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## **THE RELATIONSHIP OF GRIT TRAITS ON STRESS LEVEL AND ACADEMIC ACHIEVEMENT AMONG UNIVERSITY MALAYSIA SABAH (UMS) STUDENTS**

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**Abstract:** Traditionally, academic achievement and success is often measured by cognitive abilities such as aptitude and intelligence. However, the grit concept has received attention from researchers as the predictor for academic achievement. Dimensions of grit which are Perseverance of Effort (PE) and Consistency of Interest (CI) plays a different role in an individual. Hence, this quantitative study is conducted to examine the relationship of grit traits on academic achievement and stress level among University Malaysia Sabah (UMS) students. In addition, it also examines the differences of dimensions of grit between gender and differences of grit on students' academic achievement. The study sample consisted of 220 UMS students and was conducted using two instruments, 12-item Grit Scale (Grit-O) and Depression, Anxiety, Stress Scale (DASS-21). Result findings showed no significant relationship of dimensions of grit on academic achievement. Whereas, there is a variety of finding for the relationship of dimensions of grit on stress level. However, only CI is influenced by stress level, while PE does not have any influence. The differences towards dimensions of grit and gender and grit on students' academic achievement also showed no significant difference which explains that students based on gender and academic achievement categories have the same level of grit. Hence, the overall findings of this study contribute to the increased understanding of the complexities related to the relationship of grit on academic achievement and stress level. Additional limitations and implications are presented along with offerings for further research recommendations.

**Keywords:** Stress Level, Academic Achievement, Grit Traits

### **INTRODUCTION**

Intelligence was previously assumed as the best predictor for academic achievement. High intelligence leads to a better academic success and

achievement (Panigrahi, 2005). This was supported by reliable and valid measures of intelligence quotient (IQ) on its effects toward achievement results (Bridgeman, McCamley & Ervin, 2000). However, some researchers argued that grit is the reason behind individual's achievement and the main predictor for remarkable individual's achievement (Crede, Tynan & Harms, 2017). Academic achievement generally understands as the ability to prove academic achievement in the acquisition of the planned outcome (Wibrowski, Matthews & Kitsantas, 2017). Thus, academic achievement is one of the important goals for both students and educators. Moreover, in the academic context, the role of stress on college students are especially intense because they are continuously confronted with fresh problems and challenges (Pederson & Jodin, 2016). These include academic stress, difficulties adjusting to university life and financial hardship (Larson, 2006).

The concept of grit has emerged as one of the most recent breakthroughs in the field of personality psychology. The emergence of grit causes an enlargement in studies that advances grit as a major predictor of a wide range of excellent (Ion, Mindu, & Gorb, 2017). Findings from previous studies showed that grit is connected with positive outcomes, such as academic achievement (Yoon, Kim, & Kang, 2018) and negatively associated with negative outcomes such as stress (Lee, 2017). As grit is one of the predictors for students' academic achievement, researchers started to do research to find the relationship between these two variables. Past studies conducted by Pate, Payakachat, Harrell, Pate, Caldwell and Franks (2017), grit are associated with academic achievement, whereas there are also contradictions on findings of previous studies that claimed grit is not a predictor of academic achievement (Ivcevic & Brackett, 2014; Bazelais, Lemay, & Doleck, 2016; Muenks, Wigfield, Yang, & O'Neal, 2017).

Grit is described as perseverance and desire to achieve long-term goals by Duckworth, Peterson, Mathews and Kelly (2007). Grit is defined as striving fiercely toward difficulties, maintaining effort and interest for an extended period of time despite failure, difficulty and adversity. According to grit theory, (Duckworth et al., 2007), grit is made up of two dimensions: the first is Consistency of Interest (CI), which refers to a person's ability to stay focused and maintain the same level of interest over a relatively long period of time, and the second is perseverance of effort (PE), which refers to a person's ability to exert enduring effort to overcome setbacks.

Based on several findings, grit is seen as the most important predictor on educational success in which is comparable to be as important as intelligence (Jensen, 1998; Schmidt & Hunter, 2004). Moreover, grit has a beneficial impact on mental health since it is associated with decreased stress, depression and anxiety (Zhang, Mou, Tong, & Wu, A., 2018). University students are often face with unique circumstances which lead them to feel stress. These include for example, financial problem, academic stress, and also struggles associated with role transitions (Farrer, Gulliver, Bennett, Fassnacht & Griffiths, 2016). Previous studies show that grit is related to a variety of measures of well-being outcomes such as psychological well-being (Datu, King, Valdez & Eala, 2018) and quality of life (Sharkey, Bakula, Gamwell, Mullins, Chaney & Mullins, 2017). Therefore, grit could have protective effects against stress.

Previous research on grit and academic performance found that grittier students performed academically better compared to less gritty students (Pate, Payakachat, Harrell, Pate, Caldwell & Franks, 2017). Pulkkinen and de la Ossa (2020), found that there is a moderate correlation between Grade Percentage Average (GPA) and grit scores. Hwang et al. (2017), investigated the structural relationship between grit and school achievement among female students at an Open University in Korea. The research is also emphasized that in order to achieve their academic obligations, students must demonstrate a high level of tenacity and effort to learn (Hwang, Lim, & Ha 2017). Furthermore, the results showed that PE is a stronger predictor of academic achievement than CI. This study also indicates that PE is indirectly connected to GPA scores, which is consistent with other research findings by Wolters and Hussain (2015).

Although studies on the correlation between grit and stress levels are very limited. Recent research among Chinese university students discovered a negative relationship between CI and stress, and no associated between PE and stress also (Zhang, Mou, Tong & Wu, 2018). Similar study also showed that there are negative associations between grit (PE and CI) with stress (Lee, 2017). These findings showed that student subjective evaluation of an event is more connected to stress than an objective external unpleasant occurrence, and therefore psychological resources (grit) make students less prone to stress. Based on the inter-correlation between CI and PE, and their consistent negative association with stress, both dimensions

may have an interaction impact on stress (Lee, 2017). Furthermore, if stress is not managed properly, it may have a detrimental impact on one's grit and set off a vicious cycle of influence (Leung, Lam & Chan, 2010).

Based from these previous researches, this study wants to examine the effect of grit on academic achievement and stress levels among students at University Malaysia Sabah (UMS). Therefore, the hypotheses of the study are (H1) There is no significant influence of grit traits (CI and PE) on stress level among UMS students and (H2) There is no significant influence in grit traits (CI and PE) on academic achievement among UMS students.

## **METHOD**

The research was conducted using an online survey. The survey aims to find out the relationship between grit traits on academic achievement and stress levels among students at University Malaysia Sabah (UMS) where the independent variable is grit which consists of two dimensions, perseverance of effort (PE) and consistency of interest (CI), and the dependent variable is academic achievement and stress levels.

### **Sample**

The total population of UMS's students are approximately 15,000 students. Based on Krejcie and Morgan's (1970) table of sample size, a number of samples that required is 375 students. Questionnaire were distributed through Google Form by using snowball sampling technique. Due to pandemic situation, it was difficult for the researchers to acquire list of students' names from each faculty in UMS as to perform random selection technique. Apart from that, due to Movement Control Order (MCO), students are not in the campus but at their respective hometown. Therefore, snowball sampling is suitable to be used in this particular situation. Only 220 students responded thus the percentage of response for this study is 48.9%.

### **Instrument**

In this study, researcher provides a set of questionnaires that contain three sections namely section A: demographic information, section B: 12-item Grit Scale (Grit-O) and section C: Depression, Anxiety and Stress Scale 21 (DASS-21).

The 12-item Grit Scale (Grit-O) was designed by Duckworth and Quinn,

(2009), which aimed to measure two dimensions of grit which are CI and PE. Grit-O contains 12 items in which individual assessed their grit traits in different situations. A 5-point Likert scale that represents as 1 = not like me at all, 2 = not much like me, 3 = somewhat like me, 4 = mostly like me and 5 = very much like me.

DASS-21 designed to aim at assessing the perceived severity or level of severity related to depression, anxiety and stress (Lovibond & Lovibond, 1995). Instrument of DASS-21 contains 21 items in which describes their current situation and have three sub-scales which are stress, anxiety and depression. A 4-point Likert scale was used that represents 1 = applied to me at some degree, 2 = applied to me at considerable agree, 3 = sometimes and 4 = applied to me very much.

### **Data Analysis**

The data was analyzed using Statistical Packages for Social Sciences (SPSS). In this study, appropriate descriptive and inferential statistic are used to test the hypotheses.

## **RESULTS**

### **Descriptive Analysis**

The mean and standard deviation of the Grit-O scale (Mean = 42.92, SP = 5.77) are shown in Table 1. Table 1 also shows the mean and standard deviation for the dimension of Perseverance of Effort (PE) and Consistency of Interest (CI). This can be seen that PE (Mean = 21.7, SP = 3.95) has higher mean and standard deviation compared to CI (Mean = 21.22, SP = 3.82).

Table 1: Mean and standard deviation of Grit-O, PE and CI

<b>Dimension</b>	<b>Mean</b>	<b>Std. Deviation</b>
Perseverance of Effort (PE)	21.7	3.95
Consistency of Interest (CI)	21.22	3.82
Grit00	42.92	5.77

Meanwhile the mean and standard deviation of the DASS-21 (Mean = 27.01, SP = 15.78) is shown in Table 2. The table also shows the mean and standard deviation for sub-scale of depression, anxiety and stress. This can be seen in the highest mean score for stress (Mean = 10.33, SP = 5.47) followed by anxiety with (Mean = 8.39, SP = 5.56) and depression (Mean

= 8.29, SP = 5.99).

Table 2: Mean and standard deviation of DASS-21 and its sub-scales

Dimension	Mean	Std. Deviation
Stress	10.33	5.47
Anxiety	8.39	5.56
Depression	8.29	5.99
DASS-21	27.01	15.78

### Inferential Analysis

Multiple regression analysis was performed because this study consists of two dimensions in independent variables which are PE and CI which are expected to affect students' stress level. Based on Table 3, the results of multiple regression analysis comprised on independent variable dimensions of grit (PE and CI) can explain significantly by 8.5% of the variance in the dependent variable, stress level ( $F(2, 219) = 10.02, p < .05$ ). From the results of bivariate regression (Beta =  $-.105$ ), ( $t = -1.62, p > .05$ ) for PE and (Beta =  $.282$ ), ( $t = 4.32, p < .05$ ) was significant predictors students' grit traits.

Table 3: Regression Analysis of Grit dimensions and stress level

Model	R <sup>2</sup>	F	Standardized Coefficients		
			Beta	t	Sig
	.085	10.02			.00
PE			-.105	-1.62	.11
CI			.282	4.32	.00

Based on Table 4, the results of linear regression analysis comprised on independent variable dimensions of grit (PE and CI) explained by 0.4% of the variance in the dependent variable, academic achievement ( $F(1, 219) = .41, p > .05$ ). From the results of bivariate regression for PE (Beta =  $.015$ ), ( $t = .222, p > .05$ ) and for CI (Beta =  $-.061$ ), ( $t = -.896, p > .05$ ) was a not significant predictors of students' academic achievement.

Table 4: Regression Analysis of Grit dimensions and academic achievement (CGPA)

Model	R <sup>2</sup>	F	Standardized Coefficients		
			Beta	t	Sig
	.004	.410			.644
PE			.015	.222	.825

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CI	-.061	-.896	.371
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## DISCUSSION

### **The relationship and influence of PE and CI on stress level**

In this study, using both dimensions of grit as independent variables in finding out the relationship between dimensions of grit (PE and CI) and students' stress level. For PE dimension, the results showed that PE and stress level showed that there was a strong negative relationship but not significant. This insignificant relationship may have occurred by chance and it may involve a small study sample or sampling error.

Very limited past research has been conducted to test this relationship, however a past findings shown that PE did not have a significant relationship with mental distress (Lee, 2017). According to Lee (2017), the possible explanation is that PE does not significantly relate to students' stress level are more likely due to students perceive stressful event subjectively, thus psychological resources (grit) make students less prone to stress. Moreover, results suggested that the effect of PE on stress level was mediated by students' purpose of study. In other words, students stress level depends on the extent of importance or priority of their education. If they put education as top priority, thus they will exert a great amount of effort and will feel more pressure with their learning.

Meanwhile, using CI dimension as an independent variable, result findings reported a weak positive significant relationship between CI and stress level. Contradict with result findings, a study by Zhang, Mou, Tong and Wu (2018), reported CI a significant negative relationship with stress. University students are especially vulnerable to mental health issues, thus through result findings that showed a higher grit in individual associate with lower stress indicates that cultivating grit is beneficial in order to avoid mental illness among university students (Zhang, Mou, Tong & Wu, 2018). Based on the result findings, shown that CI is significant and positively related with stress level while PE have no relationship with stress level. Even the result findings contradict with past research, however it must be noted that grit may affects students' stress level.

### **The relationship and influence of PE and CI on academic achievement**

From the analysis of data, results showed PE is positively related to

academic achievement while CI is negatively related to academic achievement. However, both dimensions findings are not significant. This insignificant relationship may have occurred by chance and it may involve a small study sample or sampling error. It is important to note that sample size was considerably smaller compared to past research such Chang (2014), that studied the effects of grit of a first-year students from a selective private four-year college in Southern United States with sample size of 2035 first year students. Therefore, a larger sample size would increase the statistical power.

This study's findings congruent with study by Bazelais, Lemay and Doleck (2016), that found no significant relationship between grit and student achievement for students in a gateway college physics course. According to Bazelais, Lemay and Doleck (2016), an overlap of grit and construct of mindset may occur with students' GPA. In other words, the prior performance predicts achievement better than grit or mindset. For example, when a student has their own way and strategy of learning will results a better achievement compared to students who put more effort without any strategy. This explanation corresponds with the saying "Work smart not hard".

However, according to Pulkkinen and de la Ossa (2020), reported a moderate correlation between academic achievement, Grade Percentage Average (GPA) and grit scores. These finding is in accordance with Schreiner (2017), that argued grit may has been overemphasized and may not related to success. For example, other factors such as surrounding environment and influences should be taken into consideration in prediction one's academic achievement. Contrary to the results of this study, grit scores are related with better GPAs (Duckworth et al., 2007). These findings were similar with the findings of Moutafi, Furnham and Paltiel (2005), who discovered that conscientiousness and general intelligence were adversely linked derived from a large sample of job applications. In other words, individuals with lower intelligence compared to their colleagues, they compensate with a greater grit, putting in more effort and determination in their work Duckworth et al., 2007; Moutafi et al., 2005). Hence, students with less academic ability can perform outperform other students with the existence of grit traits in themselves.



Furthermore, those who scores higher in grit are reported to have higher intelligence, because a person's intellectual is flexible and can be polished with effort and hard work (Dweck, 2013). For a better understanding, grit can be improved in students' life by putting more effort in their study such as consult with lecturer for a better understanding. In addition, previous research did not correlate these variables directly, thus the results are not necessarily inconsistent with study by Bowman, Hill, Denson, and Bronkema (2015), which indicates higher PE are predictor for academic and non-academic outcomes. Supported with study by Tang et al. (2021), also contributes their findings with high grit-perseverance and moderate grit-consistency leads to a higher academic achievement. Hence, PE has a greater influence in predicting students' academic achievement.

## **CONCLUSION**

This study was conducted based on one of the factors to determine student academic achievement which is grit traits. Most of the students who reported to have grit dimension of PE are associated with higher academic achievement. Grit traits causes students to have passion and interest for their learning. Especially, for university students, success in their studies not only can be achieved through learning process during class and lectures but also requires extra effort from the student such as searching for extra information for own understanding. Broadly, studies on influence of grit traits on academic achievement have extensively tested by researchers however, studies on relationship of grit traits on stress levels are still limited.

Studies on the relationship between grit traits and academic achievement are felt to be very importance and need a lot of attention because it involves the predictor of success and well-being of student. For example, if students have low grit traits especially PE, then it will indirectly affect their studies because they do not have the necessary traits that was needed to succeed in university life. Thus, it will make students to easily feel fatigue, less enthusiasm and lack of motivation towards the assignment and their studies.

Studies on grit involve the context of employment and education both in Malaysia, and also Outside Malaysia. The relationship is strong because grit is directly related as one of the predictors of academic success. Based

on education context, it involves the importance of academic success and achievement in students' life. If this topic of research is not well explored, hence it will be a loss to one of the predictors in determining success.

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