

Examining the effects of gender, nationality and bibliographic instruction on library anxiety

Noor Harun Abdul Karim¹ and Novera Afaq Ansari²

¹Library and Information Science Unit

Faculty of Computer Science and Information Technology

University of Malaya, Kuala Lumpur, MALAYSIA

²Information and Research Center, King Hussein Foundation (IRCKHF)

Amman, JORDAN

e-mail: nharun@um.edu.my

ABSTRACT

A 49-item modified version of Sharon L. Bostick's (1992) Library Anxiety Scale was tested among 367 undergraduate students drawn randomly from a population of 8,432 undergraduate students. The 49-item instrument was administered during classroom hours using a self-reported questionnaire. An 84% response rate was achieved resulting in 308 questionnaires that were returned and were found to be useful. The analysis of data was based on these 308 usable returns. Gender, nationality and bibliographic instruction were employed as independent variables to examine their effects on each of the five (5) library anxiety sub-scales: barriers with service providers, comfort with library services, affective barriers, cognitive barriers and comfort with library technology. The results of running independent sample t-tests on each of the five(5) sub-scales with gender as the independent variable was found to be statistically significant only on the "cognitive barriers" sub-scale, $t(303) = 2.22, p < .05$ between male students ($M = 7.64, SD = 2.90$) and female students ($M = 8.42, SD = 2.79$). The results of running independent sample t-tests on each of the five (5) library anxiety sub-scales with nationality as the independent variable was found to be statistically significant only on the "affective barriers" sub-scale, $t(301) = 2.47, p < .05$ between Malaysian students ($M = 8.14, SD = 2.22$) and non-Malaysians ($M = 7.33, SD = 2.17$). The results of running independent sample t-tests on each of the five (5) library anxiety sub-scales with bibliographic instruction as the independent variable were found to be not statistically significant on all of the five (5) library anxiety sub-scales, $p > .05$. A 2 X 2 factorial ANOVA was performed to test each of the main effects and interaction effects hypotheses. The results showed that there was a statistically significant interaction effect between gender and bibliographic instruction on the library anxiety sub-scales: (a) affective barriers, $F(1, 295) = 5.21, p < .05$; (b) comfort with library technology, $F(1, 299) = 5.32, p < .05$. Statistically significant interaction effects was also found between gender and nationality on the library anxiety sub-scales: (a) barriers with service providers, $F(2, 294) = 3.85, p < .05$; (b) affective barriers, $F(2, 295) = 3.44, p < .05$. No statistically significant interaction effects were found between nationality and bibliographic instruction on any of the five (5) library anxiety sub-scales, $p > .05$. Additionally, no statistically significant main effects were found for each of the independent variables (gender, nationality and bibliographic instruction) on any of the five library anxiety sub-scales, $p > .05$. Findings suggest that gender acted as a moderating variable for the independent variables nationality and bibliographic instruction. Hence, the variable gender moderates the relationship between the two independent variables (nationality and bibliographic instruction) with the library anxiety sub-scales: affective barriers, barriers with service providers and comfort with library technology. This study represents one of the first to have identified the variable gender as a moderator in explaining the variance in library anxiety among undergraduate library users in a Malaysian university library environment. More studies need to be carried out to identify not only moderators but mediators in the library anxiety phenomenon.

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 research ever since it was conceptually and operationally defined as a multi-dimensional construct by Bostick (1992) in her doctoral dissertation study. Library anxiety as a construct that is distinct from other academic related anxiety constructs has its origins in a qualitative doctoral dissertation research carried out by Mellon (1986). Though the credit for empirically identifying the construct lies with Mellon's (1986) qualitative doctoral study, it was Bostick's (1992) multi-dimensional conceptualization and operationalization of the library anxiety phenomenon that has spawned a multitude of empirical studies since the last two decades (Abdul Karim and Ansari 2010). Nevertheless, much of the quantitative empirical efforts can be ascribed to Jiao and Onwuegbuzie (1996, 1997, 1999, 2004, 2006) who have made significant contributions to the empirical literature in the field of library anxiety.

In a landmark publication, Onwuegbuzie, Jiao and Bostick (2004) have documented several important antecedents of the library anxiety phenomenon. Among these antecedents are gender, nationality and bibliographic instruction. Gender and nationality represent two demographic variables which have been categorized by Onwuegbuzie, Jiao and Bostick (2004) as 'environmental antecedents' whilst bibliographic instruction have been labeled as 'situational antecedents'. This study was carried out to replicate previous studies that have shown gender, nationality and bibliographic instruction to be influencing the variation in the levels of library anxiety among the five dimensions or sub-scales of Bostick's (1992) Library Anxiety Scale. This study was carried out with the following research objectives:

- (a) To find out whether each of the following dichotomous variables : gender, nationality and bibliographic instruction have an effect on the levels of library anxiety as manifested in the five sub-scales of the modified version of Bostick's (1992) Library Anxiety Scale.
- (b) To find out whether the following pairs of dichotomous variables: (i) gender and nationality; (ii) gender and bibliographic instruction and (iii) nationality and bibliographic instruction would significantly interact on any of the five (5) sub-scales of the modified version of Bostick's (1992) Library Anxiety Scale.

REVIEW OF LITERATURE

Bostick's (1992) Library Anxiety Scale comprises the following five sub-scales or dimensions: (a) barriers with staff; (b) comfort with the library; (c) affective barriers; (d) knowledge of the library; and (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 of assistance whatsoever to them. A high score on this sub-scale or dimension will indicate higher 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 score on this sub-scale will indicate greater 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. 'Knowledge of the library' sub-scale assesses library users' perceptions of 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) doctoral dissertation research did not only develop and validate the multi-dimensional Library Anxiety Scale, but she also investigated whether gender would influence the variation in the levels of library anxiety across all the five (5) sub-scales. Using independent sample t-tests, Bostick found no statistically significant mean differences across all the five (5) sub-scales. This finding provided evidence that the Library Anxiety Scale does not discriminate between males and females in determining levels of library anxiety across the five dimensions. However, caution is needed in generalizing Bostick's (1992) finding with regard to gender differences in the level of library anxiety since not only was the sample size small (n=69), but also the fact that only 13 males were involved in the gender comparisons.

Jiao, Onwuegbuzie and Lichenstein (1996) conducted an investigation among four hundred and ninety three (493) university students to examine factors that predict library anxiety. Gender was one of the variables that were employed to determine its relationship with library anxiety phenomenon. The findings revealed that male students reported higher levels of library anxiety than do their female counterparts. In a subsequent study, Jiao and Onwuegbuzie (1997) investigated the relationship between demographic variables such as gender, age, native language, year of study and academic achievement and library anxiety. Five hundred and twenty-two (522) students from a mid-southern university and a northeastern university participated in the study. Bostick's (1992) Library Anxiety Scale and the Demographic Information Form were administered to participants during classroom hours. The finding revealed that male students reported experiencing higher levels of library anxiety associated with the following dimensions: barriers with staff, comfort with the library; knowledge of the library; and mechanical barriers. This finding supports that of Jiao, Onwuegbuzie and Lichenstein's (1996) study that found males to be reporting higher levels of library anxiety than females. However care should be exercised in generalizing Jiao, Onwuegbuzie and Lichenstein's (1996) findings since more than half of the sample were females (62%).

Mizrachi (2000) and Shoham and Mizrachi (2001) reported a study that employed a modified version of Bostick's (1992) Library Anxiety Scale called the Hebrew Library Anxiety Scale (H-LAS). The H-LAS comprises seven (7) dimensions: Staff factor, Knowledge factor, language factor, Physical Comfort factor, Library Policies/Hours factor and Resources factor. The H-LAS were administered to 664 students during classroom hours. Eighty-eight percent (88%) of six hundred and sixty four students (664) who participated in the study were females. The findings revealed that female students reported higher levels of library anxiety associated with the following dimensions: Staff, language and Resource. Due to the fact that an overwhelming majority of the participants were females, care should be exercised in generalizing the findings to a broader population.

Anwar, Al-Kandari and Al-Qallaf (2004) administered a modified version of Bostick's (1992) Library Anxiety Scale to one hundred and forty five (145) undergraduate biological sciences students in Kuwait. The findings revealed that gender had no statistically significant effect on any of the four (4) dimensions of library anxiety. The findings supported Bostick's (1992) study which reported gender to have no statistically significant effect on any of the five

dimensions of the library anxiety scale. This finding also supports that of Mech and Brokks (1995, 1997) who reported no gender differences on any of the dimensions of the library anxiety scale. In the light of these mixed, inconclusive and equivocal findings, we anticipated that gender would have an effect on all the five dimensions of the library anxiety instrument.

Jiao, Onwuegbuzie and Lichenstein (1996) found that the number of library instruction courses taken by students was significantly but negatively correlated to students' levels of library anxiety, $r = -0.14$, $p < .01$. However, the effect of library instructional programmes on library anxiety was very negligible. In a subsequent study, Jiao and Onwuegbuzie (1997) found participants who had received library instruction programmes were less likely to experience library anxiety associated with affective barriers. However, despite attending library instructional programmes, anxiety levels remain unchanged with regard to the following dimensions: barriers with staff, cognitive barriers, comfort with the library and mechanical barriers.

In a study conducted in Malaysia among undergraduate students, Abusin (1998) found that students enrolled in a Malaysian university who had attended a library instruction course reported statistically significant lower levels of library anxiety than did students who had not attended any such courses. Cleveland (2001) found that 1st year university students who were enrolled in a 30-minute bibliographic instruction course reported statistically significant lower levels of library anxiety than their peers who did not enroll in this course. Specifically, Cleveland found that students in the bibliographic instruction programme group reported statistically significant lower levels of library anxiety associated with 'barriers with staff'. Ben Omaran (2001) in a doctoral dissertation study found that the number of bibliographic instruction sessions attended did not predict variation in the levels of library anxiety. In the light of these findings we anticipated that bibliographic instructional programmes would have an effect on the five dimensions associated with library anxiety.

Jiao and Onwuegbuzie (2001) investigated the dimensions of library anxiety among one hundred and twenty five (125) non-native English speaking students at a northeastern university in the United States of America. Participants were administered Bostick's (1992) Library Anxiety Scale. The findings revealed that international students who are non-native speakers of English experienced the highest levels of library anxiety associated with 'mechanical barriers'. This was followed by library anxiety associated with affective barriers, comfort with the library, barriers with staff and knowledge of the library. Jiao and Onwuegbuzie (2001) found that international students experienced the highest levels of library anxiety with 'mechanical barriers'. This may be because the majority of international students who are non-native speakers of English come from countries in which the level of technology is much lower than that in United States of America.

Jiao, Onwuegbuzie and Bostick (2004) examined the relationship between race and the library anxiety phenomenon among graduate students in two different universities in the United States of America. They found that African American students attending a research intensive university reported statistically significant lower levels of library anxiety associated with barriers with staff, affective barriers and comfort with the library than did their Caucasian peers enrolled at a doctoral granting institution. However, since the two groups also differed with respect to type of institution, the researchers were unable to conclude whether the differences in the anxiety levels were due to race or to type of educational experiences. The same authors later replicated their study by controlling for

participants educational and institutional background and found that African American students reported statistically significant lower levels of library anxiety across all the five (5) dimensions of Bostick's (1992) library anxiety instrument than did their Caucasian American counterparts (Jiao, Onwuegbuzie and Bostick 2006). Hence the 2006's findings provide incremental validity to the inference that race is an environmental antecedent of library anxiety among graduate students and that library anxiety has a racial context. In the light of these findings, we anticipated nationality to have an effect on the five (5) dimensions of library anxiety.

HYPOTHESES

On the basis of the review of related literature, we formulated the following two-tailed hypotheses:

- (a) There are statistically significant mean differences in each of the five (5) dimensions of library anxiety between *male and female* students.
- (b) There are statistically significant mean differences in each of the five (5) dimensions of library anxiety between *Malaysian and non-Malaysian* students.
- (c) There are statistically significant mean differences in each of the five (5) dimensions of library anxiety between *students who have attended bibliographic instructional programmes and those who have not attended such programmes*.
- (d) There is a statistically significant main effect due to *gender* on each of the five (5) dimensions of library anxiety.
- (e) There is a statistically significant main effect due to *nationality* on each of the five (5) dimensions of library anxiety.
- (f) There is a statistically significant main effect due to *bibliographic instruction* on each of the five (5) dimensions of library anxiety.
- (g) There is a statistically significant interaction between *gender and nationality* on each of the five (5) dimensions of library anxiety.
- (h) There is a statistically significant interaction between *gender and bibliographic instruction* on each of the five (5) dimensions of library anxiety.
- (i) There is a statistically significant interaction between *nationality and bibliographic instruction* on each of the five (5) dimensions of library anxiety.

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 percent (5%) error rate, a sample size of three hundred and sixty seven (367) 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

Bostick's (1992) library Anxiety Scale is a 43-item instrument. This study employed a modified version of Bostick's (1992) instrument 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 place to sit in the library". 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 based information services that are made available to library users via the library's Web-Pac.

All in all the number of items has been increased from 43 to 49. Each item is measured on a 5-point scale ranging from strongly disagree (1) to strongly agree (5). 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 instrument was pre-tested on 10 undergraduate students to ensure that the potential respondents interpreted each item in the way they were meant to be interpreted. Such a move was designed to ensure reliability of the 49-item scale as an instrument to measure library anxiety. Further changes were made to the wording of some of 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/Directors of each of the eight faculties/institutes to enable the researcher to administer the instrument in the classroom as well as to seek the cooperation of the classroom 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.

RESULTS

(a) Descriptive Statistics on Five Subscales of Library Anxiety

Two types of inferential statistics were carried out to test the nine (9) non-directional hypotheses formulated by the researchers: independent sample t-tests and 2 x 2 factorial ANOVA. The rationale for running these two types of parametric statistics was based on the normality of each of the five (5) dimensions or sub-scales of the library anxiety construct. The skewness and kurtosis indexes for each of the five (5) sub-scales were found to be below one (1.00) and as such were deemed to be approximately normally distributed. As such it was considered acceptable to run parametric tests using each of the five (5) sub-scales as the dependent variable. The skewness and kurtosis indexes along with the mean and standard deviation values are presented in Table 1.

Table 1: Descriptive Statistics for Bostick's Modified Library Anxiety Sub-Scales

Sub-Scales	Mean	Standard Deviation	Skewness	Kurtosis
Barriers with Staff	24.13	7.14	.63	.89
Comfort with Library Services	10.50	3.08	.84	.79
Affective Barriers	7.99	2.23	.32	.32
Cognitive Barriers	8.18	2.85	.20	-.47
Comfort with Library Technology	11.40	2.89	.37	.42

The five sub-scales were submitted for validity and reliability assessments using exploratory factor analysis and Cronbach's internal reliability coefficient alpha. The findings revealed each of the sub-scales to be valid and reliable (Noor and Ansari 2010). Having

established the normality, validity and internal reliability of each of the five sub-scales, the sub-scales were then employed to test each of the nine (9) non-directional hypotheses.

(b) Results of Tests for Gender, Nationality and Bibliographic Instruction as Antecedents

In sub-sections (i) to (iii), Gender, Nationality and bibliographic instruction were subjected to independent sample t-tests with the five (5) sub-scales of library anxiety constructs.

(i) Hypothesis number 1: Gender as the Antecedent Variable

The results of running independent sample t-tests for each of the five (5) sub-scales with gender as the independent variable showed that statistically significant mean differences were found only for the sub-scale, ‘cognitive barriers’, $t(303) = 2.22, p < .05$ between male students ($M = 7.64, SD = 2.90$) and female students ($M = 8.42, SD = 2.79$). Hence, female students experienced greater levels of library anxiety than their male counterparts insofar as cognitive barriers associated with library anxiety are concerned (Table 2)

Table 2: Means and Standard Deviations for Library Anxiety Levels as a Function of Gender

Sub-Scales	Male		Female		P Value
	Mean	Standard Deviation	Mean	Standard Deviation	
Barriers with Staff	23.89	6.75	24.24	7.33	0.79
Comfort with Library Services	10.48	3.59	10.56	3.56	0.64
Affective Barriers	7.95	2.40	8.00	2.16	0.83
Cognitive Barriers	7.64	2.90	8.42	2.79	0.02*
Comfort with Library Technology	11.68	2.88	11.50	2.90	0.37

* $p < .05$

(ii) Hypothesis Number 2: Nationality as the Antecedent Variable

The findings revealed that statistically significant mean differences between Malaysian and non-Malaysian students were found only for the library anxiety sub-scale, ‘affective barriers’, $t(301) = 2.47, p < .05$ between Malaysian students ($M = 8.14, SD = 2.24$) and non-Malaysian students ($M = 7.33, SD = 2.17$). Hence, the findings showed that Malaysian students experienced greater levels of library anxiety associated with ‘affective barriers’ than their non-Malaysian counterparts (Table 3).

Table 3: Means and Standard Deviations for Library Anxiety Levels as a Function of Nationality

Sub-Scales	Male		Female		P Value
	Mean	Standard Deviation	Mean	Standard Deviation	
Barriers with Staff	23.70	6.90	25.74	8.06	0.67
Comfort with Library Services	10.29	2.98	10.92	3.51	0.23
Affective Barriers	8.14	2.22	7.33	2.17	0.01*
Cognitive Barriers	8.21	2.79	8.05	3.13	0.69
Comfort with Library Technology	11.25	2.88	11.88	2.81	0.13

* $p < .01$

(iii) Hypothesis number 3: Bibliographic Instruction as the Antecedent Variable

The findings revealed that no statistically significant mean differences were found for any of the sub-scales with the antecedent variable, bibliographic instruction. Table 4 illustrates the means and standard deviations for each of the sub-scales with the antecedent variable, bibliographic instruction. As can be seen none of the mean differences were found to be statistically significant, $p > .05$.

Table 4: Means and Standard Deviations of the Library Anxiety Levels as a Function of Bibliographic Instruction

Sub-Scales	Attend B. I.		Not Attend B. I.		P Value
	Mean	Standard Deviation	Mean	Standard Deviation	
Barriers with Staff	23.47	6.47	24.79	7.80	0.11
Comfort with Library Services	10.43	3.28	10.54	2.79	0.88
Affective Barriers	7.86	2.14	8.09	2.31	0.36
Cognitive Barriers	8.10	2.18	8.30	2.94	0.54
Comfort with Library Technology	11.25	2.19	11.57	2.79	0.34

(c) Results of 2 x 2 Factorial ANOVA for Gender, Nationality and Bibliographic Instructions as Factors

(i) Testing of Hypotheses number 4 through 6: Testing for Main Effects

The results revealed that gender had no statistically significant main effect on any of the sub-scales associated with library anxiety. There was however, a statistically significant main effect due to nationality on the library anxiety sub-scale, ‘barriers with staff’: $F(1, 295) = 3.95, p < .05$. Bibliographic instruction too had no statistically significant main effect on any of the sub-scales associated with the library anxiety construct

(ii) Hypotheses number 7: Testing for Interaction Effects of Gender X Nationality

The results revealed statistically significant interaction effects only on two (2) of the five (5) sub-scales: (a) ‘barriers with staff’, $F(1, 295) = 8.24, p < .05$; (b) ‘affective barriers’, $F(1, 296) = 6.45, p < .05$. The findings are presented in Tables 5 and 6.

Table 5: Main and Interaction Effects of Gender and Nationality on “Barriers with Staff” and “Affective Barriers”

Barriers with Staff	df	MS	F
Main Effect of Gender	1	197.63	2.90
Main Effect of Nationality	1	269.07	3.95*
Gender X Nationality	1	562.08	8.24*
Within-cells error	295	68.21	
Affective Barriers	df	MS	F
Main Effect of Gender	1	0.83	0.03
Main Effect of Nationality	1	82.85	3.39*
Gender X Nationality	1	157.60	6.45
Within –cells error	295	24.43	

* $p < .05$

Table 6: Means for Gender X Nationality on “Barriers with Staff” and “Affective Barriers”

“Barriers with Staff” and Gender	“Barriers with Staff” and Nationality	Mean
Female	Malaysian	30.69
	Non-Malaysian	36.78
Male	Malaysian	32.15
	Non-Malaysian	31.04
“Affective Barriers” and Gender	“Affective Barriers” and Nationality	Mean
Female	Malaysian	24.64
	Non-Malaysian	25.16
Male	Malaysian	26.41
	Non-Malaysian	23.12

Female non-Malaysian students reported the highest level of library anxiety associated with ‘barriers with staff’ (M = 36.78) when compared to female Malaysian students (M = 30.69), male Malaysian students (M = 32.15) and male non-Malaysian students (31.04).

Male Malaysian students (M = 26.41) reported the highest level of library anxiety associated with ‘affective barriers’ when compared to male non-Malaysian students (M = 23.12), female Malaysian students (M = 24.64) and female non-Malaysian students (M = 25.16).

(iii) Hypothesis Number 8: Testing for Interaction Effects with Gender x Bibliographic Instruction

The results revealed statistically significant interaction effects only on two (2) of the five (5) sub-scales: (a) ‘affective barriers’, $F(1, 297) = 5.15, p < .05$; (b) ‘comfort with library technology’, $F(1, 301) = 5.07, p < .05$. The findings are presented in Tables 7 and 8.

Table 7: The Main Effects and Interaction Effects of Gender and Bibliographic Instruction on ‘Affective Barriers’ and “Comfort with Library Technology”

“Affective Barriers”	df	MS	F
Main Effect of Gender	1	30.64	1.26
Main Effect of Bibliographic Instruction	1	0.51	0.02
Gender X Bibliographic Instruction	1	125.32	5.15*
Within-cells error	297	24.35	
“Comfort with Library Technology”	df	MS	F
Main Effect of Gender	1	1.02	0.14
Main Effect of Bibliographic Instruction	1	0.83	0.11
Gender X Bibliographic Instruction	1	37.35	5.07*
Within –cells error	297	7.37	

*P < .05

Male students who had attended the bibliographic instruction programmes (M = 26.12) reported the highest level of library anxiety associated with ‘affective barriers’ when compared to male students who had not attended the bibliographic instruction programmes (M = 24.80), female students who had attended the bibliographic instruction programmes (M = 24.02) and female students who had not attended the bibliographic instruction programmes (M = 25.51).

Male students who had not attended the bibliographic instruction programmes (M= 13.63) reported the highest level of library anxiety associated with ‘comfort with library technology’ when compared to females who had not attended the library instruction programmes (M = 12.75).

Table 8: Means for Gender X Bibliographic Instruction on ‘Affective Barriers’ and ‘Comfort with Library Technology’

Gender and “Affective Barriers”	Bibliographic Instruction and “Affective Barriers”	Mean
Female	Yes	24.02
	No	25.51
Male	Yes	26.12
	No	31.04
Gender and “Comfort with Library Technology”	Bibliographic Instruction and “Comfort with Library Technology”	Mean
Female	Yes	13.62
	No	12.75
Male	Yes	12.99
	No	13.63

DISCUSSION

The purpose of the study was to find out whether antecedent variables such as gender, nationality and bibliographic instruction would affect the levels of the five (5) dimensions of the library anxiety construct as operationalized by a modified version of Bostick’s (1992) Library Anxiety Scale. Two types of inferential analytic techniques were employed to test all the nine (9) non-directional hypotheses: the independent sample t-tests and the 2 X 2 factorial ANOVA.

The results of running an independent sample t-test showed that gender had an effect only on library anxiety associated with the sub-scale ‘cognitive barriers’. Female students were found to have reported higher levels of library anxiety associated with ‘cognitive barriers’ than their male counterparts. This finding somewhat conflicts with Jiao, Onwuegbuzie and Lichenstein (1996) and Jiao and Onwuegbuzie (1997) who found males to be experiencing higher levels of library anxiety associated with the following sub-scales: barriers with staff comfort with the library, knowledge of the library and mechanical barriers. This finding somewhat supports that of Mizrachi (2000) and Shoham and Mizrachi (2001) who found females to be experiencing higher levels of library anxiety than their male counterparts in the following dimensions: staff, language and resource. The findings from the present study however do not support that of Bostick (1992) and Anwar, A-Kandari and Al-Qalaff (2004) who found gender to have no statistically significant effect on any of the five (5) dimensions of the library anxiety construct.

The results of running a 2 X 2 factorial ANOVA revealed gender to have no statistically significant effect on any of the five (5) sub-scales of the library anxiety construct. This finding supports that of Bostick’s (1992) and Anwar, Al-Kandari and Al-Qalaff (2004). Hence, the effect of gender on the various dimensions of the library anxiety construct is

inconclusive and somewhat equivocal. In some studies gender was found to have an effect (Jiao, Onwuegbuzie and Lichenstein 1996; Jiao and Onwuegbuzie 1997) whilst in others gender was reported to have had no effect whatsoever (Bostick 1992; Anwar, Al-Kandari and Al-Qalaff 2004). In this study when independent sample t-tests were conducted, gender was found to have an effect only on the sub-scale 'cognitive barriers'. However, when gender was examined for its main effects on library anxiety dimensions using a 2 X 2 factorial ANOVA, no statistically significant effects were found on any of the five (5) dimensions of the library anxiety construct. The findings were therefore somewhat inconclusive and equivocal. More research needs to be conducted to find out whether gender would have a consistent effect on the various dimensions of the library anxiety construct.

Race has been shown to be an antecedent of the library anxiety construct (Jiao, Onwuegbuzie and Bostick 2004; Jiao, Onwuegbuzie and Bostick 2006). Jiao, Onwuegbuzie and Bostick (2004, 2006) found African-American graduate students to have reported lower levels of library anxiety associated with barriers with staff, affective barriers and comfort with library technology than their Caucasian counterparts. In this study the variable race was operationalized as nationality: Malaysian (Malays) versus non-Malaysian students (non-Malays). This is because the study's population comprised mainly of Malays and a widely diverse group of students from various ethnic communities the world over. To elicit data on ethnicity would be too cumbersome; much simpler to seek their ethnicity under the guise of nationality.

The results of running independent sample t-test showed that nationality/race only had an effect on the library anxiety dimension 'affective barriers'. Malaysians/Malays were found to have reported higher levels of library anxiety associated with affective barriers than non-Malaysians/non-Malays. The results of running a 2 X 2 factorial ANOVA also showed nationality to be having main effects on the library anxiety dimensions 'barriers with staff' and 'affective barriers'. Hence the findings from this study somewhat supports that of Jiao, Onwuegbuzie and Bostick (2004, 2006) who found race to have an effect the various dimensions of library anxiety: barriers with staff, affective barriers and comfort with the library.

The third antecedent variable employed in this study was bibliographic instruction. The results of running independent sample t-tests showed that bibliographic instruction had no statistically significant effects whatsoever on any of the five(5) dimensions of the library anxiety construct. The results of running a 2 X 2 factorial ANOVA also revealed bibliographic instruction to be having no statistically significant main effects on any of the five (5) dimensions of the library anxiety construct. The findings therefore support that of Ben Omaran (2000) who found no statistically significant correlations between bibliographic instruction sessions and library anxiety levels. However, the findings conflict with that of Abusin (1998) and Cleveland (2001) who found students who attended bibliographic instruction courses to be reporting significantly lower levels of library anxiety.

Although gender and bibliographic instruction on their own failed to achieve statistically significant main effects, these two variables however significantly interact on the library anxiety dimensions 'affective barriers' and 'comfort with library technology'. Males who had attended bibliographic instruction sessions (M = 26.12) reported higher levels of library anxiety associated with 'affective barriers' when compared to females who had attended such sessions (M = 24.02). Females who had attended bibliographic instruction sessions (M = 13.62) reported higher levels of library anxiety associated with 'comfort with

library technology' when compared to males who had attended the bibliographic instruction session (M = 12.99).

Similarly, statistically significant interactions were found between gender and nationality/race on the library anxiety dimensions, 'barriers with staff' and 'affective barriers'. Female non-Malaysian/non-Malay students (M = 36.78) reported higher levels of library anxiety associated with 'barriers with staff' compared to male non-Malaysian/non-Malay students (M = 31.04). Male Malaysian/Malay students (M = 26.41) reported higher levels of library anxiety associated with 'affective barriers' when compared to female Malaysian/ Malay students (M =24.64). No statistically significant interactions were found between nationality/race and bibliographic instruction on any of the five (5) library anxiety dimensions.

Findings of statistically significant interactions between gender and bibliographic instruction as well as between gender and nationality/race seem to suggest the role of gender as a moderating variable which has hitherto not been identified as such in any previous empirical study on the library anxiety phenomenon. Although bibliographic instruction had been found to have no statistically significant main effect on any of the five (5) library anxiety dimensions, its effects can be seen when gender moderates the relationship between bibliographic instruction and library anxiety dimensions. This can be seen when males who attended the bibliographic instruction session were compared to their female counterparts who had attended such sessions. Males were found to have reported higher levels of library anxiety associated with 'affective barriers' than their female counterparts. Similarly, females who had attended the bibliographic instruction session reported higher levels of library anxiety associated with 'comfort with library technology' than males who had attended the bibliographic instruction session.

Gender can also be seen to act as a variable that moderates the relationship between nationality/race and the library anxiety dimensions. Female non-Malaysian/non-Malay students reported higher levels of library anxiety associated with 'barriers with staff' when compared to male non-Malaysian/non-Malay students. Similarly, Male Malaysian/Malay students reported a higher level of library anxiety associated with 'affective barriers' when compared to female Malaysian/Malay students. We can tentatively ascribe the statistically significant mean differences in the library anxiety dimensions to the moderating influence of gender as the moderating variable. The influence of gender as a moderating variable has yet to be identified in the empirical literature. This study is the first to identify gender as a moderating variable in the library anxiety literature.

CONCLUSION

The study employed a modified version of Bostick's (1992) Library Anxiety Scale in order to examine the effects of gender, nationality and bibliographic instruction on each of the five (5) dimensions of the library anxiety construct. The results of running independent sample t-tests on each of the five(5) dimensions of the library anxiety construct revealed that gender had an effect only on the library anxiety dimension, 'cognitive barriers'. The effect of gender as an antecedent on the various dimensions of the library anxiety construct therefore remains unclear. The results of running a 2 X 2 factorial ANOVA revealed that gender had no significant effects whatsoever on any of the five (5) dimensions of the library construct. Hence, the effect of gender on the various dimensions of the library

anxiety construct is equivocal and as such the findings with regard to the effect of gender is somewhat inconclusive.

The results of running independent sample t-tests with bibliographic instruction as the independent variable also showed no statistically significant effects whatsoever on any of the five (5) dimensions of the library anxiety construct. When a 2 X 2 factorial ANOVA was performed with bibliographic instruction as one of the factors, the results revealed no statistically significant effects on any of the five (5) dimensions of the library anxiety construct. Hence, we can tentatively conclude that bibliographic instruction had no effects whatsoever on the variations in the levels of the various dimensions of the library anxiety construct.

However, the findings also revealed that gender and bibliographic instruction had significantly interacted on two (2) of the library anxiety dimensions: affective barriers and comfort with library technology. The findings suggest that gender could have a moderating effect rather than a main effect. However, this suggestion is inconclusive and somewhat equivocal since its moderating influence can be seen only in two (2) of the five (5) dimensions of the library anxiety construct.

Gender also significantly interacted with nationality/race on two of the dimensions associated with library anxiety: barriers with staff and affective barriers. The findings also seem to suggest that gender could have played a moderating role in explaining the variations in the levels of the various dimensions of the library anxiety construct. However, this suggestion too is equivocal and inconclusive its moderating influence can be seen only in two (2) of the five (5) dimensions of the library anxiety construct.

The findings with regard to gender's role as a moderating variable is somewhat equivocal and inconclusive since the moderating effects can be seen only in two (2) of the five (5) dimensions. Further, since females constituted more than half of the sample (69%) caution is needed in generalizing the findings with regard to gender's role as a moderating variable in explaining the variation in the levels of the various dimensions of the library anxiety construct. More research need to be conducted with equal number of males and females in the sample before we can safely conclude that gender has a moderating effect rather than a main effect.

REFERENCES

- Abusin, K. A. 1998. *Library anxiety among IIUM first year students*. Unpublished manuscript, International Islamic University, Malaysia
- Anwar, M. A., Al-Kandari, N. M. and Al-Qallaf, C. L. 2004. Use of Bostick's Library Anxiety Scale on undergraduate biological sciences students of Kuwait University. *Library and Information Science Research*, Vol. 26, no.3: 266-283
- Ben Omaran, A. I. 2001. *Library anxiety and internet anxiety among graduate students of a major research university*. Unpublished doctoral dissertation, University of Pittsburgh, PA.
- Bostick, S. L. 1992. *The development and validation of the library anxiety scale*. Unpublished doctoral dissertation, Wayne State University, Detroit, MI
- Carlile, H. 2007. The implications of library anxiety for academic reference services: A review of the literature. *Australian Academic Research Libraries*, Vol. 38, no.2: 129-147

- Cleveland, A. 2004. Library anxiety: A decade of empirical research. *Library Review*, Vol. 53, no.3: 177-185
- Cleveland, A. M. 2001. *Library anxiety in first year students: Computer assisted instruction vs bibliographic instruction*. Unpublished masters's thesis, University of North Carolina, Chapel Hill, NC
- 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. 1999. Is library anxiety important? *Library Review*, Vol. 48, no. 6: 278-282
- Jiao, Q. G. and Onwuegbuzie, A. J. 2001. Library anxiety among international students. *Urban Library Journal*, Vol. 11: 16-27
- 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: 228-235
- 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
- Jiao, Q. G., Onwuegbuzie, A. J. and Lichenstein, A. 1996. Library anxiety: Characteristics of at-risk college students. *Library and Information Science Research*, Vol. 18, no.2: 151-163
- Mckenzie, K. M. 2000. *The impact of bibliographic instruction on the library anxiety of adult non-traditional college students*. Unpublished Bachelor's thesis, Bethel College.
- Mech, T. F. and Brooks, C. I. 1995. Library anxiety among college students: An exploratory study. Paper presented at the 7th National Conference of the Association of College and Research Libraries, Pittsburgh, March 30-April 2.
- Mech, T. F. and Brooks, C. I. 1997. Anxiety and confidence in using a library by college freshmen and seniors. *Psychological Reports*, Vol. 81: 929-930
- Mizrachi, D. 2000. *Library anxiety and computer attitudes among Israeli B.Ed. students*. Unpublished master's thesis, Bar-Ilan University, Israel
- Noor, H. A. K. and Ansari, N. 2010. A cross-cultural evaluation of Bostick's (1992) Library Anxiety scale: Investigating the scale's psychometric properties in a Malaysian university library environment. *Malaysian Journal of Library and Information Science*, Vol. 15, no.1: 115-134
- Onwuegbuzie, A. J., Jiao, Q. G. and Bostick, S. L. 2004. *Library anxiety: Theory, research and applications*. Lanham, MD: Scarecrow Press.
- Shoham, S. and Mizrachi, D. 2001. Library anxiety among undergraduate students: A study of Israeli B. Ed. Students. *Journal of Academic Librarianship*, Vol. 27, no.4: 305-311.