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Personality traits and intrinsic motivation on academic performance

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Abstract

There is a significant connection between personality traits and intrinsic motivation on academic performance. Personality has been highlighted by numerous researchers as one of human behaviour's most important determinants. Intrinsic motivation is described as an individual who is willing and passionate towards a particular activity. Hence, through meta-analysis, this study aims to see if individual personal traits and being intrinsically motivated do influence students' academic achievement. The study also aims in determining which personality traits instigate intrinsic motivation among students. After a meta-analysis of previous researches, there are several elements identified establishing the connection between personality and intrinsic motivation in students' academic performance. They are: (1) behavioural inclinations mirrored in personality traits can have an impact on certain habits that influence academic achievement (2) cognitive ability is an indicator of an individual's ability to do a task, personality traits indicate what the individual will do and motivation drives the individual and determines the amount of effort put into a particular task; (3) academic performance is predicted by personality traits particularly in motivation-related personality variables.

Keywords: *academic performance; intrinsic motivation; personality traits*

1. Introduction

Personality traits and motivation are significant for effective learning and teaching. Individuals have different types of personalities and motivation in handling tasks. Identifying these specific differences will give important information on how teaching and learning environment should be created. Being able to recognize unique individual personality traits and levels of motivation can determine how students respond to new information and manage challenges encountered. The identification of major individual academic performance predictors has been attempted by many psychologists. Various factors have been considered such as cognitive skills, gender, study habits, academic maturity and family background. All these factors have been studied extensively in the process of determining what plays the role in influencing academic performance among secondary school students. To meet the students' diverse needs, it is imperative to take into account how personality traits and intrinsic motivation influence students' academic performance.

2. Background of the problem

Appreciating and acknowledging students' learning diversity mean that students are no longer seen as learners who will conform themselves to learn in a one-size-fits-all academic set up and curriculum. Understanding the students as individuals with their own unique traits can help them to have the sense of belonging in a competitive academic world as they are allowed to approach learning and express themselves in a non-intimidating environment. Despite cognitive ability being proven countless times as an important academic performance determinate [1] stated that there are other factors that can be seen as academic performance determinates that should be taken into consideration. The reason why these other elements should be considered is that cognitive ability is an ability that shows what a student can do, however the student's willingness to actually do what is expected is determined by personality traits and how well they accomplish the task is determined by what motivates them. Due to that, many researchers have expressed interest on how personality traits and motivation relates to academic performance.

Personality and motivation's relationship has sparked many interests throughout the years. In an educational setting, the connection between intrinsic motivation and personality traits is among the significant issues to be answered. Although there are clear and dependable evidence that links intrinsic motivation to various positive results, studies measuring the influence of personality traits and intrinsic motivation particularly on secondary school students in Malaysia is still lacking. This is possible due to the reason that most studies would look into both intrinsic and extrinsic motivation and how students' performances are influenced.

[2] discovered that intrinsically motivated students were extroverted, agreeable, conscientious, and open to new experiences. Investigations by [3] discovered the correlation between the Big Five personality traits and academic motivation and established several significant relationships between personality and motivation. They discovered that conscientious students were driven by achievements while high avoidance scores were detected in neurotic students. They also discovered that intrinsically motivated students have the tendency to be conscientious and open to new experiences whereas those extrinsically motivated were conscientious, extroverted, and neurotic; and those lacking in motivation were disagreeable and lacked conscientiousness. [4] explained that

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it is a general agreement to understand that personalities do influence interpersonal behaviour. The benefit in understanding the link between personality and behaviour is that it enables individuals to achieve the much needed results when working as a group.

In education, academic motivation is an important psychological concept and is related to many different educational outcomes. Consequently, it is understandable that interest in studying motivation in various educational contexts is continuous. According to [5] motivation is a distinctive occurrence that is influenced by four factors of context (environment and external stimuli), temper (the internal condition of an organism), goal (goal of behaviour, drive and disposition) and instruments (instruments to achieve goals). They also believe that humans need to attain the right level of motivation with the intention of achieving their goals, desires and dispositions. Principally in regard to students, motivation to perform above par academically is of pronounced significance. With adequate level of motivation as the main driver, students in particular are encouraged to effectively complete a project, achieve a specific goal or a degree of qualification in their professions. For that reason, motivation is the main reason on how humans behave or react and is a determinant why they behave or react in a certain way. Motivated behaviors are vigorous, oriented and stable.

[6] from an educational standpoint believed that motivation is a complex structure which is simultaneous with learning and academic motivation as there are various ways of interpreting motivation. In the world of education, motivation is pronged into three elements. They are: the individual's confidence with his/her ability to carry out a task, purpose and individual goals when being tasked and most importantly, how the individual feels when accomplishing the task. Most studies on motivation would have the experts to divide motivation into two main groups' namely intrinsic and external motivation.

This study will also look into how the Big Five personality traits correlate with motivation. [7] considered the Big Five personality factors due to the factors' stability, robustness and predictability correlating with academic performance. The Big Five is often commended to be used to predict academic achievement in post-secondary education [8]. The reason for looking into the Big Five personality traits is to find out if they do create the intrinsic motivation that pushes students to stay engaged and persistent with their tasks despite possible challenges. The Big Five personality traits, which are extraversion, agreeableness, conscientiousness, neuroticism and openness to experience, have been associated with extensive range of human behaviour. The extensive areas of personality are well represented by these dimensions.

Hence, the main purpose of this study is to determine the influence personality traits and intrinsic motivation have on academic achievement and which personality trait specifically instigates intrinsic motivation hence influencing the students' academic performances.

3. Literature Review

While a number of studies have examined individual differences in personality traits, motivation and academic performance, most have focused on personality traits and academic motivation with academic performance or on how either one of the factors affect academic performance. Moreover, there is not much existing research focused intrinsic motivation as most researchers looked into both intrinsic and extrinsic motivation. The literature will review the main factors discussed in the paper and they are: (1) Personality traits; (2) The Big Five Personality Traits; (3) Intrinsic Motivation and (4) Academic Performance

3.1. Personality traits

The word 'personality' originates from the Latin word 'Persona' which means 'mask'. Generally, trait is understood as "a particular quality in your personality" [9]. This definition's emphasis is on the inner characteristics of the person-the qualities that make the difference, attributes, manners and most of all, traits, which distinguishes individual A from individual B. Personality is also what is inside, the inner psychological characteristics determining and reflecting how a person would react to the situation around him/her. Personality do reflect individuality and at some point, the personality can be changed when adapting is required [10]. Identifying and determining personality traits in any organizations, particularly schools, allow the educators to tailor or build learning activities that include each student in the classroom. It is common to see some students have the tendency to outshine the quiet ones therefore it is imperative for educators to ensure that no one is left behind during the teaching and learning process.

The first dictionary listing personality-related characteristics was created by Gordon Allport and Henry Odbert in 1936. In the 1940s, another researcher, Raymond Cattell condensed Allport and Odbert's list, and applied what is known as a factor analysis and creating a model made up of 16 factors [11].

Several studies have looked into personality traits that are connected to aspects of academic motivation According to [12], some studies have investigated personality traits that may be related to some aspects of academic motivation. These studies have taken aspects such as test anxiety, performance goals, achievement motivation and related these academic performances and academic performance among high school students was positively correlated with extraversion and recklessness and psychoticism with negatively.

[13] perceived personality traits as stable characteristics with the ability to influence a person's behaviour in a given situation. The definition of personality [14] refers to the number of ways in which an individual respond to and communicate with others. Having been considered by many researchers as one of the most prominent human behaviour and motivation, personality is still not understood completely on how it is linked to motivation. Despite the doubts, personality traits can even be the source of motivation [15] as motivation is a strong force that indicates action. [16] also stated that personality can be considered a crucial factor in different contexts where an individual's personality can be of an influence to his/her performance. Personality is influential in many contexts, hence reinstating the evidence that personality should be a source of motivation [17]. Determining personality traits' influence on individual's motivation to learn can enable learning behaviour influences to be examined.

3.2. The Big Five Personality Traits

According to [18], D.W Fiske carried out a research in 1949 that was eventually developed by McCrea & Costa (1987). The Big Five is made up of: (1) openness to new experience; (2) conscientious; (3) extraversion; (4) agreeableness and (5) Neuroticism. Each trait has unique descriptions that can be used to describe an individual. Openness to new experience is used to describe someone who is creative, curious and cultured. This individual has the tendency to have wide range of interests and has the willingness to go through new experiences. Being described as conscientious means that the individual is diligent, dependable and organized and an extrovert is an individual who enjoys socializing, pleasant, outgoing and self-assured. An individual who is cooperative, likeable and agreeable can be described as having the trait of agreeableness. Neuroticism, unlike the other more positive traits, can be used to describe someone who is self-doubting, has low self-esteem and sensitive.

Apart from the five traits, conscientious is the sole factor that has been closely linked to motivation to learn. It was also discovered that while individuals who have high levels of openness to experience are interested in learning, conscientious is the positive aspect of motivation that gives the individuals the feeling of satisfaction, happiness and most of all diligent. Neuroticism is usually linked to negative element linked to motivation to learn. Previous research by [19] reported that openness to experience had been linked positively to intrinsic motivation but conscientious and extraversion is significantly related to extrinsic motivation.

The Big Five is generally commended to be used to predict academic achievement in post-secondary education. [7] considered the Big Five personality factors due to the factors' stability, robustness and predictability when correlated with academic performance. In similar view, [1] was able to prove that academic performance correlates with the five factor personality traits which supported findings by Ackermand and Heggested (1997) as cited by [18]. The correlation is positive based on an informative analysis; it was shown that there is a positive connection between intelligence, personality and interest. Meta-analysis results by O'Connor and Paunonen (2007), who was also cited by [18] looked into the connection between academic performance and the Big Five Personality traits. The results showed that academic performance was often foreseen by conscientiousness and openness.

Big Five personality traits have been established to include the basic features of human personality and influence the human behavior strongly. A trait from the Big Five, Conscientiousness, has constantly predicted examination performance with positive results [3] on top of grade point average and academic success. Despite the Big Five personality traits impact on academic performance, it goes beyond these factors direct impact as there are other predictors as crucial in the prediction of academic performance that act as mediators linking personality and academic performance.

3.3. Intrinsic Motivation

Motivation is a form of force that arouses eagerness and perseverance hence it is proven that it has the capability to instigate a specific cause of action. Motivation is a factor that has the potential to determine behaviour. It may be driven by either intrinsically or extrinsically. Motivational processes cannot be neglected in the field of education as it plays a fundamental role in instructive learning and achievement [20]. [21] described the quest of adopting self-directed motivation encourages the individual to use deep processing learning strategies, higher academic commitment and which eventually leads to better academic scores.

This is further substantiated by [6] were of the opinion when motivation is taken into account in the field of education, its effectiveness can be proven especially in relation with new learning styles, capabilities, approaches and behaviors. For academic performance, motivation is ascribed to behaviour hence leading to learning and accomplishment. In short, academic performance motivation can be described as a persistent tendency towards completing a task successfully in a particular context and instinctively evaluating the performance.

For success in the academic world, academic intrinsic motivation is an essential factor as it can be the key to ensure that the students would pursue their studies to a higher level or not. The motivations behind such academic persistence vary across many intrinsic factors. However, there are doubts if motivation is sufficient to keep students true to the track and guide them throughout their academic careers.

Deci (1975) as cited by [22] saw intrinsic motivation as an activity for itself, and the pleasure and satisfaction derived from participation. Motivation has been shown to be linked to various outcomes for instance, curiosity, perseverance, knowledge and performance. They were also quoted by various researchers on their Self Determination Theory (SDT) hypothesizing that intrinsic motivation comes from the human's natural psychological needs of being competent and self-determined [22] [23] [24] Individuals, with strong intrinsic motivation, agree to accept certain tasks that they find interesting. With that strong interest they have in the task, they are able to give their full commitment. From that commitment, they feel the satisfaction when they managed to accomplish the tasks on their own successfully. Intrinsic motivation is quite subjective as it is driven by individual's deep interests and connection in the work, inquisitiveness, pleasure, or a special form of personal challenge. The measurement for intrinsic motivation is the will to succeed, the strong need to be able to master certain skills relevant to a demanding task and the significance of being able to perform academically [25]. Suggestions from various related literature also showed three types of intrinsic motivation are present in intrinsic motivation. They are: the need to know, the need to experience stimulation, and the need to accomplish things. Intrinsic motivation means that the individual knows how to communicate several constructs such as exploration, curiosity, learning goals, intrinsic intellectuality, and finally intrinsic motivation to learn.

Intrinsic motivation is generally seen as a form of approach within the concept of motivation. It is, seen as key component of achievement goal theory. A number of theorists disagreed with the idea that mastery goals assist intrinsic motivation and associated mental processes. Performance goal, on the other hand, initiates the negative aspects of motivation. Mastery goals are seen as promoting intrinsic motivation by instilling positive challenges, encouragement, excitement and self-efficient unlike performance goals which are the opposite. Performance goals are seen to undermine intrinsic motivation as it instills threat perceptions, interrupt task association, and create anxiety and pressure [26].

Carrying out a study involving a group of college students (Yoshida, 2008) studied the relationship between academic motivation and carrying out easy and difficult tasks. The participants' motivational levels were later scored after the samples have finished their essays and complicated square or jigsaw puzzle tasks (i.e. academic tasks). The scores of the participants' motivational levels were taken and scored. [18] discovered that those with higher academic motivation have the tendency to keep on completing the difficult tasks, and those with lower academic motivation have the tendency to continue working on easier tasks.

In the context of schools, [21] believed that intrinsic motivation in school is crucial as it holds various desirable outcomes for students as highlighted by other literature such as accepting complex learning strategies [27] [28] [29] better task performance [31], experiencing positive affects [32], and higher satisfaction levels with life.

The acknowledgement of intrinsic motivation as a predictor of academic performance is not limited to education institutions in the United States only as it has been accepted internationally. A study carried out in South Africa by [25] examined post-secondary students' internal and external motivation's link with their academic performance which was facilitated by effort. Their findings showed that student motivation and academic performance is directly connected and it was discovered that intrinsic motivation was the strongest academic performance predictor, followed by effort. Based on their study, they are able to prove that academic performance is influenced not only by student motivation but it is also influenced by the amount of effort put in by students in the classroom.

[22] is in agreement with the findings as she believes that academic intrinsic motivation plays significant role in achievement, competency and academic learning and how motivation plays an important role as it contributes to student's achievement. [21] identified intrinsic motivation as the ultimate resilience factor that kept students focused throughout their tumultuous transitional stages during their school years. Additionally, greater intrinsic motivation in students lead to a more satisfied adulthood as being intrinsically motivated is connected with higher career-satisfaction, inventive performance, and life contented [33]. Prominent intrinsic motivation is a crucial in students' life, influencing not only their academic achievements, but also their lives in general.

3.4. Academic Performance

Areas of learning and education can stand to gain from enhanced knowledge related to factors that facilitate academic performance. An individual spends an extensive amount of time as a student, and worldwide, countries' economics are spent on bettering educational activities, therefore it is worth it to identify academic performance in many ways [1].

According to Annie, Howard and Mildred (1996), as cited by [34], academic performance is defined as the outcome of education to the point which a student, teacher or institution has achieved their educational goals. Academic performance is a reference to education's output and is mainly assessed with regards to subject grades with examination. The studies in the literature, which examine academic performance, measure it as a course grade, Grade Point Average (GPA) or other form of scores based on classroom tasks or assignments and the output is a grade score at all times.

Academic success has a great influence on a student's self-esteem, motivation, and perseverance particularly in tertiary levels [35]. However, it is important to remember that another form of factor affecting students' academic performance is motivation differing from one student to another. Success is triggered by motivation and in that circumstance; students with better levels of motivation will perform academically better the unmotivated students. Poor academic performance or high failure rates may bring about undesirable levels of stress and regret, reduced number of graduates and cost of education increased. Poor academic performance may also reduce students' quest for admission opportunities to obtain higher degrees. Hence, students' academic performance has always been a topic of interest for educators. Educators and researchers have long been interested in identifying and understanding the factors contributing to excellent academic performance.

There are many contributing factors to students' performance in academic fields. Achievement or underachievement results from various cognitive, social, demographic, motivational, and psychological factors for example, being academically self-efficient, social involvement, gender, motivation and personality traits [1] and [2]. Knowledge of the factors affecting academic performance and their relationships fundamental elements is important in the process of setting up of interventions to meet students' needs and help improve their performance.

4. Methodology

The study aims to see if personal traits and intrinsic motivation influence secondary school students' academic achievement. The study also aims to determine which personality traits instigate intrinsic motivation among secondary school students reflected in their academic performance. The keywords used in the search process of previous related studies are personality traits, intrinsic motivation and academic performance among students. Related literature was obtained through online database such as Science Direct, Elsevier and Education Resources Information Centre (ERIC). The following criteria were used to search for related relevant studies (1) research on personality traits and motivation; (2) secondary school students and intrinsic motivation; (3) studies between 2008 to date; and (4) the study should be on the influence personality traits; intrinsic motivation have on students' academic performance. After a qualitative analysis, a research-based personality traits and intrinsic motivation influencing students' academic performance is carried out, and the summary of the literature substantiating the findings are tabled in the next section.

5. Results and Findings

No	Influence of Personality traits and Intrinsic Motivation on Secondary school students' academic performance.	Explication	Study
1	Behavioural inclinations mirrored in personality traits can have an impact on certain habits that influence academic achievement	connection between personality and academic performance indicated that conscientiousness and openness to experience can foresee academic performance	(Kaufman, Agars, & Lopez-Wagner, 2008); (Komarraju, Karau, Schmeck, & R.R., 2009); (Komarraju, Karau, Schmeck, & R.R., 2009); (Eyong, David, & Umoh, 2014) (Bozanoğlu & Sapancı, 2015); (Gnambs & Hanfstingl, 2015)
2	Personality traits and Motivation	correlation between personality and academic performance mediated by intrinsic motivation	(Ayub, 2010); (Ciorbea & Pasarica, 2013); (Hazrati-Viari, Rad, & Torabi, 2012) (Bozanoğlu & Sapancı, 2015); (Eyong, David, & Umoh, 2014); (Gnambs & Hanfstingl, 2015)
3	Academic performance predicted by personality traits particularly in motivation-related personality variables	relationship between motivation-related variables and academic performance	(Hakimi, Hejazi, & Lavasan, 2011); (Kappe & van der Flier, 2012) (Richardson, Abraham, & Bond, 2012); (Ciorbea & Pasarica, 2013); (Gnambs & Hanfstingl, 2015)

Table 1: The Meta-Analysis of Influence of Personality traits and Intrinsic Motivation on Secondary school students' academic performance

Based on the study's meta-analysis, there are three factors identified.

Behavioural inclinations mirrored by personality traits

There is a significant connection between personality and academic performance indicating that two personality traits, conscientiousness and openness to experience, can foresee academic performance. With reference to the theoretical

statements and empirical studies on the influence of personality traits and intrinsic motivation on academic performance [6] [8] [24], there is a positive relationship between personality and behavioural inclinations. The results indicated that two of the main Big Five personality traits, conscientiousness and openness to experience, can foresee academic performance. It also suggests that students who score high in conscientiousness and openness will usually go well in school or university.

Personality traits and intrinsic motivation

There is correlation between personality and academic performance facilitated by intrinsic motivation. Students with high intrinsic motivation students can be extrinsic at the same time with regards to upcoming goal directions. In addition, intrinsically motivated students are more resilient, overcome more challenges, and show better accomplishments in their academic activities compared to those who are extrinsically motivated. The results also confirmed that motivation plays a mediating role in relations between personality traits and academic performance. Again, it can be concluded that a component of the personality trait, conscientiousness, predicts both of intrinsic and extrinsic motivation.

Academic performance predicted by motivation-related personality traits

There is a relationship between motivation-related personality traits and academic performance. The role of the Big Five personality traits come into play again where the students who are motivated by specific personality traits like conscientious, openness to experience and agreeableness would perform academically better than their counterparts. Students with positive level of agreeableness are selfless, flexible and pleasant to work with making them better team players and are able to work with others easily with little or no friction. This trait is a positive influence in academic performance. It plays an important role in academic performance specifically in circumstances where cooperation is compulsory [10].

5.1. Discussion

With reference to the meta analysis above, it can be concluded that personality traits and intrinsic motivation do affect students' academic performance. For example, students who are conscientious will have the bigger possibility of being able to meet assignments deadlines, as they priorities the tasks, working on them rather than leave them incomplete. These conscientious students will also put in a good amount of effort into that task. These students can be described as self-driven and self-motivated as they can apply themselves without the need of continuous supervision.

In terms of intrinsic motivation and another personality trait, openness to experience's influence on academic performance, it is seen from the analysis that those who are high on openness have the tendency of being be intelligently inquisitive, smart, perceptive, artistic, and attentive. Hence, students with these qualities are high in openness and may possibly perform better compared to their peers. For instance, students who are attentive and perceptive are naturally more inquisitive and have the desire to have a deeper understanding on certain issues of interest. These strong qualities can make the students better learners as they can adapt well to new learning strategies which will result in outstanding academic performance.

The combination of all these positive personality traits with the right dose of intrinsic motivation makes the students more confident with themselves and interacts easily with fellow peers. They will be able to learn from each other, work well on assignments that requires group work simultaneously making learning more enjoyable. Students with strong traits of agreeableness are described as generous, friendly and helpful nature make it easy for them to received help and favours from fellow students too [10].

6. Conclusion

In conclusion, there are three factors confirming the influence positive traits and intrinsic motivation have on students' academic performance. These three factors should be taken into consideration by educators of all levels as it is important to see the students as learners with unique personalities. Educators who are able to tap and use the individual traits will be able to motivate them intrinsically; keeping them engaged and committed with their tasks, hence becoming well-rounded individuals when they enter the real world. The prominent roles held by these unique personality traits and the crucial need to identify them should be researched on thoroughly as there are other human-influencing variables that may be of equal importance. Other variables such as cognitive skills, IQ, learning strategies and classroom set up. As the main purpose of this meta-analysis was to determine if personality traits and intrinsic motivation do influence students' academic performance, there should be another study that can consider looking into the other variables and how they can influence academic performance among students.

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