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E-sport related intrinsic and extrinsic motivation in practice
Initial psychometric properties of the "E-sport and ME" questionnaire

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Abstract
Background.
Playing video games is a pleasurable activity, and proper motivation (both intrinsic and extrinsic) appears to be essential for the majority of players. It has a significant role in explaining their behaviors, such as participating or quitting actions in esports events or contests or increasing their skills, and their determined attitude toward that discipline.
The aim.
The article presents the properties of "E-Sport and ME" questionnaire and reports preliminary data from the motivation (intrinsic – extrinsic) assessment of video game players and competing in e-tournaments.
The theoretical background was grounded in self-determination theory (SDT).
Material and methods.
The results of 203 men aged 14 to 33 years (M = 20.4; SD = 3.4) were studied. Exploratory and confirmatory factor analyses (EFA and CFA) were conducted.
Results.
Both EFA and CFA indicated two solid factors: extrinsic and intrinsic motivation [Comparative Fit Index = 0.995, Tucker Lewis Index = 0.994, Root Mean Square Error of Approximation = 0.046 (CI 0.00 – 0.08), Standardised Root Mean Square Residual = 0.075 ($\chi^2 = 64.16$, df = 53)]. Both scales had a high level of internal consistency
(> $\alpha = 0.8$). Respondents from professional e-sports clubs have higher extrinsic motivation than amateurs; intrinsic motivation takes place similarly.
Conclusions. The statistical analysis of E-sport and Me revealed a high level of internal consistency as well as the identification of two distinct factors. This could aid coaches and players in outlining the dominant type of

motivation for playing video games. The shown version should be further explored and validated to increase its generalizability.
Keywords: e-sports; motivation; video games; questionnaire design

INTRODUCTION

Video games and e-sports, as general characteristics of the phenomenon

Playing video games is a popular leisure activity and often a great pastime for people of all ages. The competitive struggles of players and teams from professional clubs are watched by crowds of fans on the Internet and in the so-called "real world" [1]. This means that this type of activity is seen in the gaming community as a type of sport, nowadays referred to as "e-sport". E-sport is associated with "gaming," i.e., spending leisure time playing video games and watching other e-gamers play [2]. Professional e-gamers face similar training demands as other athletes [3]. Possessing certain mental qualities (e.g., the ability to cope with stressful situations, the ability to make quick and accurate decisions, perseverance in the pursuit of a goal, conscientiousness) can foster success in e-tournaments. Individual competitors and professional teams join leagues in the e-sports market, and e-sports institutions, similar to traditional sports, operate globally. Some e-sports events, e.g., the World Cyber Games, the Electronic Sports World Cup, or the Cyberathlete Professional League, arouse great interest and are gaining popularity, also in Poland [4]. It should be noted that in one year, the viewership of e-sports leagues is often higher than that of the most popular traditional sports leagues, such as the NBA [5]. The development of the Internet and information technology makes potential investors perceive this market segment as attractive, increasing investments related to the sponsorship of e-sports games or teams [6]. With the growing interest in this issue [1, 3, 7, 8], there is debate at the research level as to whether playing video games can really be compared to playing traditional sports [9-11]?

Video games and e-sports in psychological research

The results of a number of studies on the phenomenon of e-sports and video game playing revolve around the question of whether immersion in the digital gaming world increases the likelihood of participants developing computer and Internet addictions or other negative consequences [1, 7, 12, 13]. Impulsivity, recklessness, attention problems, or aggression are just some of the negative consequences that are seen in users of games filled with brutality [14].

For some balance, it is worth mentioning the results of studies showing the benefits of this activity. These include psychological and social development areas related to satisfying basic human needs [15, 16]. Among these, we can mention: the pro-social benefits that come from playing together with peers or others; the improvement of logical thinking skills; perceptiveness; and speed in terms of information processing [17, 18].

One area of scientific inquiry regarding e-sports includes the issue of motivation, which prompts contestants to undertake this activity. As in traditional sports, participants experience a wide variety of emotions. In most situations, human action is determined by two motives: to succeed or to avoid failure [19]. Deci and Ryan [20], focusing on the search for the sources of human behaviour, also emphasise extrinsic motives. The problem of studying motivation in e-sports is not a completely new phenomenon, but it is undoubtedly an important one. An athlete's motivation is a critical factor in the development of his or her talent and skills, as well as the path to success in sports.

Among the best-known tools used in this area are the Motives for Online Gaming Questionnaire (MOGQ) by Demotrevits et al. [16], the Participation Motivation Scale for E-Sports (PMSES) by Gül et al. [9], and a method constructed by Sun's E-Sports Motivation Scale: League of Legend [6]. The questionnaire by Demotrevits et al. [16] consists of 27 statements (motives), starting with the sentence, "I play online games because..."

The subject's task is to state on a 5-point Likert scale (1 = almost never or never, 2 = sometimes, 3 = half the time, 4 = most of the time, 5 = almost always or always) how often they play online games. The theoretical basis was based, among others, on the theory of D. McClelland, also known as the theory of three needs: power, affiliation, and achievement. According to the authors [16], the motives of players declaring to play video games over the Internet can be reduced to seven factors. The first one is related to the social aspect, in which meeting new people plays an important role; the second one includes claims of escaping from everyday problems; the next one concerns competition with others; the next one includes coping with stress; the fifth one is related to the desire to develop skills; and, finally, the last two include, in turn, the fantasy world, in which the contender appreciates the possibility of being in a virtual world, and recreation, i.e., taking pleasure from the game and treating it as a form of fun. The results of the confirmatory analysis [16] showed a good fit of the model to the data ($\chi^2 = 2263.0$, df = 303, $p < 0.0001$; CFI = 0.93; TLI = 0.91; RMSEA = 0.057; SRMR = 0.05). "Recreation" appeared to be the most determinant motive. According to the developers of the test [16], the factors mentioned

apply to all types of online games. The study was conducted on a large sample of participants (N = 3818), but a certain limitation is the lack of reference to the motivations of respondents participating in offline e-tournaments.

A tool developed by Turkish researchers [9] allows the assessment of the motivation of video game participants to take part in electronic sports. A total of 590 respondents took part in the study. It includes a set of 22 test items. Similarly, in the version of the tool [16], a 5-point Likert scale was used (1 = totally disagree, 2 = disagree, 3 = hard to say, 4 = agree, and 5 = strongly agree). The content items fall under the three factors that emerged from the exploratory analysis: 1 - intrinsic motivation for knowledge and achievement; 2 - external regulation; and 3 - identification. Together, they explain 78.9% of the total variance. Intrinsic motivation includes questions related to the pleasure, excitement, and enjoyment that accompany gaining valuable experience and developing competence in an e-sports career. The second factor revolves around questions about the source of external stimulation, and the third relates to the extent to which the player actually identifies with e-sports and believes that their participation contributes to enhancing their own development. The Cronbach's alpha internal consistency coefficient for the entire 22-item scale was found to be very high at 97. A good fit of the three-factor model to the data was demonstrated: CMIN/SD = 4.124, CFI = 0.96, TLI = 0.95, and RMSEA = 0.07 [9].

A final tool that requires a brief discussion is the scale created by Sun [6]. Participants in the study completed a questionnaire that was shared on various social media platforms. It presented a list of 12 motives; they were asked to state why they play this game. A scale from 1 to 7 was used (1 = completely wrong, 7 = completely right). The results of the factor analysis are based on a sample of 111 people. Three factors emerged: achievement, socialisation, and immersion. The author did not indicate what percentage of the variance was explained by each factor. Loadings values for each subscale (ranging from 0.62 to 0.90) and the Cronbach's alpha internal consistency value (0.70 to 0.88) are presented. The obtained data provide favourable evidence of the tool's reliability.

The questionnaire tools described to measure the level of motivation to play video games are among the few. The method presented by Demotrevits et al. [16] seems most interesting in the context of its application in e-sports. This is supported by the results of analyses based on a large sample of players, which confirmed the satisfactory psychometric properties of the tool and its seven-factor structure. The authors of the study [16] focused on assessing e-gamers' motivation to play online video games. The aspect of playing offline or the participation of e-gamers in prestigious e-sports events supported financially by sponsors was omitted. In our opinion, these may vary between recreational and professional gamers. The PMSES questionnaire [9] is probably the only tool to measure motivation to play video games and actively participate in e-sports.

Sun's method [6] compares least favourably with the aforementioned. Surprisingly, there is no complete psychometric data on, for example, the percentages of explained variance for the individual components. Statistical analyses were conducted on a single sample of gamers (just over 100 people) in terms of motivation to play a specific video game, namely League of Legends. Also, no CFA analysis was performed to confirm the questionnaire structure obtained earlier.

It should be noted that there are not many research tools related to the assessment of e-gamers' motivation to play video games. We have not found reliable methods that show specific motivations to participate in professional e-sports tournaments among professional contestants (belonging to a club) and amateurs. It seems that the questionnaire we developed can fill this gap. We thought it would be interesting to determine what the motivation to play games is for people who actively participate in e-sports tournaments. It seems that learning about the factors explaining their participation in these events may be important in predicting their continued participation in or abandonment of this form of activity. While the traditional exercise of a sport (e.g., football or volleyball) is quite popular among different age groups, only a small percentage of these people have the aptitude and motivation to engage in it professionally.

Intrinsic and extrinsic motivation

In the scientific literature, we can find a number of works devoted to the topic of motivation in sport and the methods used to assess it [21-24]. Regardless of the type of sport practised and its individual or group nature, we can see many motives that unite the community of athletes: the desire to compete, the need for achievement, experiencing positive emotions, fun, or relaxation. In some simplification, we can assume that they include internal factors (e.g., enjoyment of the game, taking pleasure in improving one's skills) and external factors, usually expressed in the form of specific rewards [23].

According to Deci and Ryan's theory [20], the two main components of motivation mentioned above are powerful forces in shaping who we are and how we behave. Extrinsic motivations play an important role when a player's behaviour is a means to a specific end. Entering an e-tournament competition, for example, may be an opportunity to gain approval or recognition in the eyes of colleagues. When playing becomes the dominant goal of the competitor's activity, then it becomes rewarding and motivating in itself. In this case, we are dealing with intrinsic motivation. A contestant's participation in an e-sports tournament can be motivated in different

way, and although the dichotomous nature of this division seems somewhat unoriginal, it is still useful. It should be noted that motivation is a theoretical construct that allows us to identify the factors that favour the initiation and persistence of specific attitudes. In sport, it is arguably one of the most important variables constituting an athlete's strength, which can facilitate positive experiences and sporting success [22, 25, 26].

The creators of the concept of self-determination [20] suggest searching for the sources of human behavioural motivation on a continuum, in which one pole is related to the absence of any incentive to act, i.e., the lack of motivation (amotivation), and the other is an intrinsic motivation factor. In between, the authors [20] distinguish four types of extrinsic motivation: extrinsic regulation, introjection, identification, and integration. The aforementioned types of motivation have for many years been the subject of researchers' explorations in explaining specific actions in sport, education, business, or, more recently, e-sports [6, 21, 22, 24, 26].

To sum up, intrinsic motivation is related to the pleasure associated with engaging in a specific activity, and in the case, we studied, it was linked to the enjoyment of playing games and participating in e-tournaments. Extrinsic motivation refers to performing an activity in order to obtain certain rewards, such as titles, trophies, financial gratification, or even media publicity. Finally, the concept of amotivation encompasses a complete lack of motivation, both intrinsic and extrinsic, which we find difficult to imagine in relation to the respondents we studied.

THE PURPOSE OF THE STUDY

The research presented in this article served to:

- constructing the E-sport and ME, as well as demonstrating the test's basic psychometric properties, such as validity and reliability;
- to demonstrate the differences in individual types of motivation between amateur (recreational) and professional (in e-sports clubs) video game players

Research tools and methods

The research was conducted among players connected to social media related to esports issues. These were people who registered on an online portal for e-gaming. It was planned to conduct two surveys. In the first study, a list of 19 motives for playing video games was compiled using a Google form and made available to gamers as a link. Participation in the study was voluntary. The respondents were asked to state to what extent each motive applied to them. A 5-point Likert scale was used: 1 = completely irrelevant, 2 = rather irrelevant, 3 = partly irrelevant, partly relevant, 4 = rather relevant, and 5 = completely relevant. In the second study, a list of the same 19 motives was presented to a different sample of players. It was originally planned to conduct the study during an offline tournament, but due to the state of the COVID-19 pandemic, this was not possible.

Stages of questionnaire construction

Work on the construction of the E-sport and ME involved the following stages:

1. Formulation of test items

An analysis of the various theoretical approaches to motivation in sport and e-sport and the available questionnaires used to assess athletes' motivation to play a specific sport was conducted [6, 9, 13, 20, 21, 22, 27]. The theoretical underpinning of the tool was the self-determination theory (SDT) of Edward Deci and Richard Ryan [20].

The theory maintains that understanding human motivation requires consideration of innate psychological needs for competence, autonomy, and connection with others. The authors [20] distinguish amotivation and four types of extrinsic motivation: extrinsic regulation, introjected, identification-based and integrated, and intrinsic motivation. Based on data from the scientific literature, a list of 26 motivations for playing video games was prepared. Feedback was sought from two experts (e-sports coaches) working professionally with young people, asking them to indicate whether the pool of statements was relevant to their most commonly observed reasons why e-sports players play video games. After reviewing the experts' comments, the 7th test item that referred to e-gamers' lack of motivation (amotivation) to play video games was dropped. After the removal of these statements, 19 items relating to a simplified "breakdown" of motivation into an intrinsic and an extrinsic component remained on the list [20]. The former comes from the "inside": we can assume that the contestant engages in playing video games for the sake of the activity, even in the absence of external reward. Finding pleasure in improving his or her own skills, experiencing the positive emotions that accompany playing and sporting competition, and feeling the joy of playing come from within. This means that this type of motivation is rooted in a person's inner qualities, e.g., his or her personality traits or interests. Extrinsic motivation comes from the outside and includes reward-oriented and punishment-avoidance behaviours [20]. We can consider it to include attitudes of competitors specifically oriented towards social publicity, financial benefits, rewards, contracts, etc.

2. Test item analysis and Exploratory factor analysis, EFA

In this stage, the discriminative power and internal consistency of the individual claims were calculated, and exploratory factor analysis (EFA) was performed [28, 29].
3. Confirmatory factor analysis, CFA
In the final stage of the tool's development, confirmatory factor analysis (CFA) [30-31] was conducted to confirm the factor structure of the tool.

Characteristics of the surveyed persons

Study one
Gamers participating in e-sports tournaments took part in the study; there were eight women (7.2%) and 103 men (92.8%). Given the very low percentage of women, it was decided to exclude them from further analysis. The male respondents (N = 103) were aged between 14 and 33 years (M = 20.3, SD = 3.6). Amateur video game players (Group 1) accounted for 63.1% of the study sample (n = 65); the remaining 36.9% of respondents (n = 38) declared membership in e-sports clubs (Group 2). In the month prior to the survey, 66.2% of gamers in Group 1 and 92.1% of gamers in Group 2 declared participation in an e-sports tournament ($\chi^2 = 8.787$, df = 1, p = 0.003).

Study two
A total of 104 respondents participating in e-sports tournaments between the ages of 14 and 29 participated in the online survey (M = 20.4, SD = 3.5). Due to the negligible proportion of women (3.8%, n = 4), it was decided to exclude them from further analyses. Amateur video game players (Group 1) accounted for 62.0% of the total sample; the remaining 38.0% of respondents declared membership in e-sports clubs (Group 2). School students accounted for the largest proportion (36.5%), followed by students and employed people (26.9% each in both groups), and finally unemployed people (9.6%).

More than half of gamers said they played FPS (first-person shooter) or TPS (third-person shooter) games; 18.3% said they played MOBA (multiplayer online battle arena) games; 8.7% said they played sports games like FIFA, F1, Rocket League, and others; and 4.8% said they played adventure games. The largest number of gamers (31.1%) admitted that they usually spend around 4 to 5 hours a day playing a video game, and 27.2% spend at least 2 to 3 hours a day doing so. In the surveyed group, there were also people who declared to spend 6 to 7 hours a day on a single game (19.4%) and even some who spent around 8 hours or more (10.7%). Only two people (1.9%) admitted that they spend no more than half an hour a day on it, and 10 people (9.7%) need about one hour.

Statistical analyses
An analysis of basic descriptive statistics was performed along with Shapiro-Wilk normality tests.
A χ^2 test of independence was used to assess the relationship between the two nominal variables. With regard to the test items, the discriminatory power of the test items (the adjusted item-scale correlation coefficient was used for this purpose) and the content of the items were verified. Items with the weakest discriminatory power (below 0.4) were removed.

An exploratory factor analysis of EFA [29] was then conducted, and those items with the highest factor loadings (above 0.5) were selected. The maximum likelihood method was used in combination with Oblimin rotation. The choice of this method was justified by the hypothetical assumption of correlated factors [29].
In selecting the optimal number of factors, scatter plots were compared using paralel analysis and an eigenvalue greater than 1.

A confirmatory factor analysis was conducted to assess the internal validity of the tool structure. Statistical calculations were performed in JASP 0.16.4 software (Intel). The following parameters were used to evaluate the fit of the studied model: RMSEA, SRMR (standardised root mean square residual), NFI (normed fit index), IFI (incremental fit index), TLI (Tucker-Lewis index), and CFI (comparative fit index). It was assumed that a good fit of the model is indicated by the values of the indices: NFI, IFI, TLI and CFI ≥ 0.95, RMSEA ≤ 0.06 and SMRM ≤ 0.08 [32].

Mann-Whitney to assess differences, U tests were used. The level of significance was determined using the traditional threshold of = 0.05. To assess the reliability of the individual scales, Cronbach's alpha and McDonald's omega coefficients (total) were calculated. The second of the internal consistency coefficients was introduced due to the two-dimensionality of the construct proven in EFA and CFA. Acceptable values for both alpha and omega range from 0.70 to 0.95 [33-34].

RESULTS
Study one

Table 1 shows the descriptive statistics for the original version of the questionnaire. On the basis of the discriminant power analysis, it was decided to remove the five test items with the worst parameters, i.e., with a value lower than 0.4 (item numbers: 1, 3, 10, 15, 17).

Table 1. Descriptives for the items of the experimental version of the questionnaire in e-sport (N=103)

Items	Me	M	SD	Sk	K	rtt
1. My colleagues also play	4.00	3.39	1.50	-0.37	-1.30	0.22
2. I will make a lot of money by playing games	2.00	2.21	1.23	0.69	-0.40	0.70
3. Games and computers are my whole world	1.00	1.91	1.25	1.13	-1.08	0.31
4. I have met cool friends through it	3.00	2.89	1.29	0.06	0.09	0.42
5. I am interested in making a lot of money in my life, and I can earn good money from playing games	4.00	3.96	1.19	-1.03	-0.55	0.59
6. I want to get points, diplomas, and medals	2.00	2.33	1.25	0.61	-1.51	0.53
7. I want to win	1.00	1.82	1.16	1.33	2.82	0.63
8. I care about being talked about on TV and the Internet	3.00	3.10	1.56	-0.07	-0.80	0.63
9. I want to sign a professional contract	5.00	4.45	0.83	-1.64	-1.43	0.70
10. It is the joy of playing that counts for me	2.00	2.28	1.35	0.68	2.60	0.14
11. I want to develop my gaming skills	2.00	2.63	1.60	0.39	2.50	0.64
12. I know that I am good enough to become successful sooner or later	2.00	1.95	1.16	1.18	-1.05	0.57
13. I like challenges and competition	5.00	4.24	1.03	-1.65	2.22	0.52
14. It gives me satisfaction	1.00	1.54	1.01	1.96	6.60	0.50
15. It makes me feel better	1.00	1.48	0.92	2.25	-0.11	0.38
16. It is great fun	5.00	4.27	0.94	-1.51	-1.30	0.44
17. I can show others that I am really good	3.00	2.82	1.35	0.17	-0.40	0.39
18. I love the excitement of sports competitions	5.00	4.37	0.93	-1.55	-1.08	0.47
19. I find pleasure in improving my skills	5.00	4.55	0.83	-2.42	-2.42	0.64

Me - Median, M - Mean, SD - Standard Deviation, Sk - Skewness, K – Kurtosis, rtt - item-total correlation

Exploratory factor analysis

The KMO measure (Kaiser-Meyer-Olkin measure of sampling adequacy) was 0.883, and the Bartlett coefficient showed that the correlation matrix was not a unit matrix: χ^2 (91) = 725.75; $p < 0.001$. The EFA yielded two factors: the first explained 26.5% of the variance and the second 23.3%. For the final version of the questionnaire, items loading uniquely on one of the two factors were qualified by eliminating those items that demonstrated a factor loading value lower than 0.50 (in Table 1, these are items 4 and 11). Content analysis of the test items in relation to the factors identified and the items comprising each factor allowed the two factors to be identified.

Table 2 shows the factor loadings for the test items of the final version of the tool.

Table 2. Factor loadings of the final version of the questionnaire to assess motivation to play video games by players participating in e-tournaments (n=103)

	Factor	
Content of the test items in the final version of the test	1	2
9. I want to sign a professional contract	0.83	
8. I care about being talked about on TV and the Internet	0.80	
5. I am interested in making a lot of money in my life, and I can earn good money from playing games	0.80	
2. I will make a lot of money by playing games	0.73	
12. I know that I am good enough to become successful sooner or later	0.70	
6. I want to get points, diplomas, and medals	0.53	
14. It gives me satisfaction		0.76
13. I like challenges and competition		0.75
18. I love the excitement of sports competitions		0.74

Content of the test items in the final version of the test	Factor 1	Factor 2
19. I find pleasure in improving my skills		0.65
7. I want to win		0.57
16. It is great fun		0.55

Note. *Charges with a value higher than 0.40 are shown in the table. Rotated factor charges (rotation: Oblimin) are presented.*

A solution was obtained consisting of 12 test items grouped into two factors, which were named extrinsic motivation (6 items) and intrinsic motivation (6 items).

Study two

Confirmatory factor analysis was performed using robust unweighted least squares (RULS), which is based on a polychoric correlation matrix and is recommended for the analysis of ordinal variables [35]. Researchers do not completely agree on the criteria for assessing good for model fit. Acceptable or reasonable fit values can be considered: NFI, IFI, TLI and CFI ≥0.90, RMSEA ≤0.08 and SRMR ≤0.10 [32].

Table 3 shows the results obtained. Despite the restrictive assumptions of confirmatory factor analysis, the model should be assessed as a very good fit to the data: the χ^2 statistic was found to be non-significant ($p > 0.05$), the χ^2/df measure was <2, the upper confidence interval of the RMSEA was 0.082, and the NFI, IFI, TLI and CFI measures reached values >0.95.

Table 3. Goodness-of-fit indexes of the model

	χ^2	df	p	χ^2/df	RMSEA (90% CI)	SRMR	NFI	IFI	TLI	CFI
Two-factor model	64.16	53	0.538	1.21	0.046 (0.00-0.08)	0.075	0.972	0.995	0.994	0.995

CFI – comparative fit index, IFI –incremental fit index, NFI –normed fit index, RMSEA – root mean square error of approximation, SRMR –standardised root mean square residual, TLI – Tucker Lewis index.

Table 4 shows the values of the factor loadings obtained for each questionnaire item. The values of all correlation coefficients were higher than 0.30 (0.45-0.87). A positive correlation was obtained between the factors analysed ($r = 0.55$, $p < 0.001$).

Table 4. Values of factor loadings obtained for individual questionnaire items (N=100)

Factor	Indicator	Estimate	SE	z	p	95% Confidence Interval Lower	Upper	Std. Est. (all)
Factor 1 (External motivation)	9. I want to sign a professional contract	1.04	0.04	24.34	< .001	0.96	1.13	0.88
	8. I care about being talked about on TV and the Internet	1.39	0.05	28.77	< .001	1.30	1.49	0.78
	5. I am interested in making a lot of money in my life, and I can earn good money from playing games	0.88	0.04	21.55	< .001	0.81	0.97	0.73
	2. I will make a lot of money by playing games	0.94	0.04	22.60	< .001	0.86	1.03	0.76
	12. I know that I am good enough to become successful sooner or later	0.90	0.04	21.82	< .001	0.82	0.98	0.66
	6. I want to get points, diplomas, and medals	1.01	0.04	23.77	< .001	0.93	1.09	0.62
Factor 2 (Internal motivation)	14. It gives me satisfaction	0.50	0.05	9.55	< .001	0.40	0.60	0.63
	13. I like challenges and competition	0.70	0.06	12.40	< .001	0.59	0.80	0.73
	18. I love the excitement of sports competitions	0.55	0.05	10.40	< .001	0.45	0.66	0.58
	19. I find pleasure in improving my skills	0.65	0.06	11.78	< .001	0.54	0.76	0.82
	7. I want to win	0.71	0.06	12.64	< .001	0.60	0.83	0.87
	16. It is great fun	0.37	0.05	7.33	< .001	0.27	0.47	0.45

Estimate – unstandardised factor loading/regression coefficient; SE – standard error of factor loading; Standardised estimate – standardised factor loading/regression coefficient.

Reliability

The reliability of the validated tool was calculated using an internal consistency analysis (sample measure 2.) The measures of internal consistency were McDonald's ω, Cronbach's α, Guttman's λ2. Table 5 shows the reliability coefficient values for both subscales.

According to Nunnally [36], an internal consistency coefficient value of >0.70 is considered acceptable, ≥0.80 is considered good, and ≥0.90 is considered very good. Internal consistency coefficient values (≥0.80) suggest good reliability of the E-sport and ME.

Table 5. Values of reliability coefficients of subscales (N=100)

	Estimate	**McDonald's ω**	**Cronbach's α**	**Guttman's λ2**	**Mean**	**SD**
Factor 1 (Extrinsic motivation)	Point estimate	0.88	0.88	0.88	15.60	6.54
	95% CI lower bound	0.84	0.83	0.84	14.32	5.75
	95% CI upper bound	0.92	0.91	0.91	16.88	7.60
Factor 2 (Intrinsic motivation)	Point estimate	0.84	0.84	0.84	26.80	3.80
	95% CI lower bound	0.79	0.78	0.74	26.06	3.34
	95% CI upper bound	0.89	0.88	0.90	27.55	4.42

Differences in motivation to play video games between amateur and professional gamers

Non-parametric Mann Whitney U tests were used to assess the differences. As shown in Table 6, those playing professionally had higher scores on extrinsic motivation. The strength of the effect was large.

Table 6. Analysis of differences in motives and motivations for playing video games in amateur and professional gamers (N=100)

	Group 1 Amateurs (n=62)		Group 2 Professionals (n=38)				
	M	*SD*	*M*	*SD*	*U*	*p*	*r*
Factor 1 Extrinsic motivation	13.10	5.40	19.60	6.30	527.5	<.001	0.55
Factor 2 Instrinsic motivation	26.60	3.57	27.10	4.18	986.0	0.167	0.16

M - mean; SD - standard deviation; U - Mann-Whitney U test result; p - statistical significance;

r – effect size is given by the rank biserial correlation

DISCUSSION

The purpose of this study was to validate and evaluate the psychometric properties of the E-sport and ME, as well as to look into differences in video game motivation between amateur (recreational) and professional (e-sports club) contestants.

A 2-factor scale structure was obtained. The extracted factors were discovered to have a moderately strong correlation. The former comprised content items relating to extrinsic motivation and the latter to intrinsic motivation. The former includes behaviour based on extrinsic benefits (rewards). The latter is related to the enjoyment of playing video games for the sake of playing them, and therefore occurs in the absence of external considerations. It was possible to construct a short, consistent tool covering the two main dimensions of motivation. Satisfactory reliability was demonstrated for both subscales and the full scale. The presented self-administered tool is characterised by satisfactory internal structure, validity, and reliability. The results obtained allow the use of this questionnaire in research, in the assessment of gamers' motivation to play video games and

participate in e-sports tournaments, as well as in individual work with contenders in clubs. Knowing the factors that motivate them to engage in e-sports is important in shaping and developing sporting career.

We conducted two studies with a similar sample of individuals. Women made up a small proportion of participants in this type of event, which is consistent with the observations of many other researchers [6,7,9,11]. Due to their negligible percentage in the sample of players, it was decided to exclude them from further analyses.

Contestants from professional e-sports clubs had significantly higher extrinsic motivation than e-gamers from the "amateur" group. The results of the study are consistent with the observations of Kim, Thomas [37] and Brock [38], who emphasise the role of extrinsic values in triggering players' motivation to overcome their own shortcomings and develop their skills at a higher level of e-sports competition.

It is important to note that there is still little research outlining players' motivations for engaging in e-sports professionally. According to Seo [39], Kim and Thomas [37], and Giakoni-Ramirez et al. [40], intrinsic motivations and the development of an e-player's identity can be critical in the process of becoming a professional. Some studies suggest that e-gamers have similar motivational patterns (e.g., high intrinsic motivation) to professional athletes in traditional sports [22,41]. Rottensteiner et al. [41] showed how goal orientation and perceived competence by young athletes predict varying degrees of motivation and persistence in team youth sports (football, ice hockey, and basketball). The researchers emphasise that performance goals are a necessary condition for the development of a young athlete. The results of their analysis were based on a sample of approximately 2,000 adolescents. The results suggest that persevering athletes place greater emphasis on their own success criteria, find their skill level satisfactory, and show greater autonomous motivation to participate in sport.

The type of motivation in conventional sport takes into account, as in e-sport, intrinsic and extrinsic aspects: the enjoyment of the competition itself, the constant pursuit of self-improvement, the integration of attitudes, values, and standards found in professional sport, or extrinsic considerations: prizes, money, media publicity, or fame [41-43]. Having high intrinsic motivation is conducive to achieving the greatest sporting achievements. It provides satisfaction and joy to the athlete who willingly performs what is required in the sport [44].

Limitations and future research directions

Due to the small sample of respondents, it is reasonable to be cautious in generalising the results to the entire population of players. Due to the online survey nature of the research, we relied only on the declarations of e-tournament participants. We had no way of verifying whether, for example, someone actually belonged to an e-sports club.

During the period of our research, due to the epidemic situation in the country (COVID-19), no tournaments were organised in LAN (local area network) form. We did not use other measurement tools to assess the motivation to play video games, which could provide relevant comparative material, especially in assessing the external validity of our questionnaire. An analysis of theoretical relevance using research tools measuring similar constructs is necessary. At the same time, it seems like a good idea to measure motivation among contenders participating in organised indoor (land-based) e-tournaments. It would also be interesting to carry out a longitudinal study in contestants belonging to e-sports clubs, e.g., after 5 or 10 years, in order to see to what extent, the previously expressed motivations have changed, and/or to what extent they are still sustainable in the context of the player's planned development and career path.

CONCLUSIONS

The statistical analysis of e-sport and myself revealed a high level of internal consistency as well as the identification of two distinct factors. This could aid coaches and players in outlining the dominant type of motivation for playing video games. The shown version should be further explored and validated to increase its generalizability.

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APPENDIX

E-SPORT AND ME

The following statements relate to the different motivations of video game players. Please read each of the statements below carefully and decide to what extent they apply to you. Choose one answer that best describes your motivation.
Evaluate using a 5-point scale:

1 = completely irrelevant; 2 = rather irrelevant; 3 = partly relevant and partly irrelevant;
4 = mostly accurate; 5 = completely accurate

I play video games because:	completely irrelevant	rather irrelevant	partly relevant and partly irrelevant	mostly accurate	completely accurate
1. I want to sign a professional contract	1	2	3	4	5
2. It gives me satisfaction	1	2	3	4	5
3. I care about being talked about on TV and the Internet	1	2	3	4	5
4. I like challenges and competition	1	2	3	4	5
5. I am interested in making a lot of money in my life, and I can earn good money from playing games	1	2	3	4	5
6. I love the excitement of sports competitions	1	2	3	4	5
7. I will make a lot of money by playing games	1	2	3	4	5
8. I find pleasure in improving my skills	1	2	3	4	5
9. I know that I am good enough to become successful sooner or later	1	2	3	4	5
10. I want to win	1	2	3	4	5
11. I want to get points, diplomas, and medals	1	2	3	4	5
12. It is great fun	1	2	3	4	5

Extrinsic motivation – 1, 3, 5, 7, 9, 11
Intrinsic motivation – 2, 4, 6, 8, 10, 12