The Relationship Between Personality Characteristics And Academic Achievement Of Graduates-to-be In Universities

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Abstract. In order to explore the relationship between the personality characteristics of graduates-to-be and their academic achievement, this paper used the simplified scale of Big Five personality to conduct a random survey on 148 senior students who are about to graduate from a college, and SPSS25.0 was used to conduct data analysis of the survey results.The results showed that there was no significant difference between the five dimensions of personality and academic achievement in gender, and openness had a significant positive correlation with academic achievement and had a positive predictive effect on academic achievement.

Keywords: Graduates-to-be;Personality characteristics;Academic achievement

1. Introduction

Today's world is facing great changes that have not occurred in a hundred years, and China's development is still in and will be in an important period of strategic opportunity for a long time. In this special period, the characteristics and role of human resources as the first resource of social development in the 21st century are more obvious, and talent competition has become the core of comprehensive national power competition.As an essential way to cultivate talents, higher education has been paid close attention to by the state. At present, the population of higher education in China has reached 240 million, and the total number of people studying in China has exceeded 44.3 million.China has built the largest higher education system in the world, and higher education in our country has entered the stage of popularization recognized by the world[1].With the advent of the popularization stage of higher education in our country, higher education will inevitably usher in a new era of high-quality development. High-quality development not only contains the growth of quantity, but also means the improvement of quality. For college students, it is directly reflected in their academic achievements at graduation.Academic achievement is not only the embodiment of high-quality development of higher education, but also the proof of a student's academic success. It is an important indicator for a school to evaluate a student's performance at school.The research shows that main factors affecting students' academic achievement are intellectual factors and non-intellectual factors[2].The intellectual factors are mainly determined by genetic factors, while non-intelligence factors are related to heredity, acquired education, social factors and so on, which together with other factors affect the formation of a person's personality.

Personality, as the most basic psychological factor of an individual, not only affects our cognition and decision-making, but also affects our speech and behavior all the time[3]. Students' learning will get different results from the influence of their behavior, so that different academic achievements will be obtained.Therefore, there is a certain relationship between students' academic achievement and personality characteristics. Yu Xiaobo[4] used 16PF scale to study the relationship between personality characteristics and academic achievement of senior high school students. It was found that there was a significant negative correlation between total academic achievement and excitability F, and a significant positive correlation between total academic achievement and constant G.Wu Deqiong[5] took the medical students in higher vocational education as the research object, and found that their examination scores were positively correlated with the E dimension of personality and negatively correlated with the N dimension.Wang Jiangli et al.[6]found that the three personality traits of independent college students, namely conscientiousness,extraversion and agreeableness,had a significant impacted on academic achievement.PoropatArthurE[7] studied the

personality characteristics and academic achievement of primary, middle school and high school students, and found that academic achievement was significantly correlated with agreeableness, conscientiousness and openness, and the correlation gradually weakened with the growth of students' age.ImaniBehzad et al.[8] took grade 2019 undergraduates as the research object and found a significant positive correlation between tenacity and academic success.ShikhaNagpal[9] through the research on the graduation score of teacher interns, it was found that there was a significant positive correlation between responsibility, extraversion, openness and suitability, and a significant negative correlation between neuroticism and academic achievement.

Personality characteristics refer to a tendency to maintain relatively consistent behavior patterns at different times and in different situations. It refers to the psychological structure that can trigger people's behaviors and actively guide people's behaviors among the factors that constitute personality, and enable individuals to make the same reaction in the face of different kinds of stimuli.It consists of four essential characteristics: uniqueness, stability, integration and functionality[10].At present, the main tools to measure personality are Eysenck Personality scale, Cattell's 16 Personality Factors scale, Big Five Personality scale, etc. Based on the Big Five personality theory[11], this paper will use the relevant scale to study the relationship between personality characteristics and academic achievement of quasi-graduates in universities.

2. Research Object and Methods

2.1 Research Object

Senior students who are about to graduate from a university were selected as the research object, and the smallest sample was the individual student, and the network questionnaire was used to carry on the investigation. A total of 159 questionnaires were sent out, of which 148 were valid samples (72 boys and 76 girls) and 11 were invalid samples, with an effective rate of 93.1%.

2.2 Research Methods

2.2.1 Personality evaluation

The personality characteristics were assessed with NEO-FFI, a modified version of the personality inventory compiled by Costa and Mccrae, and adapted by Emperor Wen of Sui and Dai Xiaoyang et al. The scale is suitable for Chinese college students [12].The Big Five personality scale consists of five subscales, each with 12 items, a total of 60 items, and each item is a declarative sentence describing personality characteristics, they are scored on a Likert 5 scale (that is,1 stands for"very inconsistent" and 5stands for"very consistent").The five dimensions of the Big Five personality are extraversion, conscientiousness, agreeableness, neuroticism and openness[13].Extraversion includes such traits as enthusiasm, sociability and decisiveness.Conscientiousness includes the characteristics of self-discipline, prudence, fairness and dedication to duty.Agreeableness includes trust in others, altruism, empathy and empathy.Neuroticism includes traits such as hostility, depression, impulsion and vulnerability.Openness includes qualities such as creativity, imagination and emotional richness.Cronbach reliability analysis was used to analyze the reliability of the scale,and the result showed that the Cronbach's alpha was 0.889,which indicates that this scale had good reliability.

2.2.2 Assessment of academic achievement

Students' academic achievement was expressed by Grade Point Average (GPA) of all subjects during their college years. It is one of the comprehensive evaluation indicators of students' learning ability and quality, and most universities in China use it to evaluate students' academic performance.

2.3 Statistical Processing

SPSS25.0 was used to analyze the data of students' personality characteristics and academic achievement. The main analysis methods were descriptive statistical analysis, independent sample t-test, correlation analysis and regression analysis.

3. Results and Analysis

3.1 Descriptive Statistical Analysis

A descriptive statistical analysis was carried out on the five dimension score of personality characteristics and the GPA of the senior students in this university. The results are shown in Table 1.The results showed that the mean of each personality dimension of senior students was between 38.43 and 43.22, among which the mean of agreeableness was the lowest and the mean of conscientiousness was the highest. The results of standard deviation showed that the standard deviation of agreeableness was the largest and the standard deviation of conscientiousness was the smallest. According to the statistical results of GPA, the mean score was good, but according to the minimum and maximum score, it can be seen that some students were in the middle and excellent grades, and there were no unqualified and just qualified students.

Table 1. Descriptive statistical results

	N	Min	Max	Mean	SD
Neuroticism score	148	17	56	42.34	7.114
Extraversion score	148	26	59	42.62	6.700
Openness score	148	32	59	42.39	6.093
Agreeableness score	148	22	58	38.43	9.091
Conscientiousness score	148	26	57	43.22	5.992
GPA	148	2.30	4.34	3.3424	.41776

3.2 Differential Analysis of Personality Characteristics and Academic Performance in Gender

In order to accurately select the statistical methods used in the analysis of personality characteristics differences and academic achievement differences in gender, one-time normality test was conducted on these data first, and the resulting normality test table is shown in Table 2. The results showed that the score of neuroticism and conscientiousness of male and female students,the score of extraversion and openness of male students followed the normal distribution (P >0.05),while the score of agreeableness, GPA of male and female students and the score of extraversion and openness of female students did not follow the normal distribution (P <0.05).

Table 2. Normality test table

	Sex	Kolmogorov-Sminova			Shapiro-Wilke		
		Statistic	df	Sig.	Statistic	df	Sig.
Neuroticism score	Male	.100	72	.074	.948	72	.005
	Female	.097	76	.073	.978	76	.196
Extraversion score	Male	.102	72	.060	.979	72	.262
	Female	.105	76	.039	.969	76	.060
Openness score	Male	.103	72	.057	.963	72	.031
	Female	.207	76	.000	.900	76	.000
Agreeableness score	Male	.145	72	.001	.919	72	.000
	Female	.158	76	.000	.891	76	.000
Conscientiousness score	Male	.063	72	.200*	.985	72	.530
	Female	.085	76	.200*	.976	76	.151
GPA	Male	.112	72	.026	.964	72	.036
	Female	.110	76	.025	.961	76	.021

Taking sex as the independent variable, students' neuroticism score and conscientiousness score as the dependent variables, the results of independent sample t-test are shown in Table 3. The results showed that there was no significant difference in the score of neuroticism and conscientiousness between the male and female senior students, but according to the average and standard deviation of the score of male and female students, the score of male students in neuroticism and conscientiousness were slightly higher than that of female students, and the standard deviation was also slightly higher than that of girls.

Table 3. Independent sample t-test results table

	Sex	N	Mean	SD	SEM	t	p
Neuroticism score	Male	72	42.64	7.555	.890	.489	.626
	Female	76	42.07	6.708	.769		
Conscientiousness score	Male	72	44.14	6.520	.768	1.838	.068
	Female	76	42.34	5.341	.613		

The extraversion score, openness score, agreeableness score and GPA of the students were tested by Mann-Whitney U test, and the results are shown in Table 4. The results showed that the extraversion score, openness score, agreeableness score and GPA of the senior students had no significant differences in gender, but based on the ranking and assignment of the original data of the sample, it can be seen that schoolboys scored higher than schoolgirls on extraversion, openness and agreeableness, and schoolgirls scored higher than schoolboys on GPA.

Table 4. Mann-Whitney test results table

	Sex	N	Mean rank	Sum of ranks	Z	p
Extraversion score	Male	72	79.65	5734.50	-1.424	.154
	Female	76	69.63	5291.50		
Openness score	Male	72	78.56	5656.50	-1.125	.261
	Female	76	70.65	5369.50		
Agreeableness score	Male	72	78.66	5663.50	-1.150	.250
	Female	76	70.56	5362.50		
GPA	Male	72	73.20	5270.50	-.359	.719
	Female	76	75.73	5755.50		

3.3 Achievement

In order to study the relationship between personality characteristics and academic achievement of senior students in this university, the correlation analysis between personality characteristics and academic achievement was carried out, and the results are shown in Table 5. The results showed that each dimension of the Big Five personality traits was positively correlated with other dimensions (P <0.001),and the correlation coefficient was between 0.434 and 0.602. And the students' GPA was only positively correlated with the open dimension of personality characteristics (p<0.05,r=0.167), but had no significant correlation with other dimensions (p >0.05).

Table 5. Correlation analysis between personality characteristics and academic achievement

		Neuroticism score	Extraversion score	Openness score	Agreeableness score	Conscientiousness score	GPA
Neuroticism score	r	1.000	.512**	.507**	.434**	.474**	.068
	p	.	.000	.000	.000	.000	.409
Extraversion score	r	.512**	1.000	.531**	.523**	.597**	.035
	p	.000	.	.000	.000	.000	.675
Openness score	r	.507**	.531**	1.000	.602**	.517**	.167*
	p	.000	.000	.	.000	.000	.043
Agreeableness score	r	.434**	.523**	.602**	1.000	.481**	.071
	p	.000	.000	.000	.	.000	.390
Conscientiousness score	r	.474**	.597**	.517**	.481**	1.000	-.031
	p	.000	.000	.000	.000	.	.711
GPA	r	.068	.035	.167*	.071	-.031	1.000
	p	.409	.675	.043	.390	.711	.

In order to further explore the relationship between personality characteristics and academic achievement of senior four students in this university,the multiple regression analysis was carried out with the GPA as the dependent variable and the score of each dimension of the big five personality as the independent variable.The regression equation was established through four steps by using the backward screening strategy to eliminate the variable with the smallest t-test value.The equation variables eliminated in turn were extraversion score, agreeableness score and neuroticism score. Finally, there were two significant variables entering the regression equation, which were openness score and conscientiousness score, which together explained 4.4% of the GPA variation.At this point, the significance test result of the equation is 0.038<0.05, the linear relationship between dependent variables and independent variables is significant, and the established linear model is appropriate. Then the regression coefficient was tested, the results showed that openness had a significant positive predictive effect on GPA (β = 0.017, p < 0.05), while conscientiousness had no significant predictive effect on GPA (β =-0.012, p > 0.05).

Table 6. Regression analysis of personality characteristics on academic achievement

Model	B	SE	Beta	t	Sig.	VIF
(constant)	3.133	.275		11.373	.000	
openness score	.017	.007	.248	2.557	.012	1.427
Conscientiousness score	-.012	.007	-.170	-1.748	.083	1.427

Note：R=0.210，R^2=0.044，F =3.357，P=0.038<0.05

4. Discussion

4.1 The overall characteristics of personality characteristics and academic achievement of graduates-to-be

The study found that the score on the five dimensions of personality characteristics of the university's senior graduates from high to low were: conscientiousness, extraversion, openness, neuroticism and agreeableness.Among them, the score of conscientiousness was the highest and the standard deviation was the lowest.This suggests that there is little difference in the dimension of conscientiousness among the senior students in this school.The students are fair and orderly in doing things, able to control, manage and adjust their impulses well, and are more cautious.The score of agreeableness was the lowest but the standard deviation was the largest.It shows that the senior students of the school are sceptical about others, do not mind conflicts with others, are cautious and alert, and the senior students in this school have great differences in the aspect of agreeableness. Although the mean score was low, there were still students who got a higher score in

this dimension, who are compassionate, close to others, and trust others.The average GPA of the graduates-to-be was 3.3424, and the standard deviation was 0.41776, indicating that most of the graduates-to-be have good academic achievement, but a small number of students have medium or excellent grades.

4.2 The differences of personality characteristics and academic achievement of graduates-to-be in Gender

Based on the statistical analysis of the differences of personality characteristics and academic achievement of senior four prospective graduates in gender, it was found that there was no significant difference in the score of the five dimensions of personality characteristics and the GPA between male and female students,but according to the mean and mean rank data,boys scored higher than girls on all five dimensions of personality traits.It suggests that boys are more creative, more enthusiastic, more active, more forthright, and less able to balance anxiety, more impulsive, more vulnerable. However, the GPA of girl students was higher than that of boy students, which was consistent with the research results of Pan Xiudan et al.[14]. This may be due to the fact that female students are more easy-going and cautious than male students, have self-control ability,and are more attentive and careful in studying.Therefore,universities should pay more attention to the daily performance and academic performance of male college students,and carry out targeted academic guidance according to gender differences, so as to improve the overall academic achievement.

4.3 The relationship between personality characteristics and academic achievement

The study found that there was a very significant positive correlation between each dimension of the five dimensions of personality characteristics and other dimensions, and its correlation coefficient was between 0.434 and 0.602,had a strong correlation.It reflects the comprehensive nature of personality characteristics.Personality characteristics are an organic whole composed of multiple components, with the inherent unity of consistency.For a person with physical and mental health, the five dimensions of personality characteristics are harmonious and unified.Students' academic achievement was only significantly positively correlated with openness score, and the correlation coefficient was 0.167, which was relatively weak,and the other positive and negative correlation coefficients were not significant, that is, the relationship between these dimensions and academic achievement is not clear.

Through the correlation analysis, we can understand the degree of the close relationship between each dimension of personality characteristics and academic achievement, while regression analysis can reflect the degree of the influence of each dimension of personality characteristics on academic achievement. Multiple regression analysis with GPA as dependent variable found that the significant variables entering the regression equation were openness and conscientiousness, but only openness could significantly positively affected the GPA, which had certain predictive value for GPA.This analysis once again verified the influence of the openness dimension of personality characteristics on academic achievement.

In conclusion, there was a significant positive correlation between the openness dimension of personality characteristics and academic achievement of prospective graduates, and openness had a positive predictive effect on academic performance.According to the detailed explanation of openness, people with openness prefer abstract thinking, have wide interests, are easy to perceive their own emotions and inner world, like to try new things, like to challenge authority, convention and traditional ideas, are curious and good at analysis.Therefore, they like to discuss theoretical issues in their studies, dare to question the views they do not agree with, have a strong thirst for knowledge they do not know, and can timely detect their low mood and adjust themselves in daily life, all of which contribute to the improvement of their academic achievement. On the contrary,students with poor grades may feel uncomfortable with unfamiliar things,do not challenge

the existing order and authority, are less aware of their own emotions and inner world, but prefer realistic thinking, are rational and realistic.

5. Conclusion

In this paper, 148 senior students who are about to graduate from a university are given questionnaires, and the data of students' personality characteristics and academic achievements are collected, and the collected data are statistically analyzed, so as to study the relationship between the personality characteristics and academic achievements of graduates-to-be.The results showed that there was no significant difference between the personality characteristics and academic performance of students of different genders;there was a significant positive correlation between students' openness and academic achievement, and openness had a positive predictive effect on academic achievement.In psychology, the formation of personality is affected by many factors, among which school education plays an important role in the formation and development of personality.Therefore, universities can take the personality as an important content to promote students' development and carry out personality training in teaching practice with pertinence, so as to improve students' academic achievement.

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