Research Proposal

The effects of anxiety and depression on academic performance amongst university students.

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PSYC 6013

Advanced Statistics and Research Methods in Psychology

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Introduction

Background

The mental illness of anxiety is understood as an "uncontrollable, diffuse, unpleasant, and persistent state of negative affect, characterized by apprehensive anticipation regarding unpredictable and unavoidable future danger, and accompanied by physiological symptoms of tension and a constant state of heightened vigilance" (Barlow, 2002). Additionnaly, the cognitive test anxiety is composed of "individuals' cognitive reactions to evaluative situations, or internal dialogue regarding evaluative situations, in the times prior to, during, and after evaluative tasks" (Cassady & Johnson, 2002).

Depression is of concern as severe cases are linked to increased frequency of negative emotions (Elgard and Arlett, 2002). According to Lipps et al. (2010) college/university students across several Caribbean countries (53%) show an association between depressive symptoms and anxiety towards academic performance. Students that performed higher grades on examinations were related to lower depression and anxiety scores as compared to students who performed lower grades were related to higher depression and anxiety scores.

Aim

To investigate the effects of anxiety and depression on academic performance amongst undergraduate and postgraduate students enrolled at the University of the West Indies, St. Augustine.

Significance

It is understood globally that anxiety and depression pose a risk to individual's quality of life and in the Caribbean region, it is no exception. The future of the Caribbean nation hinges on the success of individual's education and their ability to handle complex cognitive tasks and accurate judgements. Therefore, if academic performance is affected by anxiety and depression, it can impact the future of the Caribbean. It is vital for studies to be done around this field as it can provide insight into remedying the issue.

Justification

This study will contribute to existing literature around anxiety, depression and academic performance. The Caribbean region has limited information regarding tertiary institutions and how mental illnesses affects students. Moreover, the distinction among levels of education is not identified, whereby undergraduate and postgraduate studies have been categorized as one. This identifies a gap as previous studies would not have proper internal or external validity. Therefore, this study can provide an in-depth perspective into the different levels which can be furthered into interventions and applications of resolving or reducing mental adversities affecting academic performance.

Relevance to society

After carrying out this study, the results gained can be beneficial to the students who are currently affected and to the lecturers, advisers and parents. The study can highlight the importance of mental health and possibly relieve stressors that contribute to anxiety and depression both at home from the parents and at school from lecturers or advisers at the

University of the West Indies. Additionally, the Ministry of Health can benefit individuals as this organization can enforce policies or interventions that bring awareness.

Research Questions/Objectives

Question 1: Does anxiety affect the academic performance of undergraduate and postgraduate students?

Question 2: Does depression affect the academic performance of undergraduate and postgraduate students?

Question 3: Is there a difference between anxiety and depression levels of undergraduate and postgraduate students?

Literature Review

There has been a considerable amount of research done on anxiety and depression towards academic performance. A study done by Owens, Stevenson, Hadwin and Norgate (2012) investigated the academic performance of developing children aged 12 to 13 years. They hypothesize that higher anxiety and depression levels relate to lower academic performance, also that working memory and feelings of worry will mediate the outcomes. This study was grounded on Eysenck's processing efficiency theory and the resource allocation model. This study was done in two parts with study one containing eighty participants and study two containing thirty-one participants. In study one, the Spielberger Trait Anxiety scale, Major Depressive Disorder scale (MDD) and the Worry subscale that was drawn out of the Children's Test Anxiety Scale was used to measure levels and severity of anxiety, depression and worry respectively. In study two, the automated working memory assessment scale and the Cambridge

neuropsychological test automated battery were used to measure working memory and non-verbal tasks while student's SAT scores were used to measure academic performance. The results supported their hypothesis where higher levels of anxiety and depression are linked to lower academic performance and worry and the central executive process mediated students' academic performance and their negative affect.

In another study (Cassady & Johnson, 2001), the aim was to determine of cognitive test anxiety influenced academic performance. Theory underlying this study was the arousal theory and also the cognitive interference model to understand the interactions between the variables and form hypotheses. The study used the Test Procrastination Questionnaire, the Reaction to Tests scale, the Cognitive Test Anxiety scale and results of students' examinations to measure anxiety and academic performance. The researchers found support of their hypotheses as high accounts of cognitive test anxiety related to lower test scores on all three examinations while procrastination only affected test scores of final examinations. Moreover, the role of gender did not mediate or affect cognitive test anxiety on academic performance. These results supported the internal consistency of the models used.

However, further investigation of literature is seen by Al-Qaisy (2011) who explored the relationship between depression, anxiety and academic achievement on university students claims to find different results. This study used a student sample of two hundred participants to fill out questionnaires that included the Back Depression Inventory and Spielberger trait anxiety Inventory to measure depression and anxiety respectively. The results of the study show a positive correlation between anxiety and academic achievement while depression negatively correlated with academic achievement. Moreover, it was found that females had higher anxiety levels than males and the males had a higher depression level compared to females.

Another study (Groom & Endler, 1960), found different results when investigating the effect of anxiety on academic achievement. The sample only included one hundred and sixty-six male students enrolled in psychology at university and used the Anxiety Test Questionnaire for measure anxiety and the Pennsylvania State university Academic Aptitude Examination to measure test results. Upon reviewing results, it was found that students who exhibited high anxiety and those who exhibited low anxiety did not differ significantly on the aptitude or achievement measures. Moreover, between test scores an aptitude, a significant negative correlation was found but there no significant relationship exists between anxiety and academic achievement. Additionally, it was mentioned that test anxiety served as a modifier variable to enhance predictions of grade averages on aptitude test scores.

Theoretical Overview

There are many theories that can explain and be used to understand anxiety and depression and along with their relationship towards academic performance. For example, Erikson's psychosocial theory explains eight stages of development where a crisis must be passed in each stage in order to gain a social skill. Therefore, if the initial stages of Erikson's theory are not met, the student may be inclined to suffer from increased anxiety and depression if they have not formed a secure identity, trust or autonomy.

Moreover, Maslow's hierarchy of needs theory can also explain the association of depression with low test scores as individuals have the need to satisfy resources, in this case academic scores before they can achieve good self-esteem and confidence. Therefore, lower test scores can result in higher depressive symptoms and anxiety. The arousal theory holds the notion that people have needs for achievement which are motivated by desire. Using this concept in the

context of this study, too high of an arousal would render individuals incapable of focusing on cognitive tasks because the physiological distractions are salient. Conversely, too little arousal causes the individual to fail to recognize the task as an event or challenge which stimulates a negative impact (Cassady & Johnson, 2001). Additionally, the cognitive interference model paired with the arousal theory can be beneficial to the study as this model explains that people with higher levels of anxiety shows lower test scores due to their inability to suppress competitive thoughts in an examination (Cassady & Johnson, 2001). Therefore, both the arousal theory and the cognitive interference model will be used in this study.

Lastly, to understand depression and its role in this study, the resource allocation model is chosen. This model "assumes a depressed mood will reduce the ability of an individual to allocate attentional resources to a cognitive task, especially when tasks are complex" (RAM; Ellis & Moore, 1999; Ellis, Ottaway, Varner, Becker, & Moore, 1997). Furthermore, using this model, Seibert and Ellis, (1991) found that negative moods had a negative correlation with recall and memory tasks due to the low cognitive resources to allocate thoughts on a selected task.

Current study

Specific objectives/hypotheses

H_1: There is an association between anxiety levels and academic performance of undergraduate students

H_2: There is an association between anxiety levels and academic performance of postgraduate students

H_3: There is an association between depression levels and academic performance of undergraduate students

H_4: There is an association between depression levels and academic performance of postgraduate students

H_0: There is no association between depression and anxiety levels and academic performance of undergraduate and postgraduate students

H_5: There is a difference between anxiety and depression levels of undergraduate and postgraduate students?

H_0: There is no difference between anxiety and depression levels of undergraduate and postgraduate students?

Participants

Sample size

The G-power calculator was used to calculate a sample size of 208 participants for this current study. A medium effect size was used as it is appropriate for an initial graduate level study. Additionally, a probability of 80% was used with an alpha value of 0.05.

Target Population

The target population will be recruited from The University of the West Indies, St. Augustine within the Faculty of Social Sciences, specifically the department of behavioral sciences. 104 participants selected would be undergraduate students and 104 would be post graduate students. The target sample would be approximately 60% female, 40% male and comprise of mainly African, East-Indian and Mixed ethnic groups. For undergraduate students, the age bracket will range from 18 to 22 years and for postgraduate students, the age bracket will range from 22 to 26

years. The postgraduate students targeted would be from Master's and Mphil level degree enrollment only.

Sampling technique

The sampling technique used was cluster sampling. In this sampling technique the target population was divided into clusters, which were then chosen randomly for the participants. Four courses

Cluster sampling is the type that is chosen for the current study. The sample was firstly separated into clusters which are different courses and by process of randomization, participants were chosen within those clusters from undergraduate studies and four courses from post graduate studies within the Faculty of Social Sciences at UWI, St. Augustine. Then, 26 individuals were randomly chosen from each course to participate in the study.

Study Design

This study will utilize multiple regression analyses to determine the linear association between predictor variables; depression and anxiety and the outcome variable; academic performance of undergraduate and postgraduate students. It will also use T-tests to compare the means of undergraduate and postgraduate levels of anxiety and depression. The study is also a quantitative type of research.

Measures

The cognitive test anxiety scale measures anxiety towards cognitive tasks and evaluations. The measure consists of 27 items on a 4-point Likert scale ranging 1 = Not at all typical of me, 2

= Somewhat typical of me, 3 = Quite typical of me and 4 = Very typical of me derived from a study with 168 students measuring their anxiety towards examinations (Cassady & Johnson, 2001). The cognitive test anxiety scale had a high internal consistency, $\alpha = .91$.

The Beck Depression Inventory (BDI) measures depressive symptoms and attitudes. The measure consists of 21 items on a 4-point Likert scale ranging from 0 to 3 where the severity of the answers increase as the corresponding number increases. This scale was derived from a study that evaluated 122 adolescents with clinical depression (Ambrosini, et al., 1991). The BDI had a high internal consistency, α - .91.

Academic performance would be measured by reviewing the grading scores of the examinations of similar courses that both undergraduate sand postgraduate students completed in semester one. Higher scores on examinations indicate greater academic performance whereas lower scores indicate lesser academic performance.

Procedure

This study will take place in January at the beginning of semester two and ethical approval will first be obtained by applying to the UWI ethics committee. The instrument that will be used is an online-based questionnaire sent to students' university emails after participation is volunteered. The questionnaire will first include the informed consent document to allow participation followed by eight demographic questions. Next, the scales, cognitive test anxiety scale, beck depression inventory scale and a self-report of the students' respective grading in the past semester will be answered by each participant. The time taken to complete the questionnaire should take approximately 20-30 minutes for each student and the duration of the data collection

process will take place over two weeks. A pilot study would initially be done to ensure the measures and methods can be used on a wider scale.

Proposed methodology/analyses

Preliminary analyses will be done first to ensure normality and provide descriptive statistics then correlational analyses will be done to reveal correlations between depression levels, anxiety and academic performance. Multiple regression analyses will be done to determine if there is an association between depression levels, anxiety levels and academic performance of undergraduate and postgraduate students.

Additionally, a T-test would be done to compare the different means of undergraduate and postgraduate students' scores on the exam to determine if there is a significant difference between the levels. Lastly, a Bonferroni post hoc test will be conducted to control for type 1 errors and to identify the significant difference of the means. The IBM 'Statistical Package for Social Scientists' (SPSS) Version 29 was the statistical software used. Also, the confounding variables can be controlled for by process of randomization.

Expected results

This study expects to find a significant association between depression levels, anxiety levels and academic performance of undergraduate and post graduate students. In a study done by Barrows, Dunn and Lloyd (2013), to measure anxiety on academic performance and self-efficacy, the results of the analysis indicated that test anxiety and self-efficacy accounted for a significant amount of the exam score variability

Their results revealed there was a significant effect on exam score due to the predictors, test anxiety and self-efficacy where , R2 = .08, F(2, 107) = 4.81, p = .01. Furthermore, a multiple regression analysis was performed to account for self-efficacy predictions solely on the exam score. Self-efficacy alone was not significant for a exam scores which indicate that test anxiety is clearly associated with the outcome of students test scores. R2 change = .05, F(8, 99) = .69, p = .70.

Another study (Andrews & Wilding, 2004) which explored depression and anxiety on students' examination performance found that only depression made an independent contribution to exam mark, betas for depression and anxiety were -.11, p < .01, and -.06, respectively where anxiety was not significant.

Basudan, Binanzan and Alhassan (2017) used multiple linear regression to analyze the date for depression, anxiety and stress in dental students and how it affected several outcomes, including academic performance. The results of the this current study should be similar to the information on their study's tables.

Table 1.

Descriptive statistics of varying severity of participants' levels of depression anxiety and stress.

Levels	Depression N (%)	Anxiety N (%)	Stress N (%)
Normal	109 (44.1)	82 (33.2)	112 (45.3)
Mild	35 (14.2)	28 (11.3)	36 (14.6)
Moderate	53 (21.4)	53 (21.4)	49 (19.8)
Severe	21 (8.5)	22 (8.9)	30 (12.1)
Extremely severe	29 (11.7)	62 (25.1)	20 (8.1)

Levels of depression, anxiety and stress among study participants

Table 2.

Multiple linear regression results of depression, anxiety and stress on academic performance (GPA of the previous year)

Predictor	Subscale	Unstandardized Coefficients		Standardized Coefficients	t	p	Collinearity Statistics	
		b	SE	β			Tolerance	VIF
Constant	D	33.597	8.272		4.062	.000*		
	A	22.598	5.559		4.065	.000*		
	S	29.473	5.737		5.137	<.001*		
Gender (1 = Male, 0 = Female)	D	-2.275	1.668	-.106	-1.364	.174	.586	1.705
	A	-3.589	1.480	-.189	-2.424	.016*	.586	1.705
	S	-4.099	1.528	-.204	-2.683	.008*	.586	1.705
Marital status (1 = Married, 0 = Not Married)	D	0.324	2.310	.009	0.140	.889	.937	1.067
	A	3.331	2.049	.100	1.625	.105	.937	1.067
	S	2.762	2.115	.079	1.306	.193	.937	1.067
Year of study (1 to 5)	D	0.880	.496	.117	1.774	.077	.821	1.218
	A	3.331	2.049	.100	1.625	.105	.937	1.067
	S	0.573	.454	.081	1.261	.209	.821	1.218
GPA of the previous year (2 to 4)	D	0.893	1.221	.058	0.731	.465	.569	1.758
	A	3.331	2.049	.100	1.625	.105	.937	1.067
	S	1.318	1.118	.091	1.179	.240	.569	1.758
Was studying dentistry your first choice? (1 = Yes, 0 = No)	D	-1.640	1.438	-.074	-1.140	.255	.847	1.181
	A	-2.430	1.276	-.124	-1.904	.058	.847	1.181
	S	-2.648	1.317	-.127	-2.011	.045*	.847	1.181
Do you have financial responsibilities towards your family? (1=Yes, 0 = No)	D	-0.401	1.800	-.014	-0.223	.824	.887	1.127
	A	-2.430	1.276	-.124	-1.904	.058	.847	1.181
	S	-0.756	1.648	-.028	-.459	.647	.887	1.127
How satisfied are you with your relationship with your peers? (1 to 3)	D	-3.527	.982	-.229	-3.592	<.001*	.875	1.143
	A	-2.119	.871	-.155	-2.432	.016*	.875	1.143
	S	-2.096	.899	-.145	-2.331	.021*	.875	1.143
How satisfied are you with your relationship with college faculty? (1 to 3)	D	-2.318	.856	-.174	-2.709	.007*	.859	1.165
	A	-2.213	.759	-.188	-2.914	.004*	.859	1.165
	S	-2.854	.784	-.229	-3.642	<.001*	.859	1.165
Overall, are you satisfied with your experience at college?(1 to 3)	D	-0.433	.921	-.029	-0.470	.639	.923	1.084
	A	0.793	.817	.060	.971	.333	.923	1.084
	S	-0.017	.843	-.001	-.020	.984	.923	1.084

*Significant predictor ($p < .05$)
D=depression, A=anxiety, S=stress, SE=standard error, VIF=variance inflation factor

Multiple linear regression model for the prediction of depression, anxiety and stress in dental students

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Appendix

Cognitive Test Anxiety Scale

Please complete the following items using the four-point scale below.

1 = Not at all typical of me
2 = Somewhat typical of me
3 = Quite typical of me
4 = Very typical of me

1	I lose sleep over worrying about examinations.	1	2	3	4
2	While taking an important examination, I find myself wondering whether the other students are doing better than I am.	1	2	3	4
3	I have ***less*** difficulty than the average college student in getting test instructions straight.[a]	1	2	3	4
4	I tend to freeze up on things like intelligence tests and final exams.	1	2	3	4
5	I am less nervous about tests than the average college student.[a]	1	2	3	4
6	During tests, I find myself thinking of the consequences of failing.	1	2	3	4
7	At the beginning of a test, I am so nervous that I often can't think straight.	1	2	3	4
8	The prospect of taking a test in one of my courses would ***not*** cause me to worry.[a]	1	2	3	4
9	I am more calm in test situations than the average college student.[a]	1	2	3	4
10	I have less difficulty than the average college student in learning assigned chapters in textbooks.[a]	1	2	3	4
11	My mind goes blank when I am pressured for an answer on a test.	1	2	3	4
12	During tests, the thought frequently occurs to me that I may not be too bright.	1	2	3	4
13	I do well in speed tests in which there are time limits.[a]	1	2	3	4
14	During a course examination, I get so nervous that I forget facts I really know.	1	2	3	4
15	After taking a test, I feel I could have done better than I actually did.	1	2	3	4
16	I worry more about doing well on tests than I should.	1	2	3	4
17	Before taking a test, I feel confident and relaxed.[a]	1	2	3	4
18	While taking a test, I feel confident and relaxed.[a]	1	2	3	4
19	During tests, I have the feeling that I am not doing well.	1	2	3	4
20	When I take a test that is difficult, I feel defeated before I even start.	1	2	3	4
21	Finding unexpected questions on a test causes me to feel challenged rather than panicky.[a]	1	2	3	4

Cognitive Test Anxiety Scale

22	I am a poor test taker in the sense that my performance on a test does not show how much I really know about a topic.	1	2	3	4
23	I am not good at taking tests.	1	2	3	4
24	When I first get my copy of a test, it takes me a while to calm down to the point where I can begin to think straight.	1	2	3	4
25	I feel under a lot of pressure to get good grades on tests.	1	2	3	4
26	I do not perform well on tests.	1	2	3	4
27	When I take a test, my nervousness causes me to make careless errors.	1	2	3	4

[a] Item was recoded to produce consistency in scale so that high values always reflect high-cognitive test anxiety responses.

BECK'S DEPRESSION INVENTORY

Instructions: Please circle the number by the response for each question that best describes how you have felt during the past seven (7) days. Please do not omit any questions. Make sure you check one answer for each question. If more than one answer applies to how you have been feeling, check the higher number. If in doubt, make your best guess.

1. 0 - I do not feel sad.
   1 - I feel sad.
   2 - I am sad all the time and I can't snap out of it.
   3 - I am so sad or unhappy that I can't stand it.

2. 0 - I am not particularly discouraged about the future.
   1 - I feel discouraged about the future.
   2 - I feel I have nothing to look forward to.
   3 - I feel that the future is hopeless and that things cannot improve.

3. 0 - I do not feel like a failure.
   1 - I feel I have failed more than the average person.
   2 - As I look back on my life, all I can see is a lot of failures.
   3 - I feel I am a complete failure as a person.

4. 0 - I get as much satisfaction out of things as I used to.
   1 - I don't enjoy things the way I used to.
   2 - I don't get real satisfaction out of anything anymore.
   3 - I am dissatisfied or bored with everything.

5. 0 - I don't feel particularly guilty.
   1 - I feel guilty a good part of the time.
   2 - I feel quite guilty most of the time.
   3 - I feel guilty all of the time.

6. 0 - I don't feel I am being punished.
   1 - I feel I may be punished.
   2 - I expect to be punished.
   3 - I hate myself.

7. 0 - I don't feel disappointed in myself.
   1 - I am disappointed in myself.
   2 - I am disgusted with myself.
   3 - I hate myself.

8. 0 - I don't feel I am any worse than anybody else.
   1 - I am critical of myself for my weaknesses or mistakes.
   2 - I blame myself all the time for my faults.
   3 - I blame myself for everything bad that happens.

9. 0 - I don't have any thoughts of killing myself.
   1 - I have thoughts of killing myself, but I would not carry them out.
   2 - I would like to kill myself.
   3 - I would kill myself if I had the chance.

10. 0 - I don't cry any more than usual.
    1 - I cry more now than I used to.
    2 - I cry all the time now.
    3 - I used to be able to cry, but now I can't cry even though I want to.

11. 0 - I am no more irritated by things than I ever am.
1 - I am slightly more irritated now than usual.
2 - I am quite annoyed or irritated a good deal of the time.
3 - I feel irritated all the time now.

12. 0 - I have not lost interest in other people.
1 - I am less interested in other people than I used to be.
2 - I have lost most of my interest in other people.
3 - I have lost all of my interest in other people.

13. 0 - I make decisions about as well as I ever could.
1 - I put off making decisions more than I used to.
2 - I have greater difficulty in making decisions than before.
3 - I can't make decisions at all anymore.

14. 0 - I don't feel that I look any worse than I used to.
1 - I am worried that I am looking old or unattractive.
2 - I feel that there are permanent changes in my appearance that make me look unattractive.
3 - I believe that I look ugly.

15. 0 - I can work about as well as before.
1 - It takes an extra effort to get started at doing something.
2 - I have to push myself very hard to do anything.
3 - I can't do any work at all.

16. 0 - I can sleep as well as usual.
1 - I don't sleep as well as I used to.
2 - I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 - I wake up several hours earlier than I used to and cannot get back to sleep.

17. 0 - I don't get more tired than usual.
1 - I get tired more easily than I used to.
2 - I get tired from doing almost anything.
3 - I am too tired to do anything.

18. 0 - My appetite is no worse than usual.
1 - My appetite is not as good as it used to be.
2 - My appetite is much worse now.
3 - I have no appetite at all anymore.

19. 0 - I haven't lost or gained much weight, if any, lately.
1 - I have lost or gained more than five pounds.
2 - I have lost or gained more than ten pounds.
3 - I have lost or gained more that fifteen pounds.

20. 0 - I am no more worried about my health than usual.
1 - I am worried about physical problems such as aches and pains, or upset stomach, or constipation.
2 - I am very worried about physical problems and it's hard to think of much else.
3 - I am so worried about my physical problems that I cannot think of anything else.

21. 0 - I have not noticed any recent change in my interest in sex.
1 - I am less interested in sex than I used to be.
2 - I am much less interested in sex now.
3 - I have lost interest in sex completely.

Name_____**Date**_____**Total**_____

1-10 Normal; 11-16 Mild;17+ Clinical Depression:17-20 Borderline, 21-30 Moderate, 31-40 Severe, 41+ Extreme