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# THE PSYCHOLOGICAL BACKGROUND OF PROFESSIONAL (ESPORTS) AND RECREATIONAL VIDEO GAME USE

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## INTRODUCTION

The activity of playing video games cannot be just labeled as a recreational pursuit anymore. A small proportion of gamers now play professionally and spend hours every day mastering their skills, and is now generally referred to as esport (electronic sport). Esports as professional (competitive) gaming started to gain prominence in the early 2000s (Bányai, Griffiths, Király, & Demetrovics, 2018).

Esport has been defined as a type of sporting activity in which gamers develop and train their mental skills and hand-eye co-ordination skills while using game-based information-communication technology (Wagner, 2006), and where gamers are virtually represented in a digital "sporting world" (Hemphill, 2005). At present, esport is most popular among adolescents and young adults (below 24 years) as a career option, and competitors of the esports scene are mostly males (92% of esport players) according to a recent online survey conducted on a convenience sample of 1814 esport gamers in Hungary (eNet, 2017; Newzoo, 2017).

Examining the differences between recreational game use and esports in general and in relation to gaming disorder is much needed. Currently, two similar conceptualizations of gaming disorder exist in the psychiatric literature: 'Internet Gaming Disorder' (IGD) in the latest (fifth) edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; (American Psychiatric Association, 2013), and 'Gaming Disorder' (GD) in the latest (eleventh) edition of the International Classification of Diseases (ICD-11) by the World Health Organization (WHO) (2018).

Many of the GD criteria (e.g., preoccupation, withdrawal, tolerance in IGD term) have undergone much scholarly debate, and one of the most important criticisms is the argument that these criteria are not appropriate in distinguishing highly engaged gamers and truly problematic cases because they can often be endorsed by highly engaged or esports gamers without leading to clinical impairment (Aarseth et al., 2017; Griffiths, Kuss, Lopez-Fernandez, & Pontes, 2017; King & Delfabbro, 2013; Király et al., 2014; Kuss, Griffiths, & Pontes, 2017). Furthermore, an increasing number of studies have highlighted differences between esport gamers and recreational gamers not only in gaming motivations and the intensity of playing, but also in terms of the IGD criteria (Ma, Wu, & Wu, 2013; Nielsen & Karhulahti, 2017). Such a distinction and research between types of video game usage and may be important as one of the most important criticisms

of IGD that the present criteria and definitions are not appropriate to distinguish the highly engaged gamers from the truly problematic cases.

## STUDY 1 - THE PSYCHOLOGY OF ESPORTS: A SYSTEMATIC LITERATURE REVIEW

### Aims

My dissertation aims to bring new aspects in the gaming disorder's research from psychological aspect. My thesis would highlight that intense video game usage not necessarily leads to problematic gaming and gaming disorder. For deeper understatement of the phenomenon, I would like to draw attention to the different types of video game use. The first study of my dissertation aims to summarize the current knowledge of esport (i.e., professional competitive gaming) to lay the foundation for future, esport and psychology related studies. The aim of the study:

1. To review recent empirical research that has focused specifically on esport (i.e., professional gaming) from a psychological perspective.

### Methods

The present study aimed to collate and review all the empirical studies concerning esport from a psychological perspective published between 2000 and 2017. The data collection included all studies published between January 2000 to July 2017. The literature search comprised the following databases: Google Scholar, Science Direct, PubMed, and Web of Knowledge. The following keywords were used in the respective search engines: 'esport video gam*'; 'professional gam*'; 'pro gam*'; 'competitive video gam*'; 'esport competitive video gam*'; 'sport video gam*' and 'professional video gam*'.

## Results

The total of eight empirical studies have been found that met the inclusion requirements (see Table 1). The eight studies comprised three main topics:

1. Becoming an esport player: transformation of the identity, motivational and learning style of esport players (Kim & Thomas, 2015; Seo, 2016).
2. The characteristics of esport players: mental skills, motivational patterns, the differences between esport players and recreational gamers (Himmelstein, Liu, & Shapiro, 2017; D. Lee & Schoenstedt, 2011; Martončik, 2015; Weiss, 2011).
3. The characteristics of e-sport viewers: the attractivity of e-sport tournaments, the motivations of esport spectators (Hamari & Sjöblom, 2017; J. Y. Lee, An, & Lee, 2014).

**Table 1. Summary table of esport focused psychological studies**

| | *Study* | *Country* | *Sample* | *Method and procedure* | *Statistical analysis* | *Main goals of study* |
|---|---|---|---|---|---|---|
| *1* | Lee and Schoenstedt (2011) | USA | 515 college students and athletic event attendees | Convenience sampling method. Data were collected in sport management related courses, and at athletic events on campuses | Multiple regression analysis | To compare esport game patterns with traditional sport involvements and to examine how the related motivations affect the time spent on esport gaming. |
| *2* | Weiss and Schiele (2013) | Germany | 360 esport players | Self-report questionnaire. Completed at *World Cyber Games* (WCG) in Cologne in November 2008 | Multiple regression analysis, group comparison (t- and F-test), and Variance Extracted (AVE) | To investigate which competitive and hedonic needs have influence on continuous use of esports according to uses and gratifications theory. |
| *3* | Lee, An, and Lee (2014) | South Korea | 103 esport spectators | Self-report questionnaire. Completed at the 2013 *League of Legends* World Championship Finals at the Yongsan e-Sports Stadium on October 5, 2103. | Bivariate correlations, multiple regression analysis | To explore the motivational pattern for watching esport (more specifically, *League of Legends*) broadcasts, and how these motives effect the satisfaction of viewers. |
| *4* | Martončik (2015) | Slovakia, Czech Republic | 108 esport players, 54 casual players | Self-report questionnaire. Sent via e-mail or directly to in-game message systems | Group comparison (ANOVA, independent-samples t-test) | To investigate the difference between esport players (more specifically, solo vs. team players, team leaders vs. non-leaders) and casual players in gaming motivations, and how gaming satisfies their life goals. |
| *5* | Kim and Thomas (2015) | South Korea | Nine esport players, two team coaches, two team directors and one psychological counselor | Interviews with the participants (*StarCraft* players, coaches and psychological counselor) | Interview analysis based on grounded theory methodology (Glaser and Strauss 1967) | To develop the stage theory model of professional esport players, where the motivations (extrinsic and intrinsic), goals and learning style change during the process to become an esport player. |

| | | | | | | |
|---|---|---|---|---|---|---|
| *6* | Seo (2016) | South Korea, USA, Australia, New Zealand | 10 esport players | (i) Field observations at real-world eSports tournaments (South Korea, USA, Australia, New Zealand)<br>(ii) 10 semi-structured phenomenological interviews with esport players | Subsequent thematic analysis based on a hermeneutic interpretive framework (Thompson 1997) | To explore the elements of esport consumption which make attractive the professionalized esport career for players, to investigate the reasons why players pursue this career, and to follow the players' identity transformation into professionalized gamer identity. |
| *7* | Hamari and Sjöblom (2017) | Not specified | 888 esport viewers | Self-reporting questionnaire, data was collected online on eSports related sub-*Reddits*, *Twitter*, *Facebook*, similar pages | Component-based PLS-SEM (Partial Least Squares Structural Equation Modeling) | To investigate the motivational background, why people watch esport on the internet. |
| *8* | Himmelstein et al. (2017) | USA | Five esport players | Semi-structured interviews with competitive *League of Legend* players | Interview analysis based on the inductive and deductive content analysis (Elo and Kyngäs 2008) | To identify the mental skills and possible obstacles of esport players to achieve better performance. |

## STUDY 2 - THE MEDIATING EFFECT OF MOTIVATIONS BETWEEN PSYCHIATRIC DISTRESS AND GAMING DISORDER AMONG ESPORT PLAYERS AND RECREATIONAL GAMERS

### Aims

Previous studies explored the relationship between psychiatric symptoms and gaming disorder, comparing different mediational models according to the gamers' gender or game genres (Demetrovics et al., 2011; Király et al., 2015; Lemmens, Valkenburg, & Peter, 2011; Nagygyörgy, Mihalik, & Demetrovics, 2012; Rehbein, Psych, Kleimann, Mediasci, & Mößle, 2010). However, previous studies lack to differentiate the types of video game usage, such as competitive video gaming (esports) or recreational use. The aims of Study 2:

1. To compare recreational and esport gamers via demographics, gaming-related characteristics, severity of gaming problems, gaming motives, and psychiatric symptoms.
2. To test previously established model (examining the mediation effect of gaming motives between psychiatric distress and gaming disorder) in both recreational and esport gamers to examine whether there are any differences in the mechanics between these groups.

### Methods

An online survey was promoted for three weeks between November and December 2016 on the the online platforms of a popular Hungarian video game-related magazine (GameStar Hungary). The three empirical studies of the dissertation are based on the same dataset.

N = 4284 (89.89% male; $mean_{age}$ = 23.08; SD = 6.6), $N_{hobby}$ = 4079 (89.63% male, $mean_{age}$ = 23.1; SD = 6.6), $N_{esport}$=195 (95.12% ffi, $mean_{age}$ = 22.0; SD = 6.3).

Measures: *Sociodemographic variables (*age, gender, marital status, and education); gaming-related variables (game time played on an average weekday and weekend day; frequently used gaming platform(s) and videogames genres); esport characteristics (competition types: online and/or LAN; the frequency of participating in esport competitions); Motives for Online Gaming Questionnaire (MOGQ) (Demetrovics et al., 2011), 10-Item Internet Gaming Disorder Test (IGDT-10) (Király et al., 2017), Brief Symptom Inventory (BSI) subscales: anxiety, depression, psychoticism (Urbán et al., 2014).

Statistical analyses: Structural Equation Modeling, comparison of esports and recreational gamers' mediation modell.

**Results**

The results show that esport gamers had significantly higher average game time on a weekday ($M_{esport}$ = 2.98, SD = 1.41; $M_{recreational}$ = 2.32, SD = 1.40) and on a weekend day ($M_{esport}$ = 4.72, SD =1.40; $M_{recreational}$ = 3.95, SD = 1.60) than recreational gamers. Moreover, the two examined groups showed differences in gaming motivations. Esport gamers scored higher on social ($M_{esport}$ = 2.80; $M_{hobbi}$ = 2.26), competition ($M_{esport}$ = 3.41; $M_{recreational}$ = 2.59), and skill development ($M_{esport}$ = 3.57; $M_{recreational}$ = 2.95) motivations compared to recreational gamers ($p < 0.001$) (see Table 2.).

The model comparing recreational gamers and esport gamers had an acceptable fit to the data ($\chi^2_{4284}$=4978.5; esport gamers: $\chi^2$=586.3; recreational gamers: $\chi^2$=4392.2, $p$<.001; CFI=0.938; TLI=0.930; RMSEA=0.053, 95% CI 0.051-0.055; Cfit>0.90; SRMR=0.046). The overall result (see Figure 1) showed that psychiatric symptoms had a significant direct effect on GD in both groups, and escape motivation significantly mediated between psychiatric symptoms and GD in both groups ($\beta_{esport}$ = 0.29, $p < 0.001$; $\beta_{recreational}$ = 0.17, $p < 0.001$).

The indirect pathways via online gaming showed significtant results: escapism ($\beta_{esport}$ = 0.22, $p < 0.001$; $\beta_{recreational}$ = 0.26, $p < 0.001$) was significatn in both groups, however coping ($\beta_{recreational}$ = -0.023; $p < 0.01$), fantasy ($\beta_{recreational}$ = -0.016; $p < 0.05$) and competition ($\beta_{recreational}$ = 0.01; $p < 0.001$) was significant indirect pathway in recreational group (see Figure 1).

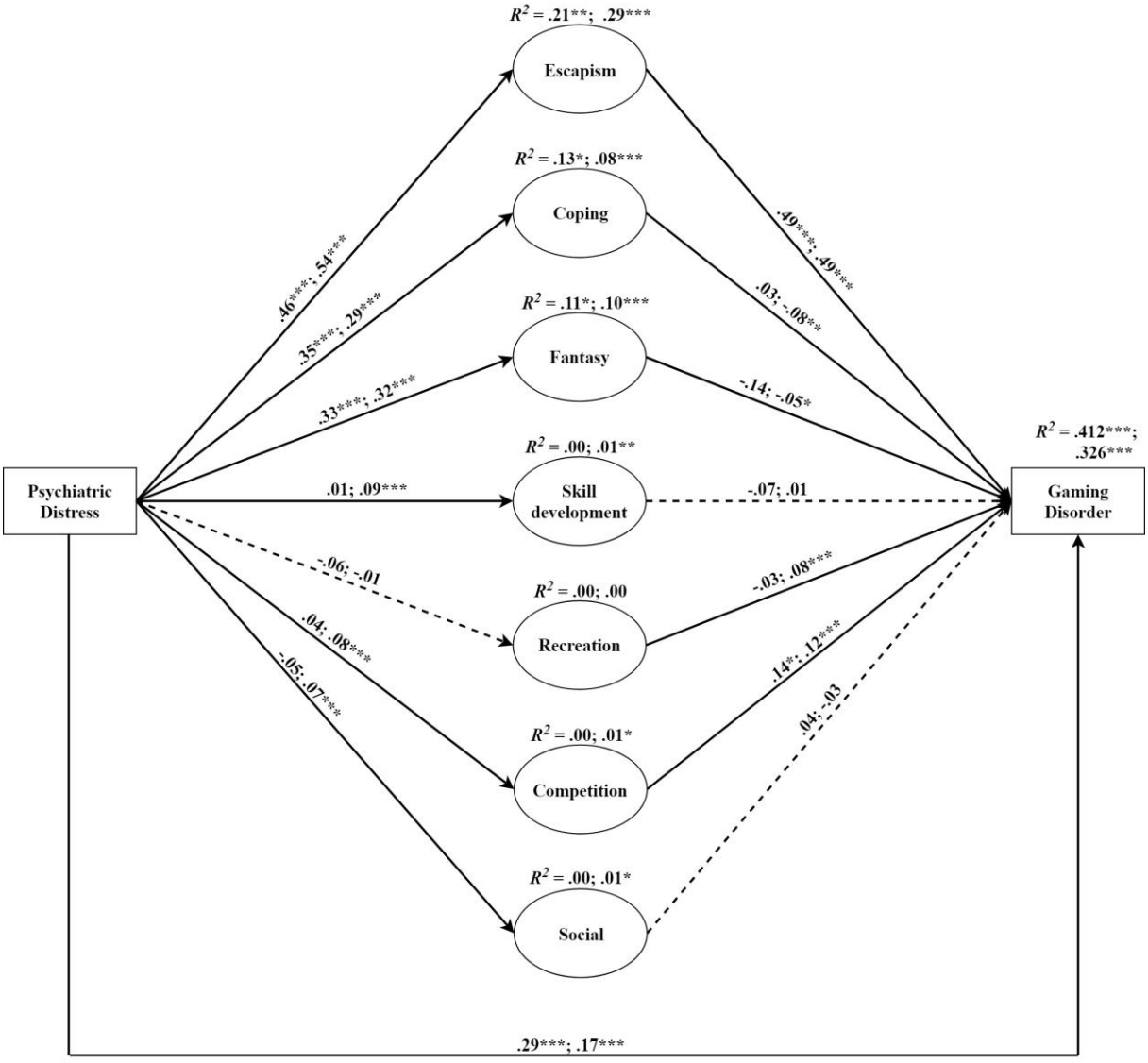
The comparison of the two models (for esport gamers and for recreational gamers) showed no significant differences according to the Wald test, meaning that gamer type did not differentiate the mediation model.

**Table 2. Psychopathology- and gaming-related variables**

| | | Total sample (*N* = 4284) | Recreational gamers (*n* = 4079) | Esport gamers (*n* = 205) | *t* | Effect size |
|---|---|---|---|---|---|---|
| **Psychiatric symptoms *Mean (SD)*** | | 0.96 (0.79) | 0.96 (0.79) | 0.87 (0.80) | -1.60 | 0.11 |
| **Gaming Disorder *Mean (SD)*** | | 0.72 (1.19) | 0.71 (0.97) | 0.84 (1.32) | 1.42 | 0.11 |
| **Gaming time** | **Average weekday *Mean (SD)*** | 2.35 (1.40) | 2.32 (1.40) | 2.98 (1.41) | 6.55*** | 0.47 |
| | **Average weekend day *Mean (SD)*** | 3.99 (1.60) | 3.95 (1.60) | 4.72 (1.40) | 7.66*** | 0.51 |
| **Motivations of Online Gaming *Mean (SD)*** | **Social** | 2.28 (0.98) | 2.26 (0.97) | 2.80 (1.03) | 7.74*** | 0.54 |
| | **Escape** | 2.31 (1.12) | 2.31 (1.12) | 2.31 (1.16) | 0.06 | 0 |
| | **Competition** | 2.63 (1.10) | 2.59 (1.10) | 3.41 (1.10) | 10.44*** | 0.50 |
| | **Coping** | 2.88 (1.06) | 2.88 (1.06) | 3.03 (1.13) | 1.97† | 0.14 |
| | **Skill development** | 2.98 (1.18) | 2.95 (1.18) | 3.57 (1.08) | 8.01*** | 0.55 |
| | **Fantasy** | 2.89 (1.23) | 2.89 (1.23) | 2.88 (1.23) | -0.03 | 0.01 |
| | **Recreation** | 4.45 (0.67) | 4.45 (0.67) | 4.37 (0.69) | -1.69 | 0.12 |

***$p$<0.001; **$p$<0.01; *$p$<0.05; †$p$=0.05. Independent sample t-tests were conducted on the following variables: psychiatric symptoms [range: 0-4], Internet Gaming Disorder [range: 0-9], gaming time [range: 0-5] and motivations of online gaming [range: 1-5]. The reported effect sizes are *Cohen's d.*

**Figure 1. Results of the multigroup analysis and path coefficients of two gamer types**: esport gamers (*n*=205) and recreational gamers (*n*=4079). The first (left) values describe esport gamers, whereas the second (right) values describe recreational gamers. For clarity, simple arrows show the significant path coefficients; dotted arrows show non-significant path coefficients. *$p$<.05; **$p$<.01; ***$p$<.001. Also, for clarity, indicator variables associated with the latent mediation variables, and the covariances between the errors of all mediator variables have not been depicted in the figure.



## STUDY 3 – THE MODERATION EFFECT OF COPING STRATEGIES AND ESPORT IN THE RELATIONSHIP OF PSYCHIATRIC SYMPTOMS AND GAMING DISORDER

### Aims

Study 3 also focused on the gaming disorder, exploring the moderating effect of coping strategies and e-sport as a type of video game usage. Several studies have investigated the association between coping strategies and GD. According to the findings, GD is associated with putatively maladaptive or dysfunctional coping styles (Paulus, Ohmann, von Gontard, & Popow, 2018) such as denial, behavioral disengagement (Schneider, King, & Delfabbro, 2018), media-related coping, self-distraction, self-blame (e.g., Dreier et al., 2017; Milani et al., 2018; Rosenkranz, Müller, Dreier, Beutel, & Wölfling, 2017); catastrophizing, or rumination (e.g., Kökönyei et al., 2019). Additionally, putatively adaptive coping styles such as active coping, positive reframing or positive reappraisal were applied less frequently in the case of gamers at risk of GD or was negatively related to GD (Dreier et al., 2017; Kökönyei et al., 2019). According to these models, higher rates of stress or certain psychiatric problems were associated with or predicted the use of dysfunctional coping styles, which in turn were associated with or predicted higher rates of GD or general problematic internet use (Kuss, Dunn, et al., 2017; Li, Zou, Wang, & Yang, 2016; McNicol & Thorsteinsson, 2017).

On the other hand, esport as a type of video gaming also were examined. Previous studies raise the question and worry that esport players (misidentifying esports as problematic gaming) may be at higher risk of developing GD than recreational gamers (Chung, Sum, Chan, Lai, & Cheng, 2019). The aims of Study 3 were twofold:

1. To test whether coping styles (both putatively adaptive and maladaptive) moderate the psychiatric symptoms – GD relationship in the aforementioned way.
2. A second assumption was that esport players will not significantly differ from highly engaged recreational players in their psychiatric symptoms – GD link.

**Methods**

An online survey was promoted for three weeks between November and December 2016 on the the online platforms of a popular Hungarian video game-related magazine (GameStar Hungary). The three empirical studies of the dissertation are based on the same dataset.

N = 3476 (90.1% male; $mean_{age}$ = 23.20; SD = 6.5).

Measures: *Sociodemographic variables (*age, gender, marital status, and education); gaming-related variables (game time played on an average weekday and weekend day; frequently used gaming platform(s) and videogames genres); esport characteristics (competition types: online and/or LAN; the frequency of participating in esport competitions); Brief COPE Scale (BCOPE) (Carver, 1997), 10-Item Internet Gaming Disorder Test (IGDT-10) (Király et al., 2017), Brief Symptom Inventory (BSI) subscales: anxiety, depression, psychoticism (Urbán et al., 2014).

Statistical analyses: EFA on Brief COPE Scale, moderation analyses with Bonferroni-correction ($p < 0{,}00625$).

**Results**

EFA showed a new BCOPE factorstructure: emotional/social support (Cronbach α = 0.86), active coping (Cronbach α = 0.79), self-blame/ self-distraction (Cronbach α = 0.68), humor (Cronbach α = 0.92), substance use (Cronbach α = 0.92), denial (Cronbach α = 0.78), religion (Cronbach α = 0.78), acceptance (Cronbach α=0.66).

The interaction terms (i.e., the moderation effects) were significant for four out of eight coping strategies; however, these have not increased the explained variance of the models considerably ($R^2$ change ranged from .003 to .005 or 0.3 to 0.5% change in the variance). In more details, the moderator effects of self-blame/self-distraction ($\beta$ = .07; $p$ < .001) and denial ($\beta$ = .05; $p$ = .001) strategies on the association between psychiatric symptoms and the symptoms of gaming disorder were significant. Moreover, the moderating effect of emotional/social support ($\beta$ = -.05; $p$ = .001) and active coping ($\beta$ = -.06; $p$ < .001) on the relationship between psychiatric symptoms and gaming disorder was also significant.

The main effect of psychiatric symptoms was moderate-to-large ($\beta$ = .39) in the model of esport/recreational video game use as well. Furthermore, although the interaction term was significant ($\beta$ = .04; $p$ = .016), the $R^2$ change due to the interaction was negligible (.001 or 0.1% change in the explained variance) and non-significant.

## STUDY 4 – CAREER AS A PROFESSIONAL GAMER: GAMING MOTIVES AS PREDICTORS OF CAREER PLANS TO BECOME A PROFESSIONAL ESPORT PLAYER

### Aims

According to previous studies, which explored the identity transformation and motivational changes of esport players in order to become professionals (Kim & Thomas, 2015; Seo, 2016), it is important to stress that young gamers who enter this hypercompetitive gaming community have to deal with immense stress and expectations from team members, coaches, sponsors and the esport community itself and their (intrinsic) motivations could help to deal with these stressors. The aim of Study 4:

1. To identify motives associated with professional videogame playing. To explore the motives as possible predictors of career planning.

### Methods

An online survey was promoted for three weeks between November and December 2016 on the the online platforms of a popular Hungarian video game-related magazine (GameStar Hungary). The three empirical studies of the dissertation are based on the same dataset.

N= 190 (100% male; $mean_{age}$=21.6; SD = 6.2).

***Measures:*** *Sociodemographic variables (*age, gender, marital status, and education); gaming-related variables (game time played on an average weekday and weekend day; frequently used gaming platform(s) and videogames genres); esport characteristics (competition types: online and/or LAN; the frequency of participating in esport competitions); Motives for Online Gaming Questionnaire (MOGQ) (Demetrovics et al., 2011), 10-Item Internet Gaming Disorder Test (IGDT-10) (Király et al., 2017), Brief Symptom Inventory (BSI) subscales: anxiety, depression, psychoticism (Urbán et al., 2014).

***Statistical analyses:*** Structural Equation Modeling, comparison of esports and recreational gamers' mediation modell.

**Results**

See results in Table 3.

**Table 3. Binary logistic regression models predicting plans to pursue a career as a professional esports player (*N* = 190)**

| | Single-predictor model | | | | Multiple-predictor model | | |
|---|---|---|---|---|---|---|---|
| | B | S.E. | O.R. (95% C.I.) | Nagelkerke $R^2$ | B | S.E. | O.R. (95% C.I.) |
| **Control variable** | | | | | | | |
| **Age** | -0.05 | 0.03 | 0.95 (0.90; 1.00) | 0.03 | -0.06 | 0.03 | 0.94 (0,88; 1,00)$^{\dagger}$ |
| **Motives for playing online games** | | | | | | | |
| **Social** | 0.45 | 0.15 | 1.57 (1.16; 2.11)$^{**}$ | 0.09 | 0.34 | 0.20 | 1.40 (0.95; 2.05) |
| **Escape** | -0.10 | 0.14 | 0.91 (0.69; 1.19) | 0.03 | -0.05 | 0.21 | 0.95 (0.63; 1.44) |
| **Competition** | 0.67 | 0.16 | 1.95 (1.44; 2.65)$^{***}$ | 0.17 | 0.66 | 0.17 | 1.94 (1.38; 2.72)$^{***}$ |
| **Coping** | -0.19 | 0.15 | 0.82 ( 0.62; 1.10) | 0.04 | -0.51 | 0.25 | 0.60 (0.37; 0.99)$^{*}$ |
| **Skill Development** | 0.49 | 0.16 | 1.63 (1.20; 2.22)$^{**}$ | 0.10 | 0.52 | 0.23 | 1.68 (1.07; 2.64)$^{*}$ |
| **Fantasy** | -0.06 | 0.13 | 0.94 (0.73; 1.21) | 0.03 | -0.15 | 0.21 | 0.86 (0.58; 1.30) |
| **Recreation** | 0.02 | 0.21 | 1.02 (0.67; 1.54) | 0.03 | -0.17 | 0.29 | 0.85 (0.48; 1.49) |
| | | | | | Nagelkerke $R^2$ of the model: 0.29 | | |

Notes: $^{***}p< 0.001$; $^{**}p< 0.01$; $^{*}p< 0.05$; $^{\dagger}p = 0.05$

S.E. = standard error; O.R. = odds ratio; C.I. = confidence interval

In single predictor models, motives for playing online games were entered separately in the regression analysis while controlling for age.

Reference category is “players who have no plans to pursue a career as a professional esports player” coded as 0 (*n* = 118, 62.1% of the total sample).

## SUMMARY OF FINDINGS

Study 1 aimed to review all empirical studies examining the psychology of esports, and to draw attention to a new field of video game research. Findings of the review demonstrated that three main topics have been investigated in the psychological literature: (i) the path of becoming a professional esport player, (ii) characteristics of esport players (i.e., mental skills, motivational patterns), and (iii) the motivational characteristics of watching esport. These studies not only provided data about why professional gamers act in such competitive ways, but also showed that becoming a professional esport player appears to be similar to the process of becoming a professional athlete in any given sport.

The findings of the Study 2 highlight that esport gamers play videogames more intensely than recreational gamers. The results of the present study suggest that esport and recreational gamers play video games in a different way in terms of game time (i.e., esport gamers have longer game times on weekdays and weekend) and gaming motivations (i.e., esport gamers scored significantly and considerably higher on certain motives such as competition, social, and skill-development). Study 2 also explored the relationship between gaming motives, psychiatric distress and gaming disorder comparing esport and recreational gamers. Overall, psychiatric symptoms were both directly and indirectly associated with gaming disorder via gaming motivations. In both groups, the escapism motive appeared to be the common predictor of gaming disorder. In the esport group, the escapism was the only motivation that had mediating effect, while in the recreational group, competition, fantasy, and coping also showed weak or even negative association with gaming disorder, which might be due to a negative suppressor effect in the regression, given the relatively strong association between these motives (i.e., escape, fantasy, coping). However, the esport gamers and recreational gamers did not differentiate in the way motivations mediated between psychiatric distress and gaming disorder.

In Study 3 it was assumed that people who frequently use putatively maladaptive or dysfunctional coping styles when encountering stressful situations in their lives have a stronger psychiatric symptoms – GD bond than those who use putatively adaptive coping strategies in general. Additionally, it was assumed that esport players will not significantly differ from recreational players in their psychiatric symptoms – GD link. According to the results regarding the coping strategies, the main effect of psychiatric symptoms was moderate-to-large in all models, and were significant for four out of eight coping strategies (i.e., self-blame/self-distraction, denial,

emotional/social support, active coping); however, the explained variance of the models only increased in negligible degrees (from 0.3 to 0.5%). The direction of the moderations was as expected: putatively maladaptive strategies were associated with more, while putatively adaptive strategies were associated with less GD symptoms when the level of psychiatric symptoms was high. Study 3 had assumption regarding the effect of player type (recreational vs. esport players) on the link between psychiatric symptoms and GD was met as the change in explained variance of the moderation model was negligible (0.1%). These results suggest that esport players are not necessarily at higher risk of developing GD than highly engaged recreational gamers.

Study 4. explored the possible predictors of a career as a professional esport player among videogame players with competitive gaming experience. The findings of Study 4 highlighted that higher levels of competition, skill-development, and social motives predicted career planning to become professional esport player. Moreover, younger players were more likely to seek career opportunities as professional esport players than older players with competitive gaming experience.

## DISCUSSION

In addition to the increasing popularity and attraction of esport, and the psychology of video gaming more generally, these phenomena are often framed as problematic, because of the lack of physical activity and its sedentary nature (van Hilvoorde 2016; van Hilvoorde and Pot 2016) or the intensive, excessive use (Griffiths 2017). However, there is a paucity of empirical data and much more research is needed before any definitive conclusions can be made concerning the psychology of esports. To earn the 'sport-status,' esports need to be accepted as a sport worldwide (van Hilvoorde and Pot 2016; Witkowski 2012, 2009), and is already under consideration in about 60 countries (International e-Sports Federation, 2020).

Moreover, the way esport gamers and recreational gamers enter and represent themselves in the games' virtual worlds may result from different mechanisms and psychological backgrounds.

Esport gamers could play more intensely than recreational gamers. While research has shown that high gaming intensity does not necessarily indicate problematic gaming behavior (Billieux et al., 2013; Chung et al., 2019; Griffiths, 2010), the results indicate that esport players can experience problematic gaming. This raises an interesting theoretical question if some esport players view their activity as their job rather than as a leisure activity. For esports players who experience severe problematic gaming (i.e., 'gaming addiction'), there is a question as to whether such individuals would be classed as addicted to gaming or addicted to work (Faust, Meyer, & Griffiths, 2013); following previous studies exploring the problematic behavior among professional poker players or athletes.

Examining the phenomenon of different video game use could reduce the stigma that recreational and some professional gamers may face (individuals, teams, and staff, including coaches, managers). To explore esport as a type of video game gaming can also help to identify and overcome any potential difficulties , such as the process of becoming a professional player and the related psychological strains, coping with stress during training and/or matches and developing these coping styles, or identify the early pattern of problematic video game use.

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