

# A Study on the Big Five Personality Dimensions' Effect on University Students' Academic Performance

WasanthaRajapakshe

Senior Lecturer (Higher Grade), SLIIT Business School, Sri Lanka Institute of Information Technology,  
Sri Lanka

---

**Abstract:** This study was conducted to determine how Big Five personality traits influence students' academic performance in Sri Lankan students in private higher educational institutes. Personality trait of five dimensions that are used to describe human character and their behavior. Grade Point Average (GPA) of the semester considered as academic performance. 200 students were participated to this study. The collected data was analyzed by using Discriminant Analysis. To carry out Discriminant Analysis two equal group were formed; GPA below 2.00 and above 2.00 and sample size reduced to 116. The results shows that out of all five traits neuroticism shown as a significant predictor of academic achievement. In addition it is revealed that conscientious became the next strongest predictor variable followed by extraversion, openness to experience and agreeableness. Conscientiousness shows a positive relationship with both group of students' academic achievement while all other four personality traits were found to be negatively associated with academic performance of the both group.

**Keywords:** Academic Performance, Big Five Big-Five Personality Traits, Personality

---

Date of Submission: 29-11-2017

Date of acceptance: 09-12-2017

---

## I. Introduction

### 1.1 Introduction

Students' academic performance depend on many factors like personal, social, economic, psychological and academic environmental factors. However, impact come from these factors on academic performance can be vary with students' personality and their origin. Among these factors personality is significant, because positive impact of other factors are depend on students' personality. For many years, educational researchers and psychologists have been constantly searching for a clear understanding, if there is a real relation between personality and student academic performance.

Personality is a combination of the characteristic pattern of thoughts, feelings and behaviors that make a person special. In addition, personality comes from within the person and remains consistent throughout his or her life. Personality is something everybody knows exist, however, nobody knows what it is (Schneewind and Ruppert, 1998) [1]. Moreover, students have different personality dimension which shape them. Each student receives information and processes it in a different way. In addition, personality has been recognized as a determining factor on how people learn (Lawrence, 1997; Myer et al, 1998)[2] [3].

Academic performance measures the success or the outcome of student achievements. Also, it refers to how students deal with their courses or accomplish different tasks related to the course. Most students would enroll in the first college that accepts them, especially if their high school grades are average. Moreover, they may not search for the ones that match their goals but rather join just to follow their friends in the college they are at. In addition, some would just enroll for the sake of 'being' a college student and not taking the learning process seriously. Within a college, two types of students groups can be generally perceived i.e. student show high academic performance and low academic performance. It has been recognized that behavior of students might be a factor to influence academic performance than other factors. Influence from other factors vary with the academic environment, culture, or teaching methods as well as behavior of the teacher. All of these factors change with the academic environment, however personality is depend on the person. To determine true factors influence academic performance it might be better approach to verify the relationship between personality and academic performance. (Duff et al, 2004; Wilt, 2008) [4], [5].

Thus, this research aims to see if personality really does have an effect on the college student's academic performance. Result of this study may helpful for students as well as teachers to recognize how to change teaching and learning method to match with the personality of the students. It may also reveal among students to recognize how to adopt their behavior to achieve greater performance.

### **1.2 Problem Identification**

For years, researchers have been analyzing personality traits, and its relation on students' academic performance. Moreover, it is important to identify whether personality does effect students with low and high academic performance. This study provides an insight on the relationship between personality and academic performance. Academic performance of the students can be measured through Grade Point Average (GPA) or Cumulative Grade Point Average (CGPA). In addition, some of the universities used average scores of the tests results. However, most of the universities use GPA or CGPA to measure academic performance among college students in particular semester or academic year. (Galiher, 2006; Hazrati-Viaria et al., 2011; Nofle and Robins, 2007; Bazalais et al., 2016) [6] [7] [8] [9]. For the purpose of this study semester GPA has considered as academic performance of the students. GPA of 2.00 and above out of 4.00 is considered as pass grade for most of the colleges. For this study GPA of 2.00 consider as higher academic performance and GPA of 2.00 considered as lower GPA.

### **1.3 Research Question**

- What is the effect of Big Five personality on academic performance among undergraduate students in Sri Lanka?

### **1.4 Objective of the Study**

The aim of the study is to understand the big five personality dimensions among undergraduate students and its relations to student performance. The following are the objectives of the research paper:

- Explore the relationship between personality dimensions and student performance which measured by GPA.
- Explore the relationship between personality dimensions and higher GPA.
- Explore the relationship between personality dimensions and lower GPA.

## **II. Literature Review**

Many research findings reveal that Big Five dimension of personality influence academic performance. Nesrin (2013) [10] reveals that conscientious, extraversion and emotional stability significantly correlated with academic performance. This study information that an individual's learning orientation and their approach to learning, is to some extent determined by their personality. Al Nagar and et al. (2015) [11] reveal that openness and conscientiousness personality dimension were positively correlated with academic performance.

Grama (2016) [12] find out that both an agreeable and a conscientious person shows high sense of responsibility and positive result on their academic performance. In their research Ghazi and et al., (2013) [13] found out that "conscientiousness" and "agreeableness" personality traits were strongly influenced and "extroversion", "neuroticism" and "openness to experience" personality traits were influence lightly in secondary school students. Dzulkifli and Alias (2012) [14] discovered by the Correlational analysis and independent Sample T-test that personality traits of the low and high achieving students are the similar other than assertiveness. These findings shows that low performers has significant relationships between personality traits and cognitive abilities but not with high performers.

Sahinidis and et al., (2013) [15] on their findings revealed that academic performance correlated with extraversion, conscientiousness and emotional stability. Further the study shows that extraversion and conscientiousness were affected to perceived academic performance. The last findings showed that academic performance according to passed percentage of each course related to age, agreeableness and conscientiousness. The study is done by Chowdhury and Behjati (2007) [16] identified that all personality traits other than extraversion positively and significantly affected to students' performance. Even though extraversion was positively related it was not statistically significant. This study revealed that openness and neuroticism were significantly affected to students' academic performance.

Ciorbea and Pasarica (2013) [17] in their study collect data from 80 graduated student who are in 22 to 28 years old to test the relationship between personality and academic performance. Finding of this research showed individual differences in academic performance need to be recognized correctly. It was strongly impact for education. Vedal (2014) [18] on her meta-analysis concluded that Agreeableness, Conscientiousness, and Openness significantly correlate with GPA. Further analysis it was revealed that academic major has moderate the relationship between conscientiousness and GPA.

Tamban and Maningas (2017) [19] in their research revealed that openness, conscientiousness and extraversion has negative correlation with academic performance. But agreeableness and neuroticism show positive correlation. Finally they concluded that the personality traits has significant relationship with academic performance. Bhagat et al. (2016) [20] in their study revealed that there is a significant correlation between academic achievement and negative emotionality. In addition they find out that regardless of the country they study negative emotional condition affect negatively on medical student's academic achievement. Results of the

Nayarko et al. (2016) [21] study 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.

With the review of the literature purpose of this study to identify another prediction with another sample of students to discover relationship between Big Five dimension of personality and academic performance among undergraduate students in Sri Lanka private universities.

### 2.1 Research Hypothesis

H<sub>1</sub>: Big Five personality characteristics will be significant predictors of academic performance among undergraduate students

### III. Research Methodology

For this research 200 students participated in the personality dimension test. Judgmental sampling method was used to select the sample size. The students who took part were from Business Management students in private universities in Sri Lanka. The questionnaire was conducted by using online survey website that was only given to the selected students. The students were asked to answer two parts, the first part was personal questions and the second part was fifteen questions which were divided into three sections to measure personality dimensions. To test the relationship between Big five dimensions of personality trait and academic achievements, total sample was divided randomly into two based on the performance. The students who have 2.00 or above GPA consider as high achievers and GPA below 2.00 has considered as low performers. To measure Big Five Dimensions of personality trait the *Big Five Inventory (BFI)* was used. Smith (2010) [22]. It has a forty four questions to measure the bigfive personality traits of extraversion, agreeableness, conscientiousness, neuroticism, and openness. Discriminant analysis was used to test the hypothesis.

### IV. Data Analysis And Findings:

Table 01 shows the personal profile of the students. 200 questionnaires were distributed and 199 responded correctly and 1 was discarded. 64.8 percent students were over 22 years old and 35.2 were below 22 years old. Out of 199, 37.2 percent were male while 62.8 percent were female. 70.4 percent were above 2.00 GPA and 29.6 percent were below 2.00 GPA.

**Table 01: Respondents' Profile**

AGE				GPA				Gender			
		Frequency	Percent			Frequency	Percent			Frequency	Percent
Valid	Over 22	129	64.8	Valid	Above 2.00	140	70.4	Valid	Male	74	37.2
	Below 22	70	35.2		Below 2.00	59	29.6		Female	125	62.8
	Total	199	100.0		Total	199	100.0		Total	199	100.0

Source: Filed Survey

The Analysis Case-processing Summary shown in Table 02 gives the dataset in terms of the valid, excluded cases and the total cases. To avoid the biases sample size was reduced to 116 with two equal size from the both group. 58 samples from each group i.e. Above 2.00 GPA and below 2.00 GPA has been selected for discriminant analysis.

**Table 02: Analysis Case Processing Summary**

Unweighted Cases		N	Percent
Valid		88	75.86
Excluded	Missing or out-of-range group codes	0	.0
	At least one missing discriminating variable	0	.0
	Both missing or out-of-range group codes and at least one missing discriminating variable	0	.0
	Total	28	24.14
Total		116	100.00

Source: Filed Survey

Table 03 shows the group statistics of the respondents. It shows that only neuroticism slightly differ for the high and low 2.00 GPA. All other four dimensions of personality show equal means.

**Table 03: Group Statistics**

GPA	Neuroticism		Extraversion		Openness to experience		Agreeableness		Conscientiousness	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Above 2.00	10.32	5.77	10.89	6.2	11.39	5.62	11.02	0.48	10.45	4.46
Below 2.00	9.31	4.56	10.01	6.1	11.12	5.43	10.98	0.76	10.36	4.42
Total	9.82	5.17	10.45	6.15	11.26	5.53	11.00	0.62	10.41	4.44

Source: Filed Survey

Results of the correlation analysis of the independent variables are presented in Table 04. There is no multicollinearity problem when using all independent variables in discriminant analysis. The correlation among all personality traits are below 0.5 or above -0.5. All correlation coefficients are very low, indicating lack of multicollinearity.

**Table 04: Pooled Within- Groups Matrices**

	Independent Variables	Neuroticism	Extraversion	Openness to experience	Agreeableness	Conscientiousness
Correlation	Neuroticism	1.000				
	Extraversion	-0.197	1.000			
	Openness to experience	-0.091	0.084	1.000		
	Agreeableness	0.088	0.016	0.070	1.000	
	Conscientiousness	-0.01	0.197	0.017	0.043	1.000

Source: Filed Survey

To check the significant differences between the group means for independent variables, Wilk's lambda statistics was calculated. Table 05 shows that three predictive variables such as neuroticism, openness to experience and agreeableness only shows significant value less than 0.05. This indicates that the group differences are significant, and can proceed discriminant analysis.

**Table 05: Wilk's Lambda and F Statistics for Test of Equality**

Independent Variables	Wilk's Lambda	F	Sig.
Neuroticism	0.453	33.8	0.0000
Extraversion	0.924	2.277	0.1425
Openness to experience	0.823	5.990	0.0209
Agreeableness	0.656	14.64	0.0007
Conscientiousness	0.954	1.338	0.2572

Source: Filed Survey

Table 06 shows the significant value as 0.783 which is greater than 0.05. This shows that there is an equal variance between two groups with Box's M value 20.022 and p value .783. This is indicated that the two groups have equal population variance and hence discriminant analysis can be conducted.

**Table 06: Box's M Test Results**

Box's M		20.022
F	Approx.	1.757
	df1	21
	df2	31469.126
	Sig.	.783

Source: Filed Survey

Table 07 shows the eigenvalue of the function. This is indicated the strength of the relationship between predictive variables and outcome groups. The results indicated that high degree positive canonical correlation i.e. 0.749. This is comparatively high.

**Table 07: Canonical Discriminant Function**

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	1.275	100.0	100.0	.749

Source: Filed Survey

Table 08 shows the value of Wilk's Lambda and Chi-square. This test conducted to check statistical significance and discrimination power of the model. The value of Wilk's Lambda range in between 0-1. If it is close to 0 is better. In the present case the value is 0.440 is revealed that better discrimination power of the model. The Chi-square is 60.831 with 4 degree of freedom, which is based on the groups present in the categorical variables.

**Table 08: Wilk's Lambda and Chi-square Test**

Function	Wilk's Lambda	Chi-square	Df	Sig.
1	.440	60.831	4	.000

Assuming 95% level of Confidence  $\alpha = 0.05$

Source: Filed Survey

Table 09 shows the prediction power of the model. The model shows total 36 (20+16) cases were misclassified originally selected group and total 11 (7+4) were misclassified in cases not selected. The accuracy of the cases selected is 59.09% [(88-36/88\*100)] and the accuracy of the cases not selected is 60.71% [(28-11/28\*100)]. These result show that the unbiasedness of the selection even though accuracy rate is 59.09% in selected group and 60.71% in unselected group.

**Table 09: Classification Matrix**

Outcome			Predicted Group Membership			Total
			Above 2.00 GPA	Below 2.00 GPA		
Cases Selected	Original	Count	Above 2.00 GPA	24	20	44
			Below 2.00 GPA	16	28	44
		%	Above 2.00 GPA	54.55	45.45	100.00
			Below 2.00 GPA	36.36	63.64	100.00
Cases not selected	Original	Count	Above 2.00 GPA	7	7	14
			Below 2.00 GPA	4	10	14
		%	Above 2.00 GPA	50.00	50.00	100.00
			Below 2.00 GPA	28.57	71.43	100.00
Note: 59.09% of selected original grouped cases correctly classified. 60.71% of unselected original grouped cases correctly classified.						

Source: Filed Survey

The main objective of this study to explore the relationship between personality dimensions and academic performance. Table 10 indicated the results of discriminant function coefficients. It shows that the neuroticism =.267, extraversion = 0.045, openness to experience = .152, agreeableness =.008 and conscientiousness = -.245. This is highlighted the answer for the main objective of the research. Linear Discriminant Function is as follows:

$Y = \alpha + \beta_1 * \text{Neuroticism} + \beta_2 * \text{Extraversion} + \beta_3 * \text{Openness to experience} + \beta_4 * \text{Agreeableness} + \beta_5 * \text{Conscientiousness}$ ; where Y = Academic Achievement (GPA),  $\alpha$  = Constant and  $\beta_1$  to  $\beta_5$  are the coefficient of Big Five personality dimensions.

The output of the Linear Discriminant function is as follow.

Academic Achievement (GPA) = 0.267(Neuroticism) + 0.044(Extraversion) + 0.152(Openness to experience) + 0.008(Agreeableness) - 0.245(Conscientiousness) - 5.112

**Table 10: Unstandardized Canonical Discriminant Function Coefficients**

Personality Traits	Function 1
Neuroticism	.267
Extraversion	.044
Openness to experience	.152
Agreeableness	.008
Conscientiousness	-.245
(Constant)	-5.112

Source: Filed Survey

Table 11 shows the group centroids, giving the value of the discriminant function evaluated at the group means. The mean of the above 2.00 GPA group is -.206 and below 2.00 GPA group is .211. Group membership was predicted and discriminant score calculated for every students by evaluating the range of -.206

to .211. Margin value of the two group was calculated to be 0.00235. Accordingly, predict and classify as High Performer if  $-.206 < Z < 0.0025$  and Predict and classify as Low Performer if  $0.0025 < Z < .211$ .

**Table 11: Functions at Group Centroids**

GPA	Function 1
Above 2.00	-.206
Below 2.00	.211

Source: Filed Survey

The above table 12 shows the result of the variables discriminating the groups. This data shows neuroticism is the strongest predictor with the coefficient value 0.834. Highest positive value indicated that neuroticism is inclined towered with students who are below 2.00 GPA and vice-versa. Conscientiousness shows negative coefficient value -0.544. This is indicated that students with above 2.00 GPA is inclined with conscientiousness. Extraversion, openness to experience and agreeableness have negative relationship with both group of academic achievements with an average predictive validity.

**Table 12: Standardized Canonical Discriminant Function Coefficients**

Personality Traits	Function 1
Neuroticism	.834
Extraversion	.143
Openness to experience	.433
Agreeableness	.039
Conscientiousness	-.544

Source: Filed Survey

## V. Conclusion

Personality traits of Big Five dimensions are generally used to describe human character and their behavior. Personality comes from within the person and remains consistent throughout his or her life. Therefore, many research papers and academic studies were carried out to understand personality and its connection to academic performance (GPA). This study also was conducted to explore the relationship between personality dimensions and student performance which measured by higher GPA as well as lower GPA. The big five dimensions were used: extraversion, neuroticism, openness, conscientiousness and agreeableness. Research was conducted on private institutes in Sri Lanka. The hypothesis used for the study was, *"HI: Big Five personality characteristics can be a significant predictors of academic performance among undergraduate students."* The Linear Discriminant Function equation is as follows:

Academic Achievement (GPA) =  $0.267(\text{Neuroticism}) + 0.044(\text{Extraversion}) + 0.152(\text{Openness to experience}) + 0.008(\text{Agreeableness}) - 0.245(\text{Conscientiousness}) - 5.112$

Out of all five traits neuroticism shown as a significant decimator of academic achievement. Therefore, on the basis of the findings the hypothesis was accepted.

In conclusion, the results obtained proved that there is a relationship between personality and student academic performance (GPA). Also, there was a relationship between personality and student higher GPA as well as lower GPA. The results shows that out of all five traits neuroticism shown as a significant predictor of academic achievement. In addition it is revealed that conscientious became the next strongest predictor variable followed by extraversion, openness to experience and agreeableness. Conscientiousness shows a positive relationship with both group of students' academic achievement. It has justified that when students' conscientious is goes up (efficient, hardworking, attainment oriented and prepared) academic achievement would be also raised positively. All other four personality traits were found to be negatively associated with academic performance of the both group. However, the association between those variables and academic performance is insignificant. Findings of this study shows how personality traits influence academic performance among under graduate students. This might be help decision makers to introduce students' center learning system in an education institutes.

## References

- [1] K.A. Schneewind, K.A. and S. Ruppert, *Personality and family development: An intergenerational longitudinal comparison* (J.E. Harrow, Trans.). Mahwah, NJ: Erlbaum Lawrence Erlbaum Associates Inc., Publishers, 1998
- [2] G. Lawrence. *Looking at type and learning styles*. Gainesville, FL: Center for Application of Psychological Type. 1997
- [3] I.B. Myers, M.H. McCauley, N.L. Quenk, and A.L. Hammer, *MBTI manual: A guide to the development and use of Myers-Briggs Type Indicator* (3rd Ed.). Palo Alto, CA: Consulting psychologists Press. 1998
- [4] Duff, E. Boyle, K. Dunleavy and J. Ferguson, *The relationship between personality, approach to learning and academic performance*, *Personality and Individual Differences*, 36(8), 2004, 1907-1920

- [5] J. Wilt, W. Revelle, Extraversion, in M. Leary and R. Hoyle (Ed.), *Handbook of Individual Differences in Social Behavior*, 2008, [Online] Available: <https://www.personality-project.org/revelle/publications/wr.ext.08.pdf>
- [6] S. Galiher, *Understanding the effect of extracurricular involvement*. Master Diss. Indiana University, South Bend. 2006
- [7] A. Hazrati-Viaria, A. T. Rada, S. S. Torabib, The effect of personality traits on academic performance: The mediating role of academic motivation. Proc. 4th International Conference of Cognitive Science (ICCS 2011)
- [8] E. E. Nofle and R. W. Robins, Personality Predictors of Academic Outcomes: Big Five Correlates of GPA and SAT Scores, *Journal of Personality and Social Psychology*, 93(1), 2007, 116–130
- [9] P. Bazelais, D.J. Lemay and T. Doleck, *How does grit impact college students' academic achievement in science?*, *European Journal of Science and Mathematics Education*, 4 (1), 2016, 33-43
- [10] A. Nesrin. *Big Five personality factors and individual performance*. Master diss., UQAC Université du Québec à Chicoutimi, (2013)[Online] Available. <http://constellation.uqac.ca/2755/>
- [11] R. A. Al-Naggar, M. T. Osman, Z. Ismail, Y. V. Bobryshev, M. S. Ali, Manuel and M. Gonzalez. Relation between Type of Personality and Academic Performance among Malaysian Health Sciences Students, *International Archives of Medicine Section: Psychiatry and Mental Health*, 8(182), 2015, 1-8
- [12] B. Grama, Predictors Of Academic Performance, *StudiaUbbEducatioArtisGymn.*, LXI, 2016, 4, 67-76.
- [13] S.R. Ghaz, G. Shahzada and S.f.Ullah, Relationship between Students' Personality Traits and their Academic Achievement in Khyber Pakhtunkhwa, *Pakistan, Journal of Educational and Social Research*, Vol. 3(2), 2013, 437-444
- [14] M. A. Dzulkifli and I. A. Alias, Students of Low Academic Achievement – Their Personality, Mental Abilities and Academic Performance: How Counsellor Can Help?, *International Journal of Humanities and Social Science*, 2012, 2(23), 220-225
- [15] G.S. Alexandros, C. C. Frangos and K.C. Fragkos. The relationship between personality type and academic performance. The case of Greek University students. *Proceedings of 3rd international conference*, Athens, **Greece**, 2013, 333-334
- [16] M.S. Chowdhury and S. Behjati, Emotional Intelligence, Self-Efficacy and academic Performance of University Students: A Correlation Study, *Frontiers of Business, Management and Economics: An Interdisciplinary Collection of Managerial research*, MehranNejati (Ed), University Publishers, Baco-Raton, 2007, 293-298
- [17] L. Ciorbea and F. Pasarica, The Study of the Relationship between Personality and Academic Performance., *Procedia - Social and Behavioral Sciences*, 78, 2013, 400-404
- [18] A. Vedel, The Big Five and tertiary academic performance: A systematic review and meta-analysis, *Personality and Individual Differences*, 2014, 71, 66–76
- [19] V. E. Tamban and O.B. Maningas. Big Five Personality Traits And Academic Performance of College of Teacher Education Students at Laguna State Polytechnic University, Los Baños Campus 2016-2017, *International Journal of Advance Research (IJAR)*5(9), 2017, 1573-1577
- [20] V. Bhagat, M. Haque, N. B. Simbak, and K. Jaalam, Study On Personality Dimension Negative Emotionality Affecting Academic Achievement among Malaysian Medical Students Studying in Malaysia and Overseas, *Advances Medical Education Practice*. 7, 2016, 341–346.
- [21] K. Nyarko, N. Kugbey, C. M. Amisah, M. Ansah-Nyarko and B. Q. Dedzo, *The Influence of the Big Five Personality and Motivation on Academic Achievement among University Students in Ghana*, *British Journal of Education, Society & Behavioural Science*, 13(2), 2016, 1-7.
- [22] J. Smith, 16 Sep. 2003, 'Big Five Personality Questionnaire' (Cited 2010). [Online] Available: [www.myskillsprofile.com](http://www.myskillsprofile.com)

#### **Author Profile:**

Wasantha Rajapakse, Ph.D. is a senior lecturer (Higher Grade), SLIIT Business School, Sri Lanka Institute of Information Technology (SLIIT), Sri Lanka. Prior to joining the SLIIT, she served 27 years as a faculty member in Jubail University College, Saudi Arabia; St. Theresa (Inti) College in Thailand; Adjunct Faculty, Troy University USA (Thailand Program) and University of Sri Jayawardenepura, Sri Lanka. Her main teaching and research interests are in the field of HRM and Organizational Behavior.

Wasantha Rajapakse "A Study on the Big Five Personality Dimensions' Effect on University Students' Academic Performance." *IOSR Journal of Business and Management (IOSR-JBM)* 19.12 (2017): 69-75.