

# A cross-cultural evaluation of Bostick's (1992) Library Anxiety Scale: investigating the scale's psychometric properties in a Malaysian university library environment

Noor Harun Abdul Karim<sup>1</sup> and Novera Afaq Ansari<sup>2</sup>

<sup>1</sup>Library and Information Science Unit

Faculty of Computer Science and Information Technology

University of Malaya, Kuala Lumpur, MALAYSIA

<sup>2</sup>Information and Research Center, King Hussein Foundation (IRCKHF)

Amman, JORDAN

e-mail: nharun@um.edu.my

## ABSTRACT

*Sharon L Bostick's (1992) Library Anxiety Scale has been widely used to assess library anxiety among library users. Little psychometric effort was undertaken to assess the scale's psychometric properties in an environment where English is not the native language of the library users. This study was an attempt to cross-culturally validate the scale in a Malaysian university library environment where the population's native language is not English. A 49-item modified version of Bostick's (1992) Library Anxiety Scale was tested among 367 students drawn randomly from a population of 8,432 undergraduate students. The instruments were administered during classroom hours using a self-reported questionnaire. An 84% return rate was achieved in which the questionnaires that were returned were found to be usable. The findings revealed that a 5-factor solution was found which corresponded to the five factors as found by Bostick's (1992) pioneering psychometric effort on library anxiety. The factor "barriers with staff" explained the greatest proportion of variance in the library anxiety construct which is consistent with previous studies on library anxiety. The overall scale as well as each of the five sub-scales was submitted to an internal reliability assessment using Cronbach's internal reliability coefficient alpha. With the exception of the modified sub-scale "comfort with library technology" all the four sub-scales as well as the overall scale were found to have satisfied the 0.70 criteria as recommended by Nunnally and Bernstein (1994). As such the findings were found to be consistent with previous studies that found the scale to be valid as well as internally reliable. More psychometric efforts are needed before the scale can be said to be a useful instrument in assessing library anxiety among Malaysian university library users. A Malay version of Bostick's (1992) scale would have to be tested before any sound conclusions can be made about the scale's psychometric soundness and stability in an environment where English is not the native language.*

**Keywords:** Library anxiety assessment; Bostick's Library Anxiety Scale; Psychometric analysis; Academic libraries; User perceptions of libraries

## INTRODUCTION

Library Anxiety has been the subject of much empirical work ever since it was conceptually and operationally defined as a multi-dimensional construct by Sharon L. Bostick (1992). Library Anxiety, as a concept that is distinct from other anxiety related concepts however, has its origins in a qualitative doctoral dissertation study carried out by Constance A. Mellon (1986). Though the credit for empirically identifying the concept lies with Mellon's groundbreaking qualitative study, it was Bostick's multi-dimensional conceptualization and operationalization of library anxiety construct that has spawned a multitude of empirical studies since the past seventeen years (Cleveland 2004; Jiao, Onwuegbuzie and Bostick 2004).

Despite the multitude of empirical work on the library anxiety construct particularly the testing and validation of Bostick's multi-dimensional Library Anxiety Scale, these empirical efforts have predominantly been carried out among library users whose native language is English. Little effort has been carried out to cross-culturally validate the Library Anxiety Scale (LAS) among library users whose native language is not English (Anwar, Al-Kandari and Al-Qallaf 2004; Shoham and Mizrachi (2001). This study has been conducted to fill up the empirical gap with regard to the psychometric soundness of the LAS in a non-English speaking culture. This study has been conducted to examine the psychometric properties of the Library Anxiety Scale among the population of undergraduate library users whose native language is not English. Specifically, the study was conducted to seek answers to the following research questions:

- (a) Would Bostick's Library Anxiety Scale be able to assess library anxiety among the population of undergraduate library users in a Malaysian university library environment?
- (b) Would Bostick's Library Anxiety Scale be able to demonstrate both construct validity as well as internal reliability when tested among library users whose native language is not English?

## LITERATURE REVIEW

Library anxiety as a construct that is conceptually distinct from other academic related anxiety construct was empirically discovered in a qualitative doctoral dissertation research by Constance A. Mellon (1986). Six years later in another doctoral dissertation research, the library anxiety was conceptually and operationally defined by Sharon L. Bostick (1992) as a multidimensional construct in the form of a psychometric instrument known as the Library Anxiety Scale. The Library Anxiety Scale comprises five sub-scales or dimensions: (a) barriers with staff; (b) affective barriers; (c) comfort with the library; (d) knowledge of the library; (e) mechanical barriers.

"Barriers with staff" sub-scale assesses library users' perceptions of library staff as intimidating, unapproachable, as well as too preoccupied to render any form assistance whatsoever to them. A high score on this sub-scale or dimension will indicate higher levels of library anxiety. "Affective barriers" sub-scale assesses library users' perceptions of adequacy regarding their abilities to make effective use of resources and services in the library. A high score on this sub-scale will indicate greater levels of library anxiety. "Comfort with the library" sub-scale assesses library users' perceptions of the library's ambiance. If library users perceive the library to be unwelcoming and threatening, then they are likely to experience greater level of discomfort. A high score on this sub-scale will

indicate lesser levels of library anxiety whereas lower scores will indicate greater levels of library anxiety. "Knowledge of the library" sub-scale assesses library users' perceptions on how familiar users are with the library's resources and services. A high score on this sub-scale will indicate low anxiety whereas a low score will indicate higher levels of library anxiety. "Mechanical barriers" sub-scale assesses library users' perceptions of how difficult it is to operate mechanical library equipment such as photocopying machines, change machines, computer printers etc. A high score on this sub-scale will indicate higher levels of library anxiety.

Bostick's (1992) multi-dimensional Library Anxiety Scale has been used in numerous studies to study the library anxiety phenomenon among various categories of library users (Cleveland 2004). In addition, it has also been employed as the leading instrument in all studies that have attempted to empirically identify the antecedents, correlates and predictors of library anxiety. In some of these studies attempts have been made to assess the psychometric soundness of the Library Anxiety Scale. Such empirical efforts have been mostly conducted using classical technique of testing scales: exploratory factor analysis and internal reliability estimates using Cronbach's alpha reliability coefficient.

Jiao and Onwuegbuzie (1996, 1997, 1998, 1999a, 1999b, 1999c 2000, 2001, 2002, 2003, 2004, 2006) are two of the leading researchers in the field who have made extensive use of the Library Anxiety Scale in their efforts to investigate the antecedents, correlates and predictors of the library anxiety phenomenon. In addition to these two researchers, others too have made significant contributions to the empirical literature in the field of library anxiety (Anwar, Al-Kandari and Al-Qalaf 2004; Brown, Weingart, Johnson and Dance 2004; Collins and Veal 2004; Shoham and Mizrachi 2001; Van Kampen 2004; Van Scoyoc 2003; Veal 2002).

However, only half of the above mentioned studies have reported the psychometric soundness of the Library Anxiety Scale (Collins and Veal 2004; Jiao and Onwuegbuzie 1997; Jiao and Onwuegbuzie 1999a; Jiao and Onwuegbuzie 2002; Jiao and Onwuegbuzie 2003; Jiao and Onwuegbuzie 2004; Jiao, Onwuegbuzie and Bostick 2004; Jiao and Onwuegbuzie 2006; Shoham and Mizrachi 2001; Van Kampen 2004).

In one of their earlier efforts in identifying the antecedents of the library anxiety phenomenon, Jiao and Onwuegbuzie (1997) found the Library Anxiety Scale to have yielded five factors consistent with Bostick's (1992) doctoral dissertation research. In addition, each of the five factors or dimensions was found to have the following alpha reliability coefficients: barriers with staff, 0.90; affective barriers, 0.80; comfort with library 0.66; knowledge of library, 0.62; mechanical barriers, 0.60. Two years later, another study on library anxiety was reported in the literature (Jiao and Onwuegbuzie, 1999a). In investigating the relationship between students' learning-modality preferences and library anxiety, Jiao and Onwuegbuzie (1999a) found the Library Anxiety Scale to have yielded 5 sub-scales as found by Bostick (1992). Once again, the Library Anxiety Scale has been validated by these two leading researchers in the field.

In addition, they found each of the 5 sub-scales to have the following alpha reliability coefficients: barriers with staff, 0.90; affective barriers, 0.80; comfort with library, 0.66; knowledge of library, 0.62; mechanical barriers, 0.60.

Jiao and Onwuegbuzie (2002) investigated the relationship between social interdependence and library anxiety using a sample of 115 graduate students who were enrolled in seven sections of a graduate-level research methodology course at a mid-southern university in United States of America. Participants were administered Bostick's

(1992) Library Anxiety Scale, a 43-item multi-dimensional instrument. Results of running an exploratory factor analysis resulted in a 5-factor solution with the following sub-scales: barriers with staff, affective barriers, comfort with the library, knowledge of the library and mechanical barriers. Each sub-scale was submitted to a test of internal reliability estimate using Cronbach's alpha reliability coefficient. The results of running internal reliability estimates for each of the sub-scales are as follows: barriers with staff, 0.93; affective barriers, 0.90; comfort with the library, 0.72; knowledge of the library, 0.69; mechanical barriers, 0.68

Jiao and Onwuegbuzie (2003) examined the relationship between reading ability and library anxiety. Participants were African-American students at a historically black university in eastern United States of America. Participants were administered Bostick's (1992) multi-dimensional Library Anxiety Scale. Results of running an exploratory factor analysis yielded 5 dimensions of library anxiety: barriers with staff, affective barriers, comfort with the library, knowledge of the library and mechanical barriers. The results of submitting each of the 5 dimensions to a test of internal reliability estimate using Cronbach's alpha are as follows: barriers with staff, 0.93; affective barriers, 0.89; comfort with the library, 0.71; knowledge of the library, 0.62; mechanical barriers, 0.51

Jiao and Onwuegbuzie (2004) investigated the relationship between computer anxiety and library anxiety. Participants were administered Bostick's (1992) 43-item Library Anxiety Scale. Results of running an exploratory factor analysis yielded a five-factor solution resulting in five sub-scales of library anxiety: barriers with staff, affective barriers, comfort with library, knowledge of library and mechanical barriers. Each sub-scale was submitted to a test of internal reliability estimate resulting in the following Cronbach's alpha reliability coefficients: barriers with staff, 0.89; affective barriers, 0.84; comfort with library, 0.53; knowledge of the library, 0.62; mechanical barriers, 0.70.

Jiao , Onwuegbuzie and Bostick (2004) examined differences in library anxiety between Caucasian-American and African-American graduate students. Participants were administered Bostick's (1992) Library Anxiety Scale. Once again, a five-factor solution was found resulting in the following five sub-scales: barriers with staff, affective barriers, comfort with the library, knowledge of the library and mechanical barriers. Results of running each sub-scale for internal reliability estimate using Cronbach's alpha reliability coefficients are as follows: affective barriers, 0.93; affective barriers, 0.89, comfort with the library, 0.71; knowledge of the library, 0.62; mechanical barriers, 0.51.

Jiao, Onwuegbuzie and Bostick (2006) replicated the 2004 study among 180 graduate students enrolled in the College of Education at a university in the southeast of United States of America. A five-factor solution was found resulting in 5 dimensions of library anxiety: barriers with staff, affective barriers, comfort with the library, knowledge of the library and mechanical barriers. Each of the sub-scale was then submitted to a test of internal reliability estimate using Cronbach's alpha reliability coefficient with the following results: barriers with staff, 0.94; affective barriers, 0.90; comfort with the library, 0.71; knowledge of the library, 62; mechanical barriers, 0.62.

Collins and Veal (2004) investigated the off-campus adult learners' levels of library anxiety. Participants were administered Bostick's (1992) 43-item multi-dimensional Library Anxiety Scale. Participants were 143 off-campus adult learners who attended classes at a distance of 50 or more miles from their home institution's libraries. Internal reliability estimates were conducted on each of the 5 sub-scales which were found to be as follows: barriers with staff, 0.92; affective barriers, 0.85; comfort with the library, 0.74; knowledge of the library, 0.66; mechanical barriers, 0.84.

Shoham and Mizrachi (2001) investigated the library anxiety phenomenon among undergraduate students in Israel. Shoham and Mizrachi (2001) however employed a modified Hebrew version of Bostick's (1992) which was referred to as the H-LAS. The H-LAS is a 35-item library anxiety scale which when tested for construct validity using exploratory factor analysis resulted in a seven factor solution with the following sub-scales: staff factor, knowledge factor, language factor, physical comfort factor, library computer comfort factor, library policies/hours factor and resource factor. The sub-scales when examined for internal reliability estimates were found to have the following alpha reliability coefficients: staff factor, 0.75; knowledge factor, 0.76; language factor, 0.76; physical comfort factor, 0.60; library computer comfort, 0.51; library policies/hours factor, 0.45; resource factor, 0.52.

Van Kampen (2004) developed a multi-dimensional 53-item instrument to measure library anxiety. The instrument was administered to 554 doctoral students at an urban university in southeastern United States of America. Results of running an exploratory factor analysis yielded six factors which collectively explained 43.39% of the variance. Further, the six factors were found to have the following Cronbach's alpha reliability coefficients: barriers with staff, 0.73; comfort and confidence when using the library, 0.86; comfort level while inside the library building, 0.74; comfort level with technology as it applies to the library, 0.73; importance of understanding how to use the library, 0.79; information search process and general library anxiety, 0.87

As can be seen, most of these studies which have employed Bostick's (1992) Library Anxiety Scale or a modified version of the scale were examined for construct validity and internal reliability assessment among native speakers of English. The objective of this present study is to find out whether Bostick's (1992) Library Anxiety Scale would demonstrate psychometric stability when applied among a population of undergraduate library users whose native language is not English. Specifically, the study has been carried out to find out whether, the Library Anxiety Scale would yield a five-factor solution as well as demonstrate internal reliability for each of the sub-scale when administered to a population of library users in a Malaysian university library environment.

## **METHOD**

### **Population and Sample**

The target population for this study was undergraduate students in a Malaysian institution of higher learning. The population size at the time of the study was eight thousand four hundred and thirty two (8432) students altogether. Allowing for a plus/minus five (5) percent error rate, a sample size of three hundred and sixty seven (367) students was drawn from the population. The sample was stratified according to year of study (first to the fourth year) and faculties. A disproportionate random sample was selected from each stratum.

### **Instruments and Procedures**

Sharon L. Bostick's (1992) Library Anxiety scale is a 43-item instrument. This study employed a modified version of Bostick's Library Anxiety Scale to include items that are meaningful to Malaysian undergraduates. For instance, an item that states "I can never find things in the library" was replaced by "I can never find information that I need in the library". Similarly, an item that reads "I can't find enough space in the library to study" was replaced by "I often can't find a seat in the library to study."

In addition to these minor changes and modifications made to the existing scale, several new items were added to the existing scale to measure library anxiety that are induced by technological tools that prevail in today's modern academic library. These technological tools include CD-ROM databases, self-check out machines, smart book-drops service, digital collections as well as Internet services that are made available to library users via the library's Web-Pac.

All in all the number the number of items has been increased from 43 to 49. Each item is measured on a 5-point scale ranging from (1) strongly disagree to (5) strongly agree. Negatively worded items were reversed scored so that all items were scored in the same direction: high scores on any item represent high anxiety. The 49-item modified Library Anxiety Scale was pre-tested on 10 undergraduate students to ensure that the respondents interpreted each item in the way they were meant to be interpreted. Such a move was designed to ensure the reliability of the 49-item scale as an instrument to measure library anxiety. Further changes were made to the wording of some of the items subsequent to the pre-test. The 49-item instrument in the form of a self-reported questionnaire was administered to the respondents during class hours. Permission was sought from the Deans of each the nine faculties/centers/institutes to enable the researcher to administer the instrument in the classroom as well as to seek the cooperation of the instructor and students in completing the instrument during class hours. All in all a response rate of 84% was achieved. Analysis of the data collected was based on these fully completed 84% return rate.

## **ANALYSIS OF DATA**

### **Construction Validation Using Exploratory Factor Analysis**

In an attempt to assess the construct validity of the modified version of Bostick's (1992) multi-dimensional Library Anxiety Scale, an exploratory factor analysis was performed on the 49-item instrument. A principal component exploratory factor analysis was employed to determine the number of factors underlying the 49-item modified version of Bostick's (1992) Library Anxiety Scale. Using a varimax rotation and criteria of 0.4 or greater for deeming a factor loading practically significant, the principal component exploratory factor analysis yielded 5 interpretable factors with 35 items that met the criteria of 0.4. Fourteen (14) items however, did not load on any of the five factors. The 5 factors collectively explained 39.6% of the total variance in library anxiety.

A visual inspection of Table 1 below shows that the factor "barriers with staff" explained the highest proportion of variance at 19.21%. This was followed by the factor "comfort with library services" which explained the second highest proportion of variance at 6.62%. The factor "affective barriers" explained only 5.8% of the total variance in library anxiety whilst the factor "cognitive barriers" explained 4.07% of the total variance. The smallest amount of variance at 3.86% was explained by the fifth factor "comfort with library technology".

Table 1: Description of Factors

<b>Factors</b>	<b>Number of Items</b>	<b>Percent of Variance Explained</b>
Barriers with Staff	12	19.21%
Comfort with Library Services	8	6.62%
Affective Barriers	7	5.80%
Cognitive barriers	5	4.07%
Comfort with Library Technology	3	3.86%
Total	35	39.56%

A visual inspection of Table 2 shows that the factor “barriers with staff” has the most number of items loaded on it (12 items altogether) with items ranging from as low as 0.42 (item number 15) to as high as 0.79 (items number 6 and 7). The majority of the items in this factor ranged from 0.60 (item number 31) to 0.79 (items number 6 and 7). However, only two items fell below 0.60 (items number 13 and 15). Items 2, 3, 4, 5, 6, and 7 are in the 0.70s. Hence it is not surprising that this factor or sub-scale explained the highest proportion of variance in library anxiety.

Table 2: Barriers with Staff

<b>Number</b>	<b>Scale Items</b>	<b>Factor Loadings</b>
1.	2	0.70
2.	3	0.78
3.	4	0.76
4.	5	0.73
5.	6	0.79
6.	7	0.79
7.	13	0.56
8.	15	0.42
9.	17	0.66
10.	22	0.63
11.	27	0.66
12.	31	0.60

Notes: Item descriptions are found in Appendix 1

A visual inspection of Table 3 shows that only 8 items were loaded on “comfort with library services” factor. The items ranged from factor loadings as low as 0.47 (items number 11 and 37) to factor loadings as high as 0.69 (item number 23). Half of the items in this sub-scale had factor loadings at 0.60 and above (items number 14, 16, 19 and 23). However only 2 items had factor loadings below 0.50 (items number 11 and 37). Collectively these 8 items explained 6.62% of the total variance in library anxiety.

Table 3: Comfort with Library Services

Number	Scale Items	Factor Loadings
1.	11	0.47
2.	14	0.66
3.	16	0.67
4.	19	0.60
5.	23	0.69
6.	24	0.56
7.	36	0.51
8.	37	0.47

Notes: Item Descriptions are found in Appendix 1.

A visual inspection of Table 4 shows that 7 items were loaded on the factor “affective barriers” which explained only 5.80% of the total variance in library anxiety. The factor had items loadings from as low as 0.41 (item number 30 and 32) to as high as 0.60 (item number 29). The majority of the items are in the 0.40s (items number 21, 28, 30 and 32). Only 3 items had factor loadings higher than 0.50 (items number 20, 25 and 29).

Table 4: Affective Barriers

Number	Scale items	Factor Loadings
1.	20	0.56
2.	21	0.47
3.	25	0.51
4.	28	0.44
5.	29	0.60
6.	30	0.41
7.	32	0.41

Notes: Item descriptions are found in Appendix 1

A visual inspection of Table 5 shows that only 5 items were loaded on the 4<sup>th</sup> factor: cognitive barriers. These 5 items had factor loadings that ranged from as low as 0.42 (item number 10) to as high as 0.76 (item number 42). However, the majority of the items in this factor were above 0.50 (items number 8, 41, 42 and 43) whilst only one item had a factor loading at 0.42 (item number 10). Collectively all these 5 items explained 4.07% of the total variance in library anxiety.

Table 5: Cognitive Barriers

Number	Scale items	Factor Loadings
1.	8	0.59
2.	10	0.42
3.	41	0.71
4.	42	0.76
5.	43	0.60

Notes: Item descriptions are found in Appendix 1



Table 6: Comfort with Library Technology

Number	Scale Items	Factor Loadings
1.	40	0.41
2.	44	0.53
3.	45	0.67

Notes: Item descriptions are found in Appendix 1

The fifth factor, “comfort with library technology” had only 3 items loaded on it that met the 0.40 criteria. A visual inspection of Table 6 shows that this factor had factor loadings that ranged from as low as 0.41 (item number 40) to factor loadings that are as high as 0.67 (items number 45). Collectively this factor explained only 3.86% of the total variance in library anxiety scores.

**Internal Reliability of Overall Scale and the 5 Sub-Scales**

To be psychometrically sound and stable, a scale as well as its sub-scales must not only be valid but also internally reliable. The sub-scale “barriers with staff” which had 12 items subsumed under it was examined for an internal reliability estimate using Cronbach’s internal reliability coefficient alpha. A visual inspection of Table 7 shows that dropping item number 13 from the sub-scale had the effect of raising the Cronbach’s alpha value from 0.79 to 0.91. Hence 11 items constitute valid and reliable measures of the sub-scale “barriers with staff”

Table 7: Internal Reliability Analysis for “Barriers with Staff”

Number	Scale Items	Alpha if item is deleted
1.	2	0.764
2.	3	0.762
3.	4	0.760
4.	5	0.762
5.	6	0.757
6.	7	0.754
7.	13	0.909.
8.	15	0.784
9.	17	0.768
10.	22	0.766
11.	27	0.764
12.	31	0.769

Notes: Item descriptions are found in Appendix 1

The sub-scale “comfort with library services” which had 8 items loaded on it was examined for internal reliability estimate using Cronbach’s internal reliability coefficient alpha. A visual inspection of Table 8 shows that dropping item number 11 had the effect of raising Cronbach’s alpha value from 0.70 to 0.73. Hence 7 items constitute valid and reliable measure of the sub-scale “comfort with library services”

Table 8: Reliability Analysis of “Comfort with Library Services”

Number	Scale Items	Alpha if item is deleted
1.	11	0.730
2.	14	0.650
3.	16	0.648
4.	19	0.656
5.	23	0.645
6.	24	0.681
7.	36	0.665
8.	37	0.689

Notes: Item descriptions are found in Appendix 1

The sub-scale “affective barriers” which had 7 items subsumed under it was examined for internal reliability estimate using Cronbach’s internal reliability coefficient alpha. A visual inspection of Table 9 shows that dropping any of the 7 items would not result in raising the Cronbach’s alpha value any higher than 0.70 and as such all the 7 items were retained to constitute a valid and reliable measure of “affective barriers”

The sub-scale “cognitive barriers” which had 5 items subsumed under it was examined for internal reliability estimate using Cronbach’s internal reliability coefficient alpha. A visual inspection of Table 10 shows that dropping items number 10 and 8 had the effect of raising Cronbach’s alpha value to 0.81. As such only 3 items were retained to constitute a valid and reliable measure of the sub-scale “cognitive barriers”.

Table 9: Reliability Analysis of “Affective Barriers”

Number	Scale items	Alpha if Item is deleted
1.	20	0.663
2.	21	0.673
3.	25	0.673
4.	28	0.669
5.	29	0.643
6.	30	0.661
7.	32	0.672

Notes: Item descriptions are found in Appendix 1

Table 10: Reliability Analysis of “Cognitive Barriers”

Number	Scale Items	Alpha if item is deleted
1.	8	0.807
2.	41	0.597
3.	42	0.575
4.	43	0.691

Notes: Item descriptions are found in Appendix 1

The sub-scale “comfort with library technology” (Table 11) had only 3 items loaded on it: items number 40, 44 and 45. The results of submitting these 3 items for internal reliability

estimate showed that dropping item number 40 from the sub-scale had the effect of raising Cronbach's alpha value from 0.58 to 0.68 which somewhat meets the minimum value of 0.70 as recommended by Nunnally and Bernstein (1994). As such only two items were found to be valid and reliable measure of "comfort with library technology"

Dropping some items from each of the 5 sub-scales had the effect of reducing the number of valid and reliable items to only 30 items instead of the original 35 items which were found to have subsumed under each of the 5 sub-scales. As such out of the 49-item instrument only 30 items constitute valid and reliable measure of the construct "library anxiety". The 30 items were examined for internal reliability and were found to have a Cronbach's alpha value of 0.78. Hence the modified version of the overall library anxiety scale was reliable with an alpha value of 0.78.

Table 11: Reliability Analysis of "Comfort with Library Technology"

Number	Scale Items	Alpha if item deleted
1.	40	0.677
2.	44	0.390
3.	45	0.320

Notes: Item Descriptions are found in Appendix 1

Table 12 presents the findings of reliability analysis of the overall or total scale as well as that of each of the respective 5 sub-scales: barriers with staff, comfort with library services, affective barriers, cognitive barriers and comfort with library technology. It can be seen that the overall scale and all the sub-scales with the exception of the sub-scale "comfort with library technology" had Cronbach's reliability coefficient alpha values at 0.70 and above.

Table 12: Reliability Estimates for Overall Scale and Sub-Scales

Scales	Cronbach's Alpha
Overall Scale	0.78
Barriers with Staff	0.91
Comfort with Library Services	0.73
Affective Barriers	0.70
Cognitive Barriers	0.80
Comfort with Library technology	0.67

**Construct Validation Using Item to Total Score Correlations**

An additional analytic effort was undertaken to triangulate the construct validation efforts that was employed using exploratory factor analysis. An item to total score correlation analysis was employed to demonstrate the construct validity of each of the 5 sub-scales that were found to be valid and reliable. The sub-scale "barriers with staff" was submitted to such an analysis. A visual examination of Table 13 shows that each of the 11 items that were shown to be valid and reliable measures of the sub-scale "barriers with staff" correlate very significantly at  $p < .01$  with the total score for that sub-scale. Items number 6 and 7 correlate very significantly as well as substantially with the total score for that sub-scale:  $r = 0.84$ ,  $p < .01$ . The majority of the scale items correlate very significantly and substantially with correlation coefficients greater than  $r = 0.60$ . As such the correlation

coefficients of these scale items reflect more or less the factor loadings as shown in Table 2.

Table 13: Item to Total Score Correlations for “Barriers with Staff”

Number	Items	“Barriers with Staff”
1.	2	0.73**
2.	3	0.76**
3.	4	0.80**
4.	5	0.75**
5.	6	0.84**
6.	7	0.84**
7.	15	0.48**
8.	17	0.70**
9.	22	0.72**
10	27	0.77**
11.	31	0.65**

Notes: \*\* Item is significant at  $p < .01$

An item to total score correlation analysis was performed on each of the 7 items that measure ““comfort with library services” with the total score for that sub-scale. A visual inspection of Table 14 shows that the highest correlation coefficient is item 23 ( $r = 0.69$ ,  $p < .01$ ) which also has a factor loading coefficient of 0.69 as shown in Table 3. Hence the correlation coefficients in Table 14 more or less reflect the factor loading coefficients as shown in Table 3.

Table 14: Item to Total Score Correlations for “Comfort with Library Services”

Number	Items	“Comfort with Library Services”
1.	14	0.71**
2.	16	0.73**
3.	19	0.68**
4.	23	0.69**
5.	24	0.54**
6.	36	0.60**
7.	37	0.37**

Notes: \*\* Item is significant at  $p < .01$

An item to total score correlation analysis was performed on each of the 7 items that measure the sub-scale “affective barriers” with the total score for that sub-scale. A visual inspection of Table 15 shows that the highest correlation coefficient is for item number 29 ( $r = 0.68$ ,  $p < .01$ ) which incidentally also has the highest factor loading as shown in Table 4. The lowest correlation coefficient is for item 32 ( $r = 0.42$ ,  $p < .01$ ) which incidentally also has the lowest factor loading for this sub-scale as shown in Table 4. Hence, the correlation coefficients for each of the 7 items in this sub-scale more or less reflect the factor loadings as displayed in Table 4.

Table 15: Item to Total Score Correlations for “Affective Barriers”

Number	Items	“Affective Barriers”
1.	20	0.61**
2.	21	0.57**
3.	25	0.63**
4.	28	0.59**
5.	29	0.68**
6.	30	0.62**
7.	32	0.42**

Notes: Item is significant at  $p < .01$

An item to total correlation analysis was performed on each of the 3 items that measure the sub-scale “cognitive barriers” with total score for that sub-scale. A visual inspection of Table 16 shows that item 42 correlates very significantly as well as substantially with the total score for that sub-scale ( $r = 0.94$ ,  $p < .01$ ). Item number 41 also correlates significantly as well as substantially with the total score for that sub-scale ( $r = 0.92$ ,  $p < .01$ ). Item 42 incidentally has displays the highest factor loading (at 0.76) for this sub-scale as shown in Table 5. Hence, the correlation coefficients reflect more or less the factor loadings as displayed in Table 5.

Table 16: Item to Total Score Correlations for “Cognitive Barriers”

Number	Items	“Cognitive Barriers”
1.	41	0.92**
2.	42	0.94**
3.	43	0.63**

Notes: Item is significant at  $p < .01$

Table 17: Item to Total Score Correlations for “Comfort with Library Technology”

Number	Items	“Comfort with Library Technology”
1.	44	0.95**
2.	45	0.75**

Notes: Item is significant at  $p < .01$

An item to total score correlation analysis was performed on each of the two items that measure “comfort with library technology” with the total score for that sub-scale. A visual inspection of Table 17 above shows that the two items (item number 44 and 45) correlate very significantly as well as substantially with the total score for that sub-scale ( $r = 0.95$ ,  $p < .01$ ;  $r = 0.75$ ,  $p < .01$ ). These two items incidentally also displayed sizeable factor loading coefficients as displayed in Table 6. Hence the items in Table 17 above more or less reflect the factor loading coefficients as found in Table 6.

## DISCUSSION

The purpose of the study was to evaluate the psychometric properties of Sharon L. Bostick's (1992) multidimensional Library Anxiety Scale among undergraduates at a Malaysian institution of higher learning. Of the 49 items that were employed to assess the library anxiety phenomenon, only 35 items were found to load on 5 interpretable factors. The results of running an exploratory factor analysis yielded a 5-factor solution with the following sub-scales: barriers with staff (12 items); comfort with library services (8 items); affective barriers (7 items); cognitive barriers (5 items); and comfort with library technology (3 items).

Each of the sub-scale was subsequently examined for internal reliability and was found to have met the criteria of 0.70 as recommended by Nunnally and Bernstein (1994) except for the sub-scale "comfort with library technology" which had a Cronbach's internal reliability coefficient alpha value of 0.68. Additionally, all the 30 items were then examined for internal reliability estimate and was found to have a Cronbach's internal reliability coefficient alpha value of 0.78 which met the recommended value of 0.70 as suggested by Nunnally and Bernstein (1994).

Items for each of the sub-scale were again examined for construct validation by employing item to total score correlations. Each of the items in the 5 sub-scales was found to correlate very significantly (at  $p < .01$ ) with the total score for that sub-scale. The correlation coefficients for each of the item in the respective sub-scales reflect the factor loading coefficients that were yielded as a result of running a principal component exploratory factor analysis. As such efforts to triangulate the findings of construct validation using item to total score correlations was successful.

The findings from this study are consistent with the previous studies insofar as the number of factors that were produced. Bostick's (1992) pioneering psychometric effort at creating a multidimensional scale resulted in a 5-factor solution that collectively explained 51.8% of the total variance in library anxiety. The findings from this study also demonstrated a 5-factor solution. However, the amount of variance explained by all the 5 factors is only 39.6% which is 12% less than that of Bostick's (1992) findings. The fact that the same number of factors were yielded by this study provided incremental validity to the multidimensional nature of the library anxiety construct

The findings from this study are also consistent with Bostick's (1992) in that the sub-scale 'barriers with staff' explained the highest proportion of variance in the library anxiety scores. In Bostick's (1992) study, the sub-scale "barriers with staff" explained 25.4% of the total variance in library anxiety scores while in this study the "barriers with staff" explained 19.21% of the total variance in library anxiety. Hence, this study provides incremental validity to Bostick's (1992) study in that the same sub-scale turns out to be the best predictor of the library anxiety phenomenon.

The findings from this study are also consistent with that of Jerabek, Meyer and Kordinak's (2001) study which had also found a 5-factor solution for the 43-item library anxiety scale. Collectively all the 5 factors in Jerabek, Meyer and Kordinak's (2001) study explained 41.2% of the variance in the library anxiety score which is only 1% more than that of this study. Hence, this study provides incremental validity to Jerabek, Meyer and Kordinak's (2001) study.

The findings from this study also support those of Collins and Veal (2004) which employed Bostick's (1992) 43-item Library Anxiety Scale in their study on off-campus adult learners

levels of library anxiety. A 5-factor solution was also found in Collins and Veal's (2004) study. The fact that the same number of factors were yielded in this study as well as that of Collins and Veal's (2004) study lends incremental validity to the multidimensional nature of the library anxiety phenomenon.

Across several studies that employed Bostick's (1992) 43-item instrument, Jiao and Onwuegbuzie (1997, 1999a, 2002, 2003, and 2004) and Jiao, Onwuegbuzie and Bostick (2004, 2006) also found a 5-factor solution for the Library Anxiety Scale. Once again the findings from this study support those of previous studies that employed Bostick's (1992) 43-item instrument thereby lending incremental validity to the multidimensional nature of the library anxiety phenomenon.

The previous studies cited above not only found a 5-factor solution for Bostick's (1992) 43-item instrument but also revealed the sub-scale "barriers with staff" to be the factor that explained the highest amount of total variance in the library anxiety scores. Hence, the findings from this study not only supports those of Bostick's (1992) study but also that of other studies insofar as construct validation of the 43-item instrument is concerned (Collins and Veal 2004; Jerabek, Meyer and Kordinak 2001; Jiao and Onwuegbuzie 1997; Jiao and Onwuegbuzie 1999a; Jiao and Onwuegbuzie 2002; Jiao and Onwuegbuzie 2003; Jiao and Onwuegbuzie 2004; Jiao, Onwuegbuzie and Bostick 2004; Jiao, Onwuegbuzie and Bostick 2006).

The findings from this study are also consistent with that of Bostick's (1992) study insofar as internal reliability estimates for the overall scale as well as for each of the 5 sub-scales are concerned. The findings revealed the internal reliability estimate for the overall scale to be at 0.78 whereas Bostick (1992) reported the internal reliability for the overall scale to be at 0.80. Additionally, the studies cited earlier reported internal reliability estimates for the overall scale to be in the 0.90s (Collins and Veal 2004; Jerabek, Myer and Kordinak 2001; Jiao and Onwuegbuzie 1997; Jiao and Onwuegbuzie 1999a; Jiao and Onwuegbuzie 2002; Jiao and Onwuegbuzie 2003; Jiao and Onwuegbuzie 2004; Jiao, Onwuegbuzie and Bostick 2004; Jiao, Onwuegbuzie and Bostick 2006).

Each of the 5 sub-scales was tested for internal reliability estimate using Cronbach's internal reliability coefficient alpha and were found to have satisfied Nunnally and Bernstein's (1994) criteria of 0.70. However, the fifth sub-scale which had an alpha value of 0.68 somewhat met the criteria as recommended by Nunnally and Bernstein (1994). As such, all sub-scales can be said to be internally reliable.

Among the 5 sub-scales, "barriers with staff" was found to have the highest Cronbach's alpha value at 0.91. This finding is consistent with that of Jiao and Onwuegbuzie (1997), Jiao and Onwuegbuzie (1999a), Jiao and Onwuegbuzie (2002), Jiao and Onwuegbuzie (2003), Jiao and Onwuegbuzie (2004), Jiao, Onwuegbuzie and Bostick (2006) who reported the internal reliability estimate for the sub-scale "barriers with staff" to be in the 0.90s.

The sub-scale "comfort with library services" in this study yielded an alpha value of 0.73. This finding support those of Collins and Veal (2004), Jiao and Onwuegbuzie (2002), Jiao and Onwuegbuzie (2003), Jiao, Onwuegbuzie and Bostick (2004) and Jiao, Onwuegbuzie and Bostick (2006) who also reported alpha values in the range of 0.71 to 0.74. Hence, it can be seen that the sub-scale "comfort with library services" has been shown to yield alpha values that are consistent across studies with different samples.

The sub-scale "affective barriers" has yielded an internal reliability coefficient alpha value of 0.70. This finding is somewhat consistent with those reported by Collins and Veal (2004),

Jiao and Onwuegbuzie (1997), Jiao and Onwuegbuzie (1999a), Jiao and Onwuegbuzie (2002), Jiao and Onwuegbuzie (2003), Jiao and Onwuegbuzie (2004), Jiao, Onwuegbuzie and Bostick (2004), and Jiao, Onwuegbuzie and Bostick (2006). However, it should be noted that the studies cited had reported internal reliability estimates for the sub-scale “affective barriers” to be in the 0.80s and 0.90s. However, despite being slightly smaller in magnitude, the internal reliability estimate for the sub-scale “affective barriers” managed to satisfy the minimum requirement as recommended by Nunnally and Bernstein (1994).

The sub-scale “cognitive barriers” which is similar to Bostick’s (1992) “knowledge of the library” was found to have yielded a Cronbach’s internal reliability coefficient alpha value of 0.81. This finding is notable in that the alpha value reported is bigger in magnitude than the alpha values reported by Jiao and Onwuegbuzie (1997), Jiao and Onwuegbuzie (1999a), Jiao and Onwuegbuzie (2002), Jiao and Onwuegbuzie (2003), Jiao and Onwuegbuzie (2004), Jioa, Onwuegbuzie and Bostick (2004), Jiao, Onwuegbuzie and Bostick (2006), and Collins and Veal (2004) who reported internal reliability estimates in the range of 0.62 to 0.69. This finding contradicts that of the previous studies since those studies alpha values did not meet the minimum requirement as recommended by Nunnally and Bernstein (1994).

The fifth sub-scale “comfort with library technology” is somewhat similar to Bostick’s (1992) “mechanical barriers”. Additional items were added to this sub-scale to make it more contemporaneous with the state of digital services that are currently available in today’s academic libraries. The results of testing the sub-scale for internal reliability estimate had yielded a Cronbach’s alpha value of 0.68 which if rounded to two decimal places would have met Nunnally and Bernstein’s (1994) minimum requirement for internal reliability. This finding however is somewhat consistent with previous studies particularly Jiao and Onwuegbuzie (1997), Jiao and Onwuegbuzie (1999a), Jiao and Onwuegbuzie (2002), Jiao and Onwuegbuzie (2003), Jiao, Onwuegbuzie and Bostick (2004) and Jiao, Onwuegbuzie and Bostick (2006) who reported internal reliability estimates in the range of 0.51 to 0.68. The lowest reliability estimate was reported by Jioa and Onwuegbuzie (2003) and Jiao, Onwuegbuzie and Bostick (2006) who found the sub-scale “mechanical barriers” to have yielded alpha values at 0.51. This finding somewhat conflicts with that of Collins and Veal who found the alpha value for the sub-scale “mechanical barriers: to be at 0.84.

## CONCLUSIONS AND RECOMMENDATIONS

A 49-item modified version of Bostick’s (1992) Library Anxiety Scale was tested among undergraduates in a Malaysian institution of higher learning in an attempt to evaluate the scale’s psychometric soundness and stability among a population whose native language is not English. The findings revealed that the modified version of Bostick’s (1992) Library Anxiety Scale had yielded a 5-factor solution not unlike that of the findings by Bostick (1992), Jerabek, Meyer and Kordinak (2001), Collins and Veal (2004), Jiao and Onwuegbuzie (1997, 1999a, 2002, 2003, 2004) and those of Jiao, Onwuegbuzie and Bostick (2004, 2006). The findings from this study therefore provide incremental validity to Bostick’s (1992) study as well as to other studies cited earlier. Not only was a 5-factor solution found which is consistent with previously cited studies, the factor “barriers with staff” was found to be the one that explained the greatest proportion of variance in the library anxiety construct which is consistent with that of Bostick’s (1992) as well as other previously cited studies.

When examined for internal reliability assessment using Cronbach’s internal reliability coefficient alpha, the overall library anxiety scale as well as each of the respective sub-



scales except “comfort with library technology” were found to have satisfied Nunnally and Bernstein’s (1994) recommended value of 0.70. Hence, the modified version of the Library Anxiety Scale was found to be not only valid but internally reliable as well. As such the findings demonstrate the psychometric soundness and stability of Bostick’s (1992) Library Anxiety Scale when tested among a population whose native tongue is not English thereby lending cross-cultural evidence of the psychometric properties of the Library Anxiety Scale.

However, it is too early at this stage to generalize the findings to all undergraduate students in all Malaysian institutions of higher learning. The university in which the scale was tested happens to be an institution in which English happens to be the medium of instruction in almost 95% of the courses that are taught. Hence, it is possible that the psychometric soundness and stability of the library anxiety scale could be ascribed to the fact that the majority of the undergraduate students being proficient in English despite the fact that English language is not their mother tongue.

As such, it is not clear whether the findings from this study can be generalized to undergraduates in other Malaysian institutions of higher learning where English is not the primary medium of instruction for all courses taught at the undergraduate level. A Malay version of the 49-item modified version of Bostick’s (1992) Library Anxiety Scale is needed to cross-culturally examine the psychometric soundness and stability of Bostick’s (1992) Library Anxiety Scale. Until and unless a Malay version of the 49-item modified version of Bostick’s (1992) is produced and tested among undergraduates whose native tongue is not English, the evidence adduce from this study remains tentative and at best empirically inconclusive.

Library Anxiety is not a problem that afflicts undergraduate students; it is also phenomenon that afflicts postgraduate students especially when much of the course assignments and dissertation/thesis work require greater as well as skillful use of library resources and interactive digital tools. Cross-cultural evidence of the Library Anxiety Scale’s psychometric soundness and stability can also be assessed using postgraduate students as the sample. Would a 5-factor solution be found when the scale is tested amongst a population of postgraduate students whose native language is not English? Would the factor “barriers with staff” still explain the greatest proportion of variance in the library anxiety construct? Would the scale also demonstrate internal reliability when applied amongst a population of postgraduate students whose native tongue is not English?

Additionally, a Malay version of the 49-item modified version of Bostick’s (1992) Library Anxiety Scale also need to be created and tested among postgraduate students in Malaysian institutions of higher learning where English is not the primary medium of instruction for courses taught at the postgraduate level? More psychometric efforts are needed before we can safely conclude that Bostick’s (1992) Library Anxiety Scale is psychometrically sound and stable when applied in a cross-cultural environment where the population’s native tongue is not English.

## **REFERENCES**

- Anwar, M. A., Kandari, N. M. and Al-Qalallaf, C. L. 2004. Use of Bostick’s library anxiety scale on undergraduate biological science students of Kuwait University. *Library and Information Science Research*, Vol. 26, no. 3: 266-283
- Bostick, S. I. 1992. The development and validation of the library anxiety scale. Unpublished doctoral dissertation, Wayne State University.

- Brown, A. G., Weingart, S., Johnson, J. R. J. and Dance, B. 2004. Librarians don't bite: assessing library orientation for freshmen. *Reference Services Review*, Vol. 32, no. 4: 392-403
- Cleveland, A. 2004. Library anxiety: a decade of empirical research. *Library Review*, Vol. 53, no. 3: 2177-185
- Collins, K. M. T. and Veal, R. E. 2004. Off-campus adult learners' levels of library anxiety as a predictor of attitudes toward the Internet. *Library and Information Science Research*, Vol. 26, no.1: 5-14
- Jerabek, J. A., Meyer, L. S. and Kordinak, S. T. 2001. Library anxiety and computer anxiety: measures, validity and research implications. *Library and Information Science Research*, Vol. 23, no. 3: 277-289
- Jiao, Q. G., Onwuegbuzie, A. J. and Lichenstein, A. A. 1996. Library anxiety: characteristics of at-risk college students. *Library and Information Science Research*, Vol. 18, no. 2: 151-163
- Jiao, Q. G. and Onwuegbuzie, A. J. 1997. Antecedents of library anxiety. *Library Quarterly*, Vol. 67, no. 4: 372-389
- Jiao, Q. G. and Onwuegbuzie, A. J. 1997. Prevalence and reasons for university library usage. *Library Review*, Vol. 46, no. 6: 411-420
- Jiao, Q. G. and Onwuegbuzie, A. J. 1998. Perfectionism and library anxiety among graduate students. *Journal of Academic Librarianship*, Vol. 24, no. 5: 365-371
- Jiao, Q. G. and Onwuegbuzie, A. J. 1999a. Identifying library anxiety through students' learning-modality preferences. *Library Quarterly*, Vol. 69, no. 2: 202-216
- Jiao, Q. G. and Onwuegbuzie, A. J. 1999b. Is library anxiety important? *Library Review*, Vol. 48, no. 6: 278-282
- Jiao, Q. G. and Onwuegbuzie, A. J. 1999c. Self-perception and library anxiety: an empirical study. *Library Review*, Vol. 48, no. 3: 140-147
- Jiao, Q. G. and Onwuegbuzie, A. J. 2001. Library anxiety and characteristic of strengths and weaknesses of graduate students' study habits. *Library Review*, Vol. 50, no: 273-80
- Jiao, Q. G. and Onwuegbuzie, A. J. 2002. Dimensions of library anxiety and social interdependence: implications for library services. *Library Review*, Vol. 51, no. 2: 71-78
- Jiao, Q. G. and Onwuegbuzie, A. J. 2003. Reading ability as a predictor of library anxiety. *Library Review*, Vol. 52, no. 4: 59-169
- Jiao, Q. G. and Onwuegbuzie, A. J. 2004. The impact of information technology on library anxiety: the role of computer attitudes. *Information Technology and Libraries*, Vol. 23, no.4: 138-144
- Jiao, Q. G., Onwuegbuzie, A. J., and Bostick, S. L. 2004. Racial differences in library anxiety among graduate students. *Library Review*, Vol. 53, no. 4: 228-23
- Jiao, Q. G., Onwuegbuzie, A. J., and Bostick, S. L. 2006. The relationship between race and library anxiety among graduate students: A replication study. *Information Processing & Management*, Vol. 42, no: 3: 843-851
- Keefer, J. 1993. The hungry rats syndrome: library anxiety, information literacy and the academic reference process. *Reference Quarterly*, Vol. 32, no. 3: 333-339
- Mellon, C. A. 1986. Library anxiety: a grounded theory and its development. *College and Research Libraries*, Vol. 47, no. 2: 161-168
- Nunnally, J. C. and Bernstein, I. H. 1994. *Psychometric theory* (3<sup>rd</sup> ed.). New York: McGraw-Hill
- Onwuegbuzie, A. J. and Jiao, Q. G. 1998. Understanding library anxious graduates. *Library Review*, Vol. 47, no. 4: 217-224
- Onwuegbuzie, A. J. and Jiao, Q. G. 2000. I'll go to the library later: the relationship between academic procrastination and library anxiety. *College and Research Libraries*, Vol. 61, no 1: 45-54

***A Cross-Cultural Evaluation of Bostick's (1992) Library Anxiety Scale***

- Shoham, S. and Mizrachi, D. 2001. Library anxiety among undergraduates: a study of Israeli B. Ed. Students. *Journal of Academic Librarianship*, Vol. 27, no. 4: 305-309
- Van Kampen, D. J. 2004. Development and validation of the multidimensional library anxiety scale. *College and Research Libraries*, Vol. 65, no. 1: 28-34
- Van Scoyoc, A. M. (2003. Reducing library anxiety in first year students. *Reference and User Services Quarterly*, Vol. 42, no. 4: 329-341
- Veal, R. 2002. The relationship between library anxiety and off-campus adult learners. *Journal of Library Administration*, Vol. 34, no. 3/4: 529-536

**49-item Modified version of Bostick's (1992) Library Anxiety Scale**

1. I'm embarrassed that I don't know how to use the library.
2. The librarians are unapproachable.
3. The librarians are unhelpful.
4. The librarians don't have time to help me because they're always on the phone.
5. I can't help in the library at the time I need it.
6. Library staffs don't have time to help me.
7. The librarians don't have time to help me because they are always busy doing something else.
8. I am unsure about how to begin my research.
9. I get confused trying to find my way around the library.
10. I don't know what to do next when the book I need is not on the shelf.
11. I enjoy learning new things about the library.
12. If I can't find a book on the shelf, the library staff will be there to help me.
13. There is often no one available in the library to help me.
14. I feel comfortable using the library.
15. I feel like I'm bothering the librarians if I ask a question.
16. I feel comfortable in the library.
17. The librarians are unfriendly.
18. I can always ask a librarian if I don't know how to use equipment in the library.
19. The library is a comfortable place to study.
20. The library never has the materials that I need.
21. I can never find information that I need in the library.
22. The library staff doesn't care about students.
23. The library is an important part of my undergraduate studies.
24. I want to learn to do my own research.
25. I don't understand the library's overdue fines
26. Good instructions for using the library's computers are available
27. Librarians don't have time to help me.
28. The library's rules are too restrictive.
29. The directions for using the computers are not clear.
30. I don't know what resources are available in the library.
31. The library staff doesn't listen to students.
32. The library won't let me check out as many items as I need.
33. I often can't find a seat in the library to study.
34. The Internet services in the library are too slow.
35. The Internet services are always available when I want to use them.
36. The library catalogue (OPAC/Web Pac) is easy to use.
37. I always use library catalogue (OPAC/Web Pac) before approaching the shelves.
38. I find online databases too complex for finding information.
39. The online databases are helpful when I am doing my class or research project.
40. I always use online databases when I am looking for information.
41. I don't know how to use digital services.
42. I never browse digital services to find information.
43. I don't need to use digital services for my research.
44. I often use digital services to browse examination papers.
45. I often use digital services to browse the theses.
46. I have never use CD-ROMs to find information.
47. I mostly use Internet services in library to check my-email.
48. I frequently use self-check out machine to borrow items from the library.
49. I never use smart book-drop service to return items to the library.