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Research Paper

Effect of personality traits and learning styles towards students' academic achievement in Johor Bahru

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Abstract

The purpose of this study is to investigate the effect of personality traits and learning styles towards the students' academic achievement in Johor Bahru. A total of 101 students from IPG Kampus Temenggong Ibrahim were chosen to be part of the respondents with the use of simple random sampling. The instrument Big Five Inventory (BFI), Kolb's Learning Style Inventory and The students' academic achievement is measured through the Cumulative Grade Point Average, also known as CGPA. Descriptive statistics, Chi-Square Test, Spearman's Correlation and Multiple Regression was used to anser research questions. The findings revealed that the most common personality traits displayed by the students are Openness and Conscientiousness while the most common learning style displayed by the students is Converger. The research also revealed that there is no significant effect of the combination of both the personality traits and learning style towards the prediction of the academic achievement among school students. The same goes to the difference of personality traits and learning style between male and female students was not significant as well.

Keywords: *Personality Traits, Academic Achievement, Learning Style*

1. Introduction

Every individual is unique in terms of his or her personality traits as well as the learning style, hence it is important to found out how the combination of the personality traits and the learning style affect the students' academic performance. Characteristics differences that are stable among the individual that described that particular individual specifically in terms of actions, feelings and perceptions are theorized to be part of personality traits [1]. These characteristics are then further break down into five different aspect of personality namely Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness to Experience, which being found empirically from the research [2]. These five aspects what formed the whole personality traits. The relation of personality traits with the learning is not unfamiliar as previously Messick [3] did mentioned that the features of learning could be possibly due to the effects of personality traits.

As for the learning style, it will focus on one of the widely used test in educational psychology that can assesses the learning style [4], Kolb's Learning Style Inventory or LSI. According to Kolb [5], it is said that in order for an individual to learn, one must incorporate each of four main learning abilities namely: concrete experience (CE), abstract conceptualization (AC), reflective observation (RO) and active experimentation (AE). Totaling up all the abilities, it can be used to form the learning styles. There are four basic learning style which can be derived from. First of all, the divergent learning style can be distinguished by the specialization of two abilities, CE and RO while the converging learning style can be distinguished by the specialization of other two abilities, AC and AE. On the other hand, specialization of two abilities, CE and AE, form the assimilating learning style whereas in the accommodating learning style, CE and AE are within the specialization of the abilities. It is being proposed by [6, 7, 8] that learning styles are crucial in determining the students' academic performance, the way how the learning is practiced, interaction in both students and teachers and the choices made in academic field.

Even though there are researches that showed that students' learning styles indeed will affect the academic achievement significantly, it must be noted that those researches only be done in other foreign countries and the findings can be diverse according to the countries where the researches are being carried out. There will not be an end to exploration and development of distinctive learning style while catering to demands of the environment. Therefore, it is imperative that the understanding of learning style of students and its effect on the academic achievement to be grasped by the teachers or educators in the effort to ensure students' success in academic achievement [9].

2. Research background

It is summarized that the relationship between personality traits, learning styles and academic achievement are valid and undeniable as it is proven in the previous studies [10]. Through it have demonstrated that how learning styles and personality traits have influenced the academic achievement. Hence it is clear that these factors are relevant to each other. The combination of personality traits and learning styles may affect the outcome of the academic achievement, depending on the combination of both personality traits and learning styles.

However, there are yet to have researches that involved local students with both the effect of personality traits and learning style. There are researches that covered the effect of personality traits and learning style but none of the research used IPG students as their experimental subject. In order to better understand what stu-

dents needs and the way to further improve the overall result, it is important that such research to be conducted in order to gain deeper and more detailed of understanding. It is also important to find out the relationship of these factors so that result can be used to further improve the students' academic performance.

2.1. Personality traits

Personality traits are being described as consistent difference of individual characters in regards to the patterns exhibited in terms of behavior, cognitions and emotional [1]. Through the discussion that raised by Messick[3], it is said that personality traits are responsible in terms of processing the information which can be defined as part of learning characteristic. In other words, it is implied that personality trait is influential in the learning process where new information is being processed.

As today, the most prevalent system to describe personality traits is the ''Big Five". Costa & McCrae [11] stated that personality is a system according to which personality can be described by five broad trait dimensions: neuroticism, agreeableness, extraversion, openness, and conscientiousness. Personality traits are the comprehensive descriptions in regards to the individual differences by referring to consistent patterns that being showed in the way how the said individual act, feel, and ponder. Traits not only represent the relatively general and enduring part of the dispositions that combined different responses based from the diverse stimuli that produced broad consistencies in terms of behavior, but it also predicts changes in personality growth and development [12, 13]. In this research, student personality traits are being taken account into with as there is the assumption of personality traits are part of the influence in regards to the learning [14]. The difference in the personality traits will means that there is difference in the learning as well depending on the individuals [15].

2.2. Big Five

The theory "Big Five" was derived from Costa & McCrae [11]. Its composition, as mentioned in [16], that there is common ground is established that the factors namely extraversion, agreeableness, conscientious, neuroticism and openness to experience, which formed the basis of Big Five in the current psychology field. It is widely being accepted that the Five Factor or "Big Five" model of personality that comprised of five important factors namely extraversion, agreeableness, conscientious, neuroticism and openness to experience [17, 18], are essential and sufficient to be used to support proven sample as well as suggested that there may have some relation with the learning approaches, as it is capable of showing a multitude of personal through the Big Five [19, 20, 21]. With that saying, it showed that there are some relations between personality traits and learning styles as the personal difference can be viewed and measured in the form of Big Five factors where different attributes or characteristics can be well represented. Ozer & Benet – Martinez [22] did mentioned in the statement that the Big Five traits which comprised of namely extraversion, agreeableness, conscientious, neuroticism and openness to experience, have been linked to wide range of behavior that take academic achievement and job performance into account [11, 23].

According to McCrae and Costa's [13] five-factor theory of personality, the Big Five personality traits form part of a dynamic personality system. Therefore, it is important to understand the personality traits as it can affect the students' behavior which in turns can be influential in their academic performance. [23] have concluded that the importance of understanding the personality traits towards the students' academic performance through their explanation in their researches. With that saying, whether a student can perform well enough or otherwise may due to his or her personality traits which decide his or her learning behavior, whether he or she is hardworking or plain ignorance towards the learning process, which in turns affect his or her academic result or scoring.

2.3. Learning styles

According to Gregorc [7], it is mentioned that learning style is the distinctive behavior that showed how an individual learn and accustomed into the said learning environment. With that saying, it can be interpreted that learning style is different from one to another and every individual have his or her unique features or characteristics when it comes to the learning and the way in coping with the environment. Learning style is playing a major role in the students' preference towards certain teaching approaches and learning environment [6]. Learning styles and personality traits are found to be closely related to each other as the combination of both did influenced the outcome of the students' academic performance [10]. With that being said, it is clear that learning styles as well as personality traits are indeed influential when it comes to the students' academic performance. It is also mentioned by [16] that learning styles are also relevant factors that contributed to academic success.

Most of the time, learning styles are nothing but certain kind of strategies or approach within the learning process [16]. Students always have their own specific of learning styles that they think suitable for them to apply in their context in order to help them gain best result as well as influenced positively in their learning outcome [9]. It is suggested that learning style can be modified at some point as they can be formed through socializing, as per stated by Sternberg [24]. Hence, it is vital to identify and acknowledged the importance and its effects of learning styles towards students' academic performance in the point of view of teaching professional, researchers and psychology practitioner. As students may come from different cultural background and undergo different learning environment, it is important to identify the learning styles of students so that to improve the overall outcome of the academic performance among the students. Being able to understand the students learning styles and its effect towards academic performance is then therefore important to the teachers to help the students improving the academic performance [9]. Focuses on addressing the diversity of learning styles is imperative as mentioned by Anderson and Adams. This is due to the diversity of learning styles can affect how the learning progresses among the students, in turns affect the outcome of the learning experiences through academic achievement.

2.4. Kolb's Learning Style Inventory

It is fundamentally based on the experiential learning theory that derived by Kolb [4] and is designed to aid in the identification of the way of learning that showed by the individual involved through learning experience. It is considered to be the major revision yet since 1999 which saw the additions of learning style typology, assessment of learning flexibility, expanded personal report that revolved on the focus of the improvement of learning effectiveness and psychometrics. All of these improvements are based on the years of researches and data gained around the world by many respondents.

According to [5, 24], learning styles cycle can be explained as part of types of learning which can be differentiate into 4 distinctive categories of key learning abilities namely, concrete experience (CE), reflective observation (RO), abstract conceptualization (AC) and active experimentation (AE) [25]. These 4 distinctive and specific description of the key learning abilities are what made up of Kolb's' Learning Styles and its related inventory as it is used within the scoring. Kolb's Learning Style is widely used within the psychology field as part of learning style inventory that can be documented while identifying and accessing the learning style of the client. In this Kolb context, learning is considered as part of process where experience is being transformed into knowledge as he proposed that the learning and its analysis lead to the grasping of new concepts which later digested and rearranged into new experiences.

It is said that learning revolves around these 4 steps that formed

the basis of four-cycle learning. An effective learning is achieved when the four component of the stages cycle occurred in order:

i.) Concrete Experience where a task or issue is being experienced followed by

ii.) Reflective Observation regarding that particular experience followed by

iii.) Abstract Conceptualization where analysis of the concept and conclusion was made, which is then referred upon at

iv.) Active Experimentation where test is used to prove the validity of the hypothesis which resulting in the formation of new experience.

Learning is considered to be part of integrated process where every stage is interrelated to each other according to Kolb [26]. Every stage within the cycle can be the starting point of the learning. However, it is worth mentioning that effective learning is considered valid if all the stages within the cycle are being executed as the effective learning cannot take place with just any one stages within the cycle on its own.

Learning style that derived from Kolb's learning theory [26] focused on four specific learning styles. He stated that every individual prefer one certain learning style which can be influenced by some factors. Regardless, the learning style that particular individual preferred is the combination of two different choices which are presented as two opposing line of axis. It is composed of two continuums namely: Processing Continuum which referred to the way how one approach a task given, and Perception Continuum which focused on our emotion responses as shown in the diagram above.

According to Kolb [26], it is said that our learning style derived from the product of two choices and two choices from the same axis is impossible to perform, meaning that we cannot think and feel at the given same time. A better understanding can be found through the diagram of the formation of the learning style as below:

Table 1: Formation of the Learning Styles

	Doing (Active Experimentation / AE)	Watching (Reflective Observation / AO)
Feeling (Concrete Experience / CE)	Accommodating (CE + AE)	Diverging (CE + AO)
Thinking (Abstract Conceptualization / AC)	Converging (AC + AE)	Assimilating (AC + AO)

It is stated that there is no one specific learning style that optimal for all kinds of students as every student is unique and different in terms of their learning style that fits them. Hence, it is important to understand each learning styles as each learning style have its strengths and weaknesses.

2.5. Academic performance

According to [27] it is said that learning is considered as a development of the way of thinking and action that resembled a specific community's principles. It is said that this process is active and continuous where the said learner understands, changes and make use of his mental model to help grasp the knowledge and act upon. In school, students are being taught with new information and knowledge over time. In this case, it is referred to the capability of students to be able to apply onto the questions or scenarios the examiners asked in the examination paper as well as whether the answer satisfied the requirements or otherwise. The results or the outcome gained through the examination will be measured and categorized by means of CGPA or Cumulative Grade Point Accumulated where the higher the value, the better the said student performed in his or her studies.

3. Research Objectives

The main objectives of this study are to investigate the effect of the personality traits and learning styles towards students' academic success among the adolescence in Johor Bahru. To be more specific, the research objectives are: 1) to find out the level of personality traits and learning style between male and female students; 2) to find out difference of personality traits and learning style between male and female students; 3) to investigate the relationship of personality traits with learning style and students' academic achievement; and 4) to investigate to what extent personality traits and learning style predict academic achievement among school students

4. Methodology

Firstly, the letter of approval will be presented to related school early in order to have the school authorities acknowledged the conduct of the research as well as the involvement of students in this research. By taking these steps, unnecessary complication or misunderstandings regarding the research can be avoided. The chosen respondents will be given some inventories to be answered, namely Big Five Inventory or BFI and Kolb's Learning Style Inventory or KLSI. Once the answering of both inventories are completed, the inventories will be collected through the aids of appointed person-in-charge for documentation purpose. The researcher will then collect the result that related to CGPA through the result of mid semester examination from students. For this research, quantitative research method is being selected through the use of questionnaire. The selected questionnaires were used in investigating the effect of personality traits and learning styles on students' academic performance. According to Creswell, it is mentioned that quantitative research involved the use of "strategic inquiry which not limited to experiment but also surveys and questionnaire that can gather the data in the form of statistical number or entries."

5. Result

Research Questions 1: What is the level of personality traits and learning style between male and female students?

Table 1 shows the means and standard deviation statistics of the personality trait in regard to the gender male. The result was showed with the value of means and standard deviation against each of the personality traits. Openness has a mean value of 38.75 with the standard deviation value at 6.311. Conscientiousness has a mean value of 31.93 with the standard deviation value at 4.626. Extraversion has a mean value of 29.18 with the standard deviation value at 3.963. Agreeableness has a mean value of 32.04 with the standard deviation value at 4.212. Neuroticism has a mean value of 26.64 with the standard deviation value at 5.057.

Table 2 shows the means and standard deviation statistics of the personality trait in regard to the gender female. The result was showed with the value of means and standard deviation against each of the personality traits. Openness has a mean value of 36.67 with the standard deviation value at 5.613. Conscientiousness has a mean value of 31.30 with the standard deviation value at 4.132. Extraversion has a mean value of 28.05 with the standard deviation value at 4.355. Agreeableness has a mean value of 31.05 with the standard deviation value at 4.862. Neuroticism has a mean value of 26.90 with the standard deviation value at 3.567.

Table 3 shows the means and standard deviation statistics of the learning style in regard to the gender both male and female. The result was showed with the value of means and standard deviation against each of the genders. Gender male has a mean value of 3.25 with the standard deviation value at .967. Gender female has a mean value of 2.96 with the standard deviation value at 1.123.

Based on the table shown above, it is summarized that the male

students have a higher value in terms of means among the personality traits such as Openness (38.75 to 36.67), conscientiousness (31.93 to 31.30), extraversion (31.93 to 31.30) and agreeableness (32.04 to 31.05). The only personality trait where the female has a higher value of mean instead when compared to male counterpart is neuroticism (26.90 to 26.64).

Table 1: Statistic for Personality Traits in Male

	Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism
Mean	38.75	31.93	29.18	32.04	26.64
S.D	6.311	4.626	3.963	4.212	5.057

Table 2: Statistic for Personality Traits in Female

	Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism
Mean	36.67	31.30	28.05	31.05	26.90
S.D	5.613	4.132	4.355	4.862	3.567

Table 3: Statistic for Learning Style in Male and Female

Gender	Male	Female
Mean	3.25	2.96
S.D	.967	1.123

Table 4: Chi Square Test of Independence for Main Personality against Gender

			Gender	
			Male	Female
Main Personality	Openness	Count	25	58
		% within Gender	89.3%	79.5%
	Conscientiousness	Count	2	8
		% within Gender	7.1%	11.0%
	Agreeableness	Count	1	5
		% within Gender	3.6%	6.8%
	Neuroticism	Count	0	2
		% within Gender	0.0%	2.7%
	Value	df	Asymptotic Sig (2-sided)	
Pearson Chi-Square	1.669[a]	3	.644	
N of Valid Cases	101			

a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is .55.

Table 5: Chi Square Test of Independence for Learning Style against Gender

			Gender	
			Male	Female
Learning Style	Accommodator	Count	2	11
		% within Gender	7.1%	15.1%
	Diverger	Count	4	14
		% within Gender	14.3%	19.2%
	Assimilator	Count	7	15
		% within Gender	25.0%	20.5%
	Converger	Count	15	33
		% within Gender	53.6%	47.5%
	Value	df	Asymptotic Sig (2-sided)	
Pearson Chi-Square	1.742[a]	3	.628	
N of Valid Cases	101			

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 3.60.

Research Question 2: What is the differences of personality traits and learning style between male and female students?

A chi-square test was performed towards the relationship of main personality in reference to both male and female gender. It was found that there is no significant relationship, X2 (3, N = 101) = 1.67, P = .65. The hypothesis null is fail to reject, P > 0.5.
The statistics also show that more males demonstrated a stronger preference for openness as their learning style compared to female (89.3% to 79.5%). On the other hand, the female displayed stronger preference towards the other learning styles when compared to male such as agreeableness (6.8% to 3.6%), conscientiousness (11.0% to 7.1%) and neuroticism (2.7% to 0.0%). No result is reported on both gender towards the extraversion learning style.
A chi-square test was performed towards the relationship of learning style in reference to both male and female gender. It was found that there is no significant relationship, X2 (3, N = 101) = 1.742, P = .63. The hypothesis null is fail to reject, P > 0.5
The statistics also show that more males demonstrated a stronger preference in terms of assimilator as their learning style when compared to female (53.6% to 45.2%). The same also happened to assimilator learning style where the male have a high preference to the said learning style when compared to female (25.0% to 20.5%). On the other hand, the female demonstrated higher preference for accommodator as their learning style (15.1% to 7.1%). The same inclination also happened to diverger as learning style among female when compared to male (19.2% to 14.3%).

Research Question 3: Is there any relationship of personality traits with learning style among the students' academic achievement?

For this question, Spearman's correlation was used in order to show the correlation between personality traits with learning style and students' academic achievement. The result showed in Table

6 portrayed the CGPA as the dependent variable (DV) and both the main personality and learning style as the independent variable (IV). From there, it is used to answer the null hypothesis which stated "there is no significant relationship in terms of personality traits with learning style and students' academic achievement". For the Main Personality, its correlation value is .083 with the P-value at .407. As the Learning Style, its correlation value is -.020 with the P-value of .845. In reference to both of the P-value displayed by both variables, it can be said that the hypothesis null is partially rejected as the p-value for main personality is .407, P < 0.5 which lead to the hypothesis being rejected whereas in the case of the learning style, the p-value is .845, P > 0.5, therefore the hypothesis null is failed to reject.

Research Question 4: To what extent personality traits and learning style predict academic achievement among school students?

In this section, the focus in the multiple regression which is used to show the relationship between three variables with the students' achievement as the dependent variable (DV) whereas both the components of the personality traits and learning style as the predictors. These variables are not able to statistically significantly predicted CGPA, F (2, 98) = .212, p > 0.0, R2 = .004. All two variables that are being added are not statistically significantly to the prediction, p > .05. The table 7 shows that the independent variables are not statistically significantly predict the dependent variable, F (2, 98) = .212, p > 0.5.

Table 6: Spearman's Correlation

			CGPA	Main Personality	Learning Style
Spearman's	CGPA	Correlation Coefficient	1.000	.083	-.020
		Sig. (2-tailed)	.	.407	.845
		N	101	101	101
	Main Personality	Correlation Coefficient	.083	1.000	.121
		Sig. (2-tailed)	.407	.	.230
		N	101	101	101
	Learning Style	Correlation Coefficient	-.020	.121	1.000
		Sig. (2-tailed)	.845	.230	
		N	101	101	101

Table 7: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	.208	2	.1104	.212	.809[b]
	Residual	48.148	98	.491		
	Total	48.365	100			

a. Dependent Variable: CGPA
b. Predictors: (Constant), Learning Style, Main Personality

Table 8: Multiple Regression Coefficient

Dependent Variable	Predictors	B	SE B	Beta	t	Sig
CGPA						R^2 = .004
	Constant	4.417	.398		11.091	.000
	Main Personality	.049	.079	.064	.626	.533
	Learning Style	-.017	.065	-.026	-.254	.800

a. Dependent Variable: CGPA

6. Discussion

Based on this research, all of the research objectives and research questions as well as the hypothesis null has been successfully answered. The relationship of personality traits and learning style among male and female students as well as the academic achievement plus the differences has been identified. In addition, the relationship and academic performance has also been identified whereas the personality traits have a positive relationship with the students' academic achievement. The research revealed that the most common personality traits displayed by the students are Openness and Conscientiousness while the most common learning style displayed by the students is Converger. On the contrary, the research also revealed that there is no significant effect of the combination of both the personality traits and learning style towards the prediction of the academic achievement among school students. The same goes to the difference of personality traits and learning style between male and female students was not significant as well. Nevertheless, the research findings also showed that there are still many potential variables and improvements to be added in to the suggestion and recommendation which can be included by the future other researchers for the improvement of future similar researches result outcome [28, 29, 30, 31, 32, 33].

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