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Predictors of Academic Performance. The Relation between the Big Five Factors and Academic Performance

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Abstract

One of the main ambitions of Psychology practitioners was to identify different predictors for academic performance. In their view, the identification of predictors can have a significant contribution to the diagnosis and intervention procedures in the educational field. The main objective of the present study is the analysis of the relations between personality and academic performances. To be more precise, our goal was to point out the relation between the Big Five personality model and academic performance. The participants were students at the Faculty of Psychology and Educational Sciences, with a Major in Psychology and the assessment methods were Revised NEO Personality Inventory (NEO-PI-R) and Big Five Adjectives on the one hand and, on the other hand, the average of the grades obtained in the Bachelor's degree exams in Psychology and the specialization exam (Clinical Psychology/Psychotherapy, Educational Psychology or Organizational Psychology).

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1. Introduction

The interest given by the scientific community to personality's role and impact on students, varied significantly over the scientific history of Psychology (DeRaad, Schouwenburg, 1996). There are multiple studies reporting positive significant relations between different parts of personality and academic performance, (O'Connor, Paunonen, 2007). Studies have identified three components of the Big Five model as representative for the prediction of academic success. Thus, it is most frequent that Conscientiousness is associated with the prediction of performance, which is explained by behaviors specific to this personality trait, among which self-discipline, persistence, self-organization and achievement orientation (Chamorro-Premuzic, Furnham, 2008).

Another component of the Big Five model which is considered to be representative for academic performance is Openness, especially due to artistic interests, creativity and intellectual curiosity (O'Conor, Paunonen, 2007). Some studies show that Neuroticism is in a negative relation with academic performance. The relation between Conscientiousness and academic performance can be partly explained through the impact of emotional self-

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control and self-discipline on the process of learning, which directly influences the academic acquisitions of students (Kanfer, & Ackerman, 1996).

As for the relation between Neuroticism and academic performance, one can consider that Neuroticism influences the achievement of performance through elements such as test anxiety or shyness. There are studies that have found a positive association between the Openness factor and academic performance, although the results of the studies are contradictory. Thus, the meta-analytical study coordinated by Ackerman and Heggestad (1997) identify a positive relation between Openness and academic performance, although the magnitude of the correlation is average.

The previously described data was replicated in longitudinal research designs, which studied the relations between different personality traits and academic performance, measured by some composite indicators entitled Academic Behavioral Indicators that were obtained through repeated measurement. These measurements were applied on absenteeism, failures, behavior during seminars. The students' academic performance was also measured by the mark obtained in exams during the three years of college (Chamorro-Premuzic, Furnham, 2003). The results of the studies revealed that among all personality traits investigated, only Conscientiousness and Neuroticism show significant associations with the scores in both annual and final examinations.

2. Purpose of study

The present study investigating the relation between the academic performance and personality, implied at first the identification of those components of personality that are relevant for the prediction of academic performance and the identification of the degree to which they can be generalized and their independence of the measurement tool applied. Secondly, the study aimed to investigate the relationship between personality measures and academic performance.

3. Research Methods

3.1. Hypothesis

This study is based on a predictive, non-experimental research design. The variables under investigation were: personality, as independent variable, and academic performance, as dependent variable. Due to the lack of possibility to control or manipulate the independent variable, the conducted research design and statistical analysis were specific to correlation research designs.

The general hypothesis of this research is the following: there is a significant relationship between personality and academic performance.

3.2. Participants

The study was realized in the Faculty of Psychology and Educational Sciences, University of Bucharest, for those with a Major in Psychology. A part of the specific activity of the Laboratory of personality diagnosis, implied that students in the final university year 2009-2010 complete a series of personality questionnaires. This activity was undergone so as to acquaint students with the administration and interpretation of personality questionnaires. Students were included in the research voluntarily.

The method of selecting the participants in the study was opportunity sampling. Due to the high costs for collecting the assessment data for both the criterion variable and the predictor variables, we used small sized samples and avoided random sampling methods. One of the limits of the sample distribution, specific to Psychology faculties, is the low number of male participants. The total number in the first sample was 85 participants, with an average age of 21-30 years, and a 1.87 year deviation. We must mention the fact that in the initial sample there were initially 113 participants. Information on the academic performance could not be obtained for 28 of them, and thus their inclusion in the sample was not necessary. Out of the 85 participants, 69 were female and 17 were male. This distribution is highly uneven, and thus the conclusions of the study apply

more to the female population of students. All participants come from the urban environment, from different geographical areas of Romania. Although the place of origin can act as moderating variable, the size of the sample was too small in order to analyze the influence this variable had in the relation between personality and intelligence.

The total number of participants in the second sample was 31 participants, with an average age of 23,60 years and a deviation of 3.86 years. For 14 participants from the initial sample, which was made up of 45 participants, data on their academic performance could not be gathered, and their inclusion in the sample was not necessary. Out of the 31 participants, 25 were female and 6 were male. This distribution is highly uneven, and the conclusions of the study are relevant for the female population of students. All participants come from the urban environment, from different geographical areas of Romania. Although the place of origin can act as moderating variable, the size of the sample was too small in order to analyze the influence this variable had in the relation between personality and intelligence.

3.3. Instruments used

The personality assessment tool used to measure the five dimensions of the Big Five model in the first lot was NEO-PI-R (Costa, McCrae, 1992). The tool was adapted in order to be used on the Romanian culture. . Revised NEO Personality Inventory (NEO-PI-R) is a tool which assesses the five personality domains, as well as the most important traits or facets that are specific for each domain, thus allowing a comprehensive assessment of adult personality (Costa, McCrae, 1992). Taking into account the specific objectives of this study, the S form of the questionnaire, the one intended for self-evaluation, was applied. The 5 areas of the tool are: - N: Neuroticism; - E: Extraversion; - O: Openness; - A: Agreeableness; - C: Conscientiousness. The test contains 240 items and the duration of the self-administration takes between 30 and 50 de minutes.

The second tool used was the Big Five Adjectives (Caprara, Barbaranelli, Borgogni, 2002). The development of BFA is based on the theory of the psycholinguistic view. 8532 adjectives were selected in a preliminary stage, and after four expert assessors examined this adjective list, they reduced it to 492 adjectives and, at a later stage, this list was used to obtain a set of self-assessments from a sample of adult population. The factorial analysis of self-assessments allowed researchers to identify the five factors, that comprised the 492 adjectives.125 adjectives were selected out of the total of 492, as they presented the highest *loading* for each factor (Caprara, Barbanelli, Steca, 2002).

3.4. Procedure

The personality questionnaires were administered online in the psychological assessment laboratory of the Psychology Department at the University of Bucharest. Before completing the questionnaires, the coordinators of the didactic activity obtained the informed consent of participants, regarding the later use of information, and the identification data was replaced with a code, after the information on the academic performance had been collected.

The data regarding the participants' academic performance was collected at the end of the 2009-2010 university year, consisting of the average obtained in the Bachelor's degree exams in general Psychology and the specialization domains (Clinical Psychology/Psychotherapy, Educational Psychology or Organizational Psychology).

4. Results

As it can be noticed in Table 4.1, the only component of the Big Five model having a significant and positive relation with academic performance is Conscientiousness. This finding is consistent with data obtained in many other studies and researches that we previously mentioned. However, the proportion of academic performance which is explained by Conscientiousness is relatively small, this factor being responsible for only 2% of the academic performance variant. One notices that, within this sample, the relations between the Big Five model

components are stronger than those obtained in the general Romanian normative sample (Iliescu, Nedelcea, Ispas, 2009), where the five main areas are relatively uncorrelated. This is due to the participants' specificities as well as to the reduced variance of the age variable for this sample. As for the facets, none of the 30 dimensions assessed by the NEO-PiR questionnaire manifested significant correlations with academic performance. The correlations with the highest magnitude were recorded for the following facets: Self-discipline (r = .201, p = .06), Anxiety (r = .13, p = .22).

Table 4.1 and table 4.2 present the correlations between the Big Five domains and academic performance.

Table 4.1. Relationship between the Big Five Domains (NEO-PI-R) and Academic performance.

Variable	1	2	3	4	5	6
Neuroticism	-					
Extraversion	-.26*	-				
Openness	.04	.28*	-			
Agreeableness	-.20	.02	-.02	-		
Conscientiousness**	-.45*	.34*	.09	.24*	-	
Academic performance	.12	-.09	-.07	.03	.11*	-

*$p<.01$

Table 4.2. Relation between Big Five Adjectives Domains (BFA) and Academic Performance (Spearman *rho)*

Variable	1	2	3	4	5	6
Neuroticism	-					
Extraversion	.39	-				
Openness	.16	.74*	-			
Agreeableness	.54*	.49*	.37*	-		
*Conscientiousness***	*.58**	*.49**	*.36**	*.50**	-	
Academic performance	.45*	.29	.26	.23	.57*	-

*$p<.00$

As for the analysis presented in Table 4.2, there are two components of the Big Five model, measured with BFA, Conscientiousness and Emotional Stability, which have a positive and significant relation with academic performance. This finding is consistent with data obtained in many studies and researches that were previously presented. Nevertheless, the proportion of the academic performance variant explained by the two dimensions is relatively small. As in the case of NEO-PI-R, we notice that within this sample, the relations between the Big Five model components are stronger than those obtained within the general Romanian normative sample, where the five major domains are relatively uncorrelated. This is primary due to the small size of the sample used.

5. Conclusions

The results of this study are in agreement with most studies on the relation between personality and academic performance. Thus, one can observe that, out of all five major domains, the only predictor that can be generalized and that can be significantly related to academic performance is Conscientiousness. At the level of facets, not one of the dimensions measured by NEO-PI-R is related with academic performance. This can occur due to the low variance of scores within the used sample, in comparison to the variance obtained in the general normative sample (Iliescu, Minulescu, Nedelcea, & Ispas, 2009). Another explanation for the relatively low association between academic performance and personality dimensions lies in how the criterion was collected, as it was an

estimation of academic performance in two written exams, and not an estimation of the academic performance across all years of study. The relations between Self-discipline, Anxiety and academic performance can be explained by the procedure of the exam, which involves learning and reproducing specific information in the field of general Psychology and another field of applied Psychology.

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