
Diagnosis of <i>Social Anxiety Disorder</i> (SAD)	19	16.1%
Diagnosis other than SAD*	21	17.8%
Don't have any diagnosis	78	66.1%

Note. **Generalized Anxiety Disorder, Bipolar Disorder, Borderline Personality Disorder, Obsessive Compulsive Disorder, Depression.*

Measurement

The measuring instruments used to validate the Indonesian version of SPIN are: (a) *Liebowitz Social Anxiety Scale* [LSAS] as a measuring instrument which will later become a comparison measurement tool in *criterion validity testing*; (b) *Social Cognition Questionnaire* [SCQ] as a measuring tool for construct *validity testing* (*convergent evidence*); and (c) *Patient Health Questionnaire* [PHQ] as a measurement tool for testing *construct validity* (*discriminant evidence*). Before presenting psychometric information from the three measuring instruments,

the author describes psychometric information from the *Social Phobia Inventory* (SPIN) measurement tool which will be validated in the Indonesian version.

The *Social Phobia Inventory* (SPIN) consists of 17 items that assess *social anxiety* based on the evaluate fear, *avoidance*, and *physiological discomfort domains* with a rating scale of 0 (*not at all*) to 4 (*extremely*). Furthermore, researchers will present psychometric information from previous studies related to measuring instruments used to test *construct validity* and *criterion validity*. The measuring instrument used to test *criterion validity* is the *Liebowitz Social Anxiety Scale* (LSAS). LSAS has 24 items divided into 2 subscales, namely *social interaction* (11 items) and *performance situation* (13 items). In the LSAS questionnaire, the score will be divided into two which become an *avoidance score* and a *fear score* with a rating scale of 0 (*none*) to 3 (*severe*) for *fear or anxiety* and 0 (*never*) to 3 (*usually*) for *avoidance*. Results from LSAS will provide six scores from the subscale: *total fear*, *fear of social interaction*, *fear of performance*, *total avoidance*, *avoidance of social interaction* and *avoidance of performance*. LSAS has an *internal consistency* of 0.96 (total); 0.92 (*total fear*) 0.89 (*fear of social interaction*); 0.81 (*fear of performance*); 0.92 (*total avoidance*); 0.89 (*avoidance of social interaction*); 0.83 (*avoidance of performance*). *Convergent validity* with SIAS of $r = 0.76$ and SPS of $r = 0.50$ and *discriminant validity* with HAMA of $r = 0.48$, HRSD $r = 0.39$ and $r = \text{BDI } 0.52$ (Heimberg et al., 1999).

The next questionnaire used to test *construct validity* is the *Social Cognition Questionnaire* (SCQ). The SCQ consists of 22 items in the form of *self-reports*, each of which reflects on *social anxiety* and its relationship with cognition. Overall, items will be assessed based on two things, namely how many frequency thoughts arise in social situations and how strongly the thoughts are believed with examples of items "I will unable to speak" and "people think I am boring" (Leigh & Clark, 2021). Higher SCQ scores indicate that individuals have negative cognition with them. This scale has a good *internal consistency* of 0.96. *Multiple regression models* were carried out and produced *negative social cognitions* of 0.22, *safety behaviors* of 0.24, *self-focused attention* of 0.12, and *post-event processing* of 0.10 significantly predicting *social anxiety* (Chiu et al., 2021).

The last measurement tool used in this study as *discriminant evidence* is the *Patient Health Questionnaire* (PHQ). PHQ is a questionnaire in the form of a *self-report* divided into five groups of common psychological disorders, namely *somatoform disorder*, *major depressive disorder*, *panic / anxiety disorder*, *eating disorder* and *alcohol abuse*. In each disorder group, PHQ has a different *rating-scale*. PHQ has an *accuracy rate* of 85%, *sensitivity* of 75% and *specificity* of 90%. Administration is carried out by psychologists and patients with at least 3 minutes to review PHQ. As many as 80% of *clinicians* claim that PHQ can be used for routine diagnosis in patients, so PHQ is said to make it easier for *clinicians* to make early diagnosis (Spitzer et al., 1999). In this study, researchers also tested *internal consistency* using *Cronbach Alpha* on measuring instruments used as *construct validity* and *criterion validity*. The result is that the three measuring instruments show *quite good internal consistency*, including SCQ ($\alpha = 0.96$); PHQ ($\alpha = 0.95$); and LSAS ($\alpha = 0.98$).

Table 2. Blue print measuring instrument

Measuring Instruments	Dimension	No. Item	Sum Items	Sample Items
SPIN	<i>Evaluate Fear</i>	1,3,5,14,15	5	<i>Being criticized scares me a lot</i>
	<i>Avoidance</i>	4,6,8,9,10,11,12,16	8	<i>I avoid speaking in front of crowds</i>

	<i>Physiological Discomfort</i>	2,7,13,17	4	<i>When in front of people, my heartbeat gets faster / palpitations</i>
LSAS	<i>Social Interaction</i>	5,7,10,11,12,15,1819,22,23,24	11	<i>Talk to people who have authority</i>
	<i>Performance Situation</i>	1,2,3,4,6,8,9,13,14,16,17,20,21	13	<i>Participate in a small group activity</i>
PHQ	<i>Somatoform Disorder</i>	1A-1M	13	<i>Stomach ache</i>
	<i>Major Depressive Disorder</i>	2A-2i	9	<i>Lack of interest or passion in doing anything</i>
	<i>Panic and or/ anxiety disorder</i>	3A-3D, 4A-4K, 5A-5G	22	<i>Feeling restless, anxious or very tense</i>
	<i>Eating Disorder</i>	6A-6C, 7A-7D, 8	8	<i>Fasting, not eating for a long period of time / for 24 hours</i>
	<i>Alcohol Abuse</i>	9, 10A-10E	6	<i>Keep drinking alcohol, even if your doctor advises you to quit because of your health problems</i>

Note. SPIN: Social Phobia Inventory; LSAS: Liebowitz Social Anxiety Scale; PHQ: Patient Health Questionnaire

Statistical analyses

Statistical analyses in this study used SPSS Statistical Software. As many participants (n = 118) were normally distributed using skewness and kurtosis so that factor tests, convergent validity, discriminant validity and criterion validity could be performed. The internal consistency of SPIN and the other three measuring instruments was tested using Cronbach Alpha. Convergent validity is seen by correlating SPIN with SCQ and PHQ (somatization, panic symptoms, generalized anxiety, and depression). Discriminant validity is seen by correlating SPIN and PHQ (eating disorder and alcohol abuse). Criterion validity is tested by looking at the score between SPIN and LSAS.

Procedure

This study ran for one month by distributing questionnaires in the form of google forms that could only be accessed by participants. The questionnaire was filled out after obtaining ethical approval from the Commission for Ethics for Human Related Research Unit of the Faculty of Psychology, Tarumanagara University (KEPTM Unit F.Psi Untar), with code NO: 085-TIM/KEPTM1294/Fpsi-UNTAR/IV/2023. Before filling out the questionnaire, participants have been given informed consent first which explains the purpose of the study, explaining that filling out this questionnaire is not with any coercion, and the data obtained by researchers is used solely for research and will not be disseminated. In filling out the questionnaire, participants took approximately 15-20 minutes. Questionnaires can be filled out using participants' laptops or smartphones. In this study, participants were given SPIN measuring instruments that had been translated into Indonesian. All items that have been translated have passed professional review, one of which is Dr. Davidson. Other measuring instruments (SCQ, LSAS and PHQ) already have the validity and reliability of items that have been translated into Indonesian in previous studies.

Results and Discussion

In this section, researchers will explain the psychometric information of the study based on participants who have met the criteria. The results will be presented based on the hypothesis that has been previously put forward.

Testing H_{1a}: Construct Validity (Homogeneity Evidence) Social Phobia Inventory (SPIN) version Indonesian

To test *construct validity (homogeneity evidence)*, researchers use *confirmatory factor analysis*, with a *maximum likelihood estimation approach*. The total number of participants was 118. Based on the test results, it shows that the SPIN construct consisting of three sub-scales (*evaluation fear, avoidance, & physiological discomfort*) has not met the indication of the fit model (GFI = 0.83, CFI = 0.72, RMR = 0.18, and RMSEA = 0.15).

H1b Testing: Internal Consistency Reliability Social Phobia Inventory (SPIN) version Indonesian

To test *internal consistency reliability*, researchers use *Cronbach's Alpha estimation method*. Based on the calculation results, it was found that *Cronbach's Alpha* as a whole and on all three SPIN scales was quite good. *The internal consistency* of all (17) SPIN items is 0.90. *The internal consistency* of the five (5) SPIN items (evaluate fear dimension) is 0.77. *The internal consistency* of the nine (8) SPIN (avoidance dimension) is 0.84. and *the internal consistency* of the four (4) SPIN (*physiological discomfort dimension*) is 0.77. Based on these results, it can be said that SPIN has good *internal consistency*. Researchers also look at the *corrected item-total correlation* that has been described in Table 3, the result is that all items are in the range of $\alpha = 0.40 - 0.68$ so that no items must be removed from the measuring instrument (> 0.20).

Table 3. SPIN Psychometric Overview and Information

No Item	Mean	Std. Dev	Item-total corr.
1	1.86	1.26	0.57
2	1.74	1.29	0.40
3	1.60	1.32	0.64
4	1.90	1.36	0.42
5	2.05	1.35	0.57
6	1.77	1.29	0.64
7	1.52	1.40	0.62
8	1.70	1.38	0.50
9	2.22	1.35	0.54
10	1.88	1.33	0.59
11	2.04	1.37	0.58
12	1.91	1.32	0.65
13	1.56	1.35	0.68
14	1.93	1.33	0.56
15	2.49	1.31	0.48
16	1.78	1.31	0.54
17	1.65	1.29	0.68

Note. Std. dev: standard deviation; item-total corr.: corrected item-total correlation

H2a Testing: Construct Validation Study (Convergent) Social Phobia Inventory (SPIN) measurement tool

To test construct validity (*convergent evidence*), the author uses the *Pearson Correlation correlation test method*. Based on the test results, there is a positive correlation between SPIN ($M = 1.76, SD = 0.81$) and SCQ ($M = 2.72, SD = 1.03$), $r = 0.34, p < 0.001$. The higher the SPIN score, the higher the SCQ score. Researchers also correlated each SPIN dimension to SCQ, the result was that SPIN had a significant correlation with the *evaluate fear* dimension ($r = 0.40, p = 0.001$) and *physiological discomfort* ($r = 0.30, p = 0.001$), but not on the *avoidance dimension* ($r (df) = 0.17, p = 0.05$). This indicates that the SPIN measuring instrument has a convergent conformity with the SCQ measurement results.

Furthermore, construct validity testing (*convergene evidence*) was also carried out by correlating SPIN and PHQ on symptoms that measured *somatization, panic disorder, generalized anxiety* and *depression*, found a correlation between SPIN measuring instruments and PHQ measuring *somatization* symptoms ($r = 0.27, p = 0.003$); *panic disorder* ($r = 0.27, p = 0.003$); *depression* ($r = 0.40, p < 0.001$) and *generalized anxiety* ($r = 0.33, p < 0.001$).

H2b Testing: Construct Validation Study (Discriminant Evidence) Social Phobia Inventory (SPIN) measurement tool

Discriminant validity was carried out using the *Pearson Correlation correlation test method* by correlating SPIN to several disorders measured by PHQ measuring instruments, namely *eating disorder* and *alcohol abuse*. The result was that SPIN was not significantly correlated between PHQ in *eating disorder symptoms* ($r = 0.13, p = 0.15$) and *alcohol abuse* ($r = 0.12, p = 0.19$). This indicates that the SPIN measuring instrument has *discriminant validity* against the PHQ measuring instrument that measures *eating disorder* and *alcohol abuse*, so it can be said that SPIN with PHQ (*eating disorder and alcohol abuse*) measures different constructs.

Table 4. Correlations of Measure of SPIN, SCQ and PHQ

	SPIN	SCQ	PHQ SD	PHQ MDD	PHQ PD	PHQ GAD	PHQ ED	PHQ AA
SPIN Total		0.31**	0.23*	0.38**	0.26**	0.32**	0.12	0.13
SPIN – EF	0.87**	0.40**	0.21*	0.40**	0.25**	0.28**	0.11	0.90
SPIN – AV	0.90**	0.17	0.18	0.29**	0.14	0.24**	0.09	0.12
SPIN – PD	0.85**	0.30**	0.24**	0.34**	0.34**	0.37**	0.13	0.12

Note. ** correlation significant at the 0.01 level; * correlation significant at the 0.05 level; SPIN: Social Phobia Inventory; SCQ: Social Cognition Questionnaire; SD: Somatoform Disorder; MDD; Major Depressive Disorder; PD: Panic Disorder; GAD: Generalized Anxiety Disorder; ED: Eating Disorder; AA: Alcohol Abuse.

H3a & H3b Testing: Criterion Validation with Sensitivity & Specificity Study Social Phobia Inventory (SPIN) measurement tool

A total of 118 participants in this study, 19 participants had a diagnosis of *social anxiety disorder* from a psychologist / psychiatrist / other professional. The existence of a very far unbalanced comparison between individuals with SAD and healthy individuals makes *specificity* and *sensitivity* tests carried out in other ways. In this study, LSAS measuring instruments were used to help conduct *specificity* and *sensitivity* tests by comparing the average scores on SPIN and LSAS. The average score of each measuring instrument, namely SPIN and LSAS, then goes through a *standard calculation of the mean of error* which will later get lower and *upper score* results. Code 1 is given to *the lower score*, code 2 is given to *the score between*

lower and upper, and code 3 is given to the upper score. Code 2 is not included in calculations for sensitivity and specificity because participants are considered to have a middle or average score.

The result of the sensitivity test is 97%, specificity is 86%, positive predictive value is 86% and negative predictive value is 97%. This value is calculated using the following methods:

Sensitivity

$$\frac{TP}{TP+FN} = X 100 = 97\% \frac{39}{39+140}$$

a. **Specificity**

$$\frac{TN}{TN+FP} = X 100 = 86\% \frac{39}{39+645}$$

Positive Predictive Value (PPV)

$$\frac{TP}{TP+FP} = X 100 = 86\% \frac{39}{39+645}$$

Negative Predictive Value (NPV)

$$\frac{TN}{TN+FN} = X 100 = 97\% \frac{39}{39+140}$$

Table 5. LSAS & SPIN Code for Criterion Validity

	SPIN code 1	SPIN code 3
LSAS code 1	39d	1c
LSAS code 3	6b	39a

Note. *Code is the code of the average score obtained from the lower & upper score (standard mean of error). a: true positives; b: false positives; c: false negatives; D: True negatives.

Data related to social anxiety cases has increased in general worldwide since the era of the COVID-19 pandemic. The World Health Organization said that since the COVID-19 pandemic, the prevalence of anxiety and depression globally has increased by 25%. This makes it important to measure nationally validated symptoms of social anxiety. One of these measuring instruments is the Social Phobia Inventory or SPIN measuring tool. This study aims to test the homogeneity of SPIN measuring instruments, internal consistency, convergent and discriminant validation as well as criterion validation. There is consistency of results from previous studies (Connor et al., 2000; Carleton et al., 2010; Mortberg & Frojmark., 2019), all items in SPIN have internal consistency, convergent validity, discriminant validity and criterion validity, although this study cannot prove good homogeneity or have a fit model. This will be explained in more detail in the discussion section.

Homogeneity evidence was carried out by testing the SPIN factor structure using confirmatory factor analysis (CFA) with three sub-scales and the result was that SPIN had a Goodness of Fit (GFI) value of 0.83 and a Comparative Fit Index (CFI) of 0.72 where the figure was < 0.90, so it can be said that the data obtained was not indicated fit and still not support against theoretical concepts. This is because the sample or participants obtained are still heterogeneous. Based on previous research, the inconsistency of factor results when conducting factor analysis can be the cause of data not being fit (Ranta et al., 2007; Carleton et al., 2010; Lopez et al., 2010). In Kyriazos (2018), it is also explained that the strength of the sample to perform factor analysis is very necessary to pay attention to so that it often becomes less accurate when done in a small number of samples and the data does not reach the indication of fit.

Although classified as not fit, based on normality testing using *Skewness* and *Kurtosis*, the data can be said to have been normally distributed (Skew. 0.09, Kurt. -0.08), so that it meets the criteria for the next test. Researchers then conducted an *internal consistency* test using *Cronbach Alpha* to prove that the measuring instruments used, especially SPIN measuring instruments have good reliability values. The result is that SPIN has good *internal consistency* in all items ($\alpha = 0.90$) and overall dimensions.

Convergent validity is done by correlating SPIN to SCQ measuring instruments that measure *negative social cognition* in individuals, the result is that SPIN has convergent validity against SCQ. The result of *convergent validity* is that there is a significant relationship with SPIN and SCQ measuring instruments ($r = 0.31$, $p = 0.001$). The correlation between SPIN and SCQ can still be said to have a correlation that is not too large (< 0.5), but some studies believe that *cognitive models* of individuals who have *social anxiety* tend to be negative, and vice versa, and individuals who have negative *social cognition* will have a greater chance of experiencing symptoms of *social anxiety* (Hofmann, 2007; Chiu et al., 2021).

This is in accordance with the theory of Miers et al. (2011) which explains that individuals have a tendency to interpret an ambiguous social situation in a negative way which eventually causes a social anxiety in the individual himself. Negative social cognition ends up being a predictor of social anxiety, which suggests that individuals with more negative social cognition will tend to experience more symptoms of *social anxiety* compared to individuals with more positive social cognition (Chiu et al., 2021). Based on Stopa & Clark (2000) it is said that *social anxiety* is generally characterized by two interpretation biases, namely the tendency to interpret social events ambiguously and the tendency to interpret social events in a negative way. This underlies the formation of the *Social Cognitin Questionnaire* or SCQ measurement tool, where in this case Chiu et al. (2021) said that there is a strong relationship between *negative social cognition* and *social anxiety*, so this study is the first study to correlate SPIN with SCQ.

Convergent evidence was also conducted by correlating SPIN with PHQ which measured symptoms of *somatization*, *panic symptoms*, *generalized anxiety* and *depression*. In line with research conducted by Mortberg & Frojmark (2019) that SPIN has a correlation with symptoms of *depression* ($r = 0.38$, $p = 0.000$) and *generalized anxiety* ($r = 0.32$, $p = 0.000$). In addition, SPIN also has a significant although small correlation to *somatization* ($r = 0.23$, $p = 0.01$) and *panic symptoms* ($r = 0.26$, $p = 0.004$), these results are consistent with previous research conducted by Carleton et al. (2010).

Furthermore, *discriminant validity* is carried out by correlating SPIN with PHQ measuring instruments in symptoms of *eating disorder* and *alcohol abuse*. Based on the *discriminant validity* test, there was no significant correlation between SPIN and *symptoms eating disorder* ($r = 0.12$, $p = 0.1$) and *alcohol abuse* ($r = 0.13$, $p = 0.1$), which indicates that SPIN measures different constructs with these two *symptoms*. It can be concluded that SPIN only has *discriminant validity* in two symptoms measured using PHQ (*eating disorder* and *alcohol abuse*) and not *discriminant* against the other three symptoms (*depression*, *panic/anxiety symptoms* and *somatization*). Previous studies have not stated the *discriminant validity* of SPIN against PHQ (*eating disorder* and *alcohol abuse*), but some studies have stated that SPIN has a significant correlation with PHQ measuring instruments that measure other symptoms and not both symptoms (*eating disorder* and *alcohol abuse*) (Wiltink et al., 2017; Mortberg & Frojmark, 2019).

Criterion validity is tested by comparing SPIN scores with LSAS. This is done because of the imbalance of participants who have a diagnosis of SAD and healthy participants, so that if *criterion validity* is done by comparing participants with SAD and healthy participants, the

percent *score criterion* results will be smaller and do not include all participants. *Criterion validity* is done by considering individuals who have high scores on both measuring instruments, namely SPIN and LSAS. Participants who had high scores between SPIN and LSAS measuring instruments were participants who also had a professional diagnosis of SAD (n = 19). *Criterion validity* by comparing the two scores of a measuring instrument can be done in accordance with research by Beaujean & McGlaughin (2015) which says that there are two assumptions, namely *the variability score* of measuring instrument 1 and measuring instrument 2 is the same and *the mean score* of measuring instrument 1 and measuring instrument 2 is the same. This study uses *score* by transforming *score* into *Z score* with the following formula

$$Z \text{ Score} = \frac{\text{Raw Score} - \text{Raw Score Mean}}{\text{Raw Score Standard Deviation}}$$

Previous studies reported that *sensitivity values* in SPIN were at 51-88% and *specificity values* at 78-90% (Johnson et al., 2006; Ranta et al., 2007; Nagata et al., 2013; Chukwujekwu & Olose, 2018). In this study, the *sensitivity value* of SPIN is 97%, it is said that the higher the *sensitivity* value, it indicates that SPIN is an efficient or good instrument for detecting symptoms of *social anxiety* in individuals. The *specificity* score in this study was 86%, which indicates that SPIN is a good instrument to distinguish healthy individuals from individuals with SAD symptoms.

The results of research from Chukwujekwu & Olose (2018), SPIN has a *positive predictive value* or PPV of 86% which shows that if participants have high scores on the SPIN measuring instrument, the possibility of participants having symptoms of *social anxiety* is quite high. The same study also explained the *negative predictive value* or NPV of 80%, which means that if *the SPIN score* is negative, then the possibility of patients not having symptoms of *social anxiety* is high. In this study, the PPV value was 86% and the NPV value was 97%.

Conclusion

The Indonesian version of Social Phobia Inventory (SPIN) does not yet have good *homogeneity (construct validity)*. However, the Indonesian version of *Social Phobia Inventory (SPIN)* has good *internal consistency reliability (Cronbach Alpha)* because the samples obtained are still heterogeneous. The Indonesian version of *the Social Phobia Inventory (SPIN)* has *construct validity (convergent evidence)* with the results of *Social Cognition Questionnaire (SCQ)* and *PHQ* measurements on symptoms of *somatization, panic disorder, generalized anxiety and depression*. This means that the SPIN measuring instrument has a construct conformity with the SCQ measuring instrument and the four (4) symptoms on the PHQ. *The Indonesian version of the Social Phobia Inventory (SPIN)* has *construct validity (discriminant evidence)* with PHQ measurement results in symptoms of *eating disorder and alcohol abuse*. This means that the SPIN measuring instrument has a construct incompatibility with the PHQ (*eating disorder & alcohol abuse*) measuring instrument. The Indonesian version of *the Social Phobia Inventory (SPIN)* has *criterion validity (sensitivity & specificity)* by comparing the score results with LSAS measuring instruments. Thus, SPIN can be said to be a good instrument to measure symptoms of *social anxiety* and can distinguish individuals with SAD and healthy individuals.

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