RESEARCHING PERSONALITY CHARACTERISTICS – HOW ESPORTS PLAYERS COMPARE TO ATHLETES [1][2]

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Abstract: The primary aim of the paper is to conduct research on the personality traits in esport players and athletes, in addition to confirming differences in personality between the two examined groups. The research has been conducted on 67 (N=67) examinees, 30 of whom are semi-professional or professional esports players who participate in state-level and regional-level competitions. The remaining 37 examinees are the highest-ranked athletes in Bosnia and Herzegovina. T-test, a type of inferential statistic, has been used to determine statistical differences in disposition between the arithmetic means of the two groups, using the BFI-44 ($\alpha=0.78$) measuring instrument. It has been anticipated that esports players would be ranked lower on Extraversion (E), Agreeableness (A), and Conscientiousness (C), but higher on the Neuroticism (N) and Openness (O) dimensions compared to athletes. The research indicates that four of the five hypotheses have been confirmed – on the scale of Extraversion (E) with significance levels of $p=.000$ ($p<0.0001$); Agreeableness (A) showing $p=.002$ ($p<0.01$); Neuroticism (N) showing $p=.042$ ($p<0.05$); and Conscientiousness (C) showing significance levels of $p=.004$ ($p<0.01$) The fifth hypothesis was not confirmed on this sample. The results gathered on this sample could significantly contribute to understanding the differences between esports players and athletes.

Keywords: *personality psychology, esports, sports, athletes, big five model*

INTRODUCTION

Esports have blossomed into a global phenomenon as a result of the widespread use of the Internet, and technological advancements, specifically computers and computer equipment required to play video games. Investors from all over the world strive to direct a portion of their investments into the ever-increasing trend of playing video games because the esports market is an economically promising market.

Market analysis predicts that this sector will be worth 3.82 billion US dollars by 2027 (MarketWatch, 2023). To put esports' popularity and viewership into perspective, we will only mention that the *League of Legends World Championship 2019* finals attracted more than 100 million viewers, while the *LIII American Super*

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Bowl finals drew 100.7 million viewers (Roundhill Team, 2020). Esports competitions are held at all levels of education in the United States, including elementary, high school, and college.

Esports is mostly played on computers, consoles, or even mobile devices. Players compete against opponents on the other side of the virtual world where everything takes place, either individually or in teams of two to ten people. The computer games generally connected with esports are: *League of Legends, Dota 2, Overwatch, CS:GO, Paladins, Smite, Fortnite, PUBG, Call of Duty* (EsportSource, 2021). For many of the moves in esports video games, which require years of hard training and playing, a set of specific rules and muscle memory are required (Himmelstein et al., 2017). Most people think that physical activity is the biggest difference between esports and regular sports. The esports industry argues, among other things, that if chess and poker can be considered sports, then esports should receive the same status, too (EsportsMention, 2019). Esports players also face a lot of pressure, and are expected to have perfect fine motor skills, emotional stability, a high level of vigilance, and a developed capacity for fast communication and exchange of information (Witkowski, 2012).

There has been a global initiative to grant esport the title of a sport in its traditional sense, and nations like the USA, Finland, Germany, South Korea, China, South Africa, Russia, Iceland, Denmark, and Ukraine have previously acknowledged esport as a sport. The Olympic Committee of Asia has confirmed that esports will also be included in the upcoming Asian Games in 2022, with medals awarded in eight video games. Esports has had a special category in the Asian Olympic Games for a few years (Olympics, 2021). Additionally, the League of Legends World Championship in 2022 set a new gaming record with 5.1 million concurrent viewers at one peak point (Garcia, 2022). All of this demonstrates that the time is right to investigate the distinctions between athletes and esports players, gather as much information as possible, and learn more about the coming, financially robust industry.

Esports and sports

When it comes to connecting psychology to sports and Esports, support and accomplishment in conventional games positively correlate with extraversion. One study demonstrated that only Conscientiousness can be a reliable predictor of traditional sports success (Mirzaei et al., 2013), while two other studies showed that higher levels of Conscientiousness and low levels of Neuroticism act as indicators of sports accomplishment and participation in national or international competitions. The fact that Emotional Stability is generally beneficial and necessary for player performance in sports as well as in non-sporting activities such as poker can be exploited in the context of video games. Video game genres within esports are also competitive, fast-paced, and intense - Emotional stability can therefore be crucial for reaching an optimal level of performance.

A study by Matuszewski et al. (2020) examined the connection between personality traits and esports performance. The focal point of this study is the exceptionally famous esports computer game *League of Legends*. It was observed that there is a connection between personality traits as per the *Big Five model* (in terms of Extraversion, Agreeableness, Openness) and achievement or accomplishment in *League of Legends*. In traditional sports, Extraversion (Eagleton et al., 2007) and Agreeableness (Nia & Besharat, 2010) have a positive correlation with top performance, so it was expected that the same thing would happen in esports. However, this was not the case, highlighting the distinction between esports and conventional sports. To be specific, players who positioned lower showed fundamentally higher levels of Extraversion and Agreeableness, and lower levels of Openness. It's possible that success being measured by individual performance is the cause of the lower levels of Agreeableness and Extraversion that are associated with superior performance. To increase their ranking and skill, high-ranked players must spend more time playing alone.

Openness is also different between highly ranked and unsuccessful players (Matuszewski et al., 2020). The reason could be that with over 140 fictional characters (champions) to choose from, *League of Legends* requires flexibility, training more of those champions, adapting to the opponent, and keeping up with new game trends that change monthly.

No significant difference was found in terms of Neuroticism and Conscientiousness, albeit a massive distinction would presumably have been found there as well if, on one side, the respondents were amateurs, and on the other, expert players (Matuszewski et al., 2020). Although psychology as such is applicable to every individual, we see that some models of ideal personality characteristics differ from traditional sports to esports.

According to the genetic, or tendency inclination hypothesis, individuals who are basically extroverted and emotionally stable are inclined to sporting experiences. Only those who possess the highest level of extro-

version and emotional stability remain at the top level, thus defeating all competition that is not fundamentally extraverted or emotionally stable (Cox, 2005). In comparison, we could say that individuals also have predispositions for esports, i.e. there is a tendency inclination hypothesis toward esports. This hypothesis would differ only in the Extroversion-Introversion dimension. Individuals who are fundamentally more introverted might be inclined towards video games and esports experiences.

Additionally, athletes are generally extroverted, experience less anxiety, and are more social than non-athletes, resulting in a higher level of emotional stability. People with stable, outgoing personalities are more likely to participate in sporting events. According to Cox (2005), the so-called sports Darwinism occurs when, as a competition progresses, all but the most enthusiastic competitors, those with the highest levels of extraversion and stability, withdraw. Based on personality characteristics, we cannot conclude which competitor is more disposed to a specific game, however contrasts in the characters of competitors of various games classifications can be noticed - for instance individual versus group activities.

According to certain findings, athletes who play team sports are more extroverted and experience less anxiety, which may be related to the need and desire to cooperate and be surrounded by people, as well as to the fact that team sports include a diffusion of responsibility (Raharjo et al., 2018).

We should emphasize that some of these factors, primarily physical and tactical preparation, do not play as significant a role in esports as they do in traditional sport, which is significantly more complex than esports. In addition, the amount of time spent playing video games on a computer is crucial in esports, which has a significantly lower success threshold. In s ports, in addition to talent, physical preparation must be present, due to the very nature of the sport, and often this physical preparation is a decisive factor. Any talent and technical/tactical or psychological preparation cannot help if the athlete does not have the predisposition to play sports at a high level.

METHOD

This research is of empirical, quantitative type, and in it, the authors used the method of surveying esports players and athletes who are actively involved in sports, at the highest level in Bosnia and Herzegovina. Basic statistics, the T-test, was used to examine differences in personality, testing statistical significance between two arithmetic means.

Research problems

The research problems can be defined as an examination of the personality characteristics of Esports players and athletes and determining the difference in the dimensions of Extraversion, Neuroticism (N), Agreeableness (A), Conscientiousness (C) and Openness (O).

Research goals

The main goal is to examine the personality characteristics of esports players and traditional athletes, and the specific goals are to determine personality differences in the dimensions of Extraversion (E), Neuroticism (N) and Agreeableness (A), Conscientiousness (C) and Openness (O) between esports players and athletes. The social goal of the research is to contribute to scientific knowledge by studying a topic that is not frequently considered, especially in this region, so that it can initiate other research, from some other psychological aspects of human life.

Sample

The sample of this research is represented by respondents gathered in different ways, through the organization "Tiltproof.gg", the Esports Association of Bosnia and Herzegovina, and through contact with the Futsal Club "Mostar SG Staklorad", HCVogošća, YBC Sloboda and FC Velež. It involved 67 respondents, 30 of which are those categorized as esports players, who compete semi-professionally or professionally at the state or regional level, (N=30), and 37 athletes who play top-level football, basketball and handball in Bosnia and Herzegovina (N=37). The average age of the respondents is 23 years and 4 months, and the age ranges from 17 years to 36 years. When we look at the athletes' age parameters, we can point out M=25.90 (SD=5.32), with the minimum age being 17 and maximum 36. Esports players' age parameters are M=20.53 (SD=3.20), with the minimum age being 17 and maximum 26. The athletes' data was collected in October 2021, during the active season, in between competitive matches (BH Futsal

League – Futsal Club „Mostar SG Staklorad", BH Premier League – HC Vogošća, BH Division I – YBC Sloboda, and BH Premier League – FC Velež). On the other hand, the data for esports players was collected in May 2021, during the A1 Adria League Season 7 (CS:GO and League of Legends) and Esport Adria Championship Season 5 (CS:GO) competitions, randomly in the pool of esports players.

Research hypotheses

H1. Since we assumed the existence of the *tendency inclination hypothesis* towards esports, we assume that there is a statistically significant difference between esports players and athletes in the Extraversion (E) dimension, i.e. that athletes achieve higher results than esports players.

H2. Due to the very nature of computers and the influence of information technologies on mental health and emotional stability, we assume that there is a statistically significant difference between esports players and athletes in the dimension of Neuroticism (N), that is, that athletes achieve lower results than esports players.

H3. Previously mentioned studies by other authors showed a lower than average level of cooperation among esports players/gamers, and therefore we assume that there is a statistically significant difference between esports players and athletes in the dimension of Agreeableness (A), i.e. that athletes achieve higher results than esports players.

H4. The previously mentioned studies examined Conscientiousness (C) among esports players/gamers, so we also assume that there is a statistically significant difference between esports players and athletes in the Conscientiousness (C) dimension.

H5. According to some findings (Matuszewski et al., 2020) and the fact that we have highly ranked esports players in this sample, we assume that there is a statistically significant difference between esports players and athletes in the dimension of Openness (O).

Measuring instruments

The measuring instruments that were used for the purpose of the research, in order to collect the appropriate data for analysis were the following:

1. *The questionnaire for collecting data on sociodemographic characteristics*, which was constructed for the purposes of this research, and which contains questions about characteristics such as gender, age, country of residence, cohabitants, place of residence, number of household members, level of monthly income in the family, per family member, the respondent's level of education as well as the education level of their pcants, whether they are active athletes, which sport, the time they have been actively playing sports, how long they have been competing, whether they have achieved any notable results (entity, national, regional, international), whether they play *League of Legends*, how long they have been playing *League of Legends*, their average ranking in the past year, and how much they have earned from playing.

2. *The Big Five Personality Inventory* - The BFI (the Big Five Inventory) is an instrument that enables the (self) assessment of the big five personality dimensions: Extraversion (E), Agreeableness (A), Conscientiousness (C), Neuroticism (N), and Openness (O). The inventory contains 44 items obtained by factor analysis on a large number of respondents. The particles within the BFI are conceived in the form of short sentences based on the already mentioned, prototypic markers of the Big Five, presented by John (1990). The evaluation is done on a Likert-type scale, i.e. from 1 to 5, and each of the selected values expresses the degree of agreement or disagreement with a certain statement, ranging from "completely disagree" (1) to "completely agree" (5), where respondents give answers that describe personality dimensions such as "I see myself as a person who is talkative" (Extraversion), "I do my work thoroughly" (Conscientiousness), "I see myself as a person who is depressed, sad" (Neuroticism), "I am selfless and ready to help" (Agreeableness) and "I am a curious person and I am interested in many different things" (Openness), in such a way that the respondent writes/circles the degree of agreement with this statement (Larsen & Buss, 2008). The measured reliability was α=0.78.

Research methods

The following methods were used in this research:

1. The statistical method was used to collect, select and determine statistical data, classification, and data processing and analysis with tabular presentation of the same.

2. The method of analysis was used, which represents the process of scientific research and explanation of reality by breaking down complex thought creations (concepts, judgments and conclusions) into their simpler constituent parts and elements, and studying each part (and element) by itself and in relation to other parts, i.e. the whole.
3. The survey research method was also used through the Google Forms online survey platform. It represents an empirical, non-experimental method that is used to examine different forms of thinking and behavior in accordance with research needs (Čolakhodžić, 2021).

RESULTS

The obtained result in analyzing the first hypothesis shows that the difference is statistically significant (t(65)=4.09, p<.0001) and that the first hypothesis is confirmed (Table 1). According to the results, athletes and esports players differ significantly on the dimension of Extraversion (E), which was also confirmed in one research (Behnke et al., 2023). The assumption at the core of this hypothesis was that esports players are more introverted and are inclined towards gaming and esports, i.e. that athletes are on average more extroverted, and that people who are more extroverted are inclined towards certain sports.

After processing the data, it was shown that in the second hypothesis, athletes were on average lower on the Neuroticism scale (N) than esports players, and this difference is also statistically significant (t(65)=-2.07, p<.05) (Table 1). Therefore, the second hypothesis was also confirmed - in this sample, athletes show lower levels of Neuroticism (N) than esports players.

Data analysis revealed that the difference in the third hypothesis is statistically significant (t(65)=3.30, p<.01), which confirms the third hypothesis (Table 1). Athletes score higher on the Agreeableness (A) dimension, which may not mean that esports athletes in this sample had a lower than average level of Agreeableness, but that compared to athletes, their level was significantly lower. Palanichamy et al. (2020) recorded similar results.

The obtained result in analyzing the fourth hypothesis shows that the difference is statistically significant (t(65)=3.025, p<.005) and that the fourth hypothesis is confirmed (Table 1). Once we processed the data regarding the fifth and final hypothesis, we found that it is not confirmed, as the difference between athletes and esports players is not statistically significant (Table 1).

Table 1. *Differences in Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness dimensions between athletes and esports players*

		Grupa	N	M	t	df	p
Extraversion	Equal var. assumed	Athlete	40	28.40	4.091	65	**.000**
	Equal var. not assumed	Esports player	27	23.85	4.033	53.162	**.000**
Agreeableness	Equal var. assumed	Athlete	40	33.40	3.301	65	**.002**
	Equal var. not assumed	Esports player	27	29.59	3.187	49.046	**.002**
Conscientiousness	Equal var. assumed	Athlete	40	34.48	3.025	65	**.004**
	Equal var. not assumed	Esports player	27	30.04	3.271	64.977	**.002**
Neuroticism	Equal var. assumed	Athlete	40	18.75	-2.074	65	**.042**
	Equal var. not assumed	Esports player	27	21.11	-2.118	59.818	**.038**
Openness	Equal var. assumed	Athlete	40	33.92	-1.295	65	.200
	Equal var. not assumed	Esports player	27	35.30	-1.321	59.621	.191

DISCUSSION

The primary objective of the study was to investigate the differences in personality traits between athletes and esports players in order to gain insight into a topic that is rarely studied today and to better understand the population of esports players since athletes have already been the subject of numerous studies.

The results introduced in this examination cannot be upheld by various other studies since the field of research itself has not been sufficiently studied. We are able to state that in this and one other study (Behnke et al., 2023), athletes showed a significantly higher level of Extraversion, which was presupposed considering the way that athletes commonly show higher levels of Extraversion than the average person, and that esports players show higher levels of Introversion than the average person (Cox, 2005; Landers & Lounsbury, 2006; Müller et al., 2014; Beate et al., 2016; Carlisle et al., 2019). According to Amichai-Hamburger et al., higher levels of Neuroticism were linked to internet use that was above average (Amichai-Hamburger et al., 2004; Mehroof & Griffiths, 2010), which was then compared between athletes and esports players in this sample. The athletes in this sample are lower on the scale of Neuroticism, as we can see. Looking at the study of Matuzevsky et al. (2020), esports players exhibit lower levels of Agreeableness, which was also tested in this sample, and athletes demonstrated statistically significant higher levels of Agreeableness, confirming the findings on this particular sample. One of the objectives was to initiate and contribute to scientific knowledge as well as possibly indicate the necessity of researching this trend, particularly in this region, as esports is gradually taking over the market and becoming a global trend.

Behnke et al. (2023) also pointed out that athletes show higher levels of extraversion than esports players do. Just as there is the hypothesis of inclination towards sports, in recent times young people show inclination tendency towards esports, where the main difference is on the Extraversion-Introversion dimension, and research has shown that esports players are indeed more introverted.

According to theoretical findings from a variety of studies in the field of sports psychology (Cox, 2005), athletes typically exhibit lower levels of Neuroticism (N) than the average person, whereas esports players exhibit higher levels of Neuroticism (N) than the general population (Landers & Lounsbury, 2006; Müller et al., 2014; Beate et al., 2016; Carlisle et al., 2019). We confirmed some of the earlier research (Behnke et al., 2023) indicating that esports players had lower levels of conscientiousness than athletes. It could be related to the fact that esports players do not need to adhere to the strict rules that athletes must frequently follow regarding training, diet, and recovery. Athletes need to deal with various elements influencing their performance, on top of the ones that they have in common with esports players, which requires more elevated levels of Conscientiousness and the aspects engaged with it. Additionally, athletes demonstrated average levels of Openness and high levels of Conscientiousness (Piepora, 2021; Mirzaei et al., 2013). As mentioned earlier, athletes generally exhibit average levels of openness, and more successful esports players exhibit higher levels of Openness (Matuszewski et al., 2020).

Taking into account that we had an example of highly ranked esports players, we can say that it is not suprising that we did not find any statistically significant difference between these two groups. However, psychology must follow contemporary trends and study them closely from the psychological aspect, taking into account their sociological aspects, in order to be able to collect information, analyze it and then predict further development, or its psychological consequences. Esports are slowly taking over the market, and seducing children and young people from an early age to engage in esports rather than in sports. That trend will only progress, taking into account the development of the IT industry and the general technologization of all aspects of human life.

CONCLUSIONS

The results obtained on this sample showed us several things. Athletes show higher levels of extraversion, agreeableness and conscientiousness, but lower levels of neuroticism than esports players. No statistically significant differences were found on the dimension of openness. Essentially, extraversion is a key component of any athlete, along with emotional stability. With esports players, these characteristics are not necessary for optimal performance, since they find themselves at the other end of the extraversion-introversion continuum. Neuroticism among Esports players may be related to their excessive use of computers and the Internet, which we know do not really have positive effect on any individual. Agreeableness and Conscientiousness represent the components that an athlete needs to possess, in terms of cooperation, compromise, sacrifice in sports, as well as order and discipline, while these are not key components for an esports player. An esports player can focus only on themselves, rather than build understanding and relationships outside the virtual world, and replace the conscious effort for order and discipline with a somewhat unconscious and compulsive use of the computer. We can say that the profile of esports players is somewhat opposite to the profile of athletes, although further research needs to be done, and an attempt should be made to increase the sample size and include as many top level athletes and esports players as possible.

This study was conducted in the hope that it will boost research of this topic, and that we will get to know more precisely the things that are becoming dominant today, especially among young people, whose devices and technology are slowly taking over most of their free time. One of the shortcomings of this research is the sample size. Although there may not be a large number of elite ssports players in Bosnia and Herzegovina, we could probably find more esports players and athletes of this profile if we merged respondents from a few countries in the region. This would give us a broader picture, a larger sample, and yet we would be able to obtain results with more certainty, taking into account the origin and similarity of the peoples in the region. Also, in case of a larger sample, it would be good to make a comparison between elite esports players and athletes and those who do it at a lower level, or at least not at the level of professionals who make a living from it. On the other hand, observing these results, we could design and implement certain awareness programs, in the context of computer use, and make mostly young esports players aware of the importance of mental health. In that case, we would teach them different techniques and precautions when using computers intensively. True, perhaps it would be best to avoid the intensive use of computers, but our task is not to reeducate people, but to try to facilitate their daily functioning in accordance with the goals and values of esports players. Stimulating and encouraging them to engage in social interactions, strengthening their psychological readiness, which includes resilience and general improvement of mental health, and devising certain mechanisms of sufficient computer use, along with healthier compensatory activities in the real, physical world, is perhaps one of the ways of practical application of these results.

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