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Anxiety of ESL Students in Business Classes and Their Coping Strategies: An Empirical Study in Cambodia

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Abstract: - This study sought to examine different dimensions regarding anxiety expressed by English as a Second Language (ESL) students undertaking business courses in English. An inferential sample was drawn from the undergraduate business program of an institution of higher education in Phnom Penh, Cambodia. An anonymous, self-administered questionnaire was utilized to test the variables of gender, location were respondents were raised, their years of studying English, self-assessment of English proficiency, and self-category of academic grade. The study also examined any correlation between self-assessment of difficulty (and consequential anxiety) by course subject and self-assessment of the mathematical highness of each of the course subjects. Finally, it explored potential coping strategies that students considered when studying business. The study found at least partial support for most of the examined variables and also found that the order of the ranking of perceived difficulty of the program's business courses matched exactly the rank of the assessed mathematical heaviness of the respective courses. Finally, the prioritization of preparation was viewed as the most favorable strategy for coping with anxiety when taking a business course. This is a pioneering effort regarding the study of ESL business students in Cambodia and the study's results provide beneficial pedagogical insights.

Keywords— Business English, Cambodia, English Anxiety, Coping Strategies, English as a Second Language (ESL), Pedagogy.

I. INTRODUCTION

English has become the *lingua franca* of the international business world, creating a challenge for higher education to teach business courses to students who use English as a Second Language (ESL). Educators must deal with the fear or apprehension of students experiencing foreign language anxiety which has come to be generally defined as "a distinct complex of self-perceptions, beliefs, feelings, and behavior related to classroom language learning arising from the uniqueness of the language learning process" (Horwitz et al., 1986).

Anxiety, within the context of learning by using a foreign language, has been discussed for over sixty years (He, 2018). It is a complex and multidimensional phenomenon which combines, among other things, communication anxiety, test anxiety, self-efficacy, motivation, and fear of negative evaluation by others. The phenomenon is further complicated by cultural differences regarding communication styles (Loh & Teo, 2017).

Most linguistic studies have examined anxiety as a psychological construct and, accordingly, have engaged in psychometric analyses, applying both quantitative and qualitative methodologies that focused on expressions of anxiety apprehension, nervousness, and fear (Dewaele et al., 2017; He, 2018; Kao & Craigie, 2013; Karatas et al., 2016). However, only a few studies have focused on the specific dimensions of anxiety in business course settings, with some examining general anxiety in business classes, (Jamshed et al., 2024; Kutwattanapaisarn et al., 2022; Li, Zhang, 2022) while others focused on specific English skills in a business class context: reading (Chen & Intaraprasert, 2019) speaking and presentations (Cepon, 2018; Faqihi, 2023; Loan, 2022; Sholikhi, 2021; Yulian & Ruhama, 2020), and writing (Kassem, 2017).

However, these studies maintained a strictly psychometric approach regarding student anxiety and generally applied their measurements of anxiety without providing a contextual analysis that tied levels of anxiety and perceptions of difficulty to the specifics of the business classes examined, including self-assessment of the difficulty of the specific course subject and self-assessment of the mathematical heaviness of that subject. Their focus on general anxiety mainly did not emphasize potential differentials by demographic factors and did not examine factors such as math anxiety, expressions of mathematical reasoning, verbalizing math concepts, structured writing and a focus on clarity in business communications (including for presentations) with its specialized nomenclature. Therefore, this study sought to achieve the following research objectives:

1. To determine if there are significance differences in the rating of self-assessed difficulty in studying business in English based on the demographic variables of gender, where the student was raised (in this case, the

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central city of Phnom Penh or the provinces), by self-identified English proficiency, self-identified academic grade classification, and years of English studied.
2. To determine if there is a direct correlation between the level of self-assessed difficulty of a course subject and the self-assessed level of mathematical heaviness.
3. To determine the coping strategies and tactics used by ESL students to deal with anxiety in business courses.

II. LITERATURE REVIEW

This study's review of prior literature focused on research that specifically addressed the anxiety challenges of ESL students in a classroom setting in order to allow for an appropriate contextual compatibility to conduct a robust comparison. Some studies found that the level of language anxiety among ESL males was greater that of ESL females (Capan & Simsek, 2012; Dogan & Tuncer, 2016; while most found that female student experienced greater anxiety (Demirdas & Bozdogan, 2013; Franco & Roach, 2016; Park & French, 2013). A few found no significant differences between genders (Jamsehed et al., 2024; Piechurska-Kuciel, 2012; Simsek, 2015). As a result, the following hypothesis was tested:

H_1: There will be significant statistical mean differences in ratings of difficulty of the four English modes by gender.

The higher education institution being examined is located in a central city (Phnom Penh) from which approximately half of the inferential sample respondents originated as opposed to the country's mainly rural provinces. The presumption is that a central city offers greater exposure to English education, and therefore, where a respondent grew up may affect their ratings of difficulty of the four English modes (i.e, speaking, listening, reading, and writing). This demographic variable is unique to this study regarding this subject.

H_2: There will be significant statistical mean differences in ratings of difficulty of the four English modes by location where the student grew up.

A logical presumption is that the respondent's ratings of difficulty will be based on self-designated grade classifications with the assessment of difficulty rising if the self-designated grade classification is lower. However, there no prior literature has examined this relationship.

H_3: There will be significant statistical mean differences in ratings of difficulty (and consequential anxiety) of the four English modes by self-designated grade classifications (e.g. an "A" Student, "B" Student, "C" Student, "D-F" Student).

A logical presumption is that the respondents' assessed ratings of difficulty will provide an inverse relationship with the self-assessment of their English proficiency. No prior literature has tested for this.

H_4: There will be significant statistical mean differences in ratings of difficulty of the four English modes by self-identified English proficiency.

A logical presumption is that the respondents' assessed rating of difficulty will provide an inverse relationship with the self-assessment of their years of studying English. Despite this important variable, no prior studies have examined this relationship.

H_5: There will be significant statistical mean differences in ratings of difficulty of the four English modes by years of studying English.

The mean ratings of five causes of perceived anxiety were summed and divided by five in this study to produce a mean anxiety rating that placed each respondent into either a low or high anxiety group based on their mean rating. A consequential mathematical analysis, unique to the dimensions of this study, examined how mean rating in relation to the methods/tactics employed in dealing with anxiety.

H_6: There will be statistically significant group differences between Low Anxiety students and High Anxiety students in their agreement levels for employing methods/tactics to deal with anxiety.

Prior research (Kao & Craigie, 2013; Kong & Yang, 2004) examined a typology of five coping strategies to deal with anxiety of ESL students: Preparation (to allocate time to study hard and obtain good summaries of review material), Relaxation (finding ways to remain calm), Positive Thinking (imagining a successful outcome), Peer Seeking (asking others for help and reinforcement), and Resignation (giving up).

H_7: There will be statistically significant differences in ratings of the coping strategies selected to employ for business study anxiety.

An examination was made to assess any differences by self-identified academic grade category based on gender, location where the student grew up, self-assessment of English proficiency, degree of liking mat, degree of liking to communicate in English, and years of English studied. No prior literature has examined these relationships.

H_8a: There will be differences by self-identified grade category of student by gender.

H_8b: There will be differences by self-identified grade category of student by location where the student grew up

H_8c: There will be statistically significant differences in mean ratings of self-assessed English proficiency by self-identified student grade category.

H_8d: There will be statistically significant differences in mean ratings of liking math by self-identified student grade category.

H_8e: There will be statistically significant differences in mean ratings of liking to communicate in English by self-identified student grade category.

H_8f: There will be statistically significant differences in mean ratings of years studying English by self-identified student grade category.

III. Research Design And Methodology

A freshman class within an undergraduate population of a business-focused, higher education institution in Phnom Penh, Cambodia was studied based on convenience sampling. The Krejcie and Morgan (1970) table was utilized to create an inferential sample of 227 respondents from a general population of 2,127 students consisting of 553 freshmen. Only freshmen were analyzed since the increased exposure and mastering of academic material over time, in general but particularly after the first year with the initial infusion of business concepts and nomenclature, will lower student anxiety through exposure. As per the demographic (independent) variables being examined, the sample reflected the general population percentage breakdown as to gender and year of study: females (157 respondents in total, representing 69% of both the sample and general populations) and males (70 respondents in total, representing 31% of both the sample and general populations). The school's administration did not possess specific data for the demographic variable of where the respondents grew up. English proficiency by skill and by range, as well as academic grade level, were self-assessments by the respondents with no institutional data available. Overwhelming homogeneity as to ethnicity (all the respondents were Cambodians) eliminated this potential demographic variable.

The study was operationalized using an anonymous, self-administered paper questionnaire that was distributed in a classroom setting. Potential respondents were informed that participation was voluntary and that choosing not to participate would not adversely impact the student. The process was anonymous with respondents informed not to write their name or student identification number. The questionnaire was translated into Khmer and then translated back by a native speaker of Khmer to assess for any possible loss in translation (Domyei & Taguchi, 2009). Questions consisted of a a forced-choice, four-point Likert scale from "Strongly Disagree" (value of 1) to "Strongly Agree" (value of 4). As a result of pretesting the questionnaire, the scale was designed to deliberately exclude a neutral option (e.g., "Not Sure"), due to the cultural trait in Southeast Asia of avoiding the expression of one's opinion or emotional reaction (Holmes et al., 2003; Johnson & Morgan, 2016, Loh & Teo, 2017). The reliability analysis for these statements produced a Cronbach's Alpha of .80, exceeding the .70 requirement for internal consistency (Hair et al., 2010).

IV. Data Analysis And Discussion

This study of factors regarding student anxiety in their business classes began by examining suspected differences in how students of different proficiency levels assessed their use of English in four skill areas that related to their studies: Speaking English, Writing English, Reading English, and Listening in English. Respondent descriptive statistics are provided in Table 1.

Table 1: Respondent Descriptive Statistics Regarding English Usage*

Gender				**Where Grew Up**				**Self-Reported English Proficiency**					
Male		**Female**		**Phnom Penh**		**Other Provinces**		**Below Avg.**		**Average**		**Above Avg.**	
#	%	#	%	#	%	#	%	#	%	#	%	#	%
70	30.8	157	69.2	124	54.6	103	45.4	19	8.4	137	60.3	71	31.3

Respondent Self-Assessment on the Four English Skills.

Writing English		**Speaking English**		**Listening in English**		**Reading English**	
$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd
2.43	.667	2.67	.716	2.77	.798	2.95	.633

*Where 1 = Difficult, 2 = Somewhat Difficult, 3 = Somewhat Easy, and 4 = Easy

In this study, a four-point, Likert scale was used. The four-point scale was selected due to the tendency of persons from Southeast Asia to select the middle option (e.g., "Not Sure" or "No Opinion") on a 5-point scale, thereby avoiding the need to assert an opinion or display emotion, a trait prevalent in that part of the world (Holmes et al., 2003; Loh & Teo, 2017). As indicated in Table 1, respondents ranked the various usages of English in order of difficulty with Writing as the most difficult, followed by Speaking, Listening and then Reading as the least difficult.

The first two hypotheses (H_1 and H_2) proposed that there would be mean group rating differences for the four usages of English by the grouping variables of Gender and Location Where the Student Grew Up. In order to test these hypotheses, t-tests were conducted using the four difficulty ratings for English usage using Gender and Location Where Student Grew Up as the grouping variables in the two tests. The option allowing Equal Variances Not Assumed was applied when a Levene test indicated significant differences in variance across the group distributions. Significant results of these tests are shown in Table 2.

Table 2: Significant t-test Results of Mean Response Ratings for English Usage Type*

Location Where Student Grew Up							
	Phnom Penh (124)		**Provinces (103)**				
Use of English Skill	M	SD	M	SD	Mean Difference	t	p
Speaking English	2.74	.728	2.47	.661	.272	2.754	.006
Writing English	2.50	.712	2.29	.582	.214	2.431	.016
Listen to English	2.87	.757	2.58	.848	.282	2.460	.015

*Where 1 = Difficult, 2 = Somewhat Difficult, 3 = Somewhat Easy, and 4 = Easy

The tests revealed no significant differences by Gender across the four usage modes (skills) of English. However, for the Location Where the Student Grew Up, significant mean rating differences were found to exist for Speaking, Writing, and Listening to English. In every case, the higher mean ratings suggesting that the English usage type was easiest were reported by students that had been raised in Phnom Penh rather than in the Provinces. There was a statistically significant difference in the number of years that students from Phnom Penh ($\bar{X} = 3.42$) studied English compared to their counter-parts from the Provinces ($\bar{X} = 2.87$; $t = 4.189$, $df = 225$, $p < .001$) on the 4-point scale described in Table 3. Hypothesis 1, suggesting significant differences in mean difficulty ratings between gender groupings, was rejected for all four English usage modes. Hypothesis 2, suggesting statistically significant mean difficulty ratings by where students were raised was supported for Speaking, Writing, and Listening to English, but was rejected for Reading.

The study then turned to the identification of statistically significant mean difficulty rating differences across other grouping variables related to the students. These included a self-reported grade category evaluation of the student (e.g., I am an "A" student, "B" student, "C" student or "D-F" student), a self-reported English proficiency rating of the student into one of three categories (Below Average, Average, or Above Average) and the number of years that they have studied English. Descriptive statistics for these categories of groupings are provided in Table 3.

Table 3: Grouping Variables Descriptive Statistics

Grade Level of Student (Self-Classification)				**English Proficiency**			**Years Studying English**			
A	B	C	D - F	Below	Average	Above	1 - 2	3 - 4	5 - 6	≥ 7
36 / 15.9%	106 / 46.7%	78 / 34.4%	7 / 3.1%	19 / 8.4%	137 / 60.4%	71 / 31.3%	16 / 7.0%	38 / 16.7%	50 / 22.0%	123 / 54.2%

In order to examine these groupings for statistically significant differences in mean English difficulty ratings for the four modes of English usage, a MANOVA was selected as. Due to violations of assumption of the homogeneity of variance across the group distributions, the Welch test was used throughout the study as a more conservative test for differences (Mendes & Akkartal, 2010). Statistically significant results of the first of these tests, English mode difficulty rating differences by self-reported Grade Classification, is provided in Table 4.

Table 4: Statistically Significant Differences English Difficulty Ratings by Grade Classification

Rated Variable	Source	DF	SS	MS	F	Welch's F	p
Speaking	Between	3	9.711	3.237	6.804	6.531	.002
	Within	223	106.096	476			
	Total	226	115.806				
Reading	Between	3	9.317	3.106	8.524	8.091	.001
	Within	223	81.255	.364			
	Total	226	90.573				
Listening	Between	3	13.098	4.366	7.433	6.447	.002
	Within	223	130.990	.587			
	Total	226	144.088				

The MANOVA indicated that there were statistically significant differences in some pairings of Grade Classification groups for the English usage modes of Speaking, Reading, and Listening. In order to determine among which pairings these differences exist, a Games-Howell post hoc test was performed. This post hoc test type was selected because it does not assume equality of distribution variances. The results of this test are provided in Table 5.

Table 5: Statistically Significant Mean Difficulty Rating Pairings by Grade Category1

Rated Variable	Grade Categories2	$\bar{X}$	SD	p-value
Speaking English	A vs. C	3.00 vs. 2.41	.676 vs. .692	< .001
	B vs. C	2.72 vs. 2.41	.687 vs. .692	.017
Reading English	A vs. C	3.19 vs. 2.68	.624 vs. .614	.001
	B vs. C	3.03 vs. 2.68	.593 vs. .614	.001
Listening to English	A vs. C	2.97 vs, 2.50	.736 vs. .818	.015
	B vs. C	2.94 vs. 2.50	2.94 vs. 8.18	.001

[1]Where 1 = Difficult, 2 = Somewhat Difficult, 3 = Somewhat Easy, and 4 = Easy

[2]Where A = "A" Student, B = "B" Student and C = "C" Student

Of the 24 possible pairings a total of 6 were found to be statistically significantly different in mean ratings of English Difficulty. All involved those students who self-classified themselves as "C" students and all had lower mean ratings for the English modes indicating that they viewed these as more difficult than did the "A" or "C" students. While the mean ratings for the "D-F" students were observably different from those of their peers in many cases, the small sample size for that group prevented statistically significant differences from being detected. This hypothesis is partially supported for Speaking, Reading and Listening. It was rejected for Writing.

The next set of hypotheses suggested statistically significant mean difficulty ratings by self-determined English Proficiency Ratings (Below Average, Average, and Above Average). Again, a MANOVA was determined to be the appropriate statistical tool to examine the data for differences. Significant results of this procedure are shown in Table 6.

Table 6: Statistically Significant Differences in English Difficulty Ratings by English Proficiency

Rated Variable	Source	DF	SS	MS	F	Welch's F	p
Speaking	Between	2	27.713	13.857	35.235	41.638	< .001
	Within	224	88.093	.393			
	Total	226	115.806				
Writing	Between	2	12.133	6.067	14.865	31.279	< .001
	Within	224	91.418	.408			
	Total	226	103.551				
Reading	Between	2	10.921	5.460	15.356	17.462	< .001
	Within	224	79.652	.356			
	Total	226	90.573				
Listening	Between	2	35.446	17.723	36.541	35.637	< .001
	Within	224	108.642	.485			
	Total	226	144.088				

This time the different modes of English usage produced significant differences in mean ratings for all four modes. To explore where these significant pairings appeared, the Games-Howell post hoc test was once again applied. The results of that analysis appear in Table 7.

Table 7: Statistically Significant Difficulty Rating Mean Pairings by English Proficiency Ratings

Rated Variable	**Proficiency Levels2**	**$\bar{X}$ 1**	**SD**	**p-value**
Speaking English	1 vs. 2	2.00	.471	.001
	1 vs. 3	2.49	.643	< .001
	2 vs. 3	3.13	.631	< .001
Writing English	1 vs. 2	1.95	.229	< .001
	1 vs. 3	2.34	.598	< .001
	2 vs. 3	2.73	.774	.001
Reading English	1 vs. 2	2.42	.507	.007
	1 vs. 3	2.85	.605	< .001
	2 vs. 3	3.20	.600	< .001
Listening to English	1 vs. 2	1.79	.713	< .001
	1 vs. 3	2.66	.700	< .001
	2 vs. 3	3.24	.686	< .001

[1]Where 1 = Difficult, 2 = Somewhat Difficult, 3 = Somewhat Easy, and 4 = Easy

[2]Where 1 = Below Average, 2 = Average and 3 = Above Average

All 12 possible pairings were found to contain statistically significant mean difficulty ratings with low p-values. This seems to serve as an indicator that the students were relatively good at self-determining their level of English proficiency in that as their self-designated English proficiency moved from the Below Average group to the Average Group and then to the Above Average grouping, their mean difficulty scores indicated easier and easier levels of difficulty for the four rated English usage modes.

The final comparison of mean difficulty ratings was conducted across groupings formed by student reports of the number of years that they had studied English. Again, the MANOVA was chosen as the most appropriate statistical tool to examine the data for statistically significant mean differences. The results are presented in Table 8.

Table 8: Statistically Significant Differences in English Difficulty Ratings by Years of English Study

Rated Variable	**Source**	**DF**	**SS**	**MS**	**F**	**Welch's F**	**p**
Speaking	Between	3	25.263	8.421	50.740	22.815	< .001
	Within	223	90.543	.406			
	Total	226	115.803				
Writing	Between	3	12.065	4.022	9.803	10.395	< .001
	Within	223	91.486	.410			
	Total	226	103.551				
Reading	Between	3	13.060	4.353	12.524	11.278	< .001
	Within	223	77.513	.348			
	Total	226	90.573				
Listening	Between	3	27.691	9.230	17.684	20.622	< .001
	Within	223	116.397	.522			
	Total	226	144.088				

Again, all the modes of English usage were shown to have statistically significant different mean pairings. The Games-Howell post hoc test was once again utilized to examine the data for statistically significant mean pairing differences. The results of that analysis are provided in Table 9.

Table 9: Statistically Significant Difficulty Rating Mean Pairings by Years of English Study

Rated Variable	**Years Studying English2**	**$\bar{X}$ 1**	**SD**	**p-value**
Speaking English	1 vs. 4	2.25 vs. 2.95	447 vs. .676	< .001
	2 vs. 4	2.21 vs. 2.95	528 vs. .676	< .001
	3 vs. 4	2.36 vs. 2.95	663 vs. .676	< .001

Rated Variable	Years Studying English2	$\bar{X}$ 1	SD	p-value
Writing English	1 vs. 4	2.13 vs. 2.63	500 vs. .693	.007
	2 vs. 4	2.11 vs. 2.63	559 vs. .693	< .001
	3 vs 4	2.26 vs. 2.63	600 vs. .693	.003
Reading English	1 vs. 4	2.50 vs. 3.12	632 vs. .581	.007
	3 vs. 4	2.60 vs. 3.12	639 vs. .581	< .001
Listening to English	1 vs. 4	2.38 vs, 3.09	500 vs. .678	< .001
	2 vs. 4	2.32 vs. 3.09	620 vs. .678	< .001
	3 vs. 4	2.46 vs. 3.09	930 vs. .678	< .001

[1]Where 1 = Difficult, 2 = Somewhat Difficult, 3 = Somewhat Easy, and 4 = Easy

[2]Where 1 = 1 – 2 years, 2 = 3 – 4 years, 3 = 5 – 6 years and 4 = ≥ 7 years

The data appears to indicate that significant gains in becoming more comfortable, experiencing less difficulty in pretty much all modes of the use of English do not seem to come in the early years. It is only after seven years of study that large differences appear in perceptions of difficulty in the use of English. The only exception to this was in the area of Reading where no statistically significant difference appeared in comparing 3 – 4 years of study with ≥ 7 years of study. The implication is that consistent study of English really begins to pay off after the first six years.

Students were then asked to rate a total of eight class subjects and activities that they face in their business studies in college in terms of their perception of the difficulty involved with each due to its English language requirement. This was done by having students respond to forced-response Likert scale statements that ranged from "Very Difficult" to "Very Easy." Again, a four-point scale was purposefully selected due to the cultural tendency to select the center point in a scale. The results of this task are shown in Table 10 in order of mean difficulty, from most difficult to least difficult.

Table 10: Result of Students' Responses to Difficulty

No.	Statement	Scale by Percentage				
		Very Difficult	Difficult	Easy	Very Easy	Mean*
1	Studying Accounting in English is	21.7	78.3	0.0	0.0	1.78
2	Studying Statistics in English is	18.3	67.8	12.2	1.7	1.97
3	Writing a business term/research paper in English is	19.6	52.6	27.8	0.0	2.08
4	Studying Finance in English is	2.6	80.0	17.4	0.0	2.15
5	Studying Economics in English is	2.5	76.4	19.8	1.3	2.19
6	Doing a presentation in English in front of a class is	17.8	49.6	29.1	3.5	2.25
7	Studying Business Research Methods in English is	1.7	64.8	31.7	1.8	2.33
8	Studying Management Theory in English is	0.0	19.6	75.2	5.2	2.86
9	Studying Marketing in English is	0.0	16.1	75.0	8.9	2.93

*Where 1 = Difficult, 2 = Somewhat Difficult, 3 = Somewhat Easy, and 4 = Easy

The mean ratings ranged from a low of 1.78 for Studying Accounting in English, indicating higher levels of difficulty to a high of 2.93 for Studying Marketing in English indicating greater ease of studying this subject in English, for a range of 1.15 for the means. The business subjects tended to be toward either the high or low end of the difficulty ratings with Writing a Term/Research paper ($\bar{X}$ = 2.08) and Doing a Presentation ($\bar{X}$ = 2.18) toward the center of the ratings distribution. An interesting result was that those subjects commonly thought to be more math-related, such as Accounting ($\bar{X}$ = 1.78) and Statistics ($\bar{X}$ = 1.97) were consistently rated more highly difficult than the more theory-based subjects such as Management Theory ($\bar{X}$ = 2.86) or Marketing ($\bar{X}$ = 2.93).

Students were also asked to rate subjects as to their perceptions of how mathematically heavy each subject was from "Very High Mathematically" to "Not Math Heavy," once again using a four-point Likert scale. The results of this investigation are shown in Table 11 in order of mathematical heaviness from Very Heavy (1) to Not Heavy (4).

Table 11: Result of Students' Responses to Mathematical Heaviness of Subjects

No.	Statement	Scale by Percentage				
		Very High Math	**Somewhat High Math**	**Somewhat Not High Math**	**Not Math Heavy**	**Mean**
1	Accounting Heavy in Math	18.3	77.4	4.3	0.0	1.86
2	Statistics Heavy in Math	10.4	75.7	13.9	0.0	1.97
3	Finance Heavy in Math	3.5	67.4	27.4	1.7	2.15
4	Economics Heavy in Math	3.2	62.8	26.3	7.7	2.46
5	Business Research Methods Heavy in Math	1.7	44.8	43.0	10.4	2.62
6	Management Theory Heavy in Math	1.7	40.4	47.0	10.9	2.67
7	Marketing Heavy in Math	0.9	15.2	54.8	29.1	3.12
8	I Like Math*	7.0	27.8	51.3	13.9	2.72

*Where 1 = Very High Math and 4 = Not Math Heavy

With the items sampling the tasks of "Writing a Business Term/Research Paper" and "Doing a Class Presentation" removed, the business subjects for which the students rated Math Heaviness lined up in exactly the same order as they were rated for their difficulty. Accounting ($\bar{X}$ = 1.86) and Statistics ($\bar{X}$ = 1.97) were rated as the most "Very High Mathematically," while Management Theory ($\bar{X}$ = 2.67) and Marketing ($\bar{X}$ = 3.12) were rated as "Not Math Heavy." Respondents reported a relatively high level agreement with the statement "I Like Math" with a mean rating of 2.72 and 65.2% of the students showing some level of agreement with the statement.

The next set of questions examined students' perceived anxiety associated with tasks associated with various activities related to taking math-related classes in college. Again, students were presented with a set of statements relating to anxiety and were asked to respond on a four-point Likert scale with their level of agreement with each statement that these things give them anxiety. Results of this portion of the study are presented in Table 12. The results are presented in order from those items producing the lowest level of anxiety to the highest.

Table 12: Result of Students' Responses Questions Regarding Perceptions of Anxiety

No.	Statement	Scale by Percentage				
		Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**	**Mean***
1	Being Given Homework with Math Problems	11.3	44.3	37.4	7.0	2.40
2	Listening to a Class Lecture on Math	13.0	43.0	33.5	10.5	2.41
3	Read and Interpret Graphs and Charts	7.4	30.4	55.2	7.0	2.62
4	Taking an Exam in a Math Related Course	8.7	38.3	34.8	18.2	2.64
5	Getting Ready to Study for a Test with Math	11.3	28.7	41.3	18.7	2.67

*Using a range of 1(low anxiety) to 4 (high anxiety)

The results indicate that all of these math-related situations produce relatively high levels of anxiety, with a grand mean of 2.55 out of 4.0, 63.7% up the scale. The items seem to cluster at about 2.4 (Homework and Lecture) and 2.64 (Interpreting Graphs, Exam Taking, and Studying for a Test with Math). In order to test whether these two clusters could be considered significantly different, the mean for each of the two clusters was determined (Homework and Lecture $\bar{X}$ = 2.405) and (Interpreting Graphs, Exam Taking, and Studying for a Test with Math, $\bar{X}$ = 2.643). A one sample t-test was then run to determine if the means for the two clusters were significantly different. Both Lecture on Math ($\bar{X}$ = 2.41, *sd* = .846, $p < .001$) and Homework with Math ($\bar{X}$ = 2.40, *sd* = .780, $p < .001$) were significantly different from the second cluster which included Interpreting Graphs ($\bar{X}$ = 2.62, *sd* = .725, $p < .001$) Exam Taking ($\bar{X}$ = 2.63, *sd* = .881, $p < .001$) and Studying for a Test with Math ($\bar{X}$ = 2.67, *sd* = .097, $p < .001$). The two clusters were significantly different in their mean anxiety ratings. It would appear that items that did not require immediate or impending performance are less anxiety invoking than those that did involve such a performance.

Students were then asked about their tactics in dealing with anxieties such as those explored above. Six different methods were presented and students were asked to express their level of agreement with each method for dealing with anxiety. The responses are presented in order of mean agreement from lowest to highest in Table 13.

Table 13: Result of Students' Responses Questions Regarding Tactics for Dealing with Anxiety

No.	Statement	Scale by Percentage				
		Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**	**Mean***
1	I ask questions to the teacher before, during, or after class, including emails.	8.4	31.0	50.2	10.4	2.62
2	I often study for exams or class projects with another student or a group of students.	8.6	28.7	35.7	27.0	2.81
3	I take many notes in class and sometimes borrow notes from my classmates.	3.5	23.9	41.7	30.9	3.00
4	I read and study all the reading material (for example, textbooks, handouts) very carefully.	1.7	17.8	48.3	32.2	3.11
5	I often stop to look up words in the dictionary or the Internet when I am studying.	4.3	11.7	50.5	33.5	3.13
6	I ask friends for help when I do not understand something about the class material.	3.5	4.3	37.0	55.2	3.44

*Using a range of 1(low anxiety) to 4 (high anxiety)

Results indicated that while all of the presented methods were utilized by the respondents, students rated Asking Questions of Their Teacher the lowest at $\bar{X}$ = 2.62. This is not surprising as students in Southeast Asian cultures tend to learn in a teacher-centered environment that focuses on control of the classroom and one that conditions students to be passive and to speak only when asked to do so. Loh and Teo (2017) suggest that students view asking questions of their teachers as wasting the other students' time and that students posing questions may lose face and become embarrassed by revealing a knowledge gap. On the other hand, asking fellow students for help with things that they do not understand from class was the highest rated method ($\bar{X}$ = 3.44, a mean difference of 0.75 out of four) for reducing class related anxiety.

The question next examined was: Do students experiencing different levels of anxiety (High vs. Low) tend to employ different methods of dealing with their anxiety? The mean ratings of the five causes of perceived anxiety shown in Table 4 were summed and then divided by five, producing a mean anxiety rating for each student. Then students were placed into a low or high anxiety group based on their mean rating for the computed anxiety variable. Out of a possible anxiety score of 5, Group 1, the Low Anxiety group, had a mean anxiety rating of $\bar{X}$ = 2.06, (*sd* =.533, *n* = 115) while Group 2, the High Anxiety group had a mean anxiety rating of $\bar{X}$ = 3.97, (*sd* = .703, *n* = 112). A t-test was performed to examine whether the two resulting groups had statistically significant different means. They were found to be statistically significantly different at $p > .001$, $t = -23.192$, $df = 206.871$.

In order to test the hypothesis (H_6), whether the two anxiety groups dealt differently with their anxiety, a t-test was performed to see where any differences might exist. The results showing significant group differences are presented in Table 14.

Table 14: t-test Results of Mean Response Ratings for Methods/Tactics to Deal with Anxiety*

Anxiety Group							
Method to Deal with Anxiety	**Low Anxiety (118)**		**High Anxiety (112)**				
	$\bar{X}$	**SD**	**$\bar{X}$**	**SD**	**Mean Difference**	**t**	**p**
Take and Borrow Notes	2.83	.809	3.19	.833	-3.57	-3.296	.001
Search Dictionary or Internet	3.25	.797	3.00	.747	.254	2.492	.013
Ask Friends for Help	3.19	.837	3.71	.496	-.519	-5.756	< .001

* Where 1 = Strongly Disagree and 4 = Strongly Agree

Of the five examined methods for dealing with anxiety, the Low vs. High Anxiety groups differed on three of these methods. Lower Anxiety students were more likely to look up words in the dictionary or on the Internet, not relying on others for help, while those in the Higher Anxiety group were more likely to take more notes and borrow notes from others and to ask their friends when they do not understand the materials. It suggests that those with Lower Anxiety levels rely more on their own abilities to search for answers than those with Higher Anxiety levels who appear more likely to look to others for help. Hypothesis 6 is therefore partially supported. Students with different levels of anxiety deal with the anxiety employing significantly different methods.

The study also examined a hypothesis (H_7) that suggested that there will be significantly different overall coping strategies selected when students are faced with the five anxiety-causing factors examined in this study that are encountered when studying business subjects. Students were presented with five coping strategies and were asked to indicate which one of the five that they were most likely to employ when faced with these anxiety-producing situations. These strategies included Preparation, Relaxation, Positive Thinking, Asking for Help from Friends, and Resignation. The descriptive statistics for each of the coping strategies are presented in Table 15.

Table 15: Coping Strategies for Anxiety

Coping Strategy									
Prepare		**Ask For Help**		**Positive Thinking**		**Resignation**		**Relax**	
#	$\bar{X}$ / sd	#	$\bar{X}$ / sd	#	$\bar{X}$ / sd	#	$\bar{X}$ / sd	#	$\bar{X}$ / sd
95	2.72 / .686	65	2.63 / .858	53	2.62 / .480	8	1.50 / .535	6	2.00 / .620

Due to insufficient numbers, “Relax” and “Resign” were dropped from the analysis and sample size was reduced from 227 to 216. A in order to test the hypothesis, a MANOVA was conducted on the three remaining strategies using each strategy as a grouping variable to examine differences in selection of coping strategy based on the five anxiety-producing situations explored in this study. Statistically significant results of that test are provided in Table 16.

Table 16: Statistically Significant Differences in Coping Strategies for Business Study Anxiety

Anxiety Cause	**Source**	**DF**	**SS**	**MS**	**F**	**Welch’s F**	**p**
Lecture on Math	Between	2	5.777	2.889	4.631	4.308	.016
	Within	213	132.848	.624			
	Total	215	138.625				
Study for Math Test	Between	2	10.228	5.114	6.950	6.903	.001
	Within	213	156.731	.736			
	Total	215	166.958				
Exam in Math	Between	2	10.113	5.056	6.850	6.418	.002
	Within	213	157.221	.738			
	Total	215	167.333				

While the test did show that there are statistically significant differences in means for these three anxiety-producing variables, it did not show among which means these differences were found. In order to determine this, a Games-Howell post hoc test was conducted. This particular test was selected because it does not assume equality of variances. The results of the test are provided in Table 17.

Table 17: Statistically Significant Pairings of Coping Strategy Means*

Anxiety Cause	**Classifications**	**$\bar{X}$**	**SD**	**p-value**
Lecture on Math	Positive Thinking vs. Ask for Help	2.12 vs. 2.56	758 vs .924	.014
Study Math Test	Prepare vs. Positive Thinking	2.75 vs. 2.27	880 vs .866	.005
	Positive Thinking vs. Ask for Help	2.27 vs. 2.81	866 vs. .814	.002
Exam in Math	Prepare vs. Positive Thinking	2.76 vs. 2.23	842 vs. .899	.002
	Positive Thinking vs. Ask for Help	2.23 vs. 2.69	899 vs. .852	.017

*Where 1 = Strongly Disagree to 4 = Strongly Agree

As shown in the MANOVA, there were differences in coping strategies for the three different anxiety causes examined in this study. For Lecture on Math, respondents differed in their use of Positive Thinking vs. Asking for Help with a greater magnitude (mean difference = 0.44) of agreement toward Asking for help. In Studying for a Math Test, Preparation received a higher level of agreement than did Positive Thinking (mean difference = 0.48) and Asking for Help received a higher magnitude of agreement than did Positive Thinking (mean difference = 0.54). Finally, for the anxiety cause Exam in Math, Prepare had a higher level of agreement than did Positive Thinking (mean difference = 0.53) and Ask for Help received a greater magnitude of agreement than did the Positive Thinking coping strategy (mean difference = 0.46).

It would appear from these results that students preferred a more proactive strategic approach in coping with stress by choosing to act by Preparing or Asking for Help rather than passively engaging in Positive Thinking. Since the hypothesis suggested that there would be differences in coping strategies when it came to addressing the various causes of anxiety explored in this study and differences were identified in five of the fifteen possible pairings of coping strategies, partial support was found for Hypothesis 7.

A final portion of the study examined a number of variables and how they might be related to self-reports of how well students performed in school. Students responded to a question that stated "I believe that I am a/n "A" student, "B" student, "C" student or "D" or below student. The variables examined started with a self-report of English Proficiency ranging from 1, "Bad/Poor," to 5, "Excellent/Fluent. Then a four-point Likert scale (ranging from "Strongly Disagree" to "Strongly Agree") asked students their level of agreement with a statement that "They Liked Math," and that they "Enjoy Communicating in English." Respondents then reported the number of years that they had studied English and whether they had grown up in Phnom Penh or in the Provinces. Demographic and other descriptors for the participants are provided in Table 18.

Table 18: Respondent Descriptive Statistics

Gender				**Where Grew Up**				**Self-Assessed English Proficiency**					
Male		**Female**		**Phnom Penh**		**Other Provinces**		**Below Avg.**		**Average**		**Above Avg.**	
#	%	#	%	#	%	#	%	#	%	#	%	#	%
70	30.8	157	69.2	124	54.6	103	45.4	19	8.4	137	60.3	71	31.3

Like Math		**Enjoy English**		**Years Studying English**				**Self-Reported Student Grade**				
$\bar{X}$	sd	$\bar{X}$	sd				≥ 7	A	B	C	D	F
2.72	.788	3.18	.538				165	64	78	61	24	0

Hypothesis H_8a suggested that students grouped by gender would have statistically significant differences in proportions of membership in each of the four categories of grades (i.e., "A" Student, "B" Student, etc.). Statistically significant proportional differences were also hypothesized (H_8b) for students based on whether they grew up in Phnom Penh or in the Provinces. In order to test these hypotheses, a chi square analysis was performed on the Gender of the students and their reported grade category and another was performed on where students reported that they grew up and their reported grade category. While significant differences in expected vs. observed cell counts were not found to exist for students by Gender, significant differences were found to exist in expected vs. observed cell counts for students by where they grew up. The results of this test are presented in Table 19.

Table 19: Chi Square Results by Grade Category for Gender and Where Location Grew Up

		Grade Category				
		A	**B**	**C**	**D**	
Gender	Male	23 32.9%	26 37.1%	11 15.7%	10 14.3%	X2 = 7.109,
	Female	41 26.1%	53 33.8%	49 31.2%	14 8.9%	df = 3; p = .068
Location	Phnom Penh	48 40.0%	33 24.2%	31 25.8%	12 10.0%	X2 = 18.836,
	Provinces	21 20.4%	40 38.8%	30 29.1%	12 11.7%	df = 3; p < .001

As indicated in the table, the proportions by gender did not differ significantly by Grade Category, X^2 (df = 3, N = 227), = 7.109, p = .068. However, for the location where the students grew up, the proportions did differ significantly for the Grade Categories X^2 (df = 3, N = 227), = 18.836, p < .001. Hypothesis H_8a is rejected and hypothesis H_8b is supported.

The final hypotheses, H_8c, H_8d, H_8e, and H_8f explored whether self-reported English proficiency, Liking Math, Enjoy Communicating in English, and Years Studying English based on the grouping variable of self-reported Grade Category. Descriptive statistics for each of the rated variables are presented in Table 20.

Table 20: Descriptive Statistics for Rated Variables

English Proficiency1		**Like Math2**		**Enjoy Communicate in English2**		**Years Studying English3**	
$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd
3.45	.762	2.72	.788	3.18	.538	3.57	.794

[1] Where 1 = Bad/Poor, 2 = Below Average, 3 = Average, 4 = Above Average and 5 = Fluent

[2] Where 1 = Strongly Disagree, and 4 = Strongly Agree

[3] Where 1 = 1 – 2 years, 2 = 3 – 4 years, 3 = 5 – 6 years and 4 = 7 or more years

In order to test these hypotheses, a MANOVA and Welch Tests were conducted to examine the data for statistically significant mean rating differences by Grade Category. The significant results of the testing are reported in Table 21.

Table 21: Statistically Significant Differences Ratings by Student Grade Category

Variable Rated	**Source**	**DF**	**SS**	**MS**	**F**	**Welch's F**	**p**
English Proficiency	Between	3	25.772	8.591	18.128	16.536	<.001
	Within	223	107.102	474			
	Total	226	132.874				
Like Math	Between	3	19.035	6.345	11.643	10.994	<.001
	Within	223	123.156	545			
	Total	226	142.191				
Enjoy Communication in English	Between	3	5.460	1.820	6.757	6.826	<.001
	Within	223	60.871	269			
	Total	226	66.330				
Years Studying English	Between	3	9.296	3.099	3.099	4.119	.009
	Within	223	135.225	598			
	Total	226	144.522				

The MANOVA found significant differences for all of the ratings by Grade Category. However, a post hoc test was required in order to determine between which groupings significant differences exist. The Games-Howell test was used. Identified significant differences for the rated variables are presented in Table 22.

Table 22: Statistically Significant Pairings Grade Category Means

Rated Variable	**Grade Categories**	**$\bar{X}$**	**SD**	**p-value**
English Proficiency1	A vs. B	3.88 vs. 3.48	775 vs. .677	008
	A vs. C	3.88 vs. 3.18	775 vs. .592	< .001
	A vs. D	3.88 vs. 2.83	775 vs. .702	< .001
	B vs. C	3.48 vs. 3.18	677 vs. .592	030
	B vs. D	3.48 vs. 2.83	677 vs. .702	002
Like Math2	A vs. D	2.73 vs. 2.00	904 vs. .834	005
	B vs. C	3.00 vs. 2.64	641 vs. .606	005
	C vs. D	2.64 vs. 2.00	606 vs. .834	009
Like Communicating in English2	A vs. D	3.27 vs. 2.83	621 vs. .702	048
	B vs. C	3.30 vs. 3.07	515 vs. .250	003
	B vs. D	3.30 vs. 2.83	515 vs. .702	023
Years Studying English3	A vs. C	3.76 vs. 3.38	609 vs. .879	029

[1] Where 1 = Bad/Poor, 2 = Below Average, 3 = Average, 4 = Above Average and 5 = Fluent

[2] Where 1 = Strongly Disagree, to 4 = Strongly Agree

[3] Where 1 = 1 – 2 years, 2 = 3 – 4 years, 3 = 5 – 6 years and 4 = 7 or more years

Of the 30 possible pairings, 15 were found to be significantly statistically different in mean ratings. The most differences were identified in English proficiency for the four student self-provided grade categories. This makes sense in that English proficiency would likely greatly influence the grades that students would earn in their classes. Years studying English had the fewest significant mean differences at one, and that between self-identified "A" students and "C" students. With these differences identified, partial support was provided for all of the hypotheses tested regarding differences in ratings by grade category of student.

V. Conclusion And Suggestions For Future Research

The results of this study are summarized in Table 23. Eleven of the thirteen hypotheses received at least partial support. A key finding was that when the respondents ranked business course subjects in order of difficulty, the order of that ranking matched exactly the ranking of heaviness of mathematical content that the course subject was perceived to contain. While findings were mixed for most of the hypotheses, the strongest findings indicated no statistical mean differences regarding gender and full support of significant mean differences in the rating of difficulty for the four English modes based on self-assessment/identification of English proficiency. As to coping strategies, students preferred Preparation, followed by Asking for Help, Positive Thinking, Resignation, and Relaxing (in that order).

This was a pioneering effort regarding most of the tested hypotheses and a pioneering effort regarding ESL students in business classes in Cambodia. However, respondents were derived from an undergraduate program of one institution of higher education. Future research should expand to other academic venues for replication as well as other inquiries regarding anxiety among ESL business students to provide further assistance regarding pedagogical considerations.

Table 23: Study Findings Regarding Hypothesis Tests

Hypotheses	**Findings**
H1: There will be significant statistical mean differences in ratings of difficulty of the four English modes by gender.	1a. Speaking: Rejected 1b. Writing: Rejected 1c. Reading: Rejected 1d. Listening: Rejected
H2: There will be significant statistical mean differences in ratings of difficulty of the four English modes by location where the student grew up.	2a. Speaking: Supported 2b. Writing: Supported 2c. Reading: Rejected 2d. Listening: Supported
H3: There will be significant statistical mean differences in ratings of difficulty of the four English modes by self-designated grade classifications (e.g. an "A" Student, "B" Student, "C" Student, "D-F" Student).	3a. Speaking: Partially Supported 3b. Writing; Rejected 3c. Reading: Partially Supported 3d. Listening: Partially Supported
H4: There will be significant statistical mean differences in ratings of difficulty of the four English modes by self-identified English proficiency.	4a. Speaking: Fully Supported 4b. Writing; Fully Supported 4c. Reading: Fully Supported 4d. Listening: Fully Supported
H5: There will be significant statistical mean differences in ratings of difficulty of the four English modes by years of studying English.	3a. Speaking: Partially Supported 3b. Writing; Partially Supported 3c. Reading: Partially Supported 3d. Listening: Partially Supported
H6: There will be statistically significant group differences between Low Anxiety students and High Anxiety students in their agreement levels for employing methods/tactics to deal with anxiety.	Partially Supported: 3 out of 6 methods
H7: There will be statistically significant differences in ratings of the coping strategies selected to employ for business study anxiety.	Partially Supported: 5 out of 15 parings
H8a: There will be differences by self-identified grade category of student by gender.	Rejected
H8b: There will be differences by self-identified grade category of student by location where the student grew up.	Supported
H8c: There will be statistically significant differences in mean ratings of English proficiency by self-identified student grade category.	Partially supported, 5 out of 6 pairings
H8d:There will be statistically significant differences in mean ratings of liking math by self-identified student grade category.	Partially supported, 3 out of 6 pairings
H8e: There will be statistically significant differences in mean ratings of liking to communicate in English by self-identified student grade category.	Partially supported, 3 out of 6 pairings
H8f: There will be statistically significant differences in mean ratings of years studying English by self-identified student grade category.	Partially supported, 1 out of 6 pairings

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