Role of Personality Traits in the Academic Performance of University Students

Aaleen Shafaat[1], Ivan Suneel[2], Maryam Munir[3*]

Abstract

This study aims to investigate the role of personality traits in the academic performance of undergraduate students. The participant sample consisted of $N = 300$ undergraduate students across 20 disciplines throughout the four-year undergraduate degree program at the university. A survey method was used to gather data from 300 participants on the variables of academic performance that were measured via the self-reported Cumulative Grade Point Average (CGPA) and the Big Five Inventory (BFI-2) for personality assessment as developed by Soto and John (2017). A correlational analysis between Conscientiousness of the Big-Five Personality Inventory and Cumulative Grade Point Average (CGPA) found a significant positive correlation between Conscientiousness and CGPA only. No other personality trait correlated to CGPA in the present study. The conclusion drawn from the present study is that high achievers have high levels of conscientiousness.

Keywords: Academic Performance, College Students, Educational Development, Personality Traits

[1]BS (Hons) Scholar, Department of Psychology, Forman Christian College (A Chartered University), Lahore, Pakistan.
[2]Associate Professor, Department of Psychology, Forman Christian College (A Chartered University), Lahore, Pakistan.
[3*]Assistant Professor, Department of Psychology, Forman Christian College (A Chartered University), Lahore, Pakistan.

*Corresponding Author Email:
maryammunir@fccollege.edu.pk

Introduction

Academic performance is an area of concern in a developing country like Pakistan. Higher academic performance of students can ensure the effective socio-economic development of a country (Volchik et al., 2018). Therefore, an analysis of the factors affecting academic performance can support the development of Pakistan. The academic culture of Pakistan is complicated; data shows that despite the Constitution Eighteenth Amendment Act of 2010 in the favor of providing free elementary education, the number of out-of-school children (OOSC) is alarmingly high. It is important to note that, at the upper secondary level, the number of OOSC is 9.8 million (UNESCO, 2017).

Because of these statistics, it seems that in Pakistan, the debate about academic achievement or rather underachievement is farfetched; a large majority of children do not even attend school. The number of out-of-school children is alarming but the school dropout rate in Pakistan is one of the highest in the world. Between the ages of 5-16, 73% of children drop-out before completing secondary school (grade 1-10). Statistics show that only 33.2% have some form of secondary education in Pakistan. Statistics show that male children have a better access to education in Pakistan than the girl child (UNDP, 2014). When looking at women's educational achievement, previous research by Mughal and Aldridge (2017) reported that in between 2012-13 3% of girl children were married by 15 years of age. This number

increased to 21% by the time these girls reached the age of 18. There are reports in the same study that boys of the same age also have to drop out from school due to the financial and social pressures they face because of having to support their families in making the dowry of their sisters. (Mughal & Aldridge, 2017).

Careful analysis has revealed a prevalent learning crisis in Pakistan; Pakistani students promoted to grade 3 haven't yet mastered the curriculum of grade 1 (Andrabi et al., 2010). Hence, the majority of students who graduate from primary schools do not possess sufficient reading skills (Andrabi et al., 2010). The challenge is not just that of OOSC, but also of the children in school producing low learning outcomes.

It has also been noted that factors such as somatic concerns, belonging to a dysfunctional family structure, having a social skill deficit, distractibility, and impulsivity did not significantly predict academic achievement (Jamil & Khalid, 2016). Another study reported that the socioeconomic status of the child's parents, study habits, and the location of the school had an impact on the academic achievement of the child. It was also noted in the study that the child's gender and the locale of the school which had an effect on the study habits of students (Nisar et al., 2017).

The main reasons noted for academic underachievement in Pakistan are; Poor educational backgrounds where children are not equipped to deal with the academic rigor of higher grades. Other reasons include poor health, malnutrition, poverty, overpopulation, home environment, ineffective educational policies set up by the government (Mughal et al., 2019). It was found that some of the factors which affect academic achievement included age, location of the school, class size etc. Furthermore, rural school children underachieved significantly more than the school children

belonging to urban localities by 5.82 times. Students studying in larger classes were more likely to be underachievers (Nomaan et al., 2016).

In addition, Vedel (2014) reported that predictive measures of academic performance are Spearman's general intelligence factor, Binet's intelligence test, and Intelligence Quotient (IQ) tests (Gygi et al., 2017). However, limitations were later noted on Intelligence tests being predictors of achievement, and therefore, not to be relied upon for the prediction of academic performance (Cavojova & Mikušková, 2015). A study conducted in Gujarat, Pakistan found the home environment of students to be the predictive factor of academic performance (Shahzadi & Ahmad, 2011).

Personality is reported to be an accurate predictor of academic performance when compared to intelligence. This can be attributed to findings that show personality traits to form the patterns of behavior, emotion, and thoughts are consistent across situations and time (Funder, 2012). Personality is then seen to consist of the internal and the external characteristics which come together to influence a person's behavior across different situations (Schultz & Schultz, 2016). Furthermore, Personality has been found to be the driving factor for the decisions that an individual makes (Ju et al., 2019).

The present study is focused on the Big-Five Factor Model of Personality to assess academic performance. The Five-Factor model is used to describe the individual differences in personality traits. Individually, the Big-Five factors are operationally defined as Extraversion (EV): being assertive, sociable, and energetic, etc., Agreeableness (AB) is the trait of being friendly and cooperative etc., Negative Emotionality (NE) which is more commonly known as Neuroticism, and is demonstrated by anti-

social behaviors that include a state of being worried, insecurity, a degree of emotional instability, and anxiety. Openness (O) to new experiences is related to being independent-minded and imaginative. Lastly, Conscientiousness (C) is the ability to be disciplined, resilient, responsible, hardworking, etc. (Kajonius & Johnson, 2019; McCrae & Costa, 2008).

An analysis of previous literature has shown that Openness and Conscientiousness have been found to have a higher positive correlation with academic performance than the other three traits (Poropat, 2014). Whereas, the components of Negative Emotionality are based on the emotional states of anger and fear. Individuals high in NE, display high anxiety, low self-worth, and irritability. Furthermore, these individuals are also high in depression, feelings of inferiority, and self-consciousness (McCrae & Costa, 2008). It is found that an individual who scores higher in Negative Emotionality would not score higher in academic performance (Rosander, 2013). A completely alternative approach to Rosander's findings is the Dark Triad traits approach to personality. The Dark Triad consists of three negative and antisocial traits: Machiavellianism, Narcissism, and Psychopathy (Paulhus & Williams, 2002). It has been connected to an individual's preoccupation to gaining fame and power with complete disregard for others. Previous research shows that an individual who scores high in the dark triad is interested in personal gain only. These individuals tend to manipulate others to outperform them (Vedel & Thomsen, 2017).

Similarly, Durkheim theorized that as success orientation goes up, it becomes increasingly impossible for individuals to satisfy their goals; their means to accomplish their goals fall short of their desired goals and therefore their level of Anomie goes up. Anomie, as proposed by Durkheim, is an explanation for how individuals become alienated from societal norms and the collective conscience. resulting in deviant behavior and crime. Meaning that a person, who according to Durkheim, is striving for success would push and shove anyone who comes in his or her way of success (Messner et al., 2019). Is this to state that Negative Emotionality is the predictor of success? Anomie is a social theory that requires more statistical evidence to make it generalizable. However, one study conducted in Oman that found that highly unsuccessful students with the lowest CGPA had higher Neuroticism at 31.5% (Begum et al., 2021).

It has been noted that different personality types do well in different fields. Extraversion and Negative Emotionality have a positive correlation with each other (Vendel, 2017). Suggestions have been made in several researches that extraversion contributes to the academic success of an individual in subjects such as media and business, however, the indication that NE and Extraversion have a negative correlation with academic performance is stronger (Rosander, 2013) that individuals majoring in political science scored higher in NE (Vedal, 2015). Openness was positively related when measuring performance in languages. In addition, there was a positive correlation between openness and practical disciplines that required one to be open to new experiences in order to learn new things (Rosander et al., 2011).

Conscientiousness was the only Big-Five trait that was found to be the most predictive of the Cumulative Grade Point Average of students (Conrad, 2006). Conscientiousness is the ability of being resilient, disciplined, responsible, and hardworking (McCrae & Costa, 2008). Conrad found similar results that Conscientiousness very accurately predicts the three academic abilities of Course performance, attendance, and GPA. It was found that when a scale of 0-4.0 is taken into consideration, the increase of one

Standard Deviation in Conscientiousness translates to 0.11 increase in GPA (Conrad, 2006). A study conducted by a Middle Eastern Tech University strengthens Conrad's finding states that the students who score higher in conscientiousness are also more likely to succeed in their academic careers (Alkış & Tugba, 2018). This trend was found to be consistent in the review of several other researches. One study points out that students with high scores on conscientiousness are more committed towards their goal. They have an overall goal-oriented approach which ensures that these students are less likely to drop out of college and complete their degree requirements (Poropat, 2014).

The students higher in conscientiousness do well in academics but certain factors have been found to be predictors of achievement in previous research; Research on Delayed Gratification found Patience to be a predictive factor of achievement (Casey et al., 2011). On the other hand, Duckworth observed that the best predictor of success is a combination of hard work, self-discipline, and consistency that she termed Grit (Duckworth & Gross, 2014). The current study has outlined how Grit and Delayed Gratification are similar to Contentiousness. It has also been found that a person needs at least 10,000 hours of deliberate practice to achieve a mastery level of that particular skill (Ericsson & Ward, 2007). Gender was not found to have been a predictive factor of academic achievement (Hong & Lin-Siegler, 2012).

The following research hypothesis was formulated after a careful analysis of the aforementioned considerations;

● There will be a positive relationship between Conscientiousness and Cumulative Grade Point Average.

To test this hypothesis, it was necessary to collect data on both variables using standardized tools: Big Five Inventory-2 to measure the five personality traits and a measure of CGPA which is standard for all the participants. The research method noted below attempted to accomplish the purpose of this study.

Rationale of the Study

The literature review proposes that individual differences in personality traits exist in all students. The current study can determine which personality traits are associated with high academic performance in Pakistani students. The Big-Five Inventory and the Academic Motivation scales may be able to predict which students can become high academic performers. On the other hand, the present study may also be used to point out the students who may not perform well academically. This will give Pakistani academia the ability to focus on the importance of academic counseling and give remedial aid where required; this will collectively improve the academic achievement of Pakistan.

Method

Participants

The participants of this study consisted of 124 male and 176 female students from a private university in Pakistan. The participants were distributed among 20 college majors. The participant sample consisted of 51 freshmen, 61 sophomores, 89 juniors, and 99 senior-year students at the college.

Sample

The participants were selected via convenient sampling. This sampling technique was selected because it was low-cost, efficient, and the participants were readily available. Data was successfully collected from 300 participants.

Instruments

Academic Performance. Academic performance was measured via the self-reported Cumulative Grade Point Average (CGPA); the CGPA scale used is of a 4-point

scale that the university uses to assign letter grades and a point score to its students. 4.00 is the highest possible grade at 93% and above and 0.00 is the lowest.

The Big Five Inventory. The Big Five Inventory (BFI-2) developed by Soto and John is a 60-item scale with items rated on a 5-point Likert Scale; 5 is marked as "Strongly Agree", 4= "Agree a Little", 3= "Neutral"; no opinion, 2= "Disagree a little", and 1 is marked as "Strongly Disagree". The scale is further divided into five domains of Personality of Conscientiousness, Openness, Agreeableness, Negative Emotionality, and Extraversion. Each domain is assigned 12 questions (Soto & John, 2017). The test-retest reliability of BFI-2 is 0.76. The Cronbach Alpha reliability of this five domain scale was ($\alpha = 0.83$). Each domain has the Cronbach alpha value ($\alpha = .85$). The convergent correlation of BFI-2 with the original BFI is found to be at 0.92 (Soto & John, 2017).

Demographic Form. For the purpose of the present study, a demographic form was developed to collect the socio-economic data of the participants on variables such as age, gender, family income, college major, college year, region of origin, and the employment status of the participants.

Procedure

A survey research method was used to gather data on these variables. The surveys given to all the 300 participants were in printed form and all had Section A: informed consent, Section B: Demographic Form, and Section C: BFI-2. The descriptive statistics were computed using measures of central tendency of mean, median, and mode. The frequencies (*f*) and Standard Deviation (SD) were also calculated from the descriptive statistics. Pearson Product moment correlation was conducted between the two variables: Personality Traits and Cumulative Grade Point Average (CGPA). This was done to assess the relationships of the variables with one another.

Ethical Considerations

In order to maintain the ethics of research, each participant signed an informed consent form that included details, benefits, and purpose of the study. Along with this, the consent forms informed the participants of their right to anonymity and confidentiality during the entire process of the research.

Results

The present study consisted of 300 participants, of which, 176 females and 126 were males [*f*=176 (58.7%), *f*= 124 (41.3%)]. Therefore, the percentage ratio of female to male participants was 58.7: 41.3. The mean age recorded of the population sample was *M*=21.24 years with the standard deviation (*SD*) at 1.61 (*N* of age = 298). The internal consistency reliability of the Big-Five Inventory-2 scale was found to be acceptable at ($\alpha = .70$). The mean value recorded for CGPA was 3.28. with SD being 0.41. The highest CGPA recorded was a perfect 4.00/4.00, whereas, the lowest CGPA recorded was 1.89/4.00.

Biotechnology and Psychology college majors made up 14% and 14.7% respectively of the participant sample. The data showed that 48% of the study's participants belonged to the monthly family income bracket (100,000-500,000 PKR). Whereas, the income bracket of 30,000 PKR had the least number of respondents at just 2.3%. Furthermore, data showed that 80.3% of the participants marked 'Not Currently Employed' in the survey questionnaire i.e., they relied on an external source (Most likely family income) for financial support throughout college.

Hereas, it was found that only 2.7% held jobs during the night shifts alongside their four-year degree program. At the time of the study, 33% of the participants were seniors and only 17 % were in their freshman year. As

indicated in Table 1, there is a significant positive correlation between Consciousness and CGPA at [*r*= 0.19, *n*=300, *p* < 0.01]. Hence, the hypothesis is accepted.

Table 1
Intercorrelations of Scores of Big Five Inventory and Cumulative Grade Point Average (N=300)

Variables	*M*	*SD*	1	2	3	4	5	6
CGPA (1)	3.28	.41	---	.04	.03	.19**	.09	-.01
Extraversion (2)	37.64	6.94		---	.08	.16**	.24**	-.15**
Agreeableness (3)	41.57	6.15			---	.22**	.17**	-.13**
Consciousness (4)						---	.17**	-.18**
Openness (5)	43.50	5.53					---	.09
Negative Emotionality (6)	38.75	7.57						---

* *p* < 0.05, ** *p* < 0.01

Discussion

The hypothesis of the present study was accepted; a positive correlation [*r*= 0.19, *n*=300, *p* < 0.01] was found between CGPA and Conscientiousness. These findings are supported by previous studies; Conscientiousness has been reported to have the strongest positive correlation with grade point average (Bergold & Steinmayr, 2018). Conscientious students are more committed to their goals and are less likely to drop out of college and are more likely to accomplish their goals (Poropat, 2014). Alkins and Temizel also concluded similar results; higher Conscientiousness scores are more likely to succeed in academics (2018).

In the present study, only conscientiousness was found to have a significant correlation with CGPA. No other personality trait was found to have a positive or a negative relationship to CGPA. There are several explanations for this finding; first, the mean CGPA score of the sample was 3.28 with a standard deviation of 0.41. A CGPA score of 3.28 is a relatively high score when taken into consideration that 3.28 is an absolute 86% grade on the college's scale. The sample of the study was coincidently chosen from the 'academically successful' population of the student body due to the use of convenient sampling technique which is commonly known as a biased representation of a population and this was why Conscientiousness had a significant result (Bornstein et al., 2017). Although no previous findings suggest this, it is to be taken into consideration that a CGPA of 3.28 may be the CGPA college average for Forman Christian College. The total Baccalaureate student population of the college, according to the school's website, is quoted to be of 4,712 students.

Participants reported experiencing fatigue while answering the questionnaire. 450 participants agreed to take part in the study but only 321 survey forms were returned to the principal investigator. 21 questionnaires were discarded due to missing values in the scales. Only 300 cases formed the data of this study. Therefore, it can be suggested that the questionnaire was lengthy and the participants who were higher in conscientiousness were more likely able to fill it out accurately and efficiently. In the sample of the present study, Psychology and Biology students made up 14% and 14.7% of participants respectively. A review of previous literature shows that Psychology and Medical Science students score high in Conscientiousness as these subjects require more commitment (Vedel et al., 2015).

The present research found that 61.7% of the representative student population of Forman Christian College reported a monthly family income of above 100,000 Pakistani Rupee. Only 2.3 % participants self-reported a monthly family income of less than 30,000 Pakistani rupees. This suggests that a college education with a higher CGPA is a privilege that can be enjoyed by students who belong to the higher income bracket and do not have to worry about finances and can focus on their education. Similar results have been found in various other studies conducted in Pakistan. One of the major problems reported in previous studies was the lack of financial support for students who wanted to continue school (Mughal et al., 2019). One particular study reported that in the rural areas of Punjab, Pakistan 10-15% of girl children are married off during secondary school when they are between the age of 14-16 years. On the other hand, male children have to drop out at the same time because they have to help share the financial burden of their families (Mughal & Aldridge, 2017). These students show a different kind of academic underachievement where they fail to complete secondary school due to the lack of resources, and social support. 80.3% of participants in the present study reported to "not have been employed" at all. Previous data also reports that Grades are positively correlated with time invested in learning (Ribeiro et al., 2019).

A study that was conducted on the Pakistani student population with a sample of 280 grade 4-5 children noted that being socially withdrawn, and delinquency both predict low academic achievement (Jamil & Khalid, 2016). Test anxiety and GPA have been found to be negatively correlated (Almalki, 2019). Further analyses and research can be conducted to test and rule out the explanations mentioned above after controlling for extraneous factors such as family income, student employment, time invested in studying, and mental health. The questionnaire can be shortened in further studies by only including the 12 components of the BFI-2 which measure Conscientiousness thus removing the fatigue that the participants reported having experienced.

Conclusion

The conclusion drawn from the present study is that high achievers are intrinsically motivated and have high levels of conscientiousness. Therefore, the academic profile of a high academic performer has a combination of different personality traits and academic motivation. The present study can be used as a foundation to conduct further research to improve the academic performance of Pakistani students. However, further research can be conducted to know if conscientiousness can be cultivated through classical conditioning and the application of social learning theory. Further research can also outline if academic motivation and personality traits vary in the four years of undergraduate. The present study can be used as a foundation to conduct further research to improve the academic performance of Pakistani students.

are available from the corresponding author [M.M.] upon the reasonable request.

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