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# The moderating effect of bibliographic instruction on library anxiety: a cross sectional design

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## ABSTRACT

*This study examined the effects of antecedent variables students' major and attendance in bibliographic instruction program on the variation in library anxiety sub-scale, 'barriers with staff'. The study employed a cross-sectional survey design using 367 students drawn randomly from a population of 8432 undergraduate students in a Malaysian institution of higher learning. The analysis of data was based on 308 usable returns. The results of running an independent sample t-test revealed that 'barriers with staff' did not significantly discriminate between students majoring in the human/social sciences and those majoring in the pure/applied sciences. Further, 'barriers with staff' was found to have significantly discriminated between students who had attended the bibliographic instruction program and those who did not attend such a program. The results of running a 2 X 2 Factorial ANOVA further supported the findings of the two independent sample t-tests in which students' major was found to have no significant effect on 'barriers with staff' whilst attendance in bibliographic instruction program was found to have a significant effect on 'barriers with staff'. The results of running a 2 X 2 Factorial ANOVA also revealed a statistically significant interaction effect between students' major and attendance in bibliographic instruction program on library anxiety sub-scale, 'barriers with staff'. The findings revealed that students majoring in the human/social sciences who had attended the bibliographic instruction program reported the lowest levels of library anxiety associated with 'barriers with staff' when compared to students majoring in the pure/applied sciences who had not attended such a program. This finding highlights bibliographic instruction program role as a moderating variable rather than as a typical antecedent or independent variable in the library anxiety research program.*

**Keywords:** Students' major, Bibliographic instruction program, Library anxiety, Barriers with staff, Independent sample t-tests, 2 X 2 Factorial ANOVA

## INTRODUCTION

Library anxiety has been the subject of much empirical research ever since it was conceptually and operationally defined as a multidimensional construct by Bostick (1992) in her doctoral dissertation work. Library anxiety as a construct that is distinct from all other types of 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 dissertation study, it was Bostick's (1992) multidimensional conceptualization and operationalization of the construct that has spawned a multitude of empirical studies since the last two decades (Noor & Ansari, 2010; 2011).

Much of the quantitative empirical efforts can be ascribed to Jiao and Onwuegbuzie (1996, 1997, 1999a, 1999b, 1999c, 2004) who have made significant contributions to the empirical literature in the field of library anxiety. Jiao and Onwuegbuzie have expended much effort in identifying the antecedents of the library anxiety construct. In a landmark publication, Onwuegbuzie, Jiao and Bostick (2004) have classified the antecedents of library anxiety into three categories: situational, environmental and dispositional. Situational antecedents refer to antecedents that are in the immediate environment that surround the stimulus. These include variables such as size of the library, students' grade point average, access to computers and number of library instruction courses attended. Environmental antecedents on the other hand refer to demographic variables such as gender, age, race and native language. Dispositional antecedents include variables such as self-esteem, self-concept, perfectionism, academic procrastination and study habits.

An important situational antecedent which has yet to be empirically identified and reported in the literature is students' major. Hitherto, no study has employed this variable as an antecedent to explain the variation in library anxiety among undergraduate library users. This study intends to add to the existing body of knowledge on the situational antecedents of library anxiety by examining its relationship with the library anxiety sub-scale, 'barriers with staff'. Additionally, we also incorporate students' attendance in bibliographic instruction programmes as another situational antecedent to explain the variation in the library anxiety sub-scale, 'barriers with staff'.

The objective of the study was to examine whether students' major and students' attendance in bibliographic instruction programmes would have individual as well as joint effects on the library anxiety sub-scale, 'barriers with staff'. Additionally, we would also like to find out whether either one of these antecedents could be acting as a moderator in explaining the variation in the library anxiety sub-scale, 'barriers with staff'. We chose 'barriers with staff as our dependent variable because it explains the greatest amount of variance in the library anxiety construct: 19.21% of the total variance of 39.56%. Hence, 'barriers with staff' is the biggest source of library anxiety and as such more information ought to be known about what brought about the variation in this sub-scale.

## LITERATURE REVIEW

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, $r = -0.14$, $p < .01$. The relationship, though statistically significant was weak. In a subsequent study, Jiao and Onwuegbuzie (1997) found that participants who had received library instruction programmes were less likely to experience library anxiety associated with 'affective barriers'. However, despite attending library instruction 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 library users, Abusin (1998) found that students who had attended a library instruction course reported statistically significant lower levels of library anxiety than did those who had not attended such courses. Cleveland (2001) found that first year university students who had enrolled in a 30-minute bibliographic instruction course reported statistically significant lower levels of

library anxiety than their peers who did not attend such courses. Specifically Cleveland (2001) found that students in the bibliographic instruction group reported statistically significant lower levels of library anxiety. Ben Omaran (2001) in a doctoral dissertation study however reported that the number of bibliographic instruction sessions attended did not predict variation in the levels of library anxiety.

Noor and Novera (2011) using a modified version of Bostick's (1992) Library Anxiety Scale found that male students who had attended the bibliographic instruction programmes reported the highest levels of library anxiety associated with 'affective barriers' when compared to (a) male students who had not attended such programmes; (b) female students who had attended such programmes and (c) female students who had not attended those programmes. In the light of these mixed and equivocal findings, we anticipated bibliographic instruction to have an effect on the library anxiety sub-scale, 'barriers with staff'.

Students' major is another variable that has yet to be identified and reported to have an effect on library anxiety. We anticipated this variable to be antecedent of the library anxiety sub-scale, 'barriers with staff'.

## HYPOTHESES

On the basis of the review of related literature, we formulated the following non-directional hypotheses:

(a) There are statistically significant mean differences in the subscale, 'barriers with staff' between those who major in the social/human sciences and those who major in the pure/applied sciences.
(b) There are statistically significant mean differences in the subscale, 'barriers with staff' between those who attended the bibliographic instruction programmes and those who did not.
(c) There is a statistically significant main effect on 'barriers with staff' due to bibliographic instruction.
(d) There is a statistically significant main effect on 'barriers with staff' due to students' major.
(e) There is a statistically significant interaction effect between bibliographic instruction programme and students' major on the subscale, 'barriers with staff'.

## METHOD

### Population and Sample

The target population for this study was undergraduate students in a Malaysian institution of higher learning. Allowing for a plus/minus five percent (5%) 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 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 the 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 readily available to library users via the library's WebPAC.

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 library anxiety. The 49-item modified library anxiety scale was pre-tested on ten (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 meant to ensure consistency in the interpretation of each and every one of the 49-item instrument. Further changes were made to the wording of some of the items subsequent to the pre-test.

The 49-item library anxiety instrument along with some demographic items was incorporated in the form of a self-reported questionnaire. Permission was sought from the respective deans of the eight faculties to enable the researchers to request the respondents to complete and return the questionnaires 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

### Construct Validation Using Exploratory Factor Analysis

In an attempt to assess the construct validity of the modified version of Bostick's (1992) multidimensional library anxiety scale (LAS), an exploratory factor analysis was performed on the 49-item instrument. A principal component analysis (PCA) was employed to determine the number of factors underlying the 49-item instrument. Using a varimax rotation and a cut-off point of 0.4 or greater for deeming a factor loading as practically significant, the analysis yielded five (5) interpretable factors with thirty five (35) items that met the cut-off point of 0.4. Fourteen (14) items however did not load on any of the five factors. The five (5) factors collectively explained 39.6% of the total variance in library with the sub-scale, 'barriers with staff' explaining the largest amount of variance at 19.21%. The table below illustrates the amount of variance explained by each of the factor or sub-scale.

A visual examination of Table 1 shows that 'barriers with staff' explains the largest amount of variance in the total library anxiety scores: 19.21%. In addition, this factor or sub-scale

also has the most number of items loaded on it: 12 items out of the total 35 items. A more detailed analysis of the 12 items subsumed under the sub-scale, barriers with staff' is shown in Table 2 below.

Table 1: Description of Factors

| Factors | Number of Items | Percent of Variance Explained |
|---|---|---|
| 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 |

Table 2: Items for Sub-Scale 'Barriers with Staff'

| Number | Scale Item | Item Description | Factor Loadings |
|---|---|---|---|
| 1 | 2 | The librarians are unapproachable | 0.70 |
| 2 | 3 | The librarians are unhelpful | 0.78 |
| 3 | 4 | The librarians don't have time to help me because they are always on the phone | 0.76 |
| 4 | 5 | I can't find help in the library at the time I need it | 0.73 |
| 5 | 6 | Library staffs don't time to help me | 0.79 |
| 6 | 7 | The librarians don't have time to help me because they are always busy doing something else | 0.79 |
| 7 | 13 | There is often on one available in the library to help me | 0.56 |
| 8 | 15 | I feel like I'm bothering the librarians if I ask a question | 0.42 |
| 9 | 17 | The librarians are unfriendly | 0.66 |
| 10 | 22 | The library staff doesn't care about students | 0.63 |
| 11 | 27 | Librarians don't have time to help me | 0.66 |
| 12 | 31 | The library staff doesn't listen to me | 0.60 |

The majority of items in this factor (barriers with staff) ranged from 0.60 to (item number 31) to 0.79 (items number 6 and 7). However, only two items fell below 0.60 i.e. items number 13 and 15 with factor loadings of 0.56 and 0.42. Items number 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 amount of variance.

## Internal Reliability of Sub-Scale 'Barriers with Staff'

To be psychometrically sound and stable, a scale as well as its sub-scales must be able to demonstrate not only construct validity but internal reliability as well. The 'barriers with staff' sub-scale which has 12 items subsumed under it was examined for internal reliability estimate using Cronbach's internal reliability coefficient alpha. A visual inspection of Table 3 below shows that dropping item number 3 from the sub-scale has the effect of raising the internal reliability coefficient alpha from 0.79 to 0.91. Hence, eleven (11) items constitute a valid and reliable measure of the library anxiety sub-scale,' barriers with staff'. These 11 items are used to compute a new variable called library anxiety associated with

'barriers with staff'. This variable was then used as the dependent variable in examining the effect of student's major and students' attendance in a bibliographic instruction course among undergraduate students in a Malaysian university library environment.

Table 3: Internal Reliability Analysis for 'Barriers with Staff'

| Scale Item | Item description | Alpha if Item is Deleted |
|---|---|---|
| 2 | The librarians are unapproachable | 0.764 |
| 3 | The librarians are unhelpful | 0.762 |
| 4 | The librarians don't have time to help me because they are always on the phone | 0.760 |
| 5 | I can't find help in the library at the time I need it | 0.762 |
| 6 | Library staffs don't time to help me | 0.757 |
| 7 | The librarians don't have time to help me because they are always busy doing something else | 0.754 |
| 13 | There is often on one available in the library to help me | 0.909 |
| 15 | I feel like I'm bothering the librarians if I ask a question | 0.784 |
| 17 | The librarians are unfriendly | 0.768 |
| 22 | The library staff doesn't care about students | 0.766 |
| 27 | Librarians don't have time to help me | 0.764 |
| 31 | The library staff doesn't listen to me | 0.769 |

## Testing of Hypotheses (a) and (b): Independent Sample T-Tests

The results of running an independent sample t-test using students' major as the independent variable revealed that no statistically significant mean differences existed in the dependent variable, 'barriers with staff', $t(299) = -1.20$, $p > .05$ between students majoring in the human/social sciences ($M = 31.01$, $SD = 7.80$) and those majoring in the pure/applied science ($M = 32.17$, $SD = 8.90$). The results of running an independent sample t-test with bibliographic instruction as the independent variable revealed that a statistically significant mean difference existed in the dependent variable, 'barriers with staff', $t(249.98) = -2.64$, $p < .05$ between those who had attended the bibliographic instruction programme ($M = 30.37$, $SD = 7.10$) and those who had not attended the bibliographic instruction programme ($M = 32.96$, $SD = 9.50$). The findings for the above t-tests are depicted in Tables 4a and 4b below.

Table 4a: Mean and Standard Deviations for 'Barriers with Staff' as a Function of Students' Major

| Subscale | Human / Social Sciences | | Pure/Applied Sciences | | t-value | P-value |
|---|---|---|---|---|---|---|
| | M | SD | M | SD | *-1.20* | *0.23* |
| Barriers with Staff | 31.01 | 7.80 | 32.17 | 8.90 | - | - |

Table 4b: Mean and Standard Deviations for 'Barriers with Staff' as a Function of Bibliographic Instruction

| Sub-Scale | Attend Bibliographic Instruction | | Did Not attend Bibliographic Instruction | | t-value | P-value |
|---|---|---|---|---|---|---|
| | M | SD | M | SD | -2.64 | .007 |
| Barriers with Staff | 30.37 | 7.09 | 32.96 | 9.50 | - | - |

## Testing of Hypotheses (c) through (e): Testing for Main and Interaction Effects

The results of running a 2 x 2 Factorial ANOVA revealed that students' major had no main effect on the dependent variable, 'barriers with staff', $F(1, 296) = 1.93$, $p > .05$. However, bibliographic instruction had a main effect on the dependent variable, 'barriers with staff', $F(1, 296) = 7.60$, $p < .05$. Additionally, the results also revealed that a statistically significant interaction effect between students' major and bibliographic instruction on 'barriers with staff', $F(1, 296) = 5.16$, $p < .05$. The findings revealed that students majoring in the human/social sciences who had attended the bibliographic instruction programme reported the lowest levels of library anxiety associated with 'barriers with staff' ($M = 30.78$) when compared to pure/applied science students who did not attend the bibliographic instruction programme ($M = 34.63$). The findings are depicted in Tables 5 and 6 below.

Table 5: Main and Interaction Effects of Students Major and Bibliographic Instruction on "Barriers with Staff"

| Barriers with Staff | df | MS | F | P Value |
|---|---|---|---|---|
| Main Effect of Students Major | 1 | 130.40 | 1.93 | 0.16 |
| Main Effect of Bibliographic Instruction | 1 | 473.59 | 7.01 | .009 |
| Students Major X Bibliographic Instruction | 1 | 348.79 | 5.16 | .024 |
| Within-cells Error | 296 | 67.61 | - | - |

Table 6: Means for Students Major X Bibliographic Instruction on 'Barriers with Staff'

| Students Major | Bibliographic Instruction Attended | Mean |
|---|---|---|
| Human/Social Sciences | Yes | 30.78 |
| | No | 31.14 |
| Pure/Applied Sciences | Yes | 29.94 |
| | No | 34.63 |

## DISCUSSION AND CONCLUSIONS

Though much effort has been expended in identifying the antecedents of library anxiety (Onwuegbuzie, Jiao and Bostick, 2004), hardly any attempt was made to determine whether students' major would have any effect on the variation of library anxiety associated with 'barriers with staff' individually as well as jointly with other antecedents. This study was undertaken to identify the individual and joint effects of students' major as

well as attendance in bibliographic instruction programmes on the library anxiety sub-scale, 'barriers with staff' among undergraduate library users in a Malaysian university library environment.

The results showed that the library anxiety sub-scale, 'barriers with staff' did not significantly discriminate between students majoring in the human/social sciences and those majoring in the pure/applied sciences. Further, the findings also revealed that the library anxiety sub-scale, 'barriers with staff' significantly discriminated between students who attended the bibliographic instruction programme and those who did not attend such a programme. The results of running a 2 X 2 Factorial ANOVA revealed findings that are consistent with those of the independent sample t-tests. Students' major had no statistically significant main effect on the library anxiety sub-scale, 'barriers with staff'. However, attendance in bibliographic instruction programme has a statistically significant main effect on the library anxiety sub-scale, 'barriers with staff'.

An interesting finding is that there was a statistically significant interaction effect between students' major and attendance in bibliographic instruction programme on the library anxiety sub-scale, 'barriers with staff'. This finding is interesting since it identified attendance in bibliographic instruction programme as a moderating variable rather than as a typical independent variable. The relationship between students' major and sub-scale, 'barriers with staff' became statistically significant only when attendance in bibliographic instruction programme was added as an additional antecedent variable to examine the variation in the sub-scale, 'barriers with staff'. The findings showed that human/social science majors who attended the bibliographic instruction programme reported the lowest levels of library anxiety associated with 'barriers with staff ($M = 30.78$) when compared to pure/applied science majors who did not attend such a programme ($M= 34.63$).

The finding with regards to antecedent variable bibliographic instruction programme is consistent with that of previous studies as reported by Abusin (1998) who found students who had attended a library instruction course to have reported significantly lower levels of library anxiety than those who had not attended such a programme. The finding also supports that of Cleveland (2001) who found that students in the bibliographic instruction group to have reported statistically significant lower levels of library anxiety than those in the control group. This finding also somewhat supports that of Jiao and Onwuegbuzie (1997) who found that participants who had received library instruction programmes were less likely to experience library anxiety associated with 'affective barriers'.

This study is perhaps the first to have employed students' major as an antecedent variable in the library anxiety research programme. Despite not having a statistically significant effect as an independent variable, significant differences in the library anxiety sub-scale, 'barriers with staff' was found only when bibliographic instruction was added as antecedent variable in the analysis. This finding highlighted the role played by bibliographic instruction as a moderating variable. Thus attendance in bibliographic instruction programme is just not another antecedent or independent variable. It moderates the relationship between students major and library anxiety sub-scale, 'barriers with staff'. Herein lies the importance of this study; it brought to light the role played by attendance in bibliographic instruction programme as a moderating variable. More studies need to be conducted to determine whether its role as a moderator is consistent across the other library anxiety sub-scales too.

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