

# The big five inventory bfi psychology essay



The present research is aimed at exploring the relationship between the Big Five Personality Factors and Academic Success. The Big Five Inventory, developed by John & Benet-Martinez (1998), was administered on 158 students of the first and second year postgraduate (HR and Business Management) programs at XLRI. The participants current CQPI at XLRI and the XII standard percentage marks obtained at school served as the two measures of academic achievement. The results revealed that conscientiousness was significantly and positively associated with XII Standard percentage scores ( $r = 0.124$ ,  $p < 0.05$ ) and XLRI CQPI ( $r = 0.248$ ,  $p < 0.01$ ). Neuroticism was also found to be significantly and positively related to CQPI at XLRI ( $r = 0.164$ ,  $p < 0.01$ ), but not to XII standard scores. No significant correlation was found between the other personality dimensions and measures of academic achievement, thereby indicating that success in academics is not influenced by these. The implications of these results for use by college admission committees are discussed.

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## Introduction

Two traditional indicators define academic performance - grades and highest level of educational attainment. Academic achievement is affected by an interplay of cognitive abilities and personality traits, both of which are involved in the determination of the direction and intensity of intellectual investments. Previous studies undertaken to examine the predictors of academic success have focussed largely on intellectual ability.

Anastasi (1954) noted declining correlations between IQ scores and academic performance with increasing levels of educational attainment. Specifically, the correlations between the two constructs declined from  $r = .70$  in elementary school to  $r = .50$  in secondary school and to  $r = .40$  in college (Chamorro-Premuzic & Furnham, 2005). Within postsecondary education itself, there is a declining correlation between ability tests and other measures of intelligence with increasing years at school. This pattern repeats itself at the post-graduation level - abilities have the highest predictive validity at the commencement of a students' university or postgraduate experience, and then subsequently decline in magnitude (Humphreys, 1968; Humphreys & Taber, 1973).

These results indicate that individual differences in academic performance due to cognitive ability disappear with increasing years of education, even after clearing successive hurdles to admission. Hence, it appears that non-ability factors (i. e., personality, self-efficacy, and motivational variables) become more important in distinguishing between better and worse students when the students are pre-selected by past academic performance or intellectual ability (Chamorro-Premuzic & Furnham, 2006).

Recent studies provide evidence in support of the measures of personality dimensions as possible predictors of academic achievement (e. g., Duckworth & Seligman, 2005). Martin et al. (2006) found that personality characteristics have a major impact on performance at the undergraduate level across all 4 years of coursework. This impact was observed over and above the effects resulting from high school academic performance and intellectual ability (i. e., achievement test scores). Chamorro-Premuzic and Furnham (2003) studied the linkages between personality traits and academic performance using two longitudinal samples of British university students. They found that personality scores measured during the first week of the academic year were significantly related to final exam results and programme work that were assessed three years later. Further, the predictive power of personality traits accounted for another 10-17% variance in academic performance when it was related to both academic behaviours (like attendance and class involvement) and teacher's predictions. In another study, Furnham et al. (2003) found that personality traits accounted for about one-fifth of variance in exam marks and one-third of variance in essay grades over a 2-year period.

McLaughlin, Moutray & Muldoon (2007) examined the impact of personality in predicting academic performance among nursing students. They administered the Eysenck's personality questionnaire (EPQ-R) on 384 nursing students in their first year of study. The results of the EPQ-R were then analysed along with the final marks obtained at the end of the program. They found that students with high scores on psychoticism were more likely to withdraw from the program. Extraversion was also seen to negatively

impact academic performance - those scoring high on extraversion were more likely to achieve lower marks. In another study, Bisping & Patron (2008) also found personality type as a significant determinant in academic success. They used the MBTI to study the impact of personality type in an introductory general business course designed to incorporate knowledge from various business disciplines.

Caspi, Roberts, and Shiner (2005) argued for a causal relationship between personality traits and academic performance. They postulated that personality traits and academic performance might be causally related if achievement criteria and personality dimensions overlap. In other words, the causal relationship will arise when a certain behaviour indexing a certain personality trait is also a part of successful performance. For instance, exerting effort as a behaviour (relevant to conscientiousness) is likely to be important for securing high grades in school (Rothstein, Paunonen, Rush, & King, 1994), thereby indicating the existence of a causal relationship.

Given the wide variety of personality measures available and the subsequent difficulty of making generalisations across studies, there is considerable debate regarding which personality traits are associated with superior academic performance. Nevertheless, the majority of research examining the importance of personality in academic performance has used the Big Five Model of Personality (Costa & McCrae, 1992). For example, Tok and Morali (2009) examined the predictive ability of the Big Five personality factors on academic success for a total of 295 physical education (PE) teacher candidates. They found that academic success as GPA was positively related to Openness to Experience and Conscientiousness and negatively

associated with Neuroticism. In a meta-analysis by O' Connor and Paunonen (2007), conscientiousness ( $r = .24$ ), extraversion ( $r = -.05$ ) and openness ( $r = .06$ ) were identified as the most consistent predictors of academic achievement. In another study, Mervielde (1994) and Mervielde, Buyst, and De Fruyt (1995) examined teacher ratings of different age groups (from 4-12 years). They found that both Openness and Conscientiousness showed significant association with academic performance. Barbaranelli, Caprara, Rabasca, and Pastorelli (2003) also found these two traits as the most important personality correlates of academic success across different informants (self, teacher, and parent).

Each of the five factors - Conscientiousness, Openness to Experience, Agreeableness, Extraversion, and Neuroticism - have been discussed below with regards to their impact on academic performance.

## **Conscientiousness**

Conscientiousness is associated with the will to achieve, self-control, determination, purposefulness, and dependability. Chamorro-Premuzic & Furnham (2004), and Moutafi, Furnham, & Crump (2003) report a negative relationship between IQ and conscientiousness. Nevertheless, it appears that conscientiousness, as a personality construct, most strongly correlates with academic achievement in both undergraduate and graduate settings (Busato, Prins, Elshout, & Hamaker, 2000; Nofle & Robins, 2007).

Nofle and Robins (2007) used multiple personality inventories across four independent samples of more than 10, 000 participants. They found conscientiousness to be the strongest predictor of both high school and

college GPA. Chamorro-Premuzic, Furnham, and Ackerman (2006) found conscientiousness to be a good predictor of academic success ( $r = .19$  to  $.31$ ) on multiple measures including exams, continuous assessment (presentations), and written essays over a three year period. Lievens, Coetsier, De Fruyt and De Maeseneer (2002) found conscientiousness to be a significant predictor of academic performance among medical students in each of their three preclinical years. Further, successful students differed from the unsuccessful ones on the subconstructs of dutifulness, achievement orientation, and self-discipline.

Conscientiousness is associated with sustained efforts and goal setting activities (Barrick, Mount, & Strauss, 1993), both of which are said to contribute to scholastic achievement (Steel, 2007). It is also related to compliance and attention to home assignments (Trautwein, Ludtke, Schnyder, & Niggli, 2006), to time management and to regulation of effort in learning activities (Bidjerano & Dai, 2007). This attests the relationship of conscientiousness to academic performance, class attendance, and final grades (Conard, 2006). MacCann, Duckworth, & Roberts (2009) found that each facet of conscientiousness (e. g., diligence, dependability, self-discipline, prudence, competence, dutifulness, order, and achievement striving) contributed to higher performance in academic settings, attainment of scholastic success, and lower disciplinary infractions. The facets also independently predicted Grade Point Average (Chamorro-Premuzic & Furnham, 2003; Furnham et al., 2003; Martin et al., 2006), motivation (Komarraju & Karau, 2005), effective learning styles (Duff et al., 2004), and academic aspirations (Rottinghaus, Lindley, Green, & Borgen, 2002). Finally,

Chamorro-Premuzic and Furnham (2003, 2006) argue that in competitive settings, conscientiousness may play a compensatory role for lower cognitive ability and consequently promote higher academic achievement.

Thus, the conscientious person who works hard, completes tasks, and strives to succeed is more likely to be motivated to perform well. This would help him in achieving higher academic success (Furnham & Mosen, 2009).

## **Openness to Experience**

Openness to Experience is characterised by receptiveness to new ideas, preference for varied sensations, attentiveness to inner feelings, and intellectual curiosity. Evidence supporting the relationship between Openness to Experience and scholastic success is mixed. Some studies report a positive relationship between Openness and academic performance (e. g., DeFruyt & Mervielde, 1996; Farsides & Woodfield, 2003), effective learning style, and higher academic aspirations (Rottinghaus et al., 2002). However, other studies do not support such a relationship (e. g., Busato et al., 2000; Chamorro-Premuzic & Furnham, 2003).

Openness has been positively related to final school grades and to strategies involving critical thinking (Bidjerano & Dai, 2007; Komarraju & Karau, 2005), and motivation to learn (Tempelaar, Gijsselaers, Schim Van Der Loeff, & Nijhuis, 2007). Chamorro-Premuzic and Furnham (2003) found openness to be positively related to intelligence and intellectual curiosity.

Chamorro-Premuzic and Furnham's (2008) confirm a positive relationship between the openness and academic achievement. They argue that open individuals are more likely to engage in activities that stimulate the



acquisition of knowledge and learning experiences. Caprara et al. (2010) found that openness along with academic self-efficacy contributed to junior high-school grades, after controlling for socio-economic status (SES). Graziano et al. (1997) assessed the Big Five self-reports of 5th to 8th graders. They found Openness positively related with both, self-reports and teacher ratings of academic adjustment. However, O'Connor and Paunonen (2007) reported in a review a very low correlation ( $r = .06$ ) between openness and academic achievement. They rejected the idea of an overall interaction between the two variables.

## **Neuroticism**

Neuroticism is the degree to which a person experiences negative emotions that are associated with irrational beliefs (Ellis, 1994), weak impulse control, and difficulty coping with stress. A number of studies report a negative correlation between neuroticism and academic performance (Chamorro-Premuzic & Furnham, 2003; Ridgell & Lounsbury, 2004), thereby indicating that academic performance tends to be higher in the case of emotionally stable students than neurotic students, who may experience higher levels of anxiety during stressful situations (O'Connor & Paunonen, 2007). However, results of meta-analyses examining the relationship between neuroticism and academic achievement remain inconclusive (O'Connor & Paunonen, 2007; Trapmann et al., 2007). Such studies suggest that neuroticism may not be a strong predictor of individual differences in academic achievement in general.

## **Agreeableness**

Agreeableness may be defined as the disposition of a person toward nurturance, altruism, trust, and a willingness to help others. Studies examining the relationship between agreeableness and academic achievement have produced differing results. Gray and Watson (2002) and Farsides and Woodfield (2003) found agreeableness to be positively associated to GPA ( $r = .15$  and  $r = .14$  respectively). Deary et al. (2003), using the Big Five Inventory found that those who failed to complete the program scored lower on agreeableness. However, in other studies (Conard, 2006; Duff, Boyle, Dunleavy, & Ferguson 2004) researchers failed to find such a significant association between the two variables. Thus, agreeableness may not be that important a determinant of academic performance.

## **Extraversion**

Extraversion is the degree to which individuals are sociable, preferring large groups and gatherings. Extroverts demonstrate a tendency to be cheerful, assertive and active. Although a positive relationship exists between IQ and Extraversion, Extraversion has been found in several studies (Busato, Prins, Elshout, & Hamaker, 2000; Chamorro-Premuzic & Furnham, 2004; Furnham, Chamorro-Premuzic & McDougall, 2003) to be negatively associated with academic success. Early studies, in particular, indicated that introverts performed better than extroverts, suggesting that the former were better at revision and possessed a higher ability to learn (Entwistle & Entwistle, 1970). More recently, Sanchez-Marin et al. (2001) found that extraverts failed their programs more frequently than introverts, again suggesting that this was to

do with their distractibility, sociability, and impulsiveness. However, Furnham et al. (1998) found that extroverts performed significantly better than introverts on a measure of logical reasoning. Chamorro-Premuzic and Furnham (2003) state that it is difficult to find a consistent relationship between intelligence and extraversion.

Overall, extraversion supports academic achievement in some studies and hinders it in others. It must be noted that several variables like age, educational level, gender and assessment method may moderate the relationship between the two variables.

In light of the preceding research, today it is more important than ever to determine the personality factors influencing academic success among college students, given the increasing levels of early withdrawal from college and their declining levels of academic performance (Tok & Morali, 2009). While a considerable amount of research has been undertaken to establish the relationship between personality factors and academic achievement, there is a virtual gap in study in this area in India. Thus, the present study extends the earlier literature on personality-academic achievement relationship by studying the linkage between the two variables among B-school students in India.

## **Hypothesis**

Based on the results of the previous research, I hypothesise that Conscientiousness as a personality variable would have the strongest impact on academic achievement.

## **Method**

### **Participants**

Data was collected from 158 respondents studying in the postgraduate program at XLRI. Convenience sampling technique was used to identify the respondents. The sample size comprised of a mix of participants belonging to the first year and second year HR and Business Management (BM) programs offered by the Institute. Specifically, 81 respondents (51.26%) were studying in the HR program and the remaining 77 participants (48.73%) belonged to the BM batch at XLRI. Out of these, 108 participants (68.35%) were in the second year and the rest 50 (31.64%) were studying in the first year. All the respondents were between the age group of 21-32 years. There were a total of 112 male respondents (70.88%). 46 female respondents (29.11%) comprised the rest of the sample.

### **Measures**

Personality Measure: The Big Five Inventory (BFI) developed by John & Benet-Martinez (1998) was used to measure the five personality dimensions of Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The participants were asked to respond to 44 items on a 5 point Likert Scale with a score of 1 indicating "strongly disagree" and a score of 5 indicating "strongly agree." Out of the 44 statements, eight items each measure Extraversion and Neuroticism; nine items each measure Agreeableness and Conscientiousness and ten items measure Openness to Experience. Sixteen items in all are reverse scored. John & Srivastava (1999) report the reliability coefficient of the BFI to be 0.83. The convergent validity for the instrument ranged from 0.73 to 0.81. Confirmatory factor analysis

yielded a validity coefficient of 0.92 for the instrument. (See appendix: Big Five Questionnaire)

Academic Achievement: The participants Cumulative Quality Points Index (CQPI) at XLRI at the time of the research study was used as a measure of academic achievement. The maximum CQPI that can be obtained by a student is 8.00. The CQPI, as a measure, was coupled with the percentage of marks obtained in the XII standard in school. Information on both these measures was obtained from the participants self-reports.

## **Data Analysis**

Responses obtained from the participants were first recoded to take into account the negatively worded items. Thereafter, the scores on the five dimensions of the BFI were computed for each participant by summing the responses of the assigned items. In order to explore the relationship between personality factors and academic success, the Pearson's Product Moment Correlation Coefficient was calculated between the Big Five Dimensions and the two measures of academic achievement, namely XLRI CQPI and XII standard percentage scored.

## **Results**

The results indicate that Conscientiousness was significantly and positively associated with XII Standard percentage scores ( $r = 0.124$ ,  $p < 0.05$ ) and XLRI CQPI ( $r = 0.248$ ,  $p < 0.01$ ). Neuroticism was also found to be significantly and positively related to CQPI at XLRI ( $r = 0.164$ ,  $p < 0.01$ ), but not to XII standard scores.

No significant correlation was found between other personality factors and the measures of academic achievement.

### **Table I: Correlation Coefficients between the Big Five Dimensions & Measures of Academic Achievement**

Big Five Dimension

XII Percentage

XLRI CQPI

Extraversion

0.095

0.025

Agreeableness

-0.051

-0.047

Conscientiousness

0.124\*

0.248\*\*

Neuroticism

0.077

0.164\*

Openness to Experience

0.012

0.058

where \*\* indicates  $p < 0.01$  and \* indicates  $p < 0.05$

## **Discussion**

The findings of the study revealed that when compared to other personality dimensions, Conscientiousness had the strongest influence on academic success, both at the XII board level and at the post-graduation level. Thus, the hypothesis was accepted. More specifically, conscientiousness was significantly and positively associated with XII Standard percentage scores ( $r = 0.124$ ,  $p < 0.05$ ) and XLRI CQPI ( $r = 0.248$ ,  $p < 0.01$ ). These results are in line with those from the previous studies (Barchard, 2003; Chamorro-Premuzic & Furnham, 2008; Chowdhury & Amin, 2006; Conard, 2006) examining the relationship between personality factors and scholastic achievement. This may be attributed to the fact that students who are organised, attentive, persistent and focused on obtaining superior results perform better in schools (Furnham, Chamorro-Premuzic, and McDougall, 2002). Thus, the results of the present study, along with those of previous studies, lend support to the idea that Conscientiousness is an important predictor of academic achievement.

Neuroticism was also found to be significantly and positively related to CQPI at XLRI ( $r = 0.164$ ,  $p < 0.01$ ), but not to XII standard scores. Earlier studies

have either found a negative relationship between Neuroticism and academic performance (Chamorro-Premuzic & Furnham, 2003; De Fruyt & Mervielde, 1996), or no relationship at all (O'Connor & Paunonen, 2007; Trapmann et al., 2007). It is believed that neuroticism affects a student's ability by directing his/her attention away from studies and on to anxious emotions and self-talk (De Raad & Schouwenburg, 1996). This idea supports the findings that Neuroticism is negatively correlated with academic success, thereby suggesting that students low on neuroticism perform better academically than do highly neurotic students. However, Perkins & Corr (2006) indicated that the association between anxiety and performance lessened in case of more intelligent students. So one would expect brighter students to have fewer neuroticism-associated problems on their studies. Further, to the extent that higher cognitive ability is associated with increasing levels of education (Strenze, 2007), one would expect the relationship between Neuroticism and scholastic performance to be moderated by academic level. Eysenck and Cookson (1969) argued that the educational process prevalent in institutions is such that it would weed out those students whose Neuroticism component acted as a hindrance rather than as a motivating factor for them. So it should be expected that the negative effect of Neuroticism on academic performance (if there is any), will decrease with increased cognitive ability and academic level. The present study was conducted on the students of the postgraduate management program at XLRI. XLRI is one of the most prestigious b-schools in India, which comprises of students selected through rigorous selection procedures involving entrance examinations and interviews. Since the investigated sample has been preselected by ability and intelligence, we would expect



that the negative consequences of neuroticism on performance would be moderated at this level.

Further the high structure academic environment prevalent at XLRI may also facilitate a comparatively better performance for students who are high on neuroticism (as is indicated by positive correlation obtained between the two variables in the present study). It has been argued that neuroticism has a more substantial influence on academic performance under high pressure situations. This may be because the presence of evaluation apprehension may trigger a variety of cognitive and affective reactions among individuals with high levels of anxiety. In fact, under low levels of situational pressure these individuals might experience less anxiety and stress, thereby performing better or at a level similar to individuals with low levels of Neuroticism. The evaluation system at XLRI is such that it emphasizes round the year academic performance rather than evaluation being restricted to a single examination, as is the case with the XII board exams. Further at XLRI, aside from the quizzes and end term examination (which are individual evaluation components), a major focus is on evaluation of group projects and assignments. These further reduce the stress and anxiety levels for students and make the environment a low press situation. This may explain for the significant positive association observed between Neuroticism and academic performance at XLRI.

Finally, no significant correlation was found between the personality factors of Extraversion, Openness to Experience, and Agreeableness with the measures of academic achievement. Research evidence regarding the association of these personality dimensions with academic success is mixed

and there are numerous studies that report no relationship of academic success with Extraversion (e. g., Hair & Hampson, 2006; Furnham, & Chamorro-Premuzic, 2004; Phillips et al., 2003, etc), Openness to Experience (e. g., Busato et al., 2000; Chamorro-Premuzic & Furnham, 2003) and Agreeableness (e. g., Conard, 2006; Duff, Boyle, Dunleavy, & Ferguson, 2004). The results of these studies are in line with the current results.

## **Implications**

Overall, the results of our study, along with those of previous studies, clearly demonstrate the useful nature of Conscientiousness in predicting the academic success among college students. This information may be beneficial to college admissions committees armed with the mission to reduce the increasing levels of early withdrawal from college and academic failure. However, the problem of accurate measurement of the personality constructs leaves the admission committees wide open to the challenges of self-report scales. These self-rating measures may be highly prone to the effects of impression management, given the high stakes nature of admissions to graduate school. One suggestion is to apply other data collection methods that may approximate the personality constructs sought here. For example, Trapmann and colleagues (2007) suggested that structured interviews may be used to assess the personality trait of Conscientiousness and its associated components. Here also concerns regarding impression management remain, despite the fact that interviews form a substantial component of selection process for a majority of graduate schools. Another suggestion is to request ratings about the student from knowledgeable informants that could be used to assess particular personality

traits (Wolfe & Johnson, 1995). However, admissions committees may find locating willing and unbiased informants a huge challenge. Those who provide letters of recommendation could be asked to address particular student characteristics. The idea is to gather as much information as possible about a student's non-ability traits to guide admission related decisions.

## **Limitations & Directions for Future Research**

The first limitation of the present study concerns the investigated sample. The participants were students of the postgraduate management program at XLRI. Since, the participants had already been pre-selected by ability and intelligence; it may have resulted in a narrow distribution of the students characteristics. Future studies can focus on samples from multiple backgrounds with a wider distribution in abilities.

Another limitation of this study is that it focuses exclusively on grades as a measure of academic performance. Grades represent only one measure of performance that people exhibit in the context of education. In the classroom there are several behaviours that may be more highly related to personality, such as the frequency of asking questions or seeking help (Pintrich, Smith, Garcia, & McKeachie, 1993), or even showing up for classes when the attendance is not taken. Investigating the effects of personality on these and other data sources may reveal that personality plays a much larger role in student behaviours, than the sole examination of grades and level of educational attainment would reveal. It is suggested that future research can focus on examining homework and other study-related behaviours discussed above. Because they occur in a relatively unstructured

environment, it appears that they would be more likely to capture the influence of non-ability traits rather than just in-class assignments or grades.