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## Development and validation of a Shyness Scale

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### ABSTRACT

Human beings are social animals that need to interact with one another in order to meet most of their needs. The implication is that people will need to have appropriate social skills in order to compete effectively. Yet there are some people who find it difficult to interact with others. These people are often labeled shy. Recent investigations suggest that shyness could be debilitating and could have negative consequences. To this end, there is need to develop a psychometrically sound instrument to measure shyness in non-Western population for proper a management. This study is therefore aimed at developing and providing a construct validity of a short screening measure of shyness using Nigerian samples. Data were analyzed using exploratory and confirmatory factor analyses. Outcomes provided two-factorial structure (social ineptness and social competence) for the Shyness Scale. Results further showed a satisfactory alpha coefficient for the two factors. Future studies may assess the convergent and the divergent validity of the scale and adapt it to other non-Western cultures.

### Introduction

Human beings are social, gregarious creatures who need to interact with one another to meet their emotional, social and biological needs. Without the ability to communicate their needs and interests clearly to others, their lives will be lonely and colourless, devoid of the warmth, meaning and nurturance that social contacts and relationships bring (Hall & Merolla, 2020). People need people for initial and continued survival, for socialization, and for the pursuit of satisfaction. Given that social interaction and relationships are important for quality of life and positive mental health (Datta, Datta, & Manjumdar, 2015), no one transcends his or her need for human contact or interaction; neither the dying and the outcast, nor the mighty. However, despite the importance of social interaction in the development of a healthy individual, there are still many individuals who lack the ability or rather still, just could not initiate or maintain social contacts due to one inhibition or another. These people avoid performing certain actions in front of others for fear of embarrassing or humiliating themselves. They also exhibit fear, nervousness and apprehension in their relationships with other people as well as avoidance of social situations. Such people are usually said to be shy, which is the focus of this paper.

Shyness is a term that is used in everyday language to mean several things. It is used in different ways to capture various aspects of a person's state of mind and behaviour in social situations. People are said to be shy if they are quiet in company, feel ill at ease in a social gathering, are reluctant to step into the limelight or are hesitant about meeting someone for the first time. People also regard someone to be

shy if he/she is self-conscious about being seen with a new hairstyle, new clothes or is diffident about talking to the opposite sex. Among children, shyness is associated with being coy, bashful and tongue-tied. The term shyness labels these transient feelings and behaviours. Invariably, it shows how common the term is in expressing several social behaviours. It does not have a precise meaning, although it has connotations of wariness, timidity and inhibition. The reason for its lack of precise meaning according to Crozier (2001) is that it is subsumed in a plethora of technical terms such as audience sensitivity, social skill deficit, unassertiveness, reticence, introversion, etc. The complexity of the everyday term is partly because most people can admit to being shy at one point or another in their lives. When asking people if they were shy sometimes during their lifetime, Zimbardo (1977) reported that more than eighty percent answered yes. The implication of this is that shyness is very common in our societies.

Shyness is often used interchangeably with social phobia; there seem to be some differences in their meaning (Morrison, 2016). Social phobia is a clinical syndrome that has been recognized as a diagnostic category since its inclusion in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) published in 1980 by American Psychiatric Association (APA), while shyness is not a diagnostic category yet. In social phobia, there is anxiety before going into the situation, while in shyness, the situation triggers the anxiety. Also, in social phobia, anxiety in the situation is high and may lead to panic attack but in shyness, it could range from mild through moderate to high level of anxiety but there is no panic attack. Although it is common for many people to experience some anxiety before or during a public appearance. Anxiety levels in people

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with social phobia can become so high that they begin to avoid all social situations. However, shyness is diagnosed as social phobia only if it is severe enough to adversely affect social or occupational functioning.

Despite the high incidence of shyness in the society, not much work was done scientifically on it until the 1970s though efforts were made earlier to define it technically. In one such attempt, Lewinsky (1941) described shyness as a state of hyper-inhibition usually accompanied by physical symptoms like blushing, stammering, perspiring and trembling, going pale, unnecessary movements and increased urinary and fecal urges. The mental state is described by the individual as a feeling of inferiority, of not being wanted, coupled with an inability to say the right thing at the right time – while a hundred good answers and quick retorts can be thought of afterwards. The individual feels over conscious of himself or herself, of his/her mental attitudes, of his/her emotions and especially of his/her appearance. This description certainly captures many of the qualities of shyness, but it is a bit vague – how frequently is “usually”? Whereas it identifies a number of mental, physiological and behavioural elements in shyness, it does not say whether all of these elements are necessary for shyness. Is an individual shy who has this mental state but who can manage to say the right thing at the right time? Does shyness necessarily have specific behavioural consequences? Would it be better to define it in terms of its characteristic behaviours, such as reticence? All these questions remain unresolved by the definition.

In order to avoid this kind of vagueness in the definition of terms like shyness that is already current in everyday language, it is important researchers use operational definitions, which could be tied to particular empirical referents. The realization of this fact coupled with the growing problems associated with shyness as well as the need to provide insight into the processes involved in social interaction (Crozier, 2001) led to the surge in shyness research in the 1970s. This increased interest led to the emergence of so many operational definitions of shyness. To Leary (1986), shyness is a condition involving anxiety and behavioural inhibition in social situation. Cheek and Watson (1989) define it as the tendency to feel tense, worried or awkward during social interaction. Borrowing from some of these views, shyness in this study is therefore defined as a psychological state of discomfort and behavioural inhibitions resulting from cognitive and physiological activation experienced in interpersonal situations.

In spite of some debates about the precise definition of shyness as a psychological construct (Cheek & Watson, 1989; Harris, 1984; Leary, 1986), there is considerable agreement among clinical, psychometric, experimental, and observational studies concerning the typical reactions of shy individuals during social interactions: global feelings of tension, specific physiological symptoms, painful self-consciousness, worry about being evaluated negatively by others, awkwardness, inhibition, and reticence (Jones, Cheek, & Briggs, 1986). These reactions are usually classified as cognitive, behavioural and physiological/affective components of shyness (Buss, 1984). The affective component of shyness reflects the anxiety, muscle tension, increased heart rate, upset stomach, and an assortment of

other psychophysiological reactions experienced by shy people. The cognitive component of shyness reflects the excessive sense of self-consciousness, negative self-appraisal, and irrational belief system characteristic of the way that shy people think about themselves. The behavioural component of shyness is expressed by behavioural inhibition and social avoidance. Thus, shyness is not just one or two symptoms but an all-encompassing collection of characteristics that manifests itself in the mind, body, and behaviour of shy people (Cheek & Melchior, 1990; Jones, Briggs, & Smith, 1986).

With increased knowledge about the nature of shyness and increased desire to measure individual's level of shyness, the need to develop short shyness screening instruments become very pertinent. Pioneering work on the assessment of shyness involved construction of the 44-item Stanford Shyness Survey (Zimbardo, 1977). The Stanford Shyness Survey was followed by the development of several other shyness measures such as the original 9-item Cheek and Buss Shyness Scale (Cheek & Buss, 1981), the 13-item Revised Cheek and Buss Shyness Scale (Cheek, 1983) and the Shyness Questionnaire (Bortnik, Henderson, & Zimbardo, 2002). All the instruments earlier mentioned have strong psychometric properties. For instance, the Revised Cheek and Buss Shyness Scale (RCBS) internal consistency coefficient of .90, and a 45-day test-retest reliability coefficient of .88. Convergent validity coefficient of .79 with Social Reticence Scale II (SRS-II) was reported (Jones & Briggs, 1986). However, in a study investigating the utility of the RCBS, Hopko, Stowell, Jones, Armento and Cheek (2005) found a three-factor model as against the initial unifactorial conceptualization of shyness.

The information obtained using these instruments in clinics and research made shyness a topical issue all over the western world resulting into the establishment of several shyness clinics and institutes. However, not much could be said about shyness in Nigeria due to dearth of shyness research and measuring instruments. The first shyness scale in Nigeria is the 40-item Shyness Personality Scale (SPS) developed by Akinade (1987). However, there is no evidence regarding the construct validity of the SPS, and it is rarely used in both clinical and research settings. In addition, the scale has a long list of items which perhaps has limited its usage. Inadequacies such as these may require the development of a new measure (Robinson, 2018). Given these flaws, there is need for the development of a psychometrically sound shyness scale with fewer number of items to enhance shyness studies in this part of the world. This study is therefore aimed at developing and validating a shyness scale that will fill this void.

## Method

### Developmental phase

The study was carried out in both development and validation phases. In the developmental phase, test domains were selected by reviewing some theories to determine relevant attributes of shyness. These include the integrated cognitive behaviour model (ICB: Rapee & Heimberg, 1997), Clark and Wells' (1995) model of social anxiety and the self-

presentational Theory (Schlenker and Leary, 1982). The ICB emphasizes the beliefs and information processing biases characteristic of individuals with social anxiety and how these impact on the processes that occur when shy individuals confront a feared social situation. Stopa and Clark (1993) states that socially anxious individuals have an abundance of automatic thoughts, the majority of which are of a self-derogatory nature. From an information processing view point, it has been proposed that pathological fear is represented in memory as anxiety-specific cognitive structures. Socially anxious individuals appear to devote excessive attention resources to the detection of potential social threat cues (Asmundson & Stein, 1994). According to Clark and Wells (1995), socially anxious individuals bring to social situations a set of problematic assumptions and beliefs about themselves and how social interactions will unfold. These assumptions and beliefs are based on previous experiences that usually encompass some form of embarrassing or humiliating social interaction that has taken place during the childhood or adolescence of such individuals. The self-presentational theory proposes that people experience social anxiety when they are motivated to make a desired impression on other people but doubt that they will successfully do so.

In item writing and selection, statements which center on the nature and components of shyness were generated from open-ended interviews with some youths and adults as well as from literature. An initial pool of 180 items was thereby generated and written out in an easy-to-understand manner. During item analysis, items were then assessed for content and face validity by some experts including two professors of Psychology and one English Language professor. Based on the recommendations of these individuals, some items were removed, and others revised or re-worded as a result of which the number of items became 50. The draft was then written with a 5-point Likert scale response format (1 = not at all; 2 = a little bit; 3 = moderately; 4 = much; 5 = very much) which is a generally accepted format for instruments designed to measure attitudes and beliefs (Gable & Wolf, 1993). The draft was then administered to a selected sample of 180 undergraduates of the University of Lagos, comprising 90 males and 90 females (Mean = 25.15,  $SD = 4.07$ ). In the item analysis, items with low inter-item correlation coefficient ( $< .40$ ) were dropped (Clark & Watson, 2005) and this brought the instrument items to 34.

## Validation Phase

### Setting

The study was carried out in five different locations in Lagos metropolis. Specifically, the participants were drawn from holiday coaching centres within Lagos metropolis. These are (i) New Hall Tutorial College, Yaba; (ii) St. Jude's College, Festac; (iii) Marjos International School, Surulere; (iv) C.M.S. Grammar School, Bariga; and (v) Trinity Secondary School, Olodi-Apapa and University of Lagos. Data for this phase of the study was collected when schools were on long vacation and the holiday coaching centres were chosen because they have the population of the students needed for the study. Also, the spread was to represent the major socio-economic groups in Lagos metropolis.

### Participants

The target population for this phase of the study was secondary school students and undergraduates. Four-hundred participants (comprising 200 males and 200 females) aged between 10 and 38 years (mean = 18.44,  $SD = 5.52$ ) completed the test instrument. In some of the Centres, participants were selected through the help of the Centre Coordinators while in other instances, the researchers were given the permission to approach the students to take part in the exercise. All the participants were literate and showed no observable of cognitive or physical impairment.

### Instrument

The following instrument was used in eliciting information from the participants:

*Shyness Scale draft:* This instrument was developed for this study. It consists of 34 items designed to measure the level of an individual's shyness. It yields score on a 5-point Likert Scale response format ranging from 1 (not at all) to 5 (very much).

### Procedure

This SS draft was administered to the participants either individually or in groups. However, this was made possible after several visits to the study centres to obtain permission from the Centre Coordinators. In some centers where the study was done in groups, the investigator was taken to the classes by the coordinators who instructed the students to listen to and carry out whatever instruction the investigator, who was introduced to them by the coordinator, will give them. Thereafter, the investigator went on to address the students. First, their consent and co-operation were sought in carrying out the exercise. They were assured that the outcome would in no way stand against them in any of their school activities. After addressing them on the harmlessness of the exercise, the investigator then asked if anyone was willing to opt out. All of them agreed to take part. The test instruments were then distributed to them after adequately spacing the sitting positions. The instructions on each of the test instruments were read and explained to them until they all understood what they were expected to do. They were encouraged to ask questions should they encounter any expression they do not understand. No time limit was given for the completion of the test, but they were encouraged to be as fast as possible. In addition, they were encouraged to be as honest as possible since there is no right or wrong answers to the questions. Where the instruments were administered individually, the participants were approached and appealed to by the investigator to help in answering the test items.

### Data Analyses

In order to obtain norms for the Shyness Scale, means and standard deviations scores were calculated. Cronbach's alpha was used to ascertain the internal consistency while factorial validity of the scale was examined by utilizing both exploratory and confirmatory factor analysis. In the exploratory factor analysis (EFA), the principal component analysis (PCA) was utilized as the extraction method while maximum likelihood was used as the estimation method in confirmatory factor analysis (CFA).

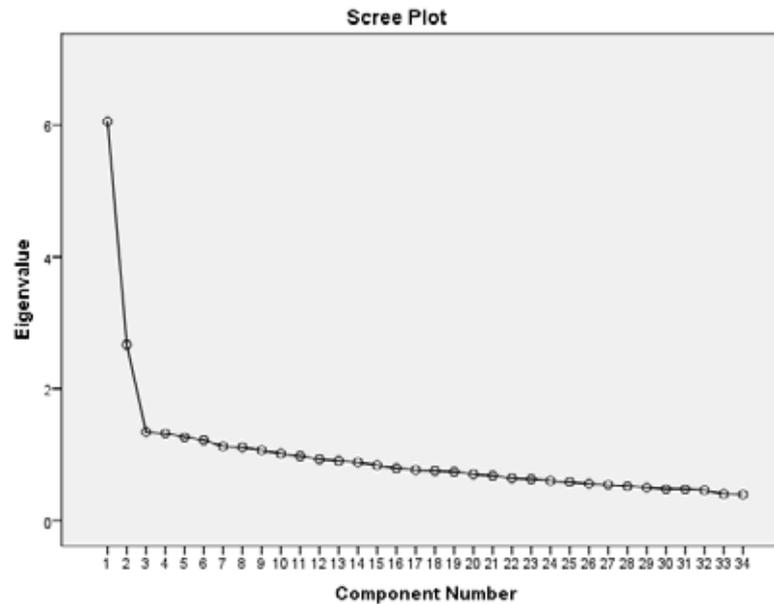
## Results

### Construct Validity

#### Exploratory factor analysis (EFA)

In order to determine the factorial structure which is an aspect of construct validity (Brace, Kemp & Snelgar, 2006), EFA with Principal component and a direct varimax rotation were used. Information about the factorability of the data was ascertained by the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's tests of sphericity. They yielded .86 and Chi square value of 3014.04,  $df = 561$ ,  $p < .05$

respectively. As a measure of factorability, KMO values of .60 and above are acceptable (Brace, Kemp, & Snelgar, 2006), and the Bartlett's chi square value was significant, thereby showing that the data was factorable. The subsequent factor analysis performed produced 10 component factors with eigenvalue greater than one (Child, 1979). Some factors were found to contain only one or two items which may be considered less reasonable in factor analysis (DeCoster, 1998). However, an examination of the scree plot (see figure 1) suggested two factors. Thus, we proceeded by extracting a two-factor solution for the Shyness Scale.



The first and the second factor showed eigenvalues 6.05 and 2.66 with corresponding variances of 17.81% and 7.85%, respectively. The pattern matrix indicated that seventeen items loaded on factor 1 and seven items on factor 2. Other items (2, 3, 8, 11, 16, 18, 19, 22, 33, and 34) were removed because they had factor

loading less than .40 (Field, 2013). Hence, 24 items were finally retained. In order to appropriately name the components extracted, the items were arranged in descending order of loading size in each factor. This is presented in Table 1.

Table 1: Factor Loadings, Descriptive Statistics and inter-factor correlations

Items	Factor 1	Factor 2
	Social ineptness	Social competence
26	Inability to maintain eye contact	.60
24	Not knowing what to say	.60
9	Increased heartbeat when interacting	.59
12	Blaming self after social interaction	.59
29	Feeling less physically attractive	.58
31	Worrying about making mistakes	.57
32	Sweating in social situations	.57
14	Fear of negative evaluation	.56
25	Fear of looking foolish to others	.56
27	Feeling tense and jittery	.56
30	Feeling lonely when with others	.56
20	Negative thoughts about self	.52
17	Worrying about appearance	.49
6	Voice shaking	.49
28	Wanting someone to accompany me	.46
23	Difficulty eating or drinking in public	.43
5	Worrying about others' opinion	.43
15	Making friends easily	.69
10	Feeling happy after social interaction	.63
21	Feeling good when complimented	.58
13	Being active in social outings	.57
1	Ability to initiate conversation	.53
7	Feeling bold to speak to opposite sex	.49
4	Ability to express feelings	.46
	Mean	40.20
	Standard deviation	12.07
	Skewness	.21
	Kurtosis	-.52
	Cronbach's Alpha	.86

### Confirmatory factor analysis (CFA)

CFA was performed with the aid of IBM® SPSS® AMOS 24.00 using the maximum likelihood estimation method to confirm the two-factor solution obtained during EFA. Data were obtained from 343 (64.7% females;  $M_{age} = 20.13 \pm 2.44$ ) medical students of College of Medicine, University of Lagos. Model fit was assessed using the CMIN/DF ( $\chi^2/df$ ),

Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Tucker-Lewis Index (TLI), p of Close Fit (PCLOSE) (Hu & Bentler, 1999; Arbuckle & Wothke, 1999; Holmes-Smith, 2000). The path diagram of the model is shown in figure 2.

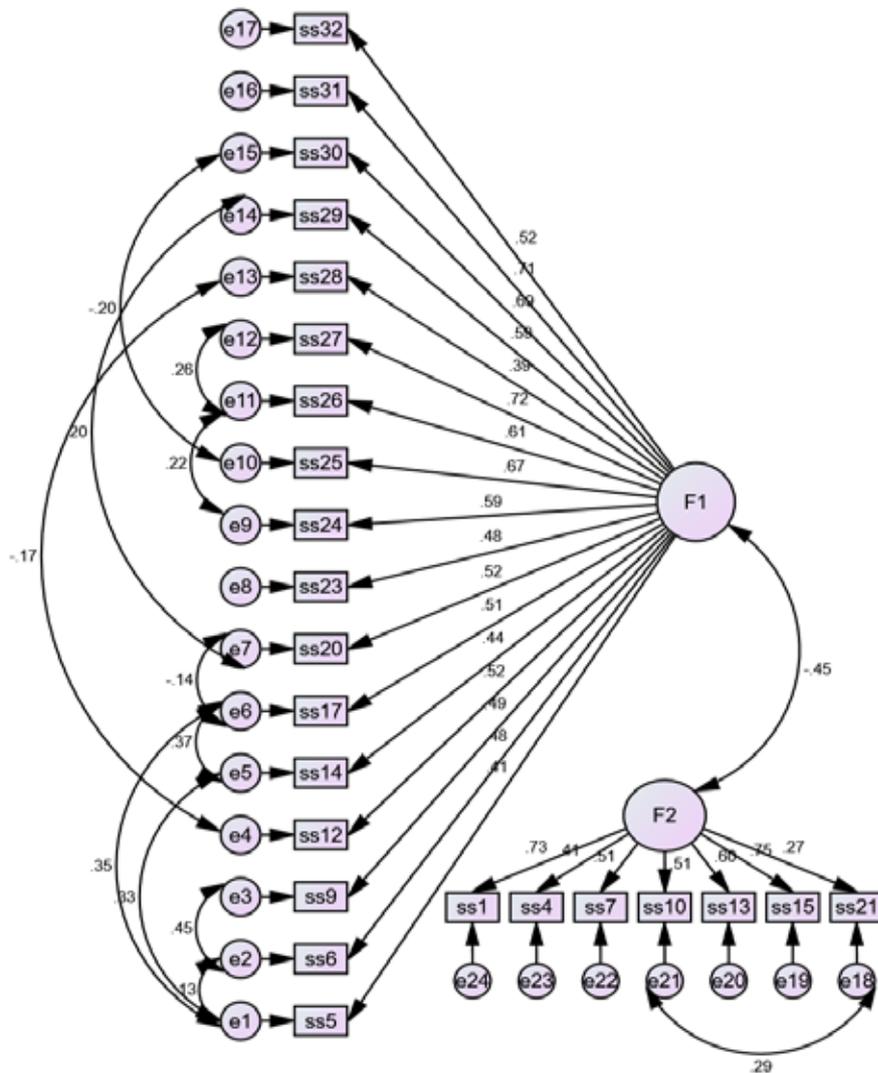


Table 2 presents the fit values for the model after covarying the error terms of some specific items. A good fit was obtained for the model given that fit

values met the acceptable cut-off points as provided in previous studies (e.g. Hu & Bentler, 1999; Arbuckle & Wothke, 1999).

**Table 2:** Model fit indices of the FCS model

Index	Two factor SS Model	Cut-off
CMIN/DF	1.88	< 3
CFI	.92	CFI > .90
TLI	.903	TLI > .90
RMSEA	.05	RMSEA < .06
PCLOSE	.43	> .05
SRMR	.06	< .09

*CMIN/DF = minimum discrepancy per degree of freedom; CFI = comparative fit index; TLI = Tucker Lewis index; RMSEA = root mean squared error approximation; PCLOSE = p of close fit; SRMR = standardized root mean square residual*

## Discussion

Noting the flaws in an existing indigenous measure of shyness, this research was aimed at developing a shorter item version, and a more valid and reliable scale of shyness for use within the Nigerian population. By utilizing the EFA, we obtained a two-factor structure for a new shyness scale (SS-24) consisting a total of 24 items. The two factors were named social ineptness and social competence. This means that shyness can be manifested in individuals by showing inept behaviours in social situations. Such behaviours may include inability to maintain eye contacts, worries concerning personal appearance or looking foolish before others. At the other side of the continuum, individuals may demonstrate social mastery as evident in the experience of positive emotions during social interactions. Thus, the two subscales are considered independent.

Although, this new scale does not agree with the three-factorial orientation of RCBS (Hopko et al., 2005), it presents a continuum-like conceptualization of shyness ranging from an experience of negative to positive emotions when in social situations. This conceptualization is novel to the research literature. The factorial orientation of the SS-24 also provides a robust conceptualization of shyness compared to the Shyness Personality Scale (SPS: Akinade, 1987) developed within the Nigerian context. In addition, the SS-24 has fewer items compared to the SPS, which makes it easier for use both in practice and research settings.

Results of this study further demonstrated an adequate internal consistency reliability for the SS-24. The reliability coefficients obtained for the two subscales: social ineptness (.86) and social competence (.68) are adequate. This finding is in line with the recommendation of Taber (2016) stating that alpha coefficients of a test ranging from .64 to .86 is adequate. The implication of this finding is that the SS-24 could yield similar scores from the same people over time. Providing further support for the construct validity of the SS-24, the CFA outcomes yielded a two-dimensional factor structure derived from the EFA. This implies that our data adequately fits two-factorial structure of the latent construct of shyness.

## Conclusion

The results of this study generally supported the notion that the SS-24 is a psychometrically sound measure of shyness. In particular, the alpha coefficient of the two factors are adequate. Equally important, the two-factor structure of the scale were confirmed as indicated in CFA findings. Although the data generated support the SS-24 as a valid and reliable measure of shyness, there is need for a nationwide study towards obtaining a general norm for the instrument across several demographic strata which could have clinical implications. Future studies may further examine the concurrent, convergent, and divergent validity of the SS-24.

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