



# The Influence of Big 5 Factor Personality Test Subscales on Academic Achievements

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## Abstract

The study aimed to measure the impact of neuroticism, extraversion, conscientiousness, openness, and agreeableness- *Big 5 Factor Personality Test* subscales on academic achievements. A correlational research design and a random cluster sample of students from the bachelor's degree program were used in the study. Data were obtained from 501 respondents from the student population. It was found a linear relationship among neuroticism, extraversion, conscientiousness, openness, agreeableness, and academic achievements. Extraversion, conscientiousness, and openness were positive predictors of academic achievements, while, neuroticism and agreeableness were negative predictors. The strongest predictor of academic achievements is conscientiousness which explains 54.4% of the variance; at the same time, the least predictor of academic achievements is agreeableness which explains 5.3% of the variance. In conclusion, it is found a linear relationship between neuroticism, extraversion, conscientiousness, openness, agreeableness, and academic achievements. Therefore, the most significant implication is to support the *Big 5 Factor Personality Dimensions*, because it is found by this study that it supports the academic achievements of students at university.

**Keywords:** Big 5 Factor, personality, academic achievements



## Introduction

In recent years, a lot of work has been done in favor of the five-factor structure to prescribe the personality of young and adult people, as well as the relationship between the dimensions of the five-factor structure and educational variables. The Big Five personality model gives a simple point to understand others and improve relationships by indicating why people act the way they do. *The Big 5 Factor Personality Test* is a test that can be used to measure an individual's most important personality traits and which roles are the best associated with them. The framework for personality traits was first created by Goldberg (1993). The idea suggests that it is possible to prescribe people using terms owned by five different groups: extraversion, agreeableness, conscientiousness, neuroticism, and openness. The works investigated in the previous research clearly showed the opportunity of refereeing to the Big Five to have personality ratings of students, and especially of adults, as well as the test represents useful constructs, especially for practical utility (Barbaranelli, Caprara, Rabasca & Pastorelli, 2003). According to Tomsik (2018). Personality makes a significant change in influencing academic performance. As the results of the study show, only conscientiousness as the personality trait was positively associated with academic performance or GPA. Also, “personality trait conscientiousness has been indicated as a statistically significant predictor of academic achievements among university students but explained only 2.7% of the variance in grade point average (GPA)” (Tomsik, 2018). Meanwhile, Wang et al. (2023) showed that “both extraversion and conscientiousness have a positive total effect on student's academic achievements, and they have mainly realized through the chain mediating effects of self-efficacy, and are primarily based on self-efficacy mediating effect, which is more obvious in the dimension of behavioral efficacy. Openness also affects academic achievement through a self-efficacy mediating effect and major identity to self-efficacy chain mediating effect, but the degree of influence is weak, and the total effect is not significant; the overall effect of agreeableness personality on academic achievement is negative, and it is mainly reflected through direct effect” (Wang et al., 2023).

The study aimed to measure the impact of neuroticism, extraversion, conscientiousness, openness, and agreeableness subscales on academic achievements. The main research question used in the study is as follows: is there any relationship between neuroticism, extraversion, conscientiousness, openness, agreeableness, and academic achievements?

## Literature Review

*Neuroticism, extraversion, conscientiousness, openness, agreeableness, and academic achievements*

Extraversion and neuroticism seemed to be positively related to the attitude toward knowledge sharing (Pei-Lee, Chen, Chin, & Siew, 2011); conscientiousness, extraversion, agreeableness, openness to experience, and neuroticism make a significant change in predicting job competency propensities (Bell & Njoli, 2016); at the same time, Kichuk & Wiesner (1997) pointed out that there is higher levels of the cognitive ability, higher

extraversion, higher agreeableness, as well as lower neuroticism in successful teams; and Pérez-González & Sanchez-Ruiz (2014) examined a positive relationship between the intelligence and the general factor of individual personality.

DeYoung, Hirsh, Shane, Papademetris, Rajeevan & Gray (2010), as well as Xhomara & Dasho (2023), indicated that extraversion and online instruction covaried with reward and learning outcomes; neuroticism with negative influence, agreeableness with the information processing, and conscientiousness with planning the future; in the meantime, Ehrler, Evans & McGhee (1999) showed that low scores on agreeableness and conscientiousness are correlated to social issues, conducting problems, attention, and hyperactivity; low points on openness to experience show problems in social behavior; meanwhile, neuroticism correlates with anxiety and depression; and Giluk (2009) explains that the *Big Five* display accountable relationship with mindfulness and the strongest relationships are found with negative impact and conscientiousness.

Busato, Prins, Elshout & Hamaker (1998) affirmed that conscientiousness and neuroticism were associated positively with undirected learning style; agreeableness and openness to experience correlated positively with directed learning style; furthermore, Power & Pluess (2015) found important indications toward neuroticism and openness, but not toward extraversion, agreeableness, and conscientiousness; and Xhomara, Gusho, & Muçaj (2023) showed that 32.6% of the variance in learning outcomes is explained by course organization, 16.6% of the variance by faculty-student interaction, and 28.4% of the variance by student involvement. All the dimensions of *the Big Five* as well as prior knowledge, problem-based teaching, the comprehensive learning approach, and assessment explained together explained 64% of the variance in students' success (Komarraju, Schmeck & Avdic, 2011; Xhomara, 2020), and significantly impact different forms of entrepreneurial success (Leutner, Ahmetoglu, Akhtar & Chamorro-Premuzic, 2014); the agreeableness as well as low emotional stability are more significant predictors in males compared to females (Budaev, 1999); and O'Brien & DeLongis (1996) found out that environment variables were linked most strongly with the use of problem-focused and relationship-focused models.

Hurtz & Donovan (2000), Xhomara (2020), as well as Fink, Manning & Neave (2004), revealed that the *Big Five* dimensions, individual study work, and lecturer support predict students' performance, and correlate positively with temperament and character (Picardi, Toni & Caroppo, 2005); and Kim, Shin & Swanger (2009) found that the most critical personality attribute impacting burnout is neuroticism and the most characteristic predicting engagement are conscientiousness and neuroticism.

Saucier & Goldberg (1998), as well as Xhomara & Baholli (2022), revealed a positive correlation between *Big Five* dimensions and values, coursework, evaluation, and attractiveness; Kalshoven, Den Hartog & De Hoogh (2011) found that a high emotional state related positively to successful leadership; whilst, O'Connor & Paunonen (2007) showed conscientiousness and openness to be strongly associated with academic achievements. Psychological attributes influence individual progress (Gerber, Huber, Doherty & Dowling, 2011); the delay was strongly associated with a lack of conscientiousness (Schouwenburg &

Lay, 1995); the meantime, Zhang (2003) found that conscientiousness, agreeableness, and openness impacted students' learning. Roccas, Sagiv, Schwartz & Knafo (2002) found out that agreeableness correlates positively with values, openness correlates with self-direction, extroversion, and conscientiousness correlates with academic achievements, and conscientiousness with performance (Barrick & Mount, 1991; Xhomara, Karabina & Hasani, 2022); whilst, Schmitt & Buss (2000) found that attractiveness and emotional state were modestly correlated with the *Big Five*. Meanwhile, Donnellan, Conger & Bryant (2004) showed that neuroticism was positively correlated with negative interactions, agreeableness, extraversion, openness to experience; whilst, conscientiousness was significantly related to behavior (Lee- Baggley, Preece & DeLongis, 2005); and Dahlen & White (2006) confirmed that neuroticism is related to misbehavior outcome. Therefore, the study of the relationship between *Big Five Factor Personality Test subscales* and academic achievements is of great importance. Based on the research work examined, it is hypothesized that:

*H # 1: There is a positive linear relationship among neuroticism, extraversion, conscientiousness, openness, agreeableness, and academic achievements*

## Methodology

### *Research Context*

Personality refers to personal differences in the approaches to thinking, feeling, as well as behaving. The study of personality is very important in several fields and includes different age groups, as well as different positions. The Big 5-factor test is one of the most powerful tools used by researchers to understand and measure personality dimensions. The researchers applied regression tests to measure the relationship between neuroticism, extraversion, conscientiousness, openness, agreeableness, and academic achievements.

### *Participants*

The target population of the study was compounded university students (N=501). The student sample was 57.4% females and 42.6 % males. 19.6% of the students' sample study for business administration, 20.9% finance banking, 9.5% natural sciences, 12.0% engineering sciences, 22.8% social sciences, 6.3% medical sciences, and 8.9% humanities.

### *Data Analysis*

The relationships between neuroticism, extraversion, conscientiousness, openness, agreeableness, and academic achievements were conducted using correlational and regression analysis. Linear multivariate regression is used to estimate the ability of one control measure to predict the total result of academic achievements by neuroticism, extraversion, conscientiousness, openness, and agreeableness points. Preliminary analyses were used to

ensure no violation of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. The statistical tests were carried out using SPSS 26.0.

## Results and Discussion

**Table 1**

Descriptive Statistics			
	Mean	Std. Deviation	N
Academic achievements	2.9564	.82501	505
Neuroticism	18.3267	7.96310	505
Extraversion	27.6376	7.83975	505
Conscientiousness	31.1208	8.56136	505
Openness	29.8139	8.81338	505
Agreeableness	26.9109	8.05499	505

As shown in the table above the mean of academic achievements in the sample is around 3 and SD is .825, where the lowest value is 1 and the highest is 5. Meanwhile, the neuroticism mean is 18.32 and SD is 7.96, the extraversion mean is 27.63 and SD is 7.83, the conscientiousness mean is 31.12 and SD is 8.56, the openness mean is 29.81 and SD is 8.81, and agreeableness mean is 26.91 and SD is 8.05, where the lowest values of neuroticism, extraversion, conscientiousness, openness, and agreeableness were 0 and the highest is 40. Hence, academic achievements, extraversion, conscientiousness, openness, and agreeableness are above average, meanwhile, neuroticism is below average.

### *Hypothesis Testing*

**Table 2**

*Pearson Correlation output of the relationship between variables*

		<b>Correlations</b>					
		Academic achievements	Neuroticism	Extraversion	Conscientiousness	Openness	Agreeableness
Pearson Correlation	Academic achievements	1.000	.044	.556	.664	.612	.342
	Neuroticism	.044	1.000	.191	.314	.204	.547
	Extraversion	.556	.191	1.000	.752	.799	.386
	Conscientiousness	.664	.314	.752	1.000	.837	.579
	Openness	.612	.204	.799	.837	1.000	.450
	Agreeableness	.342	.547	.386	.579	.450	1.000
Sig. (1-tailed)	Academic achievements	.	.163	.000	.000	.000	.000
	Neuroticism	.163	.	.000	.000	.000	.000
	Extraversion	.000	.000	.	.000	.000	.000
	Conscientiousness	.000	.000	.000	.	.000	.000
	Openness	.000	.000	.000	.000	.	.000
	Agreeableness	.000	.000	.000	.000	.000	.
N	Academic achievements	505	505	505	505	505	505
	Neuroticism	505	505	505	505	505	505
	Extraversion	505	505	505	505	505	505
	Conscientiousness	505	505	505	505	505	505
	Openness	505	505	505	505	505	505
	Agreeableness	505	505	505	505	505	505

Referring to the table above there is a negligible positive correlation among academic achievements and neuroticism,  $r = .044$ ,  $n = 505$ ,  $p > .005$ ; a moderate positive correlation between academic achievements and extraversion,  $r = .556$ ,  $n = 505$ ,  $p > .005$ ; a high positive correlation between academic achievements and conscientiousness,  $r = .664$ ,  $n = 505$ ,  $p > .005$ ; a high positive correlation between academic achievements and openness,  $r = .612$ ,  $n = 505$ ,  $p > .005$ ; and a low value of positive correlation between academic achievements and agreeableness,  $r = .342$ ,  $n = 505$ ,  $p > .005$ . Hence, high scores in academic achievements are associated with high scores of extraversion, conscientiousness, openness, and agreeableness; meantime, high scores in academic achievements are not associated with scores of neuroticism.

**Table 3**

*Regression output of the relationship between variables*

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				Sig. F Change
					R Square Change	F Change	df1	df2	
1	.694 <sup>a</sup>	.481	.476	.59716	.481	92.594	5	499	.000

a. Predictors: (Constant), Agreeableness, Extraversion, Neuroticism, Openness, Conscientiousness

The R Square value of the relationships between neuroticism, extraversion, conscientiousness, openness, agreeableness, and academic achievements is .481. This means that 48.1% of the data fit the regression model. The model reaches statistical significance (Sig. = .000; this means  $p < .0005$ ). The F value indicates that the null hypothesis is false. The variance explained by neuroticism is -.193, by extraversion is .072, by conscientiousness is .544, by openness is .115, by agreeableness is .053 for students. Thus, extraversion, conscientiousness, and openness are positive predictors of academic achievements; meanwhile, neuroticism, and agreeableness are negative predictors of academic achievements. The strongest predictor of academic achievements is conscientiousness which explains 54.4% of the variance; at the same time, the least predictor of academic achievements is agreeableness which explains 5.3% of the variance. Hence, there is a linear relationship between neuroticism, extraversion, conscientiousness, openness, agreeableness, and academic achievements.

Therefore, based on the above outputs, *H # 1: There is a positive linear relationship among neuroticism, extraversion, conscientiousness, openness, agreeableness, and academic achievements*, is supported.

## Conclusions and implications

Regarding descriptive statistics, the study found that academic achievements, extraversion, conscientiousness, openness, and agreeableness were above average, meanwhile, neuroticism was below average. It is found a negligible positive correlation between academic achievements and neuroticism ( $r = .044$ ), a moderate positive correlation connecting academic achievements and extraversion ( $r = .556$ ), a high positive correlation between academic achievements and conscientiousness ( $r = .664$ ), a high positive correlation among academic achievements and openness ( $r = .612$ ), and a low positive correlation among academic achievements and agreeableness ( $r = .342$ ). The study revealed that the R Square value of the relationships between neuroticism, extraversion, conscientiousness, openness, agreeableness, and academic achievements was .481 meaning that 48.1% of the data fit the regression model, and the model reaches statistical significance. The study indicated that extraversion, conscientiousness, and openness were positive predictors of academic achievements; meanwhile, neuroticism and agreeableness were negative predictors of



academic achievements. The other work (Pei-Lee et al., 2011; DeYoung et al., 2010; Xhomara & Dasho, 2023; Komarraju, Schmeck & Avdic, 2011; Xhomara, 2020; Hurtz & Donovan, 2000; Fink, Manning & Neave, 2004; Zhang, 2003) supported this conclusion, indicated that neuroticism, extraversion, conscientiousness, openness, and agreeableness predict academic achievements. The strongest predictor of academic achievements was conscientiousness which explains 54.4% of the variance; at the same time, the least predictor of academic achievements was agreeableness which explains 5.3% of the variance. Hence, there is a linear relationship between neuroticism, extraversion, conscientiousness, openness, agreeableness, and academic achievements. Therefore, referring to the *Big 5 Factor Personality Dimensions* is considered a support to the academic achievements of students at university.

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