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## Moderator comparative analysis of the big five personality factors and the big six interests in adolescence

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### Abstract.

The aim of this paper is to present a moderator comparative analysis of the Big five personality factors and the Big six vocational interest domains in adolescence. A total of 208 Bulgarian secondary students (males and females evenly distributed), aged 17-19 years, were included in the study. The Big five questionnaire and the Big six method for career choices were administered, adapted for Bulgarian conditions by S. Karabelyova (Karabelyova, 2015). The results showed that there were significant direct and indirect effects between the Big five facets and the Big six interests. When examining variations in the different types of career choices, the following trends were identified: the most preferred types among adolescents were the artistic, the social and the investigative ones.

**Keywords:** moderator comparative analysis, the big five, the big six, secondary students

### 1. Introduction

At present, in both academia and general public, there is a growing interest in research and determination of career preferences. Psychologists all over the world strive to answer the question how individual differences and personal characteristics contribute to career choices. Vocational interests and personality traits are two main constructs in the models for a career choice. In the present study, we have made an attempt to show the relationship between the model of the Big Five Personality Factors and the model of the Big Six Vocational Interests in adolescence. For the purpose of the study we have applied an innovative method – a moderator analysis. We consider that the study provides valuable findings and they could be used for future research. The dominant theme in the field of vocational psychology is related to career preferences, which are a reflection of personality traits. The basic assumption is that interests are associated with a big number of personal variables. J. Hansen describes the idea of a relationship between personality and career preferences as "one of the most enduring hypotheses in measuring interests" (Hansen, J. C., 1984).

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John Holland is one of the most influential psychologists in vocational psychology of our time. He is famous for his theory of careers, vocational preferences, and a taxonomy of personality types for occupations. The six main vocational interest themes in Holland's model are: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. This concept is also known as "The Big Six". The author provides rational and empirical evidence that personality traits determine the career choice (Holland, J. L., Johnston, J. A., & Asama, N. F., 1994). The scientist claims that: "studies show that people flourish in their work environment when there is a good fit between their personality type and the characteristics of the environment. Lack of congruence between personality and environment leads to dissatisfaction, unstable career paths, and lowered performance" (Holland, J. L., 1996). Scientists agree that personality can be reliably described in five broad dimensions, often called "The Big Five Personality Traits": extraversion, agreeableness, conscientiousness, openness and neuroticism. The big five personality factors represent a detailed hierarchical structure of personality traits describing the individual. The dimensions of the five-factor model also offer a framework for organizing some of the existing studies on the relationship between personality traits and career interests (Costa et al., 1984); (McCrae, R. R., & Costa, P. T., Jr., 1985); (Gottfredson et al., 1993). It is widely accepted that career preferences and personality traits are strongly interlinked. Empirical research on the relationship between these two constructs has been carried for more than half a century. D.Tokar, A. Fischer and L. Subich claim that the most consistent links between interests and personality are the positive associations between openness and investigative and artistic ideas, as well as between extraversion and enterprising and social interests (Tokar et al., 1998). In this sense, regardless of the environment, personality has its own contribution to work results. B. Hecketh argues that the enterprising and the social types in the model of J.Holland are extroverts, who are generally happier than introverts, and are likely to feel more satisfied with their work environment. This may be due to the fact that extroverts are more willing to improve their work so that it better suits them or because they have higher levels of positive feelings (Hecketh, B., 2000). The five-factor model of P.Costa and R. McCrae for personality traits (The Big Five) and the six-factor model of J.Holland (The Big Six) have been compared in different studies (Costa et al., 1984); (De-Fmyt, F., & Mervielde, I. 1997); (Gottfredson et al., 1993); (Holland, J. L., Johnston, J. A., & Asama, N. F., 1994). The results from the studies have been very similar which shows that there is a significant overlap between the two models but in each of them there is a certain variation that cannot be replaced (Roberti et al., 2003). Gasser and colleagues describe three main meta analyses which synthesise the relationship between the personality traits and the career preferences – "The Big Five" and "The Big Six" (Gasser et al., 2004). The results from the analyses prove that there is a significant interrelation between the dimensions in the two models. The conclusion is that there is a strong correlation between these models, which overlap each other, and the moderation analysis used for the purposes of the study, proves this. In the psychological practice the claim that changes in a given criterion variable

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are not limited to the influence of only one independent variable, no matter how strong and direct it may be, has been confirmed with scientific arguments for a long time. There is always a more complex interaction between three or more factors which ultimately determine the nature of the phenomenon. This led to the hypothesis about the existence of a moderator variable, which is not relevant to the change of the criterion variable, but its interference in the relationship between the predictor and the latter one affects the direction or the strength of the relationship. In general, the moderator is understood as the third variable that impacts the relation between the other two variables (Baron, R., & D. Kenny, 1986). It is usually a qualitative variable, such as gender, race, class, or a quantitative variable, such as remuneration, a degree of the support received, and so on. Through a more precise analysis, for example one-way analysis of variance (ANOVA), the main moderator effect can be shown as an interaction between the central independent variable and the factor which creates the specific conditions for its manifestation. The model reveals the existence of three paths of interaction between the variables. A moderator effect is present if the influence, expressed as a path "c", is significant. At the same time, there may be some major effects of both the predictor and the independent variable (paths "a" and "b") on the criterion variable but this is irrelevant to the proof of the moderator effect. It is desirable for the moderator not to significantly correlate with the predictor and the criterion variable. Dispersion analysis is most often used to verify the moderator effect. "The dispersion analysis is applicable when comparing more than two arithmetic mean values, in regression analysis, in seasonal fluctuation analysis, in proving the existence of causal interdependence or parallelism in the course of two or more phenomena and in many other specific studies. The result obtained is an alternative - there is or there is not a significant difference between the observed mean values, whether or not regression is present, whether or not there is seasonality in the course of the observed phenomenon, whether or not parallelism (correlation) is present and so on. Most often, dispersion analysis is used to prove the existence of causal interdependence or parallelism in the course of two or more phenomena" (Sepetliev, D., & Paskalev, D. 1968). The dispersion analysis must prove that there is a different effect of influence of the independent variable on the dependent one as a function of the moderator. The ways of measuring and proving the various effects partly depend on the type of the independent variable and the moderator one which have been measured.

In this regard, R. Baron and D. Kenny considered four cases. In the first case, the independent variable and the moderator are dichotomous variables; in the second case, the moderator is dichotomous and the independent variable is a continuous one; in the third case, the moderator is continuous and the independent variable is a dichotomous one, and in the fourth case, the two variables are continuous. It is easier and at the same time more reliable to check the model in the first case, when both variables are dichotomous (Baron, R., & D. Kenny, 1986). In our case, in the role of predictors, some personality variables have been studied (introversion / extroversion,

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emotional instability / stability, openness, etc.). Gender has been studied in the role of the moderator variable and in the role of the criterion variable is satisfaction with the environment. This paper reports on a psychological study which examines the influence of the moderator variable on the Big Five factors and the Big Six Interests. The objective of the study is to identify to what extent the moderating impact of gender is observed.

## 2. Methods

### 2.1 Procedure

The aims and rationale of the study were explained to the respondents in advance. All adolescents were given the instruction that they participated voluntarily in an anonymous study about their personality traits and career interests. They were informed that their data was only going to be used for scientific purposes. The students were asked to fill out anonymous self-report questionnaires including the research instrument and sociodemographic questions. All the data was then transferred to and analysed via the computer program SPSS-21.

### 2.2 Participants

The sample consisted of 210 adolescents (males and females evenly distributed) from schools in Sofia and Pravets. Students' age ranged from 17 to 19 years. The study was conducted between October and December 2020.

### 2.3 Measures

The results from the current study are shown in the following table. It shows the moderator analysis based on gender which is the moderator variable.

## 3. Moderator analysis and results

*Table 1 The moderating influence of personality on the vocational interests depending on gender*

Personality traits	Emotional intelligence							
	Males				Females			
	R <sup>2</sup>	B	T	p	R <sup>2</sup>	B	T	p
	Realistic type							
Extraversion	0.62	.038	.270	.789	0.32	-.082	-.466	.643
Agreeableness		-.178	-.924	.362		-.152	-.739	.464
Conscientiousness		.699	4.583	.000		.279	1.378	.174

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Neuroticism		.035	.215	.831		.057	.299	.766
Openness		.409	1.503	.141		.446	1.723	.091
	<b>Investigative type</b>							
Extraversion		-.009	-.067	.947		-.234	-1.725	.090
Agreeableness		.220	1.133	.265		.114	.718	.476
Conscientiousness	0.47	.415	2.708	.002	0.46	-.031	-.200	.842
Neuroticism		-.067	-.409	.685		.024	.161	.872
Openness		.187	.683	.499		.638	3.194	.002
	<b>Artistic type</b>							
Extraversion		-.015	-.104	-.104		-.104	.023	.982
Agreeableness		.411	2.122	2.122		2.122	2.854	.006
Conscientiousness	0.66	.471	3.075	3.075	0.62	3.075	-1.426	.160
Neuroticism		.196	1.201	1.201		1.201	-.383	.703
Openness		.600	2.195	2.195		2.195	4.156	.000
	<b>Social type</b>							
Extroversion		.216	1.633	.111		.017	.160	.873
Agreeableness		.284	1.581	.123		.699	5.577	.000
Conscientiousness	0.63	.240	1.689	.100	0.73	.078	.631	.531
Neuroticism		.052	.345	.732		.227	1.940	.058
Openness		.611	2.413	.021		.446	2.831	.005
	<b>Enterprising type</b>							
Extraversion		.761	5.038	.000		.498	3.260	.002
Agreeableness		.114	.554	.583		.028	.154	.878
Conscientiousness	0.68	.365	2.250	.031	0.49	.326	1.851	.070
Neuroticism		.329	1.897	.066		.058	.345	.731
Openness		-.151	-.522	.605		.272	1.207	.233
	<b>Conventional type</b>							
Extraversion		.070	.557	.581		-.293	-2.055	.045
Agreeableness	0.65	.140	.823	.416	0.34	.005	.033	.974



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Conscientiousness		.663	4.925	.000		.181	1.100	.276
Neuroticism		.070	.483	.632		-.042	-.267	.790
Openness		-.144	-.599	.553		.250	1.190	.240

The assumption of moderating effects, caused by gender in the impact of the personality traits on the career choices, has been confirmed. As a whole, compared to women, men show a higher consistency in the experience of career choices, influenced by basic personality formations. This statement has been supported by the higher values of the percentage of variation among men than among women in the regression equations. Obviously, for women, the predominant influences in the career choices are a result of other, non-personal, environmental factors. In terms of certain aspects of the career types, such as: the enterprising and the conventional types, gender does not moderate the manifestations of personality. Both women and men are equally interested in business fields and structured and familiar situations. The aforementioned types are characterized by qualities such as selfconfidence, ambition, as well as organization, responsibility and consistency. However, gender plays a significant role in the choice of the realistic and the investigative types among males and the artistic and the social types among females. The gender-role stereotype of the fair sex to be more oriented towards careers related to the care of others- in the field of education, health and social services- was observed. Similar results were reported by A. Bandura and colleagues (Bandura et al., 2001). These results are logical and have been confirmed in other studies, too (Tsvetkova, P. & Mitevka, M., 2020). On the other hand, the realistic and the investigative types require strength, physical activities, technical and scientific competence, adventurous spirit and pursuit of solving abstract problems which are more common among the representatives of the strong sex. The preferences for the Investigative type reveal the adolescents' need to try new and unknown things which help self-knowledge, awareness of interests, skills and values. The results which were obtained in this research paper are similar to a study of gender-role stereotypes in early adulthood for the Bulgarian sociocultural context. „Men continue to be perceived as ... skillful mathematicians, resilient, ambitious ..., competitive, confident and acting as leaders..“ (Andreeva, L. & Karabeliova, S. 2009).

#### 4. Conclusion

This study has confirmed the moderating function of the third variable only, regarding the theory of the moderator function. It divides the independent variable into subgroups. In our case these are the personality traits which determine the area of maximum efficiency in its relation to the dependent variable. In other words, the manifestations of the regulatory functions of personality are manifested with certain specificity among men and women. Of course, this statement would sound too extreme and naive if it was not supported by further research, but this is beyond the

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objectives of the present paper. The purpose of this article was only to demonstrate the possibilities for analyzing human behavior in terms of career choices, seen through the prism of the moderator analysis.

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