



Assessing the Impact of Personality Traits on Academic Performance: Evidence from Tertiary Students in Ghana

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ABSTRACT

The purpose of this study is to assess and predict the impact of personality traits on academic performance evidence from Tertiary students in Ghana. The main objective is to investigate the association between the personal traits (extraversion, neuroticism, openness to experience, agreeableness and conscientiousness) and academic performance. The target population of the study comprised of students who have studied a minimum of three semesters at selected tertiary institutions in Ghana. 627 out of the 700 participants returned their questionnaires. Respondents were recruited from, Greater Accra Region of Ghana. The study adopted purposive sampling technique to select the tertiary institution whereas convenience sampling techniques were employed to select the students. With the aid of SPSS the following statistics were used: descriptive statistics in order to have a clear picture of study variables, Cronbach's alpha to measure the internal consistency of the construct, Kurtosis and Skewness values to check the normality of each variable used and regression analysis to measure the effect of independent variables on dependent variables. The findings revealed that, there is a significant positive relationship between the academic achievements of tertiary student's that are conscientious, agreeable and openness, however extroversion and neuroticism failed to pass the hypothesis test. The research suggests that counsel periods should be organized by parents, lecturers and counselors regarding positive influence agreeableness at home, institutions and workplace and in the society for peaceful co-existence.

Keywords: extraversion; neuroticism; openness to experience; agreeableness; conscientiousness

INTRODUCTION

Many scholars of pedagogy in much tertiary education have focused on teaching and learning techniques to deal with the unique needs of individual students. Appreciating individual differences, academic performance is essential to meeting the needs of today's diverse student population. Being abreast with the factors that affects student's academic performance has



critical implication for tertiary education in relation to customizing teaching techniques to students, learning styles and curriculum design.

Even though research has proved that cognitive ability is one most important determinate of academic successes (Poropat, 2009), contrary, according to Furnham et al,(2003) there are other factors, aside cognitive ability that account for the variation evident in tertiary students' academic performance(s). The reason being that cognitive ability reflect what a student can do, whereas personality traits may reflect what a student will do (Furnham &Chamorro-Premuzic, 2004), many researchers have expressed interest on how personality traits relates to academic success.

Since McCrae and Costa (1999) first proposed the Big Five model, it has appeared prominently in many studies on educational performance. Studies mentioned shows that academic successes among tertiary students are significantly related with two of the Big Five traits: conscientiousness and openness to experience (Poropat, 2009; Trapmann et al., 2007).

Many scholars and researchers for past decades of years have been constantly conducting research to find out among the parsimonious set of variables of personality traits which has relationship with academic performance. (Trapmann et al., 2007; Poropat 2009; Hakimi et al., 2011). Early researchers concluded that a trait has a relationship with academic performance; and that it is not a mere assistant of intelligence in determining the academic performance. This research on role of personality traits with regards to academic performance is to gives answer to the question why some individuals are academically inclined and others are not in spite having same intelligence level.

THE BIG FIVE PERSONAL TRAITS AND ACADEMIC PERFORMANCE

The Big Five traits (extraversion, agreeableness, conscientiousness, neuroticism, and openness) have been related to a wide range of behaviors (McCrae and Costa (1999) including job performance, academic achievement, leadership and well-being (Heckman, et al. 2006; Judge, Jackson, Shaw, Scott, and Rich, 2007, Fairweather, 2012).



Academic performance are not tangible and are difficult to measure because they result in the form of transformation of knowledge, life skills and behavior modifications of learners (Tsinidou, Gerogiannis, & Fitsilis, 2010). According to Galihier (2006) and Darling (2005) GPA measure student performance for the particular semester. Hijazi and Naqvi, (2006) used test results or previous year to measure academic performance for the specific subject or year.

Extraversion (ES) is regarded as a general tendency toward sociability, assertiveness, activeness and being talkative. Thus it is the degree to which a person is sociable, leader like and assertive as opposed to withdrawn, quiet and reserved. Individuals willing to entertain novel ideas and unconventional values are described by the openness to experience trait (Uziel, 2006).

Bidjerano and Dai (2007) believed that extraversion support social behaviours, and peer learning. However, Eynseck (1992) suggested that extraverted students would be more likely to socialise and participate in other activities, rather than studying, resulting in lower levels of performance. In addition to this, Matthews (1997) found that extraverts tended to be poorer in reflective problem solving due to them reaching cognitive closure prematurely. This led to the first hypothesis of the study. *H1: Is there a relationship between Extraversion and academic performance*

Kumari (2014) defined **Neuroticism (NM)** as a general tendency to experience negative effects such as fear, sadness, embarrassment, anger, guilt, and distrust. It is the degree to which a person is calm and self-confident as opposed to anxious and insecure.

Poropat (2009) related emotional stability with academic achievement and found a negative correlation between neuroticism and academic performance in primary level. Other words, students with high emotional stability performed higher academically. However did not find any significant correlations at secondary or tertiary levels of education. This led to the second hypothesis of the study. *H2: Is there association between Neuroticism and academic performance*



Openness to Experience (OE) refers to individuals who tend to be creative, imaginative, and curious to experience new things amongst other things (Costa & McCrae, 1992). Openness to experience includes traits like imaginative, cultured, curious, original, broad minded, intelligent and artistically sensitive (Barrick & Mount, 2001).

According to McCrae and Costa (1985) intelligence has a positive relationship with openness. Besides a research conducted by Ackerman and Heggestad (1997) concluded that openness has the highest correlation with intelligence. In the same research they also found that openness did not have the highest correlation with academic performance. . This led to the third hypothesis of the study. **H3: Is there a relationship between Openness and academic performance.**

Agreeableness (AG) encapsulates constructs of sympathy, cooperativeness, and helpfulness towards others. It is described as the degree to which a person is good natured, warm and cooperative as opposed to irritable, uncooperative, inflexible, unpleasant and disagreeable (Nofle & Robins,2007).

Poropat (2014) believed that high agreeableness facilitate learning and therefore agreeableness has a positive relationships associated with are believed. In relation to the impact of agreeableness on academic performance, De Raad and Schouwenberg(1996) argued that agreeableness have positive effect on academic performance because it encourages team work discussion. The relationship was later affirmed by Vermetten, et al (2001) who ascertained a positive relationship between agreeableness and effort and surface learning. This led to the fourth hypothesis of the study **H4: Is there a relationship between Agreeableness and academic performance.**

Conscientiousness (CN) is the trait that is associated with diligence, self-discipline, punctuality, and general competence (McCrae & Costa, 2003). Conscientiousness is the personality dimension that correlates the strongest, out of all personality dimensions, with overall academic performance (Barrick et al., 2001; Hurtz & Donovan, 2000). Steel (2007) found that conscientiousness has two attributes: sustained effort and goal-setting which contribute towards academic success. MacCann (2012) argued that conscientious students tend to have high



confidence level which encourages greater learning. This led to the fifth hypothesis of the study **H5**: *Is there a relationship between Conscientiousness and academic performance*

RELATIONSHIP BETWEEN TEMPERAMENT AND ACADEMIC ACHIEVEMENT

Poropat (2009) concluded that agreeableness, conscientiousness and openness to experience contribute to academic performance. Trapman's meta-analysis added neuroticism as a negative predictor of performance (Trapmann et al., 2007). Besides, a study of Iranian university students shows that neuroticism and extraversion are also significant predictors and both of them are negative (Hakimi et al., 2011).

METHODOLOGY

Both primary and secondary data were used in the study. The study adopted purposive sampling technique to select tertiary institution whereas convenience sampling techniques was employed to select students.

The target population comprised tertiary students, both sexes between the ages of 18 and 40 who have at least three semester result from Methodist University College (MUC), University of Professional Studies (UPSA), Accra Polytechnic (A Poly) and Ghana Institute of Journalism (GIJ), all in the Greater Accra Region of Ghana. A sample of 627 participants returned the questionnaires out of 300 questionnaires sent out.

Data were collected through the use of questionnaire. The questionnaire was divided into five sections. Section A elicited general and biographical information about respondents. Section B elicited information on Agreeableness. Section C sought information on Openness. Questions in Section D solicited information on Extraversion. Section E sought information on Neuroticism. Question in Section F captures information on Conscientiousness. Section G solicited information on academic performance. Likert scales anchored by strongly disagree (1) to strongly agree (5) were used in the questionnaire.

Once the data is collected and entered to computer using SPSS. The following statistics were used: descriptive statistics in order to have clear picture of study variables. Cronach's alpha,



which measures the internal consistency of a construct, Kurtosis and Skewness values were used to check the normality of each variable used in the research. Regression analysis was used to measure the effect of independent variable on dependent variable.

RESULT AND DISCUSSIONS

Following the guidelines indicated in the research methodology section, the researcher collected data in 2015.

Demographic information

Table 1: Demographic information

Variables	Frequency	Percentage
Female	381	60.8
Male	246	39.2
Total	627	100

Age		
18-22	237	37.8
23- 27	249	39.8
28-32	141	22.4
Total	627	100.0

Tertiary Institute		
MUC	168	26.8
GIJ	147	23.5
A POLY	123	19.6
UPSA	189	30.1
Total	627	100.0



No. of semesters with

Institute

3 semesters	279	44.5
Between 4 to 6	168	26.8
Between 7 to 8	180	28.7
Total	627	100

Survey results, 2015

A detailed demographic analysis of respondents is presented in **Table 3**. Questionnaires were distributed to students who had been with their respective institution for at least 3 semesters. 627 completed questionnaires were collected from the respondents. Among the sample data 60.8% respondents are female whiles 39.2 are male. Besides, the modal age is between 23 – 27years representing 39.8% Also the respondents from USPA recorded the highest respondent at 30.1%.In relation to number of semesters' in respective institution 3 semester recorded the highest at 44.5% of the respondents.

Table 3: Values of Cronbach's alpha for the research construct

Construct	Cranach's alpha
Extraversion (ES)	0,758
Neuroticism (NM)	0,757
Openness to Experience (OE)	0,776
Agreeableness (AG)	0.767
Conscientiousness (CN)	0.756
Academic performance (AP)	0.778

(Source field work, 2015)



Table 2: Supporting literature for measurement scales

Construct	supporting literature
Academic performance	110
Extraversion (ES)	223
Neuroticism (NM)	197
Openness to Experience (OE)	134
Agreeableness (AG)	202
Conscientiousness (CN)	24

(Source field work, 2015)

All of the measurement scales used, as shown in **Table 2**, were based on previous research. Assuring the validity and reliability of the measures required supporting literature to validate the scales which were used to operationalise the research constructs. The Big Five Traits construct was measured using the scales and indices included in the work of Ozer and Benet-Martinez (2006) who used the following variables to determine level of personal traits: Extraversion, Neuroticism, Openness to experience, Agreeableness and Conscientiousness.

Table 3: Values of Cronbach's alpha for the research constructs

Construct	□ Value
Academic performance	110
Extraversion (ES)	223
Neuroticism (NM)	197
Openness to Experience (OE)	134
Agreeableness (AG)	202
Conscientiousness (CN)	24

(Source field work, 2015)



A reliability test was carried out using Cronbach's alpha, which measures the internal consistency of a construct. The recommended minimum acceptable limit of reliability for this measure, as reported by Sekaran (2003) is 0.60. As shown in **Table 3**, all the constructs passed the reliability test.

Table 4: Descending means of the competitive priorities

Construct	Mean	Standard deviation
Extraversion	110	103
Neuroticism	223	214
openness to experience	197	120
agreeableness	134	121
Conscientiousness.	202	210

(Source field work, 2015)

The respondents indicated that their students exhibit different personal traits construct. It may be noted that each of the personality traits constructs shown in **Table 4** has a mean above 3. So it may be concluded that all of personality traits constructs are of considerable importance in the study.

Table 5. Skewness and Kurtosis for research constructs.

Construct	skewness	Kurtosis
Academic performance	110	103
Extraversion	223	214
Neuroticism	197	120
openness to experience	134	121
Agreeableness	202	210
Conscientiousness.	113	201

(Source field work, 2015)



As shown in **Table 5**, Kurtosis and Skewness values were used to check the normality of each variable included in the research. Skewness values larger than (+1) or smaller than (-1), as suggested by Sakan (2003) indicate a substantially skewed distribution. On the other hand, added that a curve is too peaked when the Kurtosis exceeds (+3) and is too flat when it is below (-3). Thus, Skewness values within the range of (-1) to (+1) and Kurtosis values within the range of (-3) to (+3) indicate an acceptable range. As shown in **Table 5**, the values of Skewness and Kurtosis for each variable indicate that, the constructs fell within the acceptable range.

Table 6 Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.980 ^a	.960	.894	.17162

The results of the multiple regression analysis, as shown in **Table 6**, R determines the correlation between personal trait and academic performance. These explain that the correlation between the two variables is 0.98 which signifies a strong positive relationship. Besides the result reveal a coefficient of determination, R², which predicts the relationship between the independent variables and dependent variable, of 0.96. This means that 96.0 percent of the total variance in the dependent variable (academic performance) is accounted for by the independent variables (extraversion, neuroticism .openness to experience, agreeableness and conscientiousness). This result affirms that personal trait is significant in creating academic performance.

Table 7 ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.134	5	.427	14.490	.000 ^a
	Residual	.088	3	.029		
	Total	2.222	8			



a. Predictors: (Constant), ES, NM, OE, CN,AG

b. Dependent Variable: AP

(Source field work, 2015)

The results of the F-ratio, as shown in **Table 7**, indicates that the regression model is significant at $p < 0.001$. It can be concluded, that the regression model predicts academic performance strongly. In other words, the personal traits construct: Extraversion, Neuroticism .Openness to experience, Agreeableness and Conscientiousness (the independent variables) have the ability to predict academic performance (the dependent variable).

Table 8: Results of multiple regression analysis Coefficients^a

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	5.798	.526		11.022	.000
ES	-.101	.062	0.12	-1.639	.600
NM	.156	.067	0.11	2.309	.700
OE	-.887	.130	0.46	-6.844	.000
AG	.048	.093	.048	.514	.000
CN	-.524	.144	0.49	-3.631	.000

(Source field work, 2015)

The regression analysis presented in **Table 8** reveals that the creation of academic performance is determined by the personality traits construct of construct: extraversion, neuroticism .openness to experience, agreeableness and conscientiousness. Extraversion has a beta value of 0.12. This



means that Extraversion explains 12 % of the aid academic performance, at a p-value of.060.This explains a negative significant association Extraversion with academic performance.

Neuroticism has a beta value of 0.11. This means that neuroticism explains 11. % of the aid to academic performance, at a p-value of.070. Regression model is significant at $p < 0.001$.This indicates a negative significant association of Neuroticism with academic performance. Openness to experience has a beta value of 0.46. This means that Openness to experience explains 46. % of the creation of academic performance, at a p-value of.000. Regression model is significant at $p < 0.001$ This shows a positive significant association of academic performance with Openness to experience

Agreeableness has a beta value of 0.49. This means that agreeableness explains 49. % of the creation of academic performance, at a p-value of.000.This indicates a significant association of agreeableness with academic performance. Regression model is significant at $p < 0.001$. This shows negative significant association of academic performance with Agreeableness. Conscientiousness has a beta value of 0.48 this means that Conscientiousness explains 48. % of the creation of academic performance, at a p-value of.000.

This indicates a significant association of Conscientiousness with academic performance. Regression model is significant at $p < 0.001$. This shows positive significant association of academic performance with Conscientiousness. Therefore, only three hypothesized relationships between personality traits and academic performance were accepted. **Table 9** summarizes the research hypotheses and their results.

Table 9: Summary of research hypotheses and results

Hypothesis	Description	Beta	t-value	Comments
H1	is there a relationship between extraversion and academic performance	0.12	-2.42	REJECTED
H2	is there association between Neuroticism and academic performance	0.11	-1.23	REJECTED



H3	Is there a relationship between openness and academic performance?	0.46	5.54	ACCEPTED
H4	is there a relationship between Agreeableness and academic performance	0.49	4.08	ACCEPTED
H5	is there a relationship between conscientiousness and academic performance	0.48	4.05	ACCEPTED

(Source field work, 2015)

DISCUSSION

The first finding showed that the students that, are highly conscientious performed better .This is due to the fact that conscientiousness is related to hard work, this would translate into academic performance. They are discipline in what they do and deliberately plan for their success. The studies result is supported by (Barrick Mount & Judge, 2001; Erdheim, Wang & Zickar 2006) that conscientiousness is one of the most consistent personality predictors of academic performance and found to show a positive relationship between conscientiousness and academic performance.

Finding also revealed that students who are agreeable performed significant better than their counterparts who are not. This is due to the fact that, academic involves socialization. These qualities make it easy to work together with colleague students and learn from each other. Being generous, friendly and helpful in nature makes it easy for them to received help and favour from fellow students as well.

The study shows that students who are high on neuroticism performed significantly worse than other trait. They are nervous, moody and emotionally over-reactive to minor issues. This agrees with the findings of Fadare (2010) who further opined that this category of people construe ordinary situations as threatening and frustrations as hopelessly difficult.

The study further shows that students who are openness performed significantly in academics. This is in congruent with Vermetten, et al. (2001) who established the fact that openness



motivates critical thinking and disassociated with absenteeism.(Tempelaar, Gijsselaers, van der Loeff, & Nijhuis, 2007) (Bidjerano & Dai, 2007, Lounsbury, Steel, Loveland, & Gibson, 2004).

CONCLUSION

In view of literature reviewed and data collected, analyzed and the findings derived. The following conclusions were made: There was a significant positive relationship between the academic achievements of tertiary student's who are conscientious, agreeable and openness however extroversion and neuroticism failed to pass the hypothesis test. The present study supports prior research that conscientiousness agreeable and openness are a critical factor with regard to academic performance. Therefore, it seems that mediated relationships between conscientiousness, agreeable and openness and academic performance are ripe for future study.

LIMITATIONS OF THE STUDY

The decision about the size of the sample was taken considering time and cost, the need of precision and a variety of further considerations. Due to the limit of time and costs, the population was narrowed to tertiary students in Greater Accra Region alone. The sample was determined by convinces sampling. The construct of personal traits was narrowed to only five variables.

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