

Article

Measuring the Scale and Scope of Social Anxiety among Students in Pakistani Higher Education Institutions: An Alternative Social Anxiety Scale

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Abstract: Social Anxiety Disorder (SAD) is neither just shyness, nor for most victims does it merely involve an inability to speak in public. For most sufferers of this disorder, it could be a pervasive, disabling condition that steals away opportunities for a richer, fuller life. Having an early onset and combining high prevalence rates with serious negative effects on functioning and quality of life, SAD is a public health problem of considerable magnitude. Hence, its assessment using a standardized measure and timely intervention can completely preempt or at least lessen the severity of this psychiatric illness. So far SAD among students in higher education institutions is a less investigated area of study in Pakistan. Students generally avoid reporting difficulties they experience while making interactions with people and quietly try to combat with their fears in social settings. Proper and timely diagnosis and treatment of SAD are required, and for this purpose, the need of the hour is to create a culturally oriented measuring instrument for proper surveillance of the student population in Pakistan. This paper, drawing from a study conducted at Higher Education Institutions (HEI) across Pakistan, addresses this issue by devising an indigenous, comprehensive, well-founded and valid scale of social anxiety in the Urdu language. The use of this scale, both in general and patient care settings, would effectively screen individuals who could be at risk of being victimized by this disorder. This alternative Social Anxiety Scale (SAS) carefully evaluates social behaviors and attitudes while also ensuring that cultural perspectives are considered, which would also encourage clinicians to evaluate SAD in Pakistani population.

Keywords: social anxiety disorder (SAD); social anxiety scale (SAS); confirmatory factor analysis (CFA); convergent validity; Liebowitz social anxiety scale (LSAS); higher education institutions (HEI)

1. Introduction

The process of measurement is one of the fundamental activities of social science. It is through the systematic collection of data using tested methodologies and innovative analysis that researchers are able to advance knowledge about human behavior and social phenomena. The use of measurement scales is considered to be one of the most useful ways for achieving this objective. Social Anxiety Disorder (SAD), one of the most prevalent psychological illnesses across genders, various cultures, racial groups and socioeconomic statuses as well as both clinical and non-clinical populations has

been well researched over the last two decades with the help of measurement tools to quantify it [1–4]. It is often described as a persistent unwarranted fear of and a compelling desire to avoid situations in which a person may be exposed to strangers or to scrutiny by others, resulting in considerable distress and impaired ability to function in at least some parts of daily life [5].

SAD typically begins in adolescence, only becoming harmful for an individual's functioning, following a stable period of life, if not treated properly [6]. Activities that require social interactions and performing tasks publically are mostly avoided by those who suffer from it. Consequently, this withdrawal may result in lower achievements in vital domains of their lives potentially undermining educational, occupational and relational achievements. Unfortunately, most cases go untreated, as people are generally unaware of the symptoms [7,8].

Previous studies show that strong unwarranted fear of others' judgments poses a threat to the self-actualization needs of youth and particularly students in higher education institutions [9]. SAD in students may make them vulnerable to developing a fear of being scrutinized and judged by the general public, fellows and superiors. However, anxiety and fear of being judged by authority figures is the most intense [8]. As a result, SAD sufferers may try to escape exposure to such situations, isolate themselves and take refuge in seclusion from social gatherings and interactions. Consequently, they are more likely to prefer to remain aloof during forced participation in gatherings, avoiding conversation with the strangers and people who are perceived as judgmental [10].

In the context of Pakistan, a large portion of students is found to report being anxious and fearful during their social interactions, speaking publically and performing in front of an audience [11]. Consequently, this fear intensifies self-consciousness, avoidance, feelings of inadequacy and inferiority, fear of humiliation, embarrassment, lower self-esteem and depression. Examples might include: fear of speaking in public, eating, drinking or taking a test in the presence of others, using public washrooms, attending a social engagement alone, communicating with the opposite sex or with strangers, making complaints and becoming the center of attention [12]. Although there has been progress with regard to recognizing SAD as a psychiatric disorder whose prevalence is alarmingly increasing among students in higher education institutions, this study intends to better understand, measure, raise awareness and address it in the Pakistani perspective.

Currently, there exist a number of reliable and valid scales designed to assess SAD in adults. Although they are widely used and well-established scales, each has its own strengths and limitations. A review of these scales demonstrates the need to develop an indigenous scale of SAD that could be more effectively used with the adult Pakistani population in general and students in higher education institutions in particular for assessing the frequency of subjective social fears and to identify those at the greatest risk of developing SAD, so that they can be further assessed and benefit from an intervention. The Fear of Negative Evaluation (FNE) Scale [13] and The Social Avoidance and Distress Scale [13] are two of the earliest developed scales. The original version of the FNE (30 items) examines fear of negative evaluations by others as well as the avoidance of social situations in a true or false format. A modified version of the FNE involves an additional 9 items examining fear of rejection. On the other hand, the Social Avoidance and Distress Scale [13] (28 items) measures two aspects of anxiety: four experiences—distress, discomfort, fear and anxiety—and the avoidance of social situations following the same response format. One noteworthy limitation of these scales is that they only give an indication of whether a person would be fearful or not while being judged by others based upon the response format of true or false, and the level of fear cannot be quantified. Moreover, social situations that could give rise to intense fear and anxiety conditions in a person are not clearly defined in them. The Social Phobia Scale (SPS) [14] and the Social Interaction Anxiety Scale (SIAS) [14] were developed as companion measures. The SPS is a 20-item measure designed to assess one's fear of being looked upon and scrutinized by others while engaging in routine behaviors (e.g., public speaking, eating or writing), more strongly capturing performance anxiety; whereas the SIAS is a 20-item measure assessing one's general fear of engaging with others (e.g., initiating and maintaining conversations), more strongly capturing interaction anxiety. Both SPS and SIAS scales have certain limitations; each

should be used to develop a complete score of social anxiety as each assesses constructs of interaction and performance anxiety separately. In addition, the response format measures intensity of anxiety and frequency cannot be quantified. Moving on to another scale with similar limitations, The Interaction Anxiousness Scale (IAS) [15] is a 15-item measure of anxiety in social interactional situations. Another screening tool is the Social Phobia Inventory (SPIN), a 17-item questionnaire that assesses each of the symptom domains of SAD (fear, avoidance and physiologic arousal) but a number of important social situations that can result in severe social anxiety have been overlooked. The Liebowitz Social Anxiety Scale (LSAS) [16] (24 items) is one of the most commonly used SAD rating instruments possessing satisfactory psychometric properties for research and clinical purposes; however, it is culturally specific and may have limited application in Pakistan. Language barriers can also challenge the generalizability of the existing SAD scales in countries like Pakistan, where English is not the first language. Sometimes, the meaning of a particular English word might change while finding a suitable substitute in translating the statements [17–19]. For the above-mentioned reasons, theoretical and practical benefits are likely to be derived not only from a new instrument encompassing the previous ones, but also from the validity added by a sample of indigenous participants. Therefore, the need to develop a short, comprehensive and culturally anchored measurement of SAD in Pakistan seems to be justified. Taking all these perspectives into consideration, the Social Anxiety Scale aims to be an indigenous tool, well-constructed and validated as per the cultural norms and standards of Pakistan when contrasted with the ones developed according to the standards of different societies. Moreover, all the dimensions of social anxiety can be measured using this tool instead of using separate tools to measure the constructs.

2. Method and Methodology

The study was conducted in five phases. In phase I, extensive exploration of the construct was carried out through a review of literature, focus groups and interviews with experts, in order to make the conceptual basis available for the initial phrasing of the items. A content validity index of the item pool generated was measured and the face validity of the scale was determined by conducting a pilot study. Exploratory factor analysis (EFA) was conducted in phase II on a sample of 300 university students aged 18 to 26 years ($M = 21.14$, $SD = 2.06$). A Varimax rotation method was used, which yielded three factors: Performance Anxiety, Interaction Anxiety and Evaluation Anxiety; this accounted for 53.83% of the variance. In phase III, Confirmatory Factor Analysis (CFA) was run to validate the findings of EFA. The sample for this part of the study consisted of 800 male and female university students aged 17 to 29 years ($M = 20.04$, $SD = 1.92$). Participants from seven public and private sector universities in Lahore (Pakistan) were randomly recruited for the sample. The CFA demonstrated a good fit to the data. The Cronbach's alpha coefficients for performance, interaction and evaluation anxiety were 0.84, 0.81 and 0.78, respectively, and 0.90 for the total Social Anxiety Scale. In phase IV, the convergent validity of the Social Anxiety Scale (SAS) was determined by finding positive correlations ($r = 0.41$) with the score of the Liebowitz Social Fear subscale (LSF) and ($r = 0.63$) with the score of the Liebowitz Social Avoidance subscale (LSA) of LSAS [12], whereas discriminant validity was determined by finding a negative correlation ($r = -0.40$) with the score of extraversion subscale of the Big Five Inventory (BFI) [20]. In the final phase V, an additional analysis to find out gender differences in overall social anxiety and all of its dimensions was carried out on the sample of university students used in phases III and IV of this study.

3. The Study and its Results

3.1. Phase I—Item Generation for Social Anxiety Scale (SAS)

Items for the SAS were derived using both inductive and deductive approaches. The following sources were used to generate the SAS items: (a) review of available literature and theories of SAD, diagnostic criteria of SAD according to Diagnostic and Statistical Manual of Mental Disorders- 5 (DSM-5)

and items from existing scales of SAD, (b) three focus groups with 32 university students in total with equal number of both genders selected through convenience sampling, and (c) semi-structured interviews of three psychologists with at least five years of experience. Interviews were comprised of open-ended questions (e.g., in your expert opinion, what is a Social Anxiety Disorder; how do people with social anxiety report its impact upon their daily functioning and what areas are mostly affected). Interviews were carried out individually and both focus groups and interviews were audio recorded with the permission of the participants. The audio-taped interviews and notes were then transcribed. The fearful social situations gathered from the above-mentioned sources were pooled together in the form of a list that constituted 35 items. The statements of the scale were written in the native language Urdu. Six experts (having expertise in social anxiety research) were then presented with the list of items and were requested to scrutinize on the basis of clarity, fidelity, comprehensibility and redundancy. Finally, with empirical validation through Content Validity Index (CVI), a scale of 28 items was structured [21].

To measure social anxiety, the mean score across all the items could be computed to yield an average response for each participant. Participants who scored above average could be classified as socially anxious [22].

In order to determine the face validity of the scale as well as to ensure its understandability to the normal population, a pilot study was conducted on a sample of 50 students (male = 25, female = 25) selected through convenience sampling from different public and private sector universities in Lahore, Pakistan. Participants' ages ranged between 18 and 26 years ($M = 21.14$, $SD = 2.06$). They were briefed about the purpose of the study and were ensured about the confidentiality of their responses. Finally, 28 items were chosen to ensure factor validity and the theoretical structure of SAS via EFA.

3.2. Phase II—Factor Structure, Construct Validity and Internal Consistency of the Scale Sample

Exploratory factor analysis (EFA) was conducted in this phase of the study to determine the factor structure of the scale. The sample ($N = 300$) was chosen through a convenience sampling technique with age ranging between 18–26 years ($M = 21.14$, $SD = 2.06$). 48% men ($N = 144$) and 52% women ($N = 156$) with various levels of qualification (undergraduates to postgraduates) were selected from different public and private sector universities. Participants diagnosed with any clinical problem based on subjective reporting were excluded from the study.

3.2.1. Procedure

First, informed consent was taken from all the participants after briefing them about the purpose of the study. The questionnaires were then administered to the participants after giving them the needed guidelines to fill them. The researcher also assured participants of the confidentiality and anonymity of their responses. All 300 questionnaires were fully completed.

3.2.2. Results

After testing all assumptions for factor analysis, 28 items of the SAS were subjected to exploratory factor analysis. More than one criterion was used for the extraction of factors, which involved obtaining Eigen values and making use of a scree plot. Eigen values were obtained to see the amount of variance accounted for by each factor; hence the factors having an Eigen value of 1 or greater were retained as they represent substantial variance [23]. A total of six items (i.e., 13, 15, 16, 18, 24 and 25) were eliminated because they did not contribute to a simple factor structure. As a result, 22 items were retained in the scale. The above-mentioned criterion led to an extraction of three components which in combination explained 53.84% of the variance, which was found to be quite considerable. In addition to this, a scree plot was inspected and the point of inflection of the curve was considered as the cutoff value for selecting the number of factors [24]. Hence, considering the adequate sample size, convergence of the scree plot and Kaiser's criterion of Eigen values, a total of three factors were extracted and retained (see Table 1).

Factor 1 consisted of eight items (8, 9, 10, 15, 16, 17, 18 and 19) indicating fear and distress experienced by a person while performing publicly (such as “I feel afraid of giving a job interview”). This factor was labeled as “Performance Anxiety” (see Table 1, Figure 1 and Appendix A).

Ten items in total (1, 2, 3, 4, 5, 6, 7, 11, 12 and 13) emerged to have high loadings in factor 2. These items addressed an individual’s feelings of discomfort in situations where interaction with people is required (such as “I feel afraid while talking to strangers”). Factor 2 was labeled as “Interaction Anxiety” (see Table 1, Figure 1 and Appendix A).

Factor 3 was labeled as “Evaluation Anxiety” as it included all items assessing the level of anxiety in reference to possible scrutiny or assessment of one’s actions by others (such as “I fear rejection from people”). Four items (14, 20, 21 and 22) having high loadings were included in factor 3. This factor is a unique characteristic of this scale and is not measured as a separate factor in any other existing scales (see Table 1, Figure 1 and Appendix A).

Table 1. Factor loading for the Social Anxiety Scale (SAS) (N = 300).

Items	Factors			Item Total Correlation
	1	2	3	
SAQ1	-	0.65	-	0.65 **
SAQ2	-	0.71	-	0.57 **
SAQ3	-	0.66	-	0.61 **
SAQ4	-	0.69	-	0.56 **
SAQ5	-	0.67	-	0.46 **
SAQ6	-	0.68	-	0.59 **
SAQ7	-	0.75	-	0.49 **
SAQ8	0.72	-	-	0.40 **
SAQ9	0.76	-	-	0.52 **
SAQ10	0.85	-	-	0.54 **
SAQ11	-	0.71	-	0.37 **
SAQ12	-	0.74	-	0.33 **
SAQ13	-	0.68	-	0.33 **
SAQ14	-	-	0.48	0.37 **
SAQ15	0.85	-	-	0.69 **
SAQ16	0.86	-	-	0.56 **
SAQ17	0.70	-	-	0.74 **
SAQ18	0.76	-	-	0.60 **
SAQ19	0.73	-	-	0.55 **
SAQ20	-	-	0.71	0.34 **
SAQ21	-	-	0.69	0.54 **
SAQ22	-	-	0.72	0.54 **
Eigen values	5.71	4.36	1.76	
Cumulative percentage of variance	25.97	19.82	8.04	

** p< 0.01. Items with 0.40 or above are boldfaced and selected for scale.

Table 2 shows that SAS and its subscales have high reliability coefficients ranging between 0.78–0.90 those ensure the internal consistency of the scale. All the subscales of SAS correlate significantly with the total SAS score indicating the appropriateness of the construct in screening for social anxiety disorder. In addition, the subscales correlate significantly with one another.

Table 2. Alpha coefficient and inter-correlation for subscales and the total score of the Social Anxiety Scale (N = 300).

Factors	1	2	3	4
1. Performance Anxiety	-	0.72 **	0.59 **	0.91**
2. Interaction Anxiety	-	-	0.54 **	0.91 **
3. Evaluation Anxiety	-	-	-	0.73 **
4. Total SAS	-	-	-	-
Alpha coefficient	0.84	0.81	0.78	0.90

** $p < 0.01$ Total SAS = total Social Anxiety Scale.

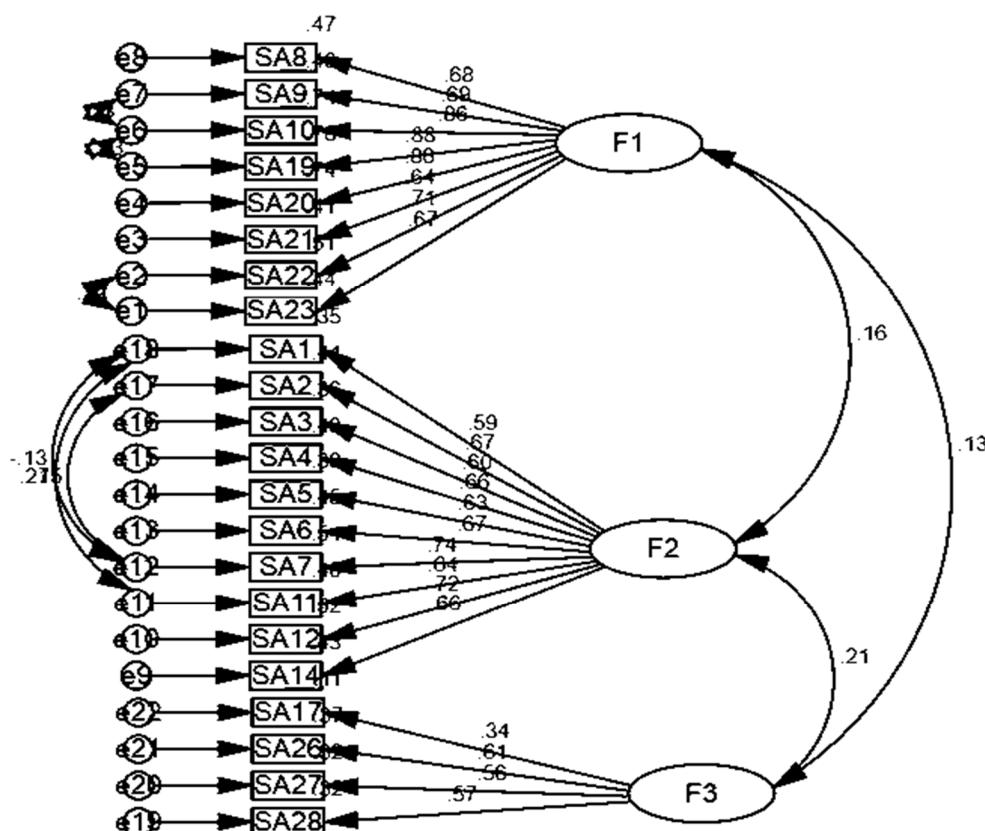


Figure 1. The final factor structure model of the SAS.

3.3. Phase III—Confirmatory Analysis Sample

To confirm the factor structure of the 22 items of SAS, a sample of 800 students was randomly selected including men ($N = 400$) and women ($N = 400$) from public and private sector universities in Lahore, Pakistan. The age range of participants was 17–29 years ($M = 20.04$, $SD = 1.92$). 37% of the sample consisted of undergraduates, 57.8% were graduate level students and 5.3% were postgraduate students.

3.3.1. Instrument

The SAS developed in study 1 was used to confirm the factor structure and the dimensionality. The scale consisted of three clear and theoretically well-defined factors labeled as Performance Anxiety, Interaction Anxiety and Evaluation Anxiety.

3.3.2. Procedure

Participants were approached in their respective departments after getting official permission from the concerned university authorities. Those students who gave their informed consent about

participating in the study were included in the sample. The purpose of the study was explained, confidentiality of the data was assured and written guidelines for completion of the questionnaire were given. Participants were also informed that they could withdraw from the study at any time.

3.3.3. Results

In order to confirm the factor structure of the SAS (as emerged in the EFA) a confirmatory factor analysis was used. The results of the CFA show a good fit to the data with $df = 200$, Chi square = 768.98, comparative fit index (CFI) = 0.92, tucker-lewis index (TLI) = 0.91, goodness-of-fit index (GFI) = 0.90 and root mean square error of approximation (RMSEA) = 0.05. The criteria followed for determining the best model fit were: CFI > 0.90 [25], TLI > 0.90 [26] GFI > 0.90 [27] and RMSEA < 0.08 [26,27]. Results also show that Chi square/df is 3, representing a good model fit [28].

3.4. Phase IV—Convergent and Discriminant Validity of the Social Anxiety Scale

This phase of the study was conducted with an objective to validate the SAS so that it could be applied to measure an individual's level of anxiety in a social environment. Hence convergent and discriminant validity of the scale were established by using the Liebowitz Social Anxiety Scale (LSAS) [16] and subscale of Extraversion from the Big Five Inventory (BFI) [20]. It was hypothesized that the scores on SAS would be positively related with the scores on LSAS and negatively correlated with the scores on the Extraversion subscale from BFI.

3.4.1. Sample

Data for this section of the study were collected from the same participants as for the CFA. The research purpose was briefed by the researcher with assurance to maintain confidentiality of the information shared. The sets of questionnaires were then distributed among willing participants for data collection.

3.4.2. Material

Social Anxiety Scale (SAS)

The newly developed 22-item SAS was used. A five point Likert type scale with a response format of 0 (never) to 4 (always) was used to measure the three components of SAS. The Cronbach's alpha reliability of SAS came out to be 0.90, whereas for the three subscales alpha coefficients were: Performance Anxiety (0.84), Interaction Anxiety (0.81) and Evaluation Anxiety (0.78).

Liebowitz Social Anxiety Scale (LSAS)

The Liebowitz Social Anxiety Scale (LSAS) [16] is a short scale featuring 24 items designed to assess fear and avoidance of social interaction and performance situations by an individual in order to assist in the clinical diagnosis of SAD. The items are divided into two subscales: performance anxiety (13 statements) and social situations (11 statements). All the items are first rated on a 4-point Likert scale from 0–3 on level of fear felt during the situations, and then the same items are responded to mark the level of avoidance of the situations. The scale was available in an Urdu translation and thus used for data collection [29]. The Cronbach's alpha of LSAS was 0.86.

Extraversion subscale of the Big Five Inventory (BFI)

The BFI [20] is a 44-item self-report inventory designed to measure an individual on the big five dimensions of personality. One of them is "Extraversion" comprising of 8 short phrases with accessible vocabulary characterizing an individual's breadth of activities, surgency from external activities and the tendency to enjoy interaction with people being enthusiastic and action oriented. The items are rated on a 5 point scale with options of 1—strongly disagree to 5—strongly agree. The scale translated

in the Urdu language was used for data collection [30]. The Cronbach's alpha of Extraversion scale was 0.75.

3.4.3. Procedure

Participants were individually contacted by the researchers. The research purpose was briefed to them with assurance to maintain confidentiality of the information given. The sets of questionnaires with proper guidelines were then distributed among willing participants for data collection. It took 10 to 15 minutes to complete the protocol. To establish the convergent and discriminant validity of the newly developed SAS, the researcher calculated correlations between SAS, subscales of LSAS [16] and the Extraversion subscale of BFI [20].

3.4.4. Results

To test the hypothesis that the Social Anxiety Scale is positively correlated with the Liebowitz Social Anxiety Scale and negatively correlated with the Extraversion scale of BFI, Pearson's correlation was calculated. The findings presented in Table 3 show positive correlations ranging between 0.40–0.65 between both fear and avoidance scores of the LSAS with the SAS and a negative correlation between SAS and the Extraversion subscale of BFI.

Table 3. Correlation of SAS with subscales of the Liebowitz Social Anxiety Scale (LSAS) and the Extraversion scale ($N = 800$).

Variables	1	2	3	4
SAS	-	0.41 **	0.63 **	-0.40 **
LSF	-			
LSA	-			
EXT	-			

** $p < 0.01$. Note. SAS = Social Anxiety Scale, LSF = Liebowitz Social Fear, LSA = Liebowitz Social Avoidance, EXT = Extraversion.

3.5. Phase V—Gender Differences in Social Anxiety and its Dimensions

This phase of the study was conducted with an objective to explore gender differences in overall social anxiety and all of its dimensions, i.e., performance, interaction and evaluation anxiety in a sample of university students ($N = 800$) including men ($N = 400$) and women ($N = 400$) who also participated in phases III and IV of this research.

Results

The results of the independent samples t -test showed significant differences between the means of men ($M = 27.15$, $SD = 12.58$) and women ($M = 39.15$, $SD = 14.28$) on overall social anxiety $t(798) = -12.61$, $p < 0.001$, indicating much better social functioning for the group of men. Women also seemed to have significantly higher levels of performance, interaction and evaluation anxiety as compared to men, as shown in Table 4. Cohen's d also suggested large differences between the groups on all social anxiety dimensions.

Table 4. Independent sample t -test for comparing Performance Anxiety, Interaction Anxiety, Evaluation Anxiety and Total Social Anxiety among men and women ($N = 800$).

Variable	Men ($n = 400$)		Women ($n = 400$)		<i>Df</i>	<i>T</i>	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Performance Anxiety	13.67	5.22	16.44	5.64	798	-7.18	0.000	0.96
Interaction Anxiety	10.06	6.82	17.39	7.69	798	-14.25	0.000	1.02
Evaluation Anxiety	3.41	3.30	5.32	3.61	798	-7.82	0.000	1.01
Total Social Anxiety	27.15	12.58	39.15	14.28	798	-12.61	0.000	1.29

4. Discussion

The process of scale development involves many systematic steps and procedures in order to obtain theoretical and methodological precision. The prior objective of the current study was to develop an indigenous Social Anxiety Scale by following a standardized procedure, which could help in screening the adult population in higher education institutions for the presence of social anxiety. The process of scale development followed through four phases: item generation, theoretical analysis through EFA and CFA and psychometric analysis. Following the strategy suggested by DeVellis (2003) [31] to develop a new scale, 35 items were generated in the first step by using the deductive approach (diagnostic features of SAD according to DSM-5, literature review and a review of existing social anxiety scales) and an inductive approach (focus groups with adults, interview from experts). This phase also involved assessment of content validity of the newly developed scale to see whether it successfully and appropriately reflects the intended construct through the item pool generated. Face validity was also assessed through a pilot study involving 50 participants. At this stage, seven items were deleted which produced a refined structure of the scale with 28 items. The second phase consisted of EFA performed on a total of 28 items to determine the factor structure of the scale. Six items were deleted at this level and three well-defined factor structures were extracted which accounted for 53.83% of the variance. A total of 22 items with factor loadings of >0.40 were retained on theoretically relevant factors. The factors formed were Performance Anxiety (8 items), Interaction Anxiety (10 items) and Evaluation Anxiety (4 items). Moreover, the factor structure was found to be reliable as the Cronbach's alpha for the scale (0.90) was well above the benchmark of 0.70 in accordance with the social sciences [32].

CFA was conducted in the third phase of the study to confirm the three-factor structure and dimensionality of 22 items of the SAS retrieved through EFA. The estimated model fitted the data well and it was concluded that the EFA structure replicated accurately, and the construct validity of SAS was established successfully. The psychometric properties of SAS were established through validation in the fourth phase of the study. Convergent validity is considered to be a preferred technique to be used in the process of scale development [33], but for the current study, both convergent and discriminant validities were established to increase the psychometric rigor and robustness. The Liebowitz Social Anxiety Scale was used to assess the convergent validity of the SAS. Significant positive correlations were observed between fear ($r = 0.41, p < 0.01$) and avoidance scores ($r = 0.63, p < 0.01$) of LSAS and SAS, indicating that individuals who had a high index of social anxiety on SAS also scored high on LSAS. Discriminant validity is the extent to which two conceptually related constructs are distinct and in this study discriminant validity of the SAS was established by evaluating its relation with the Extraversion subscale of BFI. It was hypothesized that there would be an inverse relationship between the scores of these two measures. The resulting correlation coefficient ($r = -0.40, p < 0.01$) revealed that individuals who are more socially phobic have greater avoidance behavior, are less social, remain mostly reserved and prefer to be isolated as compared to those who are less socially anxious. Hence the objective of this phase of study was also successfully achieved.

In the fifth and final phase of the study, the sample of university students was evaluated to explore the gender differences in social anxiety and all of its dimensions. The results highlighted female predominance for specific social behaviors like participating in social events, undertaking some task in front of others, and being the center of attention. More recently, fear in various social situations, e.g., connecting with the opposite gender and authority figures, working while being observed, entering a room with people already seated, being the focus of attention, expressing disagreement with people who are less acquainted, criticism and embarrassment have also been seen more in women than in men [34–38].

5. Limitations

The major limitation of the present research is that data were collected only from higher education institutions of the Punjab province, so to increase the external validity of SAS future research should

include a larger and more diverse sample, ideally one which is fully representative of the adult population. Moreover, it cannot be known if the structure of the scale is equivalent for men and women and whether the item functioning is the same for both genders. Another limitation of our work is the implications of statistical techniques only, thus, in future studies, we further plan to employ state-of-the-art natural language processing and machine learning techniques to better understand the aversive effects of SAD on daily functioning; these have already proven to be highly useful in understanding other disorders that can lead to psychological problems, directly or indirectly [39–50].

6. Conclusions

Considering that existing social anxiety measures display several limitations, the first objective of this paper was to devise an alternative SAS that could assess the construct of social anxiety among students in higher education institutions in Pakistan as they are found to suffer a lot on the hand of their social fears. The indigenous SAS appears to be a novel and highly efficient self-rating scale possessing sound psychometric properties which could be effectively used for screening students in academia for the presence of Social Anxiety Disorder as well as for both clinical and research purposes. The second objective of this paper to explore gender differences in social anxiety was also successfully achieved and women in the sample were found to be more socially anxious than men. In the future, this scale might be useful in discriminating socially anxious students who are at risk of developing SAD and need careful assessment and intervention from those students who experience a normal level of anxiety in their social environment. Timely diagnosis and management could also prevent these young adults from further psychological complications and deterioration in their social functioning.

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Appendix A

Social Anxiety Scale (translated to English)

Instructions: Carefully read the following statements and select the relevant level of your feelings in the column in front of each statement. Tick (✓) in the selected answer column. Please do not miss any questions.

	Statements	Always	Often	Sometime	Very less	Never
1-	I feel afraid while talking to strangers.					
2-	I feel afraid while travelling with strangers.					
3-	I feel reluctant to talk to a stranger on phone.					
4-	I feel reluctant to ask a stranger for help.					
5-	I feel reluctant while bargaining with the shopkeeper.					
6-	I feel afraid to talk to a person of the opposite gender.					
7-	I feel uneasy when someone stares at me.					
8-	I feel uneasy going to a party or function.					
9-	I feel uneasy talking to influential persons.					
10-	I feel reluctant to talk to people while making eye contact.					
11-	I feel hesitant to make new friends.					

	Statements	Always	Often	Sometime	Very less	Never
12-	I feel upset when unexpected guests come over.					
13-	I feel uneasy sitting with people.					
14-	I am scared of being judged by people at religious gatherings (Quranic / Milad / Majlis).					
15-	I feel uneasy talking in a crowd.					
16-	I feel reluctant to express my feelings in the presence of people.					
17-	I feel reluctant to address a gathering of people.					
18-	I feel uneasy performing any task in front of people.					
19-	I feel afraid of giving a job interview					
20-	I feel uneasy being the center of attention.					
21-	I fear rejection from people.					
22-	I fear being disliked by people.					

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