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DIFFERENCES IN PERSONALITY TRAITS OF STUDENTS ATHLETES AND NONATHLETES

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Abstract

The goal of this research was to determine potential differences in personality traits of students athletes in comparison to students nonathletes. Research included around 200 students of Faculty of Education of University "Džemal Bijedić" in Mostar, from which 100 students are professional or recreational athletes and 100 students are nonathletes. Students are equated according to the year of study and average grade during the study. Personality traits were estimated by the "Big five" inventory (BFI) (John, Donahue and Kentle, 1991) and obtained data were presented and discussed from the aspect of dominant theories in the given area. Results of the personality traits research on this appropriate sample show that students athletes do not statistically differentiate in a significant measure from nonathletes in personality traits Extraversion and Accommodation, while in the trait Conscientiousness athletes differentiate significantly from nonathletes, with the level of significance of $p < ,05$. Also, students athletes differentiate significantly from nonathletes in personality trait Neuroticism ($U = 4040,5$; $N = 200$; $p < ,05$), because athletes obtained statistically lower results in the trait Neuroticism than nonathletes in this research. Also, obtained results show that athletes, in this research, do not differentiate statistically from nonathletes in personality trait Openness towards experience.

Key words: **extroversion, accommodation, conscientiousness, neuroticism, openness towards experience, sport**

Introduction

According to the opinion of many experts, personality, complex and unique at every individual, is in the basis of every human behaviour and activity. Many theoreticians and researchers had tried to define personality. Although this task seems easy, it can be noted that it is pretty hard to differentiate between personality traits and some other psychological variables, such as intellectual abilities and emotion expression. Almost all authors which dealt in personality defining, differentiate permanent and relatively stable features from psychological conditions, which are temporary. Some of them claim that specific complexity of personality traits is a cause of behaviour of an individual, while others think that personality is connected to behaviour, e.i. that based on knowing someone's personality its future behaviour can be predicted (Repišti, 2015). Therefore, many authors avoid formal defining of personality. Larsen and Buss (2008) give a definition of personality according to which personality is an assembly of psychological characteristics and mechanisms in an individual which are relatively permanent and organized, and which effect on interaction and adaptation of a person on physical, intra psychological and social surrounding. Personality traits are key concepts in personality psychology and they must be defined as precise as possible.

McCrae and Costa gave a definition of personality traits as its constituents and in their opinion, personality traits are dimensions of individual differences in tendencies of displaying consistent opinion forms, feelings and activities (McCrae and Costa, 1990, according to Larsen and Buss, 2008), and they are stabile during life. This definition doesn't imply strict causality nor manifestation of personality traits as real and sensible entities, which is in accordance with their nature. Personality traits are trying to be defined by lexical, statistical and theoretical approach. After numerous research, an initial consensus concerning basic taxonomy of personality traits was accomplished, and it is "Big five" inventory (Opsenica-Kostić, 2012). "Big five" inventory is a result of "questionnaire tradition" and operationalization structure of personality which includes five wide dimensions of personality and thirty subdimensions (facets). Six facets are adequate to each domain, and basic personality traits which make big five factors are: Extraversion, Accommodation, Conscientiousness, Neuroticism and Openness towards experience. All facets are marked by number and letter sign, e. g. in the case of Neuroticism: anxiety is – N1, angry hostility – N2, vulnerability – N6 etc. (Repišti, 2015). Mentioned model of personality is most used in practise and it has most followers, and was applied in this research. Researches which have dealt with personality traits of athletes and nonathletes especially refer to the importance of dimensions Extraversion and Neuroticism (De Bruijn et al., 2005; Hagberg et al., 1979; Chan et al., 2007; Watson and Pulford, 2004) as well as of dimension Accommodation for practice of sport

(Eagleton et al., 2007; Watson and Pulford, 2004; Chen et al., 2007). Research of Ingledew et al. indicated on the importance of four dimensions of personality from "Big five" inventory for regulation of behaviour during practice, and those are – Neuroticism, Extraversion, Accommodation and Conscientiousness, while for the dimension Openness towards experience results are pretty much contradictory. Observed as a whole, researches of personality traits of athletes from the prism of "Big five" inventory are newly dated and are not so often, which is probably related to the recent acceptance of that model and its predominance over other models of personality. However, such results may indicate on higher importance of specific personality traits in the context of practising sport – whether on recreative or on professional level, and that is the fact which needs to be appreciated and researched in the future. Extraversion, Accommodation and Conscientiousness are desirable features which make a person that owns them favourite in the society. Researches of personality traits on the sample of athletes conducted till now show that these dimensions are significantly more present at athletes compared to nonathletes. For example, researches related to Eysenck's model of personality showed that participants in sport have higher results in dimension of Extraversion compared to nonparticipants in sport (Eagleton et al., 2007), which was confirmed by a research in which "Big five" inventory was used and in which instructors and participant amateurs in extreme sports obtained higher results in dimension Extraversion compared to nonparticipants in such sports (Watson and Pulford, 2004). Also, research of personality traits and attendance of recreation centres (Chan et al., 2007), which used measure of "Big five" inventory, showed that it is more likely that people with high results in dimensions Extraversion, Accommodation and Conscientiousness will attend recreation centres. Therefore, we think that it is justified to assume that in this research level of Extraversion, Accommodation and Conscientiousness will be statistically much higher at athletes as to nonathletes, also. Emotional stability follows business success and satisfaction with that success, while Emotional instability and Neuroticism destroy it, since neurotic people incline towards making obstacles in successful achievement in competitive situations or in situations of achievement measurement. Researches of this personality trait of athletes have shown that dimension of Neuroticism is significantly less present at athletes compared to nonathletes, for example at bicyclists in the US, which gained significantly lower results on the scale of Neuroticism compared to controlled group of students – nonparticipants in sport (Hagberg et al., 1979), and at instructors and amateur participants in extreme sports (Chen et al., 2007), and participants which attended recreation centres (Watson and Pulford, 2004). Therefore, we assume that level of Neuroticism will be statistically much lower at athletes compared to nonathletes. Based on the overview of previous researches which have dealt in analysis of personality traits at athletes and determination of potential differences compared to nonathletes, we can conclude that results are pretty much contradictory

when dimension Openness towards experience comes to focus. And, otherwise, in different cultures and different languages there is an uncertainty in regard to this factor – its content, name and replicability, because some individual differences are more important to one than the other culture, e. g. intellect in one, conventionality in other, openness in third etc. In accordance to that, we can assume there is no statistically relevant difference in the level of Openness towards experience between athletes and nonathletes. The main goal of this research is to examine personality traits of athletes and to determine potential differences compared to parallel sample of nonathletes, and the main goal is to determine is there a statistically significant difference in the structure of personality between athletes and nonathletes.

Methods

Sample of examinees
In this research 200 students of Faculty of Education of University "Džemal Bijedić" in Mostar were included, from which 100 athletes were engaged in sport professionally or recreational for more than one year and 100 were nonathletes. Sample included students of both gender (120 female students and 80 male students) which are equated according to the year of study and average grade during the study.
Average age of the examinees is 23 years and 2 months (M = 23,2; SD = 4,97; N = 200), with a remark that average age of athletes is 22,6 and of nonathletes 23,8. Besides, athletes are practising sport recreationally or professionally between 1 and 20 years, and in average M = 9,1 years (SD = 4,78).
Data were collected during February and March of 2017. by voluntary, anonymous filling of the questionnaire.

Sample of variables
Independent variables in this research are personality traits according to "Big five" inventory, and those are:
- Extraversion: Talkative, assertive, direct, open opposed to Shy, quiet, inhibited.
- Accommodation: Compassionate, kind, warm, full of understanding, sincere opposed to Unkind, rough, cruel, insensitive.
- Conscientiousness: Organised, neat, practical, pedantic opposed to Unorganised, untidy, superficial, impractical.
- Neuroticism: Grumpy, anxious, insecure opposed to Quiet, relaxed, stable, and
- Openness towards experience: Imaginative, independent in assessments, directs attention on oneself's feelings, prefers diversities, intellectually curious opposed to Unimaginative, appreciates obedience and respect of the authority without any objection.

Dependent variable of the research is practicing or nonpractising sport, and based on this, examinees are classified into group of athletes or group of nonathletes.

In the unique group of athletes are classified professional athletes as well as those practicing sport recreatively, because, just the fact that they have the desire, will, need and motivation to practice sport activities contributes to the assumption that structure of their personality could differ from the structure of nonathlete personality (Lorger, 2011).

Measuring instruments

For testing of personality traits "Big five" inventory (BFI) was used in this research (John, Donahue, and Kentle, 1991). Translation and empirical check of BFI, with the permission of authors, was made by Gavrić with co-workers, gaining approval of authors for appliance of questionnaire in research purposes in Bosnia and Herzegovina (according to Vardo and Efendić-Spahić, 2016). "Big five" inventory is an instrument which enables (self)evaluation of five basic personality dimensions: Extraversion (E), Accommodation (A), Neuroticism (N) and Openness (O). It was developed to enable representative display of five big personality traits, integrating results of previous studies on what makes basic dimensions by focusing on the description of traits offered by John (1990). Inventory contains 44 particles gained by factor analyses on a large number of examinees. Particles inside of BFI are conceived as short sentences based on already mentioned – prototype markers of "Big five", which were presented by John in 1990. Evaluation is made on a scale of Likert's type from 1 to 5, expressing a degree of accordance/discordance with the statements "completely incorrect" (1) to "completely correct" (5), in a manner that the examinee writes degree of accordance with certain statement on the predicted place (Vardo and Efendić-Spahić, 2016). Although each of the subscales of the BFI implies eight to ten particles per scale, that didn't affect relatively good psychometric characteristics of this instrument. Namely, on the sample of examinees from USA and Canada, reliability of scales, measured by alpha coefficient, goes from ,75 to ,90 (John, Naumann and Soto, 2008). Additionally, Hampson and Goldberg (2006) have registered reliability (measured by test-retest method) from ,74 on a sample of examinees of middle age, which is considered acceptable reliability (Fajgelj, 2003).

Statistical data analysis

For analysis and data processing obtained in this research program package SPSS for Windows, version 21.0, was used, while during interpretation professional literature was consulted. Average age of the examinees was determined by calculating arithmetic mean and dispersion of results around the average by standard deviation and span of results. Distribution of examinees according to different characteristics was described by frequencies, e. i. by percentage. Along to basic descriptive statistics and usage of t-test for big independent samples, after control of prerequisites for parametric, adequate non-parametric statistical operations were also used, such as Mann-Whitney's U-test for big independent samples. Level of safety was determined on the level of 95%, e. i. with risk of a mistake from 5%, and on the level of 99%, e. i. with risk of a mistake of 1%.

Results

After authentication of reliability of subscales of BFI, it was determined that Cronbach's alpha coefficient in this research for the subscale Neuroticism is ,78; for the subscale Extraversion ,72; for the subscale Openness towards experience ,65. Additionally, Cronbach's alpha coefficient for the subscale Accommodation is ,63 and for the subscale Conscientiousness ,79. Thereafter, reliability of subscales on our sample is somewhat lower compared to the sample of examinees in USA and Canada, but other than on subscales Openness towards experience and Accommodation, it is relatively good, having in mind the fact that the alpha coefficient was calculated on a small number of particles. Additionally, assessment of normality of result distribution is a prerequisite for many statistical tests and before we start testing the hypotheses, in table 1. we will show results of mostly used test of normality – Kolmogorov-Smirnov's test separately for athletes and nonathletes. Normality of distribution was checked for all five personality factors.

Table 1. Results of Kolmogorov-Smirnov's test for student athletes and nonathletes on five personality factors

Personality factors	DO YOU PRACTICE SPORT?	Kolmogorov-Smirnov		
		Statistics	df	p
Neuroticism	YES	,104	100	*,010*
	NO	,083	100	,083
Extraversion	YES	,070	100	,200
	NO	,069	100	,200
Openness towards experience	YES	,090	100	*,046*
	NO	,085	100	,070
Accommodation	YES	,092	100	*,038*
	NO	,127	100	*,000*
Conscientiousness	YES	,077	100	,153
	NO	,071	100	,200

Results achieved on 5 abovementioned scales are distributed normally, except in four cases. Results on scales Neuroticism, Openness towards experience and Accommodation at athletes and on the scale Accommodation at nonathletes statistically deviate in a significant measure from normal distribution. Additionally, after control of distribution of normality of variables – practising/non-practising sport and average degree, it has been noticed that their distributions also are in a significant measure statistically deviant from normal distribution. Therefore, on results which deviate from normal distribution, in further analyses non-parametric tests will be carried out, and on those that don't deviate from normal distribution, parametric tests. In continuation, we have tested difference between average values on the scales of Extraversion and Conscientiousness of athletes and nonathletes by t-test for big independent samples and on the scale Accommodation by Mann-Whitney's U-test. We can see

descriptive data for these two groups for three mentioned traits in table 2. By overview of table 2. we can conclude that athletes and nonathletes do not statistically much differ in results on scale Extraversion (t = 0,461; df = 198; p > 0,05), but they differ in results on scale Conscientiousness, with the level of safety 95% (t = 2,113; df = 198; p < 0,05). Thereafter, athletes gain statistically higher results on the scale Conscientiousness than nonathletes.

Table 2. Comparison of results in three personality traits for students practicing sport and students non-practicing sport

Personality factors	DO YOU PRACTICE SPORT?	N	M	SD	SDE
Extraversion	YES	100	29,36	4,953	0,495
	NO	100	29,03	5,173	0,517
Accommodation	YES	100	34,84	4,572	0,457
	NO	100	35,17	4,463	0,446
Conscientiousness	YES	100	33,83	6,205	0,621
	NO	100	32,14	5,047	0,505

Table 3. Results of testing of statistical significance of difference on personality traits Extraversion and Conscientiousness between athletes and nonathletes by t-test for big independent samples

Personality factors	t	df	p	M_s-M_{ns}	SDE differences
Extraversion	,461	198	,645	,330	,72
Conscientiousness	2,113	198	,036	1,69	,80

If athletes and nonathletes differ on scale Accommodation (table 4), we have tested by Mann-Whitney's U-test. Based on average ranks and sum of ranks achieved by athletes and nonathletes on the scale Accommodation, we have concluded that there is no statistically significant difference (U = 4757; N = 200; p > 0,05).

Table 4. Results of testing of statistical significance of difference on the personality trait Accommodation between athletes and nonathletes by U-test for big independent samples

Factor of personality	DO YOU PARACTICE SPORT?	N	Average rank	Sum of ranks	Mann-Whitney U
Accommodation	YES	100	98,07	9807,00	
	NO	100	102,93	10293,00	4757,00 p = 0,552
	Overall	200			

Therefore, we can say that athletes don't achieve statistically higher results than nonathletes on the scales Extraversion and Accommodation, while on the scale Conscientiousness athletes achieve statistically much higher results than nonathletes. Additionally, we have tested the difference in results on the scale Neuroticism between athletes and nonathletes, and from the table 5. we can read what results in average were achieved by athletes and by non-

athletes, as well as dispersion of results around average and standard error. The difference was tested by Mann-Whitney's U-test for big independent samples.

Table 5. Comparison of group descriptive parameters on Neuroticism for students practising sport and students non-practising sport

Factors of personality	DO YOU PRACTISE SPORT?	N	M	SD	SDE
Neuroticism	YES	100	20,71	5,661	,566
	NO	100	22,51	5,844	,584

As we see in table 6, result of non-parametric U-test for big independent samples showed existence of statistically significant difference between group of athletes and group of nonathletes (U = 4040,5; N = 200; p < 0,05).

Table 6. Results of testing of statistical significance of difference on the trait Neuroticism between athletes and nonathletes by U-test for big independent samples

Factor of personality	DO YOU PRACTISE SPORT?	N	Average rank	Sum of ranks	Mann-Whitney U
Neuroticism	YES	100	90,91	9090,50	
	NO	100	110,10	11009,50	4040,50 P = 0,019
	Overall	200			

Because of that, based on these results, we can conclude that we accept second hypothesis. Athletes, in this research, achieve statistically much lower results on Neuroticism than nonathletes, e. i. athletes are emotionally more stable than nonathletes. Also, by non-parametric test for big independent samples we have checked differences in results of athletes and nonathletes on the personality trait Openness towards experience. Descriptive parameters for these two groups on the scale Openness towards experience are shown in table 7.

Table 7. Comparison of group descriptive parameters on Openness towards experience for students athletes and nonathletes

Factor of personality	DO YOU PRACTISE SPORT?	N	M	SD	SDE
Openness towards experience	YES	100	38,20	4,725	,472
	NO	100	37,68	5,047	,505

In table 8. we can see results from Mann-Whitney's U-test and on the basis of those results we conclude that athletes and nonathletes statistically don't much differ in personality trait Openness towards experience, with the level of security of 95% (U = 4662,5; N = 200; p > 0,05). Based on that, we conclude that between athletes and nonathletes there isn't statistically significant difference in the personality trait Openness towards experience.

Table 8. Results of testing of statistical significance of difference on the personality trait Openness towards experience between athletes and nonathletes by U-test for big independent samples

Factor of personality	DO YOU PRACTISE SPORT?	N	Average rank	Sum of ranks	Mann-Whitney U
Openness towards experience	YES	100	103,88	10387,50	4662,50 P = 0,408
	NO	100	97,13	9712,50	
	Overall	200			

Discussion

Researches conducted with a goal of testing personality traits of athletes and nonathletes indicate existence of statistically significant differences in the structure of personality of athletes and nonathletes, and especially point out the importance of dimensions Extraversion, Neuroticism and Conscientiousness for practising sport (De Bruijn et al., 2005; Hagberg et al., 1979; Chen et al., 2007; Watson and Pulford, 2004; Eagleton et al., 2007). Also, research by Ingledew et al. (2004) indicates the importance of four dimensions of personality for practising sport, e. g. Neuroticism, Extraversion, Accommodation and Conscientiousness, while results for the dimension Openness towards experience are pretty much contradictory.

Therefore, it would be justified to expect that certain differences in the structure of personality can be found at athletes as well at nonathletes. Results of this research in a certain measure confirm that general hypothesis. Namely, results of our research have shown that athletes do not statistically differ in a significant measure from nonathletes in personality traits Extraversion, Accommodation and Openness towards experience, while in personality traits Neuroticism and Conscientiousness athletes statistically differ in a significant measure from nonathletes. It has come to light that lower Neuroticism and higher Conscientiousness are more present at athletes compared to nonathletes, which is in accordance to results of previous researches (Hagberg et al., 1979; Chen et al., 2007; Watson and Pulford, 2004; Judge et al., 2002). Higher results of athletes on scales Extraversion and Accommodation, which we have expected based on description of personality traits as well as on results of previous research (Eagleton et al., 2007; Watson and Pulford, 2004; Chen et al., 2007), in this research are not confirmed. Reason for that can be found in a fact that Extraversion and Accommodation are desirable features which make people owning them favourite and appreciated in society, and that is something to what all human, in all life periods, especially in adolescence and early adult age, aspire more and more. Additionally, it is important to point out that this research has few imperfections, no matter the effort and work included in the research, and one of the main is the fact that we weren't in an ability to find a sample with bigger number of examinees. Namely, although a sample of 200 examinees (100 athletes and 100 nonathletes) can be considered satisfying, we are of opinion that with a larger and better selected sample we would gain data on which we would have bigger possibility to conduct some more precise and complex statistical procedures. Furthermore, it would be desirable to conduct the research on a sample with a larger number of examinees practising sport professionally, because in that way we could gain some more significant and interesting results which would have a larger possibility of practical application. Besides, for further research we can propose implementation of prospective longitudinal studies of researching personality structure of athletes and nonathletes, because, seen as a whole, researches of personality traits of athletes, especially from a prism of "Big five" model, are not so frequent. Therefore, just that fact can imply bigger value of specific personality traits in the context of practising sport, which in the future need to be more acknowledged and looked into. Also, it could be useful to compare structure of personality of professional athletes and recreational athletes in one of the future research of this thematic in order to perceive eventual similarities and differences between mentioned groups and to open the field for new researches and practical implications of the same.

Conclusion

In the research of personality traits on the sample of 200 examinees (100 professional or recreational athletes and 100 nonathletes, of which there were 120 women and 80 men) we came to following conclusions: Athletes do not statistically differ in a significant measure from nonathletes in personality traits Extraversion and Accommodation, while in the trait Conscientiousness athletes differ significantly from nonathletes; Athletes statistically differ in a significant measure from nonathletes in personality trait Neuroticism. Namely, athletes in this research obtain statistically much lower results in Neuroticism than nonathletes, which was expected and athletes in this research do not differ statistically in a big measure from nonathletes in personality trait Openness towards experience. Based on the available literature, we can conclude that in our area this is one of the few researches of athlete and nonathlete personality structure and we hope that with our result we will give a certain contribution to this field of research, open some new research questions and give a stimulus for some new research which will additionally enlighten answer to the question is there a structure of personality which "gives wings", ensures software for a medal and predisposes winners in arena of sport and arena of everyday life.

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