



The Influence of the Big Five Personality and Motivation on Academic Achievement among University Students in Ghana

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Authors' contributions

This work was carried out in collaboration among all the authors. All authors read and approved the final manuscript.

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ABSTRACT

The study investigates the association among students' personality characteristics, motivation and academic achievement by selecting a total of 273 students from the University of Ghana, Legon. The cross-sectional survey design was adopted for this study and standardized instruments which measure personality characteristics, intrinsic and extrinsic motivations were administered to the students. The respondents also reported their current Cumulative Grade-Point Averages (CGPA) as a measure of their academic achievement. Data were analyzed with the use of standard multiple regression and Pearson correlation. Results show that, among the personality characteristics, conscientiousness is the only factor that significantly predicts students' academic achievement. Further analysis did not show any significant relationship between extrinsic motivation and academic achievement as well as intrinsic motivation and academic achievement. It is concluded that culture

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could be exerting a strong influence on personality characteristics and motivation and therefore, the associations should be interpreted within the cultural milieu of Ghana.

Keywords: Personality; motivation; academic achievement; students; Ghana.

1. INTRODUCTION

The consistent decline of students' academic performance in Ghana has been a major topic of discussion across several sectors. In trying to ensure better academic outcomes among students, it is important to examine some inherent individual characteristics of students that are associated with their school success or otherwise. Notwithstanding the fact that the focus of the discussions is mainly on the structural and policy level analyses, researchers in other parts of the world pay a great deal of attention to the structural, policy as well as personal individual characteristics. The key individual characteristics of interest in this study are the students' personality characteristics and motivation.

Personality characteristics have been studied in the psychological literature for several decades due to their impact on several psychosocial outcomes of individuals including motivation and academic achievement. The most widely studied personality characteristics are those in the Big Five personality model [1,2] and it is assumed the personality characteristics cluster around five factors, namely; Extraversion, Agreeableness, Conscientiousness, Neuroticism/Emotional Stability, and Openness [3,4]. Individuals who are high on the trait conscientiousness are usually disciplined, organized, and achievement-oriented whereas those who are high on extraversion are usually sociable, assertive and talkative. Individuals who are high on neuroticism tend to be emotionally unstable, anxious and impulsive whilst individuals who are high on openness tend to have preference for novelty and are also intellectually curious. Finally, individuals who are high on agreeableness tend to be sympathetic, cooperative and very helpful to other people. Research findings have demonstrated that students' personality factors are significantly associated with their learning styles and academic performance [5-7].

Another important variable identified in the psychological and other social science literature is motivation. Motivation can be seen as the driving force of human behavior in that it is significantly associated with several outcomes both among students and workers. There are two main types of motivation, namely; intrinsic and

extrinsic [8]. Intrinsic motivation refers to natural inclination toward mastery, interest, and exploration that represents a critical source of enjoyment and vitality [9-11]. That is, people do engage in a particular behavior not because of any external rewards be it tangible or intangible. On the other hand, extrinsic motivation refers to factors external to the individual be it tangible or intangible that influence their behavior [8]. Both forms of motivation have been shown to be significant in influencing different domains of an individual's characteristics. However, different factors may be responsible for an individual's intrinsic and extrinsic motivations which include personality characteristics.

1.1 The Big Five Personality and Academic Achievement

Several factors have been identified in the education and psychology literature to have significant impacts on students' academic performance at the macro as well as micro levels. Students' micro level factors such as their personality which is considered very crucial has been associated with students' learning styles and academic performance. For instance, Komarraju et al. [5] found in their study which examined the impact of personality and learning styles on academic achievement that five personality traits together explained 14% of the variance in grade point average (GPA) while learning styles explained an additional 3%. This indicates the importance of personality and learning styles in influencing students' academic performance. Like Komarraju et al. [5], other researchers have noted the importance of personality factors on academic outcomes, especially conscientiousness being a consistent predictor of academic achievement [12-15]. Other studies however found neuroticism to be significantly associated with poor academic performance [12].

Similarly, Laidra et al. [16] explored the predictive impacts of students' intelligence and personality traits on their academic achievement in Estonia and found that openness, agreeableness, and conscientiousness correlated positively with students' academic achievement whilst neuroticism correlated negatively with GPA in almost every grade. In comparing the predictive

power of intelligence and personality traits, intelligence was found to be the strongest predictor of GPA, followed by agreeableness in Grades 2 to 4 and conscientiousness in Grades 6 to 12. Similar results were reported with extraversion, openness, and conscientiousness predicting students' GPA and overall academic performance [15,17].

It was however, noted by Farsides and Woodfield [17] that empirical evidence is mixed concerning the role each of the five traits plays in determining academic success. The researchers suggested that the inconsistencies could be due to age specificity of the relationship (e.g., neuroticism is positively related to academic achievement in middle school but negatively at college level; similarly, extraversion predicts higher grades in middle school but lower grades at the college level [18]. A study among German adolescents revealed that the need for achievement as a motivation construct had positive associations with school achievement in Math, German, and GPA. However, conscientiousness was positively associated with grades, whilst personality traits such as neuroticism, extraversion, openness to experience, and agreeableness were either not or weakly related with one or two out of three performance criteria [19]. These findings buttressed the inconsistency in the association between personality traits and academic achievement which needs further investigation in our cultural context to determine if any significant associations exist and the nature of these associations.

1.2 Motivation and Academic Achievement

Lepper et al. [20] explored whether type of motivation significantly relates with academic performance and whether differences exist across age and sex of the respondents in the study. The outcomes revealed that intrinsic motivation decreases as children progressed and was positively correlated with children's grades and standardized test scores at all grade levels. However, extrinsic motivation was negatively associated with academic outcomes and was not significantly affected by children's progression from one grade to another. The review of literature showed that there is limited published work in our Ghanaian context in the area of types of motivation and academic achievement. However, in their study, Nyarko et al. [21] found a significant positive relationship between

motivation and teachers' job satisfaction, but type of motivation did not affect their levels of satisfaction.

1.3 The Big Five Personality, Motivation and Academic Achievement

Sung and Choi [22] investigated creativity by examining how personality and extrinsic motivation affect creativity and reported that extraversion and openness to experience had significant positive effects on creative performance. Extrinsic motivation was found to moderate the positive relationship between openness to experience and creativity by strengthening the association. However, agreeableness was found to be a positive predictor of creative performance only when the person's extrinsic motivation was low.

Kaufman et al. [23] found from their study among college students that conscientiousness, intrinsic motivation, and extrinsic motivation were all significant predictors of first-quarter academic success. However, while intrinsic motivation and conscientiousness had positive impacts on academic success, extrinsic motivation had a negative impact on college success. This concurs with earlier findings that personality factors and motivation are significant predictors of academic success [24-26].

A majority of the previous studies reviewed either examined personality on some other psychological constructs other than motivation and academic achievement. The few that examined these associations were conducted in other parts of the world which share different cultural values that are not the same as the Ghanaian culture. The paucity in the literature within the Ghanaian context in respect of students' personality, motivation and academic achievement necessitated this study. Thus, this study sought to 1. Determine whether students' personality characteristics significantly predict their academic achievement and 2. Find out whether significant relationship exists between motivation and academic achievement.

2. METHODOLOGY

2.1 Population and Sample

The population of interest consisted of undergraduate university of Ghana-Legon students from diverse socioeconomic backgrounds and cultures. A total of 273

students comprising 117 male students and 156 female students were conveniently sampled from levels 200 to 400. The students had a mean age of 22.32 years with a standard deviation of 2.65 years. Out of the total sample, 98 (36%) were in Level 200 (second year), 52 (19%) were in Level 300 (third year) whilst 123 (45%) were in Level 400 (fourth years). The levels in this context represent the academic years of students.

2.2 Measures

A set of questionnaires was used with three subsections. Section 1 consisted of the respondents' demographic characteristics. The second section consisted of motivation questionnaire and the third section consisted of the big five personality inventory.

Motivation [27] - This is a seven item questionnaire developed to measure the nature of motivation among the students. The scale measures both intrinsic and extrinsic motivation levels of respondents. Some of the items on the scale are; "What matters most to me is enjoying what I do", "I seldom think about grades and awards", "I am keenly aware of the Grade Point Average goals I set for myself" and "It is important for me to have an outlet for self-expression". The total scale has a reliability value of .61.

The Big Five Inventory [28]. - This is a forty four item questionnaire developed to measure the big five personality traits of extraversion, agreeableness, conscientiousness, neuroticism/emotional stability, and openness. Some of the items on the scale are "I see myself as someone who... is talkative, is emotionally stable, not easily upset, is inventive, does a thorough job". The scale has reliability values ranging from .75 to .80 for the subscales.

2.3 Design

The cross-sectional design was employed for the data collection due to the nature of the information of interest which is not appropriate with the use of other research designs.

2.4 Procedure

The researchers approached students in their various lecture halls and hostels for their participation in the study. The objectives of the study were explained to the students and were

allowed to ask questions for clarification. Those who agreed to partake in the study were administered with the questionnaires. Participation in the study was voluntary and the respondents had the right to withdraw at any point in time during the course of the study. The respondents were given one day to return the completed questionnaires. The researchers adhered to all ethical guidelines stipulated for using human participants in research.

2.5 Data Analysis Techniques

Descriptive statistics were used to summarize the data. Multiple regression analysis was used to examine the predictive abilities of the independent variables on the dependent variable. Pearson correlation was used to examine the relationship between the study variables and regression analysis to examine the predictions.

3. RESULTS

The results are presented in the Tables 1 and 2 with their interpretations.

Table 1. Multiple regression analysis of personality characteristics as predictors of academic achievement

Model	B	SEB	β	ρ
Extraversion	.003	.005	.039	.525
Agreeableness	-.003	.006	-.033	.641
Conscientiousness	.016	.005	.202**	.004
Neuroticism	.005	.005	.077	.249
Openness	-.008	.005	-.093	.138

Table 2. Pearson correlations of the relationship between motivation and academic achievement

Variable	Mean	SD	Intrinsic	Extrinsic	GPA
Intrinsic	12.77	2.24	-		
Extrinsic	14.14	2.40	.33**	-	
GPA	3.06	.41	.05	.06	-

**= significant at the .01 level of significance

An examination of Table 1 shows that personality explained 3.7% of variance in students' academic achievement [$R^2 = .037$, $F(5,267) = 2.055$, $\rho = .071$]. For the individual contributions of the various personality characteristics to students' academic achievement, only Conscientiousness significantly predicted academic achievement ($\beta = .202$, $\rho < .05$). Extraversion ($\beta = .039$, $\rho > .05$), agreeableness

($\beta = -.033$, $p > .05$), neuroticism ($\beta = .077$, $p > .05$) and openness ($\beta = -.093$, $p > .05$) did not significantly predict students' academic achievement. Therefore, the hypothesis that personality characteristics will significantly predict students' academic achievement is partially supported.

The results from Table 2 indicate that there is no statistically significant relationship between students' intrinsic motivation and academic achievement ($r = .05$, $p > .05$), nor student's extrinsic motivation and academic achievement ($r = .06$, $p > .05$). Therefore, the hypothesis that students' intrinsic and extrinsic motivation will be significantly related to their academic achievement is not supported.

4. DISCUSSION

The current study examines the influence of personality characteristics and motivation on academic achievement of university students in Ghana. It was hypothesized that personality characteristics would significantly predict academic achievement. It was also hypothesized that the type of motivation of students would significantly predict their academic achievement. The results showed that only conscientiousness as a personality characteristic positively and significantly predicted students' academic performance. That is, students who are well organized planned their times and activities and have the desire to do well on tasks are likely to perform better or attain better academic achievements.

This is because conscientiousness as a personality characteristic has been associated with several positive outcomes of which academic achievement is not an exception. For instance, some studies have observed that personality characteristics are significant in influencing academic outcomes with the trait of conscientiousness being the most consistent predictor of academic achievement [5,12-15].

However, unlike previous studies [12,16] that reported neuroticism to be significantly and negatively associated with students' academic achievement, this study did not find any such relationships which suggests that there is the need to look at the personality measures within the cultural context of Ghanaian students. This is because students who are high on neuroticism are usually emotionally unstable and this emotional instability is believed to have negative

consequences on their academic outcomes. Nonetheless, this finding confirms earlier works that found that personality traits such as neuroticism, extraversion, openness to experience, and agreeableness were either not or weakly related with one or two out of three performance criteria [19].

Additionally, the researchers sought to find out whether the type of motivation will be significantly associated with students' academic achievement as other earlier works have pointed to such associations. However, findings from this study show that there are no significant relationships between intrinsic motivation and students' academic achievement on one hand, and extrinsic motivation and students' academic achievement on the other hand. That is, both the levels of students' intrinsic and extrinsic motivation do not significantly relate with their academic performance.

The findings are incongruent with the study by Kaufman et al. [23] among college students that conscientiousness, intrinsic motivation, and extrinsic motivation significantly predicted first-quarter academic success. Similar results were also reported with a majority of the studies intimating that intrinsic motivation is positively associated with academic success whereas extrinsic motivation is negatively associated with college success [23-26]. The reason for these findings could be the high correlation between intrinsic and extrinsic motivations which suggests that Ghanaian students are both intrinsically and extrinsically motivated and the nature of the motivation therefore does not make any significant difference in their academic achievement.

It should be noted that the study had some limitations. For example, the use of students' self-report of their GPA might have affected the findings of the study since some of them are likely to embellish their academic performance. Irrespective of the above limitation, the study's findings are useful for policy intervention. Based on the findings from this study, it is recommended that students' personality characteristics be taken into consideration in issues relating to their academic performance as students who are more conscientious tend to do better due to their organized nature. It is also recommended that in dealing with students' motivation, both their intrinsic and extrinsic motivation levels should be considered as they are motivated by both types. Additionally, to

ensure better academic outcomes among students, both intrinsic and extrinsic motivations should be considered though they did not significantly relate with academic achievement among students. Finally, future studies should try as much as possible to get access to the actual scores of the students in order to establish their true academic potential or performance.

5. CONCLUSION

This study shed light on the association between students' personality characteristics, type of motivation and their academic achievement by highlighting the relevance in guiding students to better academic outcomes. It is observable from the results that the trait of conscientiousness which involves competence, order, achievement striving (thorough), self-discipline and deliberation is key in ensuring good academic performance among students. However, the results of this study should be interpreted with caution as relationships do not suggest causality. Also, the measure of academic achievement used was subjective as students had to report their own cumulative GPAs which could not be verified for authenticity.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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