



# Psychometric Assessment of the Motives for Online Gaming Questionnaire Among Iranian Gamers

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**Objective** Gaming motivations are crucial aspects of healthy and problematic video gaming behavior. The aim of this study was to assess the psychometric properties of the widely used Motives for Online Gaming Questionnaire (MOGQ).

**Methods** Test-retest reliability was evaluated in a sample of 66 university students. Data from 791 participants in an online survey of Iranian online gamers were examined to assess convergent validity and construct validity using confirmatory factor analysis. Internal consistency of MOGQ factors was assessed in both samples.

**Results** The item content validity index (I-CVI) and the scale content validity index (S-CVI) were between 0.8 and 1.0 for clarity and relevancy. The test-retest reliability of the 27-item questionnaire was 0.85 and internal consistency was 0.94. After incorporating additional error paths, model fit improved to an acceptable level. The MOGQ factors had acceptable correlations with relevant motivational scales such as Gaming Motivation Scale and Player Experience of Need Satisfaction. Recreation motives had the highest average score in the sample and social ones had the lowest, and males scored higher than females across all motivation domains except escape.

**Conclusion** The MOGQ is a suitable instrument for the assessment of online gaming motivations in the Iranian population.

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**Keywords** Video games; Online gaming; Internet gaming disorder; Gaming motivations; Validation.

## INTRODUCTION

Given the increasing popularity of video games, interest in understanding the underlying bases, associated behaviors and consequences of video game playing has been growing.<sup>1</sup> It has been estimated that by the end of 2017 there were 2.21 billion active gamers around the world,<sup>2</sup> and more than 28 million Ira-

nians reported playing for at least one hour per week in a recent national survey.<sup>3</sup> After decades of research, a consensus is emerging that players relate to video games in nuanced complex contexts, shaped by the characteristics of players, games, and the gaming environment.<sup>4,5</sup> Relatedly, while it appears that most players are not adversely impacted by their gaming behavior,<sup>6,7</sup> a minority of players report potentially pathological patterns of gaming.<sup>8</sup> This has led to the recent formulation of the diagnostic entity of internet gaming disorder (IGD), and calls for its recognition as an important emerging public health issue globally.<sup>9,10</sup> While data is scarce, IGD is also considered a potential public health concern in Iran<sup>11,12</sup> and it has been estimated to impact about 3.7% of Iranian online gamers.<sup>13</sup> Thus, investigations of important aspects of gaming behavior seem warranted.

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It is increasingly recognized that different individuals play online and offline games with a variety of different motives, and that these motives may constitute an important aspect of gaming behavior.<sup>14</sup> Besides general entertainment and enjoyment of the games they play, players may engage with games to form social connections, to feel a sense of progress, to modulate low mood, to detach from and escape daily life, to learn new skills, to compete and to feel competent, and to explore and sate their curiosity.<sup>15</sup> Among these diverse motivational profiles, some might be more strongly associated with problematic gaming than others.<sup>16</sup> For example, it has been demonstrated that individuals who engage in online games to compete,<sup>17</sup> to escape life issues,<sup>18-20</sup> and to stimulate fantasies<sup>18,21</sup> may be at greater risk of pathological gaming and associated psychiatric comorbidities.<sup>21</sup> Investigating and better theorizing about the motivations of players for online gaming may thus aid in understanding and distinguishing problematic patterns of play, and preventing or treating the problems associated with harmful online gaming.<sup>17</sup>

Different theories of motivation have been applied to conceptualize online gaming behavior. Self-determination theory (SDT) proposes two general categories of intrinsic and extrinsic motivation for gaming; gamers who play for enjoyment, exploration and improve their skills would be intrinsically motivated, while those who play for game-related rewards, competition, or social connection are extrinsically motivated.<sup>22</sup> On the other hand, Bartle's framework<sup>23</sup> would suggest four different motivations associated with the playing styles of achievers, explorers, socializers, and killers, and Yee<sup>24</sup> has developed this framework to propose the motivation categories of achievement (including advancement, mechanics, competition), social (socializing, relationship, teamwork), and immersion (discovery, role playing, customization, escapism). A number of instruments have been developed to assess gaming motives based on these theories, such as the 27-item Motivation for Online Games Questionnaire,<sup>25,26</sup> the 18-item Gaming Motivation Scale (GAMS)<sup>22</sup> with a 15-item version proposed recently, the 12-item Online Gaming Motivations Scale,<sup>27</sup> and the 10-item Player Experience of Need Satisfaction (PENS) Questionnaire.<sup>28</sup>

Considering the increasing national and global popularity of online games and the importance of gaming motives to understand healthy and disordered gaming, this study is an attempt at translating the Motives for Online Gaming Questionnaire (MOGQ) into the Persian language, assessing its psychometric properties, and investigating the distribution of gaming motives based on the MOGQ in a sample of Iranian online gamers. We chose MOGQ since it is a comprehensive questionnaire that explores the aims of online gaming and can be used in a wide age range,<sup>25</sup> and has been translated

into a number of different languages and validated across different cultures.<sup>18,21,26,29-32</sup>

## METHODS

### Procedure and participants

The study was conducted in three stages: 1) translation and assessment of the content validity of the translated questionnaire, 2) assessment of the internal consistency and test-retest reliability, and 3) investigation of convergent and construct validity.

At the first step the questionnaire was translated from English to Persian, in compliance with World Health Organization guidelines<sup>33</sup> and using the forward-backward translation method. Content validity was assessed by a group of 15 experts which consisted of content experts, lay experts, and a psychometrist, for relevancy, clarity, and comprehensiveness. Relevancy and clarity indices were calculated using the universal agreement (UA) approach and the mean approach, for each item as well as the entire instrument. Content validity ratio (CVR) was also assessed. Values above 0.80 were regarded as acceptable for content validity indices.

To evaluate the test-retest reliability in the first stage, 120 undergraduate students were recruited from five classes of Alameh University in Tehran after providing informed consent to participate in the study. Of these, 96 had a history of online gaming in the past year. In the retest phase, all individuals who met the inclusion criteria were asked to retake the retest, and 66 completed the MOGQ for the second time after a 10- to 14-day interval. Convenience sampling was used without randomization. For all MOGQ factors, intraclass correlation coefficients (ICCs) were assessed to estimate test-retest reliability.

An online survey was carried out among 791 Iranian online gamers in 2016 to test convergent and construct validity.<sup>34</sup> The Persian versions of the instruments were uploaded to a website with open public access. The Iranian National Center for Addiction Studies (INCAS) advertised the URL and recruited participants in several rounds of announcements via the INCAS website. Calls for participation were also made on social media platforms popular in Iranian and flyers and pamphlets distributed in several universities. Upon clicking the questionnaire URL, participants were greeted and given a detailed description of the study objectives and criteria for inclusion, and assured that measures would be taken to anonymize their data which would only be used towards the study's stated purposes. No sample size calculation or randomization was performed, with the objective of recruiting as large a convenience sample as possible.

The construct validity of the MOGQ was assessed using confirmatory factor analysis (CFA) for the data from this survey.

For the CFA, chi-square values and fitness indices were calculated. To assess the convergent validity of the questionnaire, we calculated correlations between MOGQ factors and relevant domains from the PENS and GAMS instruments. The internal consistency of MOGQ (based on Cronbach's alpha) was calculated in both samples. We have also provided the results of the MOGQ testing among the 791 online gamers based on gender and different age groups. The IBM SPSS Statistics 25 (IBM Co., Armonk, NY, USA) and the AMOS 24 (IBM Co.) software programs were used for the analyses.

## Measures

The MOGQ<sup>25</sup> is a 27-item self-administered instrument assessing an individual's motivations for gaming. The instrument consists of the following domains: escape, coping, fantasy, skill development, recreation, competition, and social motivation. Each item has a 5-point Likert scale, with higher scores showing greater motivation in that domain. The MOGQ has been assessed in several languages and shown to have acceptable to very good psychometric properties.<sup>25,26,29</sup>

The PENS is a 10-item questionnaire assessing gamers' experience across five dimensions: presence/immersion, autonomy, competence, relatedness, and intuitive controls. Items in the PENS are rated by on a 7-point Likert scale which shows participants agreement.<sup>28</sup>

The GAMS is an 18-item questionnaire, designed to identify individuals' motives for playing video games, measuring six domains of motivation using three questions for each domain with a 7-point Likert scale.<sup>22</sup> GAMS was constructed within the theoretical framework of SDT. Within SDT, behaviors depend on six types of motivations; namely intrinsic motivation, integrated regulation, identified regulation, introjected regulation, external regulation, and amotivation. The GAMS was developed and validated to measure the extent to which participants' gaming behavior relies on each of the SDT's six motivation domains.<sup>9</sup>

## Informed consent and confidentiality

Participants in both samples were informed that provided data would remain confidential. Only those involved in statistical analyses had access to complete participant information. Institutional review board approval was sought and the research protocol was approved by the Ethics Committee of Tehran University of Medical Sciences in Iran (no. IR.TUMS.VCR.REC.1395.800).

## RESULTS

### Content validity

For the Persian version of the MOGQ-27, the item content

validity index (I-CVI) for clarity was 0.8 for question 5, 0.93 for question 13 and 27, and 1.0 for the rest of the questions. I-CVI for relevancy was 1.0 for all items. The scale content validity index (S-CVI) for clarity using the UA approach and the mean approach were 0.89 and 0.99, respectively. S-CVI for relevancy was 1.0 in both approaches. The CVR for all items and questionnaire comprehensiveness were 1.0. CVI values of 0.80 or more were interpreted as indicating acceptable validity, following the widely cited suggestion of Davis.<sup>35</sup>

## Reliability

Data from the sample of university students was used to assess test-retest reliability. Sixty-six individuals completed the questionnaire twice with a 10- to 14-day interval. Among these, 47 (71.2%) were females. Fifty-one (77.3%) were undergraduate students and the rest (22.7%) were graduate students. In terms of marital status, only three were married and the rest (95.5%) were single. The age distribution of 66 people was between 19 and 40 years and their age was  $22.1 \pm 3.2$  (mean  $\pm$  standard deviation [SD]) years.

Besides item 11 "...because it helps me get rid of stress" which had a test-retest reliability of 0.45, the test-retest reliability of MOGQ items ranged from 0.64 to 0.87. The reliability of all factors was between 0.79 (coping) and 0.87 (skill development), and the ICC of the entire questionnaire was 0.85 that considers good.<sup>36</sup> The internal consistency of the MOGQ factors was also assessed in this sample, and ranged from 0.68 (social) to 0.87 (recreation). The ICC between 0.50–0.75 and between 0.75–0.90 are indicated as moderate and good reliability, respectively (Table 1).<sup>36</sup>

## Convergent validity and internal consistency

A total of 791 participants in the online survey, including 592 (75.4%) males. The age of participants ranged from 18 to 50 years, with a mean of  $23.4 \pm 8.8$  years. To investigate the validity of the Persian version of the MOGQ and its internal consistency, we used the data from 758 participants in the online survey who had no missing values. Correlations between the

**Table 1.** Internal consistency and test-retest reliability of the Motives for Online Gaming Questionnaire (N=66)

Factor	ICC (95% CI)	Internal consistency
Social	0.83 (0.73–0.90)	0.68
Escape	0.81 (0.70–0.89)	0.81
Competition	0.84 (0.74–0.90)	0.76
Coping	0.79 (0.66–0.87)	0.72
Skill development	0.87 (0.79–0.92)	0.86
Fantasy	0.84 (0.74–0.91)	0.79
Recreation	0.81 (0.68–0.88)	0.87

ICC, intraclass correlation coefficient; CI, confidence interval

**Table 2.** Mean, SD, internal consistency of the Motives for Online Gaming Questionnaire factors (N=791)

	Social	Escape	Competition	Coping	Skill development	Fantasy	Recreation
Mean±SD	7.47±3.40	8.38±4.21	10.46±4.21	8.73±4.01	9.51±4.09	7.77±4.13	11.53±3.39
Internal consistency	0.78	0.89	0.89	0.83	0.90	0.85	0.91
Social	1	0.53	0.45	0.55	0.46	0.57	0.31
Escape		1	0.40	0.71	0.32	0.60	0.24
Competition			1	0.52	0.45	0.50	0.43
Coping				1	0.59	0.62	0.34
Skill development					1	0.46	0.31
Fantasy						1	0.28
Recreation							1

All correlations are significant at least at p-value<0.05. SD, standard deviation

MOGQ factors ranged from 0.24 to 0.71, with the lowest correlation observed between the escape and recreation factors and the highest observed between escape and coping. The internal consistency of MOGQ factors based on Cronbach's alpha ranged from 0.78 for the social motives factor to 0.91 for the recreation factor (Table 2). Cronbach's alpha for the entire questionnaire was 0.94.

There were significant correlations between the social factor from the MOGQ and relatedness from the PENS ( $r=0.546$ ,  $p<0.001$ ), the competition factor from the MOGQ and competence from the PENS ( $r=0.494$ ,  $p<0.001$ ), the escape factor from the MOGQ and introjected regulation from the GAMS ( $r=0.567$ ,  $p<0.001$ ), the competition factor from the MOGQ and external regulation from the GAMS ( $r=0.482$ ,  $p<0.001$ ), and the skill development factor from the MOGQ and identified regulation from the GAMS ( $r=0.577$ ,  $p<0.001$ ). Regarding the other three MOGQ motivation factors, i.e., fantasy, coping, and recreation, we were not able to find corresponding domains in other instruments to assess convergent validity.

**Construct validity**

To explore the dimensionality of the MOGQ, we ran a CFA testing a first-order model with seven factors as suggested during the original development of the MOGQ.<sup>25</sup> Each of the seven factors consisted of three or four corresponding items. According to the CFA, the model had the following fit indices: chi-square=1,746.6 (df=303, n=758,  $p<0.001$ ), comparative fit index (CFI)=0.897, incremental fit index (IFI)=0.897, normed fit index (NFI)=0.878, root-mean-square error of approximation (RMSEA)=0.079 (90% confidence interval [CI], 0.076–0.083), Akaike information criterion=1896.61, and Bayesian information criterion=2,243.91.

When searching for partial misfits, modification indices (MI) suggested the addition of error paths between item 9 "...because it makes me forget real life" and item 16 "...because gaming helps me escape reality" (MI=82.28), between

item 13 "...to feel as if I was somebody else" and item 20 "...to be somebody else for a while" (MI=38.61), and then between item 1 "...because I can get to know new people" and item 8 "...because I can meet many different people" (MI=19.96). Incorporating the proposed additional error paths improved the model fit to an acceptable level: chi-square=1,422.7 (df=300, n=758,  $p<0.001$ ), CFI=0.920, IFI=0.920, NFI=0.901, RMSEA=0.070 (90% CI: 0.067–0.074). Standardized factor loadings for all items were higher than 0.6 and the highest correlation was between escape and coping motives (Figure 1).

**Demographic correlates**

Considering the distribution of MOGQ factor scores across genders and age groups, male online gamers scored significantly higher than female ones in all motivational dimensions ( $p<0.05$ ) except for escape, in which males had an average score of  $8.48±4.25$  and females had an average score of  $8.17±4.13$ . Compared to other age groups, the 18–20 age group scored significantly higher in all motivational dimensions ( $p<0.05$ ), again except for escape (Table 3).

**DISCUSSION**

In this study, we translated and assessed the content validity, test-retest and internal reliability, and construct and convergent validity of the Persian version of the MOGQ and described the distribution of motivation domain scores in a population of Iranian online players. The results showed that the Persian MOGQ has very good content validity and suitable internal and external reliability (Cronbach's alpha=0.94). Notably, we are not aware of any prior study on the test-retest reliability of the MOGQ and our study showed that it has good test-retest reliability for both the individual factors and the entire questionnaire. The MOGQ was originally developed in English, and has since been translated and validated in several other languages. The psychometric properties of the Eng-

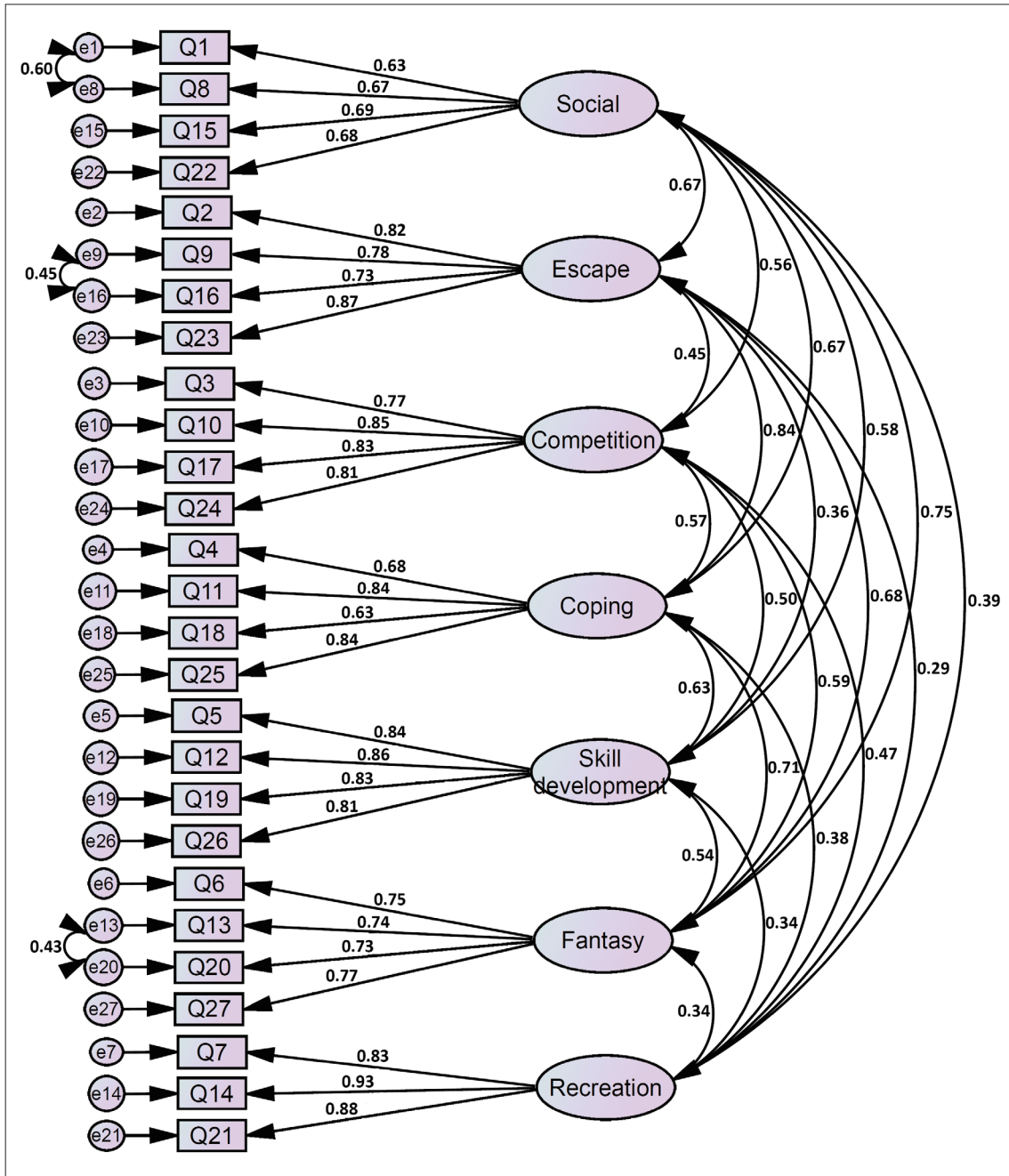


Figure 1. Estimates of standardized factor loadings and correlations among the factors of the Motives for Online Gaming Questionnaire.

lish version as well as the Chinese, Indonesian, Turkish, Korean, and Italian versions have also been assessed.<sup>18,25,26,29,32</sup>

In the original English version, the internal consistency for all 7 dimensions ranged from 0.79 to 0.90 (Cronbach's alpha=0.91).<sup>25</sup> The internal consistency was between 0.83–0.90 in the Chinese version (Cronbach's alpha=0.95),<sup>26</sup> between 0.80–0.87 for the Korean version<sup>18</sup> and between 0.88–0.92 for the Turkish version<sup>32</sup> for dimensions. In the Italian version, the internal consistency of all factors was observed to be appropriate.<sup>21</sup> Lastly, the Indonesian version of the MOGQ was re-

ported to be valid and reliable and with a Cronbach's alpha of 0.94.<sup>29</sup> In both our samples, the social motives factor had the lowest internal consistency and recreation motives the highest, which diverges from the English<sup>25</sup> and Chinese questionnaires<sup>26</sup> and might reflect variations resulting from translation or sample differences. On the other hand, these results are consistent with a psychometric assessment of the Turkish version of MOGQ,<sup>32</sup> potentially reflecting greater cultural similarities between Iranian and Turkish samples.

Some versions of the questionnaire reduce the number of

**Table 3.** Motivation scores of the Motives for Online Gaming Questionnaire by sex and age

	Social	Escape	Competition	Coping	Skill development	Fantasy	Recreation
<b>Sex</b>							
Male (N=592)	7.72±3.51	8.48±4.25	11.17±4.76	9.01±4.10	9.75±4.6	8.13±4.26	11.91±3.26
Female (N=193)	6.74±2.91	8.17±4.13	8.46±3.91	8.75±4.02	8.91±4.01	6.78±3.55	10.44±3.47
<b>Overall test for sex</b>							
t-value (df=783)	3.51	0.89	7.16	3.16	2.24	3.96	5.36
Cohen's d	0.30	0.07	0.62	0.06	0.19	0.34	0.44
p-value	<0.001	0.372	<0.001	0.002	0.025	<0.001	<0.001
<b>Age (yr)</b>							
18–20 (N=228)	8.22±3.84 <sup>a</sup>	8.41±4.36 <sup>a</sup>	11.77±4.82 <sup>a</sup>	9.36±4.38 <sup>a</sup>	10.29±4.82 <sup>a</sup>	8.80±4.68 <sup>a</sup>	12.12±3.20 <sup>a</sup>
21–23 (N=276)	7.08±2.98 <sup>b</sup>	8.02±3.78 <sup>a</sup>	9.97±4.44 <sup>b</sup>	8.48±3.82 <sup>b</sup>	9.29±4.19 <sup>b</sup>	7.29±3.66 <sup>b</sup>	11.35±3.34 <sup>b</sup>
24–50 (N=282)	7.23±3.31 <sup>b</sup>	8.70±4.49 <sup>a</sup>	9.91±4.74 <sup>b</sup>	8.47±3.85 <sup>b</sup>	9.11±4.44 <sup>b</sup>	7.43±3.97 <sup>b</sup>	11.28±3.53 <sup>b</sup>
<b>Overall test for age</b>							
F-value	8.17	1.79	12.46	3.99	4.94	10.17	4.67
p-value	<0.001	0.168	<0.001	0.019	0.007	<0.001	0.010

Values are presented as mean±standard deviation or number only. Different subscript letters (a, b, c) in the same row of age reflect significant (p<0.05) difference between the means while same subscript letters in one row reflect non-significant difference between the means according to Bonferroni post-hoc test

factors from 7 to 6. For example, the coping and escape dimensions are merged into one dimension in the Turkish MOGQ<sup>32</sup> and the coping factor was eliminated from the Korean after exploratory and confirmatory factor analyses favored a six-factor structure.<sup>18</sup> We observed a high correlation between the escape and coping factors (0.712), similar to the Turkish study,<sup>32</sup> but decided to keep the original structure intact given factor analysis results. This high correlation may indicate that the coping and escape, although conceptually distinct, can be considered overlapping constructs. Indeed, some studies before the development of the MOGQ considered the escape factor a coping factor. Demetrovics et al.<sup>25</sup> also observed a strong correlation between the two factors (0.602) but proposed that the two factors be separated considering the results of their factor analysis. A discussion of the differences between coping and escape would be warranted given these results.

Escape indicates a desire to escape certain situations or environments and is thus focused on escaping real life, ultimately helping the player manage unwanted moods and emotions such as stress, aggression, and anxiety.<sup>37</sup> In many studies, this kind of escape is what is considered important as a motivation for seeking entertainment.<sup>38</sup> On the other hand, coping is often defined as a conscious, active effort to resolve or overcome personal and interpersonal problems.<sup>39</sup> Two notable differences emerge between escape and coping. First, coping refers to strategies aiming to reduce, eliminate, or manage the stressor, while escape implies disengagement, in which the main goal is to ignore, avoid, or withdraw from the stressor or its emotional consequences.<sup>37</sup> Second, escape is an emotion-foc-

used strategy whereas coping is an action-focused one.<sup>40</sup> While further investigations are required to clarify this distinction, our factor analysis suggests that the 7-factor model is preferable after a few modifications, and a 6-factor model may result in notable information loss.

In terms of demographic correlates of gaming motivations, males in our sample scored significantly higher than females across all motivational dimensions except escape. This is consistent with the results of the Chinese version of the MOGQ and also a recent meta-analysis which suggests that males have greater motivation to play video games across a variety of motivation domains.<sup>26,41</sup> Interestingly, several other studies have also found that the score for the escape motive specifically is not higher in males than in females<sup>42</sup> or that females have higher scores on escapist motives.<sup>22</sup> Wu et al.<sup>26</sup> also reported that males generally scored higher on MOGQ motives, but not on the escape domain. Interestingly, the pattern was repeated for those in the 18–20 age group, who scored significantly higher than other in all motivational dimensions (p<0.05) except in the escape dimension. Since participant ages are truncated at 18 (based on our inclusion criteria), our results may suggest that gaming motivations decline with age. This may happen since cognitive maturity could render many major games less appealing and enjoyable,<sup>43</sup> or since individuals take on increasing responsibilities and challenges as they age and enter the job market. It seems the only motivation that does not decrease significantly with age is the escape. This may be since some players increasingly use video games to escape routine tensions which increase with age and responsibility. However, this re-

sult has not been reported in any study so far and requires future studies.<sup>44</sup>

We observed several significant correlations between certain motivational factors from the MOGQ and domains which appear to correspond to them from the PENS and GAMS measures. Ballabio et al.<sup>21</sup> similarly assessed the convergent validity of MOGQ, and have observed a close association between the social, competition, and fantasy factors in MOGQ and the social, achievement, and immersion factors in OGMS, respectively. The recreation and coping factors were developed in the MOGQ for the very first time, so they have not been compared with any other subscales to the best of our knowledge.

### Conclusion and limitations

Overall, this study investigated multiple reliability and validity indices of the Persian version of the MOGQ questionnaire, and results indicate that it has appropriate psychometric properties for the assessment of online gaming motivations in our samples. However, the present study also had several major limitations. Firstly, we mainly sampled populations of university students, and even the online survey was advertised mainly on platforms which may be used more regularly by those with better education. We also utilized convenience samples which are not necessarily representative of the sampled populations, and future studies are needed to investigate the generalizability of our findings. Furthermore, the test-retest reliability of the questionnaire was investigated in the smaller of our two samples and after only a two-week interval, and studies of larger samples across longer follow-up periods are required to establish test-retest reliability with greater confidence. Lastly, we did not have access to data on a variety of demographic, socioeconomic and clinical variables, or objective measure of playing behavior that may be relevant to gaming motives and their relationship to problematic gaming. Longitudinal studies collecting data on multiple variables of interest across time would be necessary to further explore the dynamic relationships between gaming motives and such factors.

### Availability of Data and Material

The datasets generated or analyzed during the study are available from the corresponding author on reasonable request.

### Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

### Author Contributions

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