

# An exploratory study on motivational predictors in Internet Gaming Disorder among Peruvian gamers

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**Abstract—** According to many reports, one of the fastest growing industries in the US is video games. In Peru, it is estimated that Peruvians spent more than one hundred million dollars annually in videogames. However this number may be underestimated since piracy is a common practice. With the rapid proliferation of this form of entertainment, the inclusion of Internet Gaming Disorder (IGD) in section III of the Diagnostic and Statistical Manual of Mental Disorders and the recent inclusion of Gaming Disorder in the beta draft of the 11<sup>th</sup> International Classification of Diseases, many academic researchers and health professionals have become concerned with the addictive properties of videogames. Previous research has found that motivational factors have an important role in addictive behaviors. For this reason, the present study aimed to identify the main motivational factors underlying IGD. To reach this goal, a large empirical survey was carried out among 821 Peruvian gamers. Results showed that escape and fantasy were the factors that most predict IGD among Peruvian gamers. Implications for mental health professionals, game developers, and academics are discussed.

**Keywords—** Internet Gaming Disorder, gaming motives, Peruvian gaming, MOBA.

## I. INTRODUCTION

In recent years, videogames have changed the behavioral patterns of leisure entertainment in society worldwide. According to the UK Interactive Entertainment Association [1], the global audience of videogames is more than two and a half billion and it is estimated that videogames are bigger than the film and music industry [2]. In South America, Peru is the country that most people use the internet from public places also known as “*cabinas*” (public internet booths) [3] although there is a growing number of LAN gaming centers, gaming

events, and individuals who engage in the activity [4, 5]. Since the inclusion of Internet Gaming Disorder (IGD) as a condition for further research in the Section III of the *Diagnostic and Statistical Manual of Mental Disorder (DSM)* and the incorporation of Gaming Disorder in the beta draft of the 11<sup>th</sup> International Classification of Diseases (ICD), many researchers, academics, and health institutions have called for further research examining IGD [6, 7]

### A. Internet Gaming Disorder and gaming motives

According to DSM-5, IGD is conceptualized as the persistent and recurrent use of internet based-games that leads to clinical impairment [6]. The criteria proposed are as follows: (i) preoccupation (ii) withdrawal, (iii) tolerance (iv) unsuccessful attempts to control, (v) loss of interests, (vi) continued excessive use, (vii) deception, (viii) gaming to escape negative mood and (ix) jeopardizing educational and/or occupational opportunities and relationships [6]. Within the rapid proliferation of studies in IGD, many negative consequences have been identified. For instance, previous studies have shown that individuals with IGD may show high levels of neuroticism, low conscientiousness, anxiety symptoms, impulsivity, ADHD, stress, poor school performance, inadequate eating and sleep patterns, psychosomatic problems, musculoskeletal problems, and psychiatric symptoms [8]–[16]. Likewise, in the neuroscience discipline, studies have found abnormal structures and patterns in the brain of individuals with IGD [17].

With regard to motivation, it is well known that people play videogames for different reasons and some theories within the context of gaming have been developed [18, 19]. In the 1990s, Bartle proposed four types of players: killers, achievers, socializers, and explorers [20]. Later on, an empirical study with 3000 gamers who played Massively Multiplayer Online Role-Playing Games (MMORPGs) [21] found three motivations: achievement, social, and immersion. Not surprisingly, attention among scholars in relation to the

motivational aspects of videogames and its role in addictive gaming has been documented in the literature [22–24]. In line with this, a previous study with Italian gamers found that psychiatric symptoms were related to problematic online gaming via escape and fantasy motives [25]. Similarly, a study with Hungarian gamers found that psychiatric symptoms had significant direct effects on problematic online gaming and was also associated with escape and competition motives [26]. Therefore, it was hypothesized that fantasy and escape would predict IGD. To our knowledge, research examining specific motives and the association with IGD symptoms among Peruvian gamers remain unexplored. Finding specific motives for disordered gamers would help prevent problems in their personal, family, and social life. Therefore, the purpose of the present study was to identify gaming motives that predict IGD symptoms among Peruvian gamers.

## II. METHODS

### A. Participants, measures and procedure

The study was approved by the ethics committee at *Eötvös Loránd University* (Budapest, Hungary) and *Universidad de Ciencias y Humanidades* (Lima, Peru) and was part of a larger cross-cultural project [27]. The current sample was non-probabilistic and the participants in the study comprised 821 Peruvian gamers. Of these, 651 (79.3%) were Multiplayer Online Battle Arena (MOBA) gamers playing *Dota 2*.

A survey was used to collect demographic information such as gender, age, marital status, educational level, current occupation, and hours played weekly. To assess IGD, the Ten-Item Internet Gaming Disorder Test (IGDT-10) was used ( $\alpha = 0.774$ ) [28]. In order to assess gaming motives, the Motives for Online Gaming Questionnaire (MOGQ) was used [29]. This instrument comprises 27 items and it assesses gaming motives. The scale comprises seven factors: escape, coping, fantasy, skill development, recreation, competition, and social.

The research team contacted the organizers of a large local gaming event in Lima (Peru). After explaining the objectives of the study to gaming sponsors and organizers, they agreed to participate. All of the gamers were recruited by posting a link of the survey on the local gaming event website. Confidentiality and anonymity were obtained before participants started the survey. A raffle prize was offered for gamers who participated. In the present study, data were analyzed using SPSS 23 and Mplus 7.3.

## III. RESULTS

### A. Basic sociodemographic characteristics

As shown in Table 1, from a total of 821 respondents, 98% were male. The mean age was 20 years ( $SD=3.69$ ), and 88% were single. Overall 27.3% of the sample completed secondary school and 38% did not complete university. In addition, 78% of respondents were currently studying and 60% were not currently working.

TABLE I. DEMOGRAPHICS CHARACTERISTICS

VARIABLES	N = 821 (100%)
Age	19.9
Gender	
Male	811 (98.8%)
Female	10 (1.2%)
Marital status	
Single	723 (88.1%)
In a relationship, living separately	69 (8.4%)
Living in partnership	19 (2.3%)
Married	10 (1.2%)
Education level	
Completed elementary school	7 (0.9%)
Did not complete secondary school	62 (7.6%)
Completed secondary school	224 (27.3%)
Technical education (1 to 2 years)	34 (4.1%)
Technical education (3 years)	99 (12.1%)
Did not complete university	319 (38.9%)
Completed university	76 (9.3%)
Current job	
No	494 (60.2%)
Full-time job	83 (10.1%)
Half-time/part time job	105 (12.8%)
Ad-hoc basis job	139 (16.9%)

Gender, marital status, education level and currently job are reported in absolute frequencies

### B. Confirmatory factor analysis

In order to confirm the factor structure of the MOGQ, a Confirmatory Factor Analysis (CFA) with maximum likelihood with robust standard errors estimation method (MLR) was performed. The model provided an acceptable fit to the data:  $\chi^2 = 1306.102$ ;  $df = 297$ ;  $p < 0.001$ ;  $CFI = 0.904$ ;  $TLI = 0.887$ ;  $RMSEA [90\% CI] = 0.065 (0.061; 0.069)$ ;  $SRMR = 0.059$ . Results in Table II show the factor structure from the MOGQ and the reliability, validity and correlation for each factor. A high correlation was identified between the Fantasy and Escape factors which indicates that both perform together as a second order factor. Even though the factor Recreation showed some issues in AVE score ( $< 0.5$ ), we decided to maintain it because of the accepted reliability ( $\alpha > 0.7$ ) and discriminant ( $\sqrt{\text{AVE}} > \text{ICC}$ ) measures.

TABLE II. VALIDITY AND CORRELATION AMONG MOGQ SEVEN FACTORS

FACTORS	[1]	[2]	[3]	[4]	[5]	[6]	[7]
[1] Social	<b>0.74</b>						
[2] Escape	0.60	<b>0.77</b>					
[3] Competition	0.41	0.45	<b>0.71</b>				
[4] Coping	0.61	0.75	0.57	<b>0.68</b>			
[5] Skill development	0.58	0.51	0.54	0.77	<b>0.82</b>		
[6] Fantasy	0.64	0.90	0.47	0.65	0.54	<b>0.77</b>	
[7] Recreation	0.37	0.27	0.49	0.59	0.53	0.27	<b>0.64</b>
Cronbach's Alpha ( $\alpha$ )	0.806	0.863	0.816	0.748	0.888	0.862	0.731
Composite Reliability (CR)	0.82	0.85	0.80	0.77	0.89	0.85	0.66
Average Variance Extracted (AVE)	0.55	0.58	0.50	0.46	0.67	0.59	0.41

( $\alpha > 0.7$ ; (CR)  $> 0.7$ ; (AVE)  $> 0.5$ ; CR  $>$  AVE; Square Root of AVE (In Bold)  $>$  Inter-Construct Correlations (ICC).

### C. Structural equation model

While the adequacy of the model fit measure in the CFA was confirmed, in order to test the hypothesis proposed in the study, a path diagram was modelled. In order to continue with SEM analyses on IGD, a second order factor (SF) was introduced for the two latent factors from the MOGQ because of the high correlation between Escape and Fantasy:  $SF \rightarrow \text{Escape}$  ( $\beta = 0.966$ ;  $p < 0.001$ ) &  $SF \rightarrow \text{Fantasy}$  ( $\beta = 0.934$ ;

$p < 0.001$ ). The research team was interested in determining the predictive effect of different gaming motives on IGD symptoms. To achieve this goal, a SEM analyses was conducted using an MLR estimation method. The principal finding from the path model analyses (Figure 1) showed that the second order factor composed by Escape and Fantasy, was the only factor to have positive direct effect on IGD, while social factor scores showed a negative direct effect. As shown in Figure 1, weekly playing time had a small but significant direct effect on IGD.

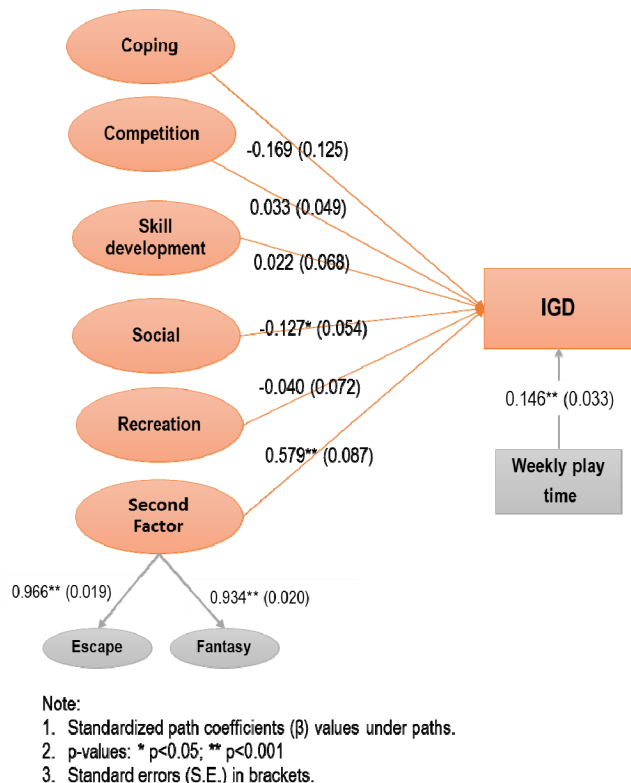


Fig 1. Results of the structural equation model

#### IV. DISCUSSION AND CONCLUSIONS

In the present study, several demographic characteristics and gaming patterns among Peruvian gamers were investigated. Moreover, symptoms of IGD and motivational factors were found. The data showed that most of the gamers were males (98.8%), which is consistent with past research that males tend to dominate LAN parties and gaming tournaments [30]. Moreover, a high percentage of the sample were single (88.1%) which might possibly be due to the amount of time dedicated to gaming and the strong stigmatization in Peru toward gaming. Also, the analysis identified seven motivational factors in the MOGQ according to the original factor structure. The same factor structure was found in previous research [25,26] confirming the existence of different motives and provides support to self-determination theory in the context of videogames [31]. In addition to this, the data indicated that escape and fantasy factors were adequately explained by one second-order factor. This finding

is contradictory to previous research [29] and it is possible that Peruvian gamers who play for fantasy motives may do it because they are trying out new identities in gaming which may serve as an escape from real life problems. Also, a fantasy motive is more suitable for MMORPGs where gamers are able to create a character rather than MOBA games which are more about teamwork and strategy [32]. It was also found that social motives had a low negative direct effects on IGD. It appears that when gamers play for social motives, they are less likely to develop IGD symptoms. This result is consistent with previous research [25,26] and suggests that gaming for social purposes may prevent addictive patterns. The data also yielded evidence about the positive direct effect of weekly play time on IGD. However, this association was weak and is consistent with the view expressed by Király et al. [33]. Highly engaged gamers who compete may spend hours developing strategies and this might not necessarily imply development of IGD. Further analysis revealed that the second order factor (fantasy and escape) had positive direct effects and were the strongest on IGD. The present finding confirmed the hypothesis and is consistent with previous research were escape is the most documented factor in predicting videogame addiction [21,22,25,26]. In addition to this, one study showed that fantasy was a predictor of problematic gaming [25]. It appears that Peruvian gamers with IGD may play for escape from real life problems (i.e., family, economic, personal, and academic, etc.). Thus, creating new identities in the game and community may simultaneously compensate real life problems. However, all of these issues will be maintained long-term in the gamer's life and may create a vicious circle. Griffiths has stated that complex motivational characteristics in gaming can change depending of the type of gamer (i.e. professional, hardcore) [34] and the present sample were participating in an e-sport MOBA tournament.

The present study reported demographic data, gaming patterns, and motivational factors related to IGD in a sample of Peruvian gamers. Future research should include female gamers, different types of videogames, qualitative methods, and probabilistic samples. Such findings would provide support for important issues in the Peruvian gaming community as well as a baseline for researchers and mental health practitioners to work in conjunction toward evidence-based treatment. Also, it may serve as a starting point to educating gaming companies and policymakers about the risks of IGD in Peru who may develop strategies for player protection as has happened in gambling [35], including contextual variables such as cheap and easy access to videogames (i.e. thirty cents an hour), videogame piracy, and the fact that most people play in internet booths [36].

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