What Causes Stress in Malaysian Students and it Effect on Academic Performance: A case Revisited

Cheng Seow Voon [1], Cheng Fan Fah [*2]

[1] TAR University College, Department of Accounting , Faculty of Business, Penang, Malaysia.
[2] University Putra Malaysia, Department of Accounting and Finance, Faculty of Economics and Management, Serdang, 43400, Selangor, Malaysia. (Corresponding author: chengfanfah@yahoo.com)

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ABSTRACT

Background: This research aims to examine and identify the stress factor and level of undergraduate and postgraduate students at Local University that affect their academic performance. Current study proposes a hypothesis that there is a relationship between stress and academic performance. A total of 100 participants were recruited in this study using a random sampling. Participants were asked to fill a questionnaire regarding their stress experience and their GPA score. The data then analyzed using a Factor analysis to identify the components of stress. This study explores different types of stress that contributes to participant's academic performance from self, environment, and future and parent expectation. All the Environment factor, self-efficacy factor and future/parent expectation show a significant and reliable score of 0.67-0.77 above the acceptable level. A multiple regression was performed to test their effect on the academic score. The Environment and future/parent expectation are found to be significantly affecting their score. However, self efficacy factor is found to be not significant. These results show that external factor motivate students to study more than the self motivation. This study gives a current state-of-the-art and includes descriptive information that can be used for future research.

INTRODUCTION

Learning is essential to advance individual knowledge, however, the process can be a stressful experience due to the academic demands and social transitions intrinsic, especially in the university practice. Academic learning is one of the major causes of stress among young individuals. Stress is an external constraint, which upsets an individual both mentally and physically.
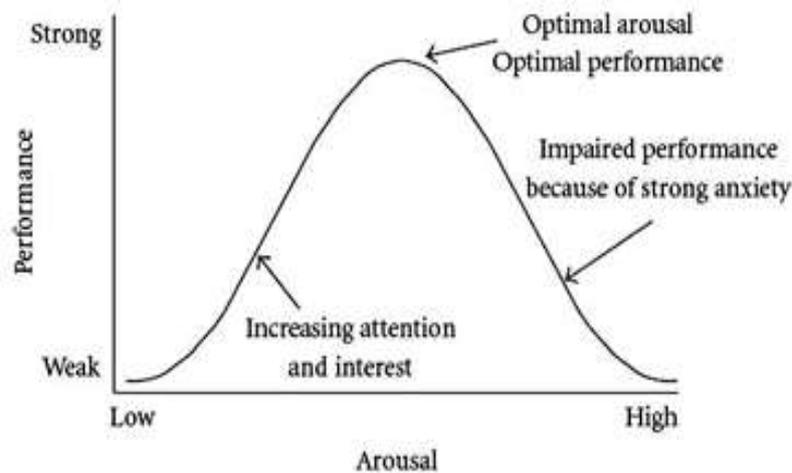
People perceived stress as a destructive factor and will affects one's life negatively, however, not all stress is bad. In the earlier pioneer study by Kavanagh (1981) stress is important part of life in which it can actually improve one's performance; Supported by Scott (1996) study who found that when individual is arouse to an optimal point cause by stress, it improves their performance and as the arousal decrease, the stress and stimulation increase beyond optimum.

University students are more likely to experience stress from assigned readings, papers, test, family pressure, loan, relationship and many other factors. They find that academic is a very stressful experience to cope.

In 2004, Staal (2004) proposed the relationship between stress and performance could be explained by using The Inverted-U model or known as Yerkes-Dodson Law. This model suggests that there is a subtle relationship between these variables whereby the right amount of pressure will lead to a better performance, however, when there is too much or too little pressure, the performance will suffer.

The Inverted-U Model

Performance: Strong ... Weak

Arousal: Low ... High

Optimal arousal
Optimal performance

Impaired performance because of strong anxiety

Increasing attention and interest

Based on the model, peak performance could be achieved when individuals experience a moderate level of stress, however, it will decline if the stress is too much or too little.

The left side of the graph illustrates that individual is experiencing a low stress and their performance weak. They feel that they are under-challenged in which they have no reason to work hard at a task or in urgency. Therefore, they tend to approach their work in a unmotivated way. The middle part of the graph illustrates individuals who perform at peak effectiveness. They are motivated to work hard and the task is not overloaded. This state is also known as a state of "Flow" which indicates enjoyable and highly productive in doing their work. The right side of the graph illustrates the fall apart under-pressured due to overwhelming volume and scale of task that demands their attention.

According to Ciccarelli and White (2009) stress describes one's physical, emotional, cognitive, and behavioral response towards an event that is perceived as threatening or challenging.

Stress and Academic Performance

Many researches have been conducted in the area of stress and performance. However, many of the research are conducted in western country. There is one local study by Rafidah, et.al, (2009). They found that, the level of stress experienced by individuals differs, as one might see it as a threat and yet others might see it as an opportunity. Stress can affects individual from many aspects. An excessive stress may affects individual's health and academic performance as well as if the individual perceive the stress negatively. Nevertheless, an optimal exposure of stress will enhance learning ability. The study by Rafidah, et.al (2009) among diploma students found result that there is a weak correlation between students perceived stress at the end of semester with their academic performance, which is higher stress correlated with lower performance even though not to an extent that they could not cope with academic activities.

Therefore, this current study is conducted to look at the relationship between stress and academic performance in a Malaysia local University. This research will look at whether stress influences student's academic performance and understand the factors that might interfere with their academic success. In addition, by using Principal Component Analysis to classify what factor causes the stress

Therefore, current study hypothesized that there is a relationship between stress and academic performance. The operational definition is participant's level of stress on the Perceived Stress Scale (PSS) (Sun, Dunne, & Hou, 2011) and GPA score.

METHODOLOGY

Design

      This study is a non-experimental study with stress as a predictor variable and GPA as criterion variable. Stress is measured using a 5-point likert scale from Perceived Stress Scale. The higher the scores indicate higher stress level. The performamnce of students are measured by their GPA score from 1 to max 4..

Participants

      A total of 100 participants who are currently pursuing study in an local University were recruited in this study. Participants were undergraduate, postgraduate and PHD students with a good command of English. Participants' age ranged between 19 to 45 years old and came from diverse background (race, gender, and ethnicity). There are 38 male (38%) and 62 female (62%) with age range of 66 participants (66%) in age 19-25, 22 participants (22%) age 26-30, and 10 participants (10%) age 31-36 and 2 participants (2%) age 40-45. 32 participants (32%) are studying undergraduate, 33 participants (66%) are postgraduate and 2 participants (2.00%) are PhD.

Instruments

      The Perceived Stress Scale consists of 12 items by Sun, Dunne, & Hou (2011) is used. (refer to APPENDIX A)

RESULTS

Statistical Analysis

      The data is analyzed using SPSS. Reliability test and Factor analysis was used to identified factors that causes the stress. Participant's demographic information is asked in this research to test the hypothesis. This statistical test was chosen because it is able to look at the relationship between stress and academic performance as well the factors that contribute in affecting the criterion variable.

      The initial reliability test using Cronbach's alpha were performed on the 12 items. The results show in Table 1. The Cronbach's alpha is 0.777 above the acceptable 0.6 level.

Table 1: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.777	.779	12

A Factor Analysis using Principal Component methods was performed. The Bartlee's test of sphericity is significant and that KMO measure of sampling adequacy is above 0.6.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.659
Bartlett's Test of Sphericity	Approx. Chi-Square	149.463
	df	66
	Sig.	.000

      Varimax rotation was selected to choose the factors, where the factor axes are kept at right angles to each other, is chosen. The results are in Table 3.

      The Factor Analysis using Principal Component methods was able to identify 3 predicted variable of factor X, which is X1, stress from *environment*, X2 stress from *self-efficacy* as and stress from *future/parent expectation* as X3.

Table 3: Rotated Component Matrix[a]

	Component		
	1	2	3
7	.749		
5	.747		
8	.697		
9	.498		.459
4	.481		.385
6		.853	
3		.755	
11		.497	
1		.368	.730
2			.701
12			.868
10			.697

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.[a]

a. Rotation converged in 6 iterations.

Then, three reliability tests are performed on three factor items. Their reliability scores are:-

Table 4: Reliability Statistics

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
X1	.739	.745	6
X2	.720	.718	5
X3	.648	.661	6

All the above Cronbach's Alpha are above 0.6. This indicates reliability in the items used in this instruments. All the factor scores were save and used in the next regression results.

Regression Results

The dependent variable is the GPA score of these respondents. The independent variables are the factor score of X1= Environment, X2 = self efficacy and X3 = future/parent expectation.

From Table 5a, the results show that adjusted coefficient of determination is 0.308, which indicates 30.8% of the variability in academic performance is explained by the equation based on the three variable of environment's stress, self-efficacy's stress and future expectation's stress. Table 5b, ANOVA analysis show F-stat = 8.25 (p=0.000) at a highly significant level. The coefficients estimate are significant.

Table 5a: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.592[a]	.350	.308	.6017	2.198

a. Predictors: (Constant), X1= Environment, X2 = self efficacy and X3 = future/parent expectation.

b. Dependent Variable: GPA

Table 5b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.965	3	2.988	8.254	.000[b]
	Residual	16.655	46	.362		
	Total	25.620	49			

a. Dependent Variable: GPA

b. Predictors: (Constant), X1= Environment, X2 = self efficacy and X3 = future/parent expectation.

Table 5c: Regression Results

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
1	(Constant)	1.740	.085	20.4	.000
	Environment	.318	.086	3.69	.001**
	self-efficacy	.049	.086	.572	.570
	Future/parent expectation	.282	.086	3.28	.002**

** significant at 0.01 level

The following equation was developed via the coefficients values of the variables in order to estimate the values of the relationship between stress level and academic performance.

$$Y = 0.318X_1 + 0.049X_2 + 0.282X_3 + 1.740$$

The regression is done on basis of 95% confidence, and the p-value should be $p < 0.05$. It was suggested that without any stress exist, the academic performance is 1.74.

The p-value for variable X_1 is 0.001 ($p<0.05$), which indicates that the Environment stress is significant to academic performance. The coefficient suggested a positive relationship of X_1 with academic performance, for every unit increase in self-efficacy stress will increase the CGPA by 0.318 units. Variable X_2 shown a p-value of 0.570 ($p >0.05$), it is not significant with academic performance. However, the X_3 show a significant relationship again with p-value of 0.002 ($p< 0.05$). The relationship of future expectation stress with academic result is confirmed. The coefficient suggested a positive relationship of X_3 with academic performance, for every unit increase in future/parent expectation stress will increase the CGPA by 0.282units.

The model was tested for multicollinearity and auto correlation. The VIF=1 are due to the factor analysis. The Durbin-Watson score is 2.18, which is near 2, showing no auto correlation. Therefore, the regression results estimate is the best linear unbiased estimator.

CONCLUSION

This study was able to classify the stress of students in academic study into three factors. That is the Environment, self efficacy and future/parent expectation by using the Principal Component Analysis. The reliability of these items tested using Cronbach's alpha. All three factors scores are above 0.6. The stress factors were reliable and robust. A multiple regression were performed to test their effect on the academic score. The Environment and future/parent expectation are found to be significantly affect their score. However, self efficacy factor is found to be not significant. These results show that external factor motivate students to study more than the self motivation. These results were conducted in a local private University. The composition of these students maybe differ from other Universities, e,g, public university. Therefore more detail and extensive research need to be conducted to generalize the findings.

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APPENDIX A

Educational stress scale

1.0	I feel there is too much homework
2.0	I feel that there are too many tests /exams in the school
3.0	I feel stressed when I do not live up to my own standards
4.0	I always lack confidence with my academic scores
5.0	I am very dissatisfied with my academic grades
6.0	I usually cannot sleep because of worry when I cannot meet the goals
7.0	I set for myself It is very difficult for me to concentrate during classes
8.0	There is too much competition among classmates which brings me a lot of academic pressure
9.0	My parents care about my academic grades too much which brings me a lot of pressure
10.0	I feel that I have disappointed my parents when my test/exam results are poor
11.0	Future education and employment bring me a lot of academic pressure
12.0	Academic grade is very important to my future and even can determine my whole life

Stress is measured using a 5-point likert scale from Perceived Stress Scale. The higher the scores indicate higher stress level.