The Big Five Personality Traits And Academic Performance

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Abstract: This study investigates the impact of Big Five personality traits on the academic performance of university students in terms of their CGPA by using 20 item short Mini-IPIP Five-Factor personality test developed by Donnellan, Oswald, Baird, and Lucas (2006). The purpose of using this short measures test is to come up with a generalized and effective quick personality test for predicting academic performance (in terms of CGPA) in students. The study was conducted on undergraduate college students at Forman Christian College, Lahore (N = 406). The results affirm the predictive validity of the Big Five personality traits. Openness (0.169) was most positively related to academic performance followed by agreeableness (0.148) and conscientiousness (0.128). However, neuroticism (.054) and extraversion (.061) were found to have no significant correlation with academic performance. Implications of these results are discussed in context of career and academic counseling and university administration.

Keywords: Big Five, Academic performance, Conscientiousness, Openness, Neuroticism, Extraversion, Validity

1. Introduction

Due to the cutthroat competition in educational sector in Pakistan where numbers of universities have grown tremendously within last few years, there is a need to device strategies in order to differentiate university offerings from other rival institutions. Universities need to understand their customers, specifically current and prospective students and provide them with comprehensive career and academic guidance to survive through their degree programs.

It is not only important for profit making educational institutions to keep the students satisfied in order to sustain in the industry but at the same time is crucial for student retention (DeShields Jr, Kara, & Kaynak, 2005). Researchers suggest that career and academic counseling have a significant impact on the student's educational, values, career goals and aspirations and thus are considered highly useful (Alexitch & Page, 1997; Flynn, 2007). Through effective counseling, students can learn to acquire skills involved in dealing with lack of support, overcoming employment barriers and self-management which are known to have a direct impact on their motivation (Hiebert, 2007).

Studies find that students look for professional advice and knowledge from counselors on work related and education related decisions (Bell & Bezanson, 2006). Therefore, the main objective of this research is to maximize the assistance to students where they can identify their strengths and weaknesses and choose their careers based on these strengths and weaknesses. This paper will act as a guideline or a roadmap for academic and career counselors, instructors or academic advisors to precisely guide students for their academic and career development.

1.1. Objectives
1. To find out if the 20 item short Mini-IPIP Five-Factor personality test developed by Donnellan *et al.* (2006) can be used to predict academic performance of students
2. To find out which personality traits predict academic performance of baccalaureate students

1.2. Rationale

Educational institutions try to find variety of factors influencing academic performance in students, however are not sure about the precise outcomes of these factors (Rawat, Reddy, Mishra, & Sultana, 2015). Many recent studies have exposed significant link between personality and academic performance in students (Duckworth & Seligman, 2005; Wagerman & Funder, 2007). Conard (2006) states that the personality measures are highly significant predictors of students' academic performance and hence can be a useful tool for assisting students in their career development and academics. Not only personality traits have significant importance in future career of students, personality has a great influence on students' success in school (De Raad & Schouwenburg, 1996). Also, personality has minimal link with people's cognitive ability and intelligence and therefore there exists a historically proven clear segregation between intelligence and personality traits (Allport & Odbert, 1936).

2. Literature review
2.1. The Big Five Model
Many researches demonstrate that there is a relationship between personality constructs and academic performance (Chamorro-Premuzic & Furnham, 2008; Conard, 2006; Saklofske, Austin, Mastoras, Beaton, & Osborne, 2012) where Five Factor Model of personality is considered as the most comprehensive framework for understanding personality and its traits (Costa & MacCrae, 1992; Digman, 1990) includes i.e. openness, conscientiousness, neuroticism, extraversion and agreeableness. Openness is the individual's propensity to have intellectual curiosity, active imagination, attentiveness to feelings and sensitivity to esthetics. Conscientiousness is the tendency to be organized, ambitious, determined, reliable and purposeful. Neuroticism is related to an individual's inclination towards experiencing negative effects such as guilt, anger, fear, disgust, sadness and embarrassment. Extraversion is the tendency to be talkative, assertive, active, excited and to prefer being in large groups and to like people. Agreeableness is the tendency to be trusting, altruistic and cooperative (Major, Turner, & Fletcher, 2006). This Five Factor Model is one of the most extensively accepted models of personality. One of the biggest advantages of using Big Five model is that personality (as measured by Big Five) does not substantially change and is stable over a four year period across age groups (Cobb-Clark & Schurer, 2012).

2.2. The Big Five model and academic performance
Many studies have been conducted on relation between academic performance and personality (O'Connor & Paunonen, 2007). Although there are many personality testing models, however, the Five Factor Model is by far the most extensively researched and accepted personality models (Kuncel, Credé, & Thomas, 2005). Moreover, several studies concludes that there is a significant influence of Big Five personality traits on academic performance in students (Chamorro-Premuzic & Furnham, 2008; Cobb-Clark & Schurer, 2012; Gray & Watson, 2002; Hodson, Hogg, & MacInnis, 2009; Komarraju, Karau, Schmeck, & Avdic, 2011; Noftle & Robins, 2007). However, due to the variations in results, the validity of the Big Five model can be considered complex. Also, the relationship between academic performance and Big Five personality traits may vary because of variety of tools used for measuring academic performance internationally. GPA, SAT score, test scores, course grades can all be predictors of academic performance. Similarly, differences in intervals (e.g. yearly, semester etc.) between measuring academic performance and personality traits differs internationally. Aptitude, personalities and learning behavior may also vary among students pursuing different degree programs or belonging to different countries, regions or settings.

For example, Major et al. (2006) found that openness, conscientiousness and extraversion were the three key personality traits which predicted motivation to learn in people whereas neuroticism is found to have a negative relation with academic performance and motivation to learn (Colquitt, LePine, & Noe, 2000). Similarly Bartone, Eid, Helge Johnsen, Christian Laberg, and Snook (2009) found that conscientiousness is the most noticeable and influential factor in academic settings whereas, extraversion has greater dominance in business settings. It seems reasonable to assume that students who are high on extraversion should have higher academic performance because of their proactive, loud and sociable personalities. This idea which appears to be valid in present academic environment was well supported by De Raad and Schouwenburg (1996). On the other hand, Eysenck (1992) suggested that highly extrovert students would rather perform bad academically because of their pursuit to socialize and involvement in other activities – which too seems logical but requires context specific study.

Moreover, most literature suggests that conscientiousness is found to have the most significant and positive relationship with academic performance in most of the studies (Chamorro-Premuzic & Furnham, 2003; Noftle & Robins, 2007). This correlate persists in conscientious students because of the inherent existence of self-control (Roberts, Chernyshenko, Stark, & Goldberg, 2005) self-discipline and achievement orientation in their nature (Chamorro-Premuzic & Furnham, 2004). Here, self-control is found to have a greater relation with academic grades of students (Tangney, Baumeister, & Boone, 2004). Also, conscientiousness is associated with goal setting and sustained effort, both of which are the primary components of academic success (Steel, 2007).

Also, other than openness and conscientiousness, very few studies have established a medium or small relationship between academic performance and other personality traits including emotional stability and agreeableness (Hair & Graziano, 2003; Ridgell & Lounsbury, 2004).

A similar study conducted by Lievens, Ones, and Dilchert (2009)found that extraversion, conscientiousness and openness along with extraversion are the key predictors of GPA. Whereas neuroticism is found to be negatively associated with academic performance or achievement (Chamorro-Premuzic & Furnham, 2003).

It is also important to consider that there are factors which are more closely related with academic performance as compared to others and hence effect more on the academic structures, systems and policies(Rawat et al., 2015). Considering the importance of factors influencing academic performance in students, McKenzie and Schweitzer (2001) mentions that the academic problems in university student can be solved significantly if the psychological, cognitive, academic and demographic factors influencing academic performance in students are identified properly. Literature suggests that study skills and previous academic performance of students are the two significant academic performance predictors (Gettinger & Seibert, 2002; McKenzie & Schweitzer, 2001; Pascoe, McClelland, & McGaw, 1997; Rahim & Meon, 2012). Meanwhile, there are several studies which emphasize on the psychological variables influencing academic performance (Rickinson & Rutherford, 1996; Robbins et al., 2004).

Although academic performance is found to be associated with willingness to perform such as initiative, attendance, attitude towards study, involvement in non-academic activities, (Willingham, Pollack, & Lewis, 2002) however, one of the most dominant and frequently used measures of academic performance used in research is GPA (Kuncel et al., 2005).

Judge and Ilies (2002) found that there exists a multiple correlation in the measures of five factor model to statistically predict goal setting motivation. Here, goal setting motivation is a person's willingness to perform as an aspect of his or her personality. Therefore, it somehow justifies the use of five factor model to predict academic performance as well (Poropat, 2009).

2.3. Gap

This study tries to address two prevailing gaps in the preceding literature:

1. Inconsistency in results:

Many past studies have consistently shown that out of the five Big Five personality traits, there is only one significant trait which shows positive relation with academic criteria i.e. conscientiousness. Also, conscientiousness is found to be the only factor which is specifically associated with motivation to learn (Colquitt et al., 2000). Whereas, with the exception of few studies (Poropat, 2009) the other four traits i.e. extraversion, openness, agreeableness and neuroticism have been found to be generally non-significant to academic performance or ability and motivation to learn (Conard, 2006; Furnham, Chamorro-Premuzic, & McDougall, 2002; Gray & Watson, 2002; Lounsbury, Sundstrom, Loveland, & Gibson, 2003; Noftle & Robins, 2007; Oswald, Schmitt, Kim, Ramsay, & Gillespie, 2004; Wagerman & Funder, 2007). Based on literature, there seems some inconsistencies where some studies concludes that conscientiousness is the only primary personality trait influencing academic performance, whereas other studies reveal that openness (Lounsbury, Sundstrom, et al., 2003; Paunonen & Ashton, 2001), extraversion (Lievens et al., 2009), neuroticism (Chamorro-Premuzic & Furnham, 2003) and agreeableness (Hair & Graziano, 2003; Ridgell & Lounsbury, 2004) too have high, medium or even negative (in case of neuroticism) influence on academic performance. Therefore, context specific studies are needed to continue to ensue results (Conard, 2006). Thus, this study will attempt to find out the influence of all the five traits in Big Five model on academic performance of students.

2. Use of long rigorous Five Factor personality inventories:

Also, all the studies which were examined found to have used rigorous Five Factor personality test inventories containing above 100 items. For example, Lievens, Coetsier, De Fruyt, and De Maeseneer (2002) who conducted a similar study on medical students used an extremely intensive 240 items Five Factor personality test inventory. Similarly, Lounsbury, Smith, Levy, Leong, and Gibson (2009) conducted a similar study by using a 118 question personality inventory i.e "Resource Associates' Adolescent Personal Style Inventory (APSI) for College Students" developed by Lounsbury, Tatum, et al. (2003). Many other studies used long Big Five personality inventories which included 96 items (Noftle & Robins, 2007), 60 items (Komarraju et al., 2011) and the famous 44 items Big Five Inventory (Wagerman & Funder, 2007) also known as BFI (John, Donahue, & Kentle, 1991). Incentives in terms of extra grade in course and also in monitory terms were provided to participants (students) to encourage them to participate in these intensive tests. Therefore, this study will use a short, easy to complete 20 item mini test to find out the effectiveness of such tests over long intensive tests.

3. Method
3.1. Research design

The online test was sent to all the bacalaureate students at Forman Christian College, Lahore through emails to measure the impact of personality on academic performance. The followup phonecalls were made to all students to request them to fill the online personality test. The email addresses and contact details of these students was available at the Career Services Office at Forman Christian College. To ensure the generalisability of the results, the online test was sent to all the bacalaureate.

3.2. Participants

Participants were 406 undergraduates college students including 259 males (63.7%) and 147 females (36.2%) who completed the survey. The participants self reported their CGPA besides 31 students who willingly did not mention their CGPA. The participants represented all undergraduate classes i.e. freshmen, sophomores, juniors and seniors who belonged from variety of majors i.e. business, computing, applied sciences, social sciences and arts.

3.3. Measures

3.3.1. Personality

To measure personality of students, the 20 item short Mini-IPIP Five-Factor personality test developed by Donnellan et al. (2006) was used. The wording of few questions in the test were slightly tailored using simple english to make it more understandable and readable for the Pakistani students. This 20 item Mini-IPIP test was validated across five studies with an α at or above 0.6 which confirms the psychometrical acceptablility and practical usefullnes of this short measure of Big Five personality factor (Baldasaro, Shanahan, & Bauer, 2013; Cooper, Smillie, & Corr, 2010; Donnellan et al., 2006). The personality was measured on a 20 item scale with responses placed on a 5-point Likert scale ranging from 5 "Almost always true" to 1 "Almost never true". The negatively keyed items in the test were reverse scored before computing the total scores. The taylored Mini-IPIP instrument used in this study is presented in Apendix A.

3.3.1. Using short instrument Mini-IPIP Scales:

Robins et al. (2001) states that the single-item measures eliminate item redundancy and hence decrease fatigue, boredom and frustration related with repeatedly answering highly similar questions (Gosling, Rentfrow, & Swann, 2003). Although long instruments are found to have better psychometric properties as compared to the shorter instruments, however the costs related to short instruments are feared unusually more than the actual loss (Burisch, 1984; Gosling et al., 2003). Also, in cases where long, complex or "best" instruments are not feasible, the researchers may prefer to use shorter instruments rather than not using any instrument at all (Kimberlin & Winterstein, 2008). Therefore, this study will study the relationship between personality traits and academic performance of students using the Mini-IPIP 20 item test of Five Factor Model measure (Donnellan et al., 2006). This study will also identify the most significant trait or traits which predict academic performance in terms of self-reported CGPA of students using this short 20 item personality test.

3.3.2. Academic performance

The self reported CGPA was the criteria used to assess academic performance of students in this study. Out of the 406 students, 33 students willingly did not mention their CGPA and were eliminated during the computation of academic performance in ralation to the personality. However those 33 students were included in the study for computing their overall personality traits.

4. Results

4.1. Corelation analysis

Corelation analysis indicated several significant relationships (see Table 1). Three personality traits i.e. openness, agreeableness and conscienciousness were found to have the most significant coralation with academic performance in students. Openess (0.169) was found to be most positively related to academic performance (i.e. CGPA) followed by agreeablenes (0.148) and conscientiousness (0.128). However, neuroticism (.054) and extraversion (.061) were found to have no significant corelation with academic performance.

Table 1:

Correlations						
	CGPA	Extroversion	Agreeableness	Conscientiousness	Neuroticism	Openness
CGPA	1					
Extroversion	.061	1				
Agreeableness	.148**	.245**	1			

Conscientiousness	.128*	.047	.160**	1		
Neuroticism	.054	-.072	.100*	-.148**	1	
Openness	.169**	-.004	.050	.203**	-.001	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 2:

	Number	*Mean*	*SD*
Extroversion (α = 0.644)	406	2.92	0.77
Agreeableness (α = 0.577)	406	3.72	0.64
Conscientiousness (α = 0.463)	406	3.61	0.66
Neuroticism (α = 0.510)	406	3.15	0.73
Openness (α = 0.507)	406	3.69	0.64
CGPA	375	3.18	1.24

The groups made out of the individual questions have a cronbach alpha of 0.30 or above which is considerably good.

Table 3:

CPGA = 1.813 + 0.035 Extroversion + 0.111 Agreeablness + 0.085 Conscientiousness + 0.063 Neuroticism + 0.147 Openess

Variable		**Beta**	**T**	**Sig.**
Name	**Symbol**			
Constant	β_0	1.813	6.860	.000
Extroversion	β_1	.035	.676	.499
Agreeableness	β_2	.111	2.085	.038
Conscientiousness	β_3	.085	1.607	.109
Neuroticism	β_4	.063	1.225	.221
Openness	β_5	.147	2.846	.005
β: Standardized Beta value $R^2 = 0.058$, Adjusted $R^2 = 0.045$				

CGPA is taken as dependent variable and extroversion, agreeableness, conscientiouness, neurotiscim and openess as dependent variable. All the variable only explains 4.5% of variation in the CGPA. However, openess impacts CPGA the most as shown in the table 3.

5. Discussion

The results of this study affirm the predictive validity of Big Five personality traits by using the short yet effective 20 item Mini-IPIP Five-Factor personality test developed by Donnellan *et al.* (2006).

The results that the three personality traits i.e. openness, agreeableness and conscienciousness have the most significant coralation with academic performance in students mirrored those of Farsides and Woodfield (2003) who found that openness and agreeableness along with conscientiousness predict the overall academic performance. Chamorro-Premuzic and Furnham (2008) also found that openness and conscientiousness are correlated the most with academic performance. Poropat (2009) too found a significant correlation between overall academic performance and openness, agreeableness and conscientiousness.

However, neuroticism and extraversion were found to have no significant corelation with academic performance. Results for these two traits which are found to have no corelation with academic perfromance are somehow contradictory from the past reserachespresented in the literature reiew section of this paper.

Interesting, this study was conducted on students from varity of degree programs and not frome specific courses , however the results of this study i.e. openness, agreeableness and conscienciousness being the most significant coralates of academic performance are consistent with the studies conducted to predict performance of students in specific courses. Because studies show that conscientiousness along with openness can be classified as the predictors of performance in specific course (Lounsbury, Sundstrom, et al., 2003; Paunonen & Ashton, 2001).

Results of this study also support the concept presented by Noftle and Robins (2007) that personality traits have an incremental and independent effects on the academic outcomes in students i.e. openness and conscientiousness have exclusively independent effects on academic performance.

5.1. Contribution to practice and theory

5.1.1 Practice

One of the major implication of this study is that this short and less time consuming test can be conducted on students to predict their academic performance at the time of their admission. Also, career and academic counsellors can also utilize this short and simple test to find out strengths and weaknesses of students and guide them to work on their strengths while building on their strengths.

5.1.2. Theory

The results from this study which was conducted in Lahore, Pakistan has provided a somehow different perspective to the already existing literature and studies conducted in other countries. Although the primary results are in consistence with the past studies i.e. openness, agreeableness and conscientiousness being correlates of academic performance (Chamorro-Premuzic & Furnham, 2008; Farsides & Woodfield, 2003; Poropat, 2009) however provided some additional insight to relationship between the Big Five personality traits and academic performance. Results from this study for the two traits i.e. neuroticism and extraversion were found to have no corelation with academic perfromance are somehow contradictory from the past reserachas. Contrary to the findings of this study, literature suggests that extraversion have positive correlation with academic performance whereas neutoticism has negative correlation with academic performance (Chamorro-Premuzic & Furnham, 2003; Lievens et al., 2009).

5.2. Limitations and future research:

Results from this study provide no significant evidence of the impact of personality traits on academic performance (CGPA) of students i.e. (Adjusted R^2= 0.045) by using the 20 item Mini-IPIP Five-Factor personality test. It may be because of the use of a very short 20 items Big Five personality test whereas more rigorous Big Five personality testing instruments are available which may offer much more effective model for predicting academic performance. Also, the study was limited to a single university. Future research can be made covering wider range of universities in the region and preferably by using the famous 44 items Big Five Inventory (John et al., 1991) for more reliable and effective results.

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