

## Evaluation of the Validity and Reliability of the Turkish Version of Online Gambling Disorder Questionnaire

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### ABSTRACT

**Objective:** There is a limited number of instruments to measure online gambling disorder among the Turkish population. Online Gambling Disorder Questionnaire is a 5-point Likert-type, self-report tool that evaluates problematic online gambling frequency and duration. This study aimed to assess The Turkish Version of the Online Gambling Disorder Questionnaire in a non-clinical sample.

**Methods:** This research is conducted on students of Ankara Yıldırım Beyazıt University Vocational School of Health Services. In the first-phase, content validity and in the second phase, construct, concurrent validity, internal consistency, and test-retest reliability were assessed. The questionnaire was completed online, and informed consent was obtained from the participants. The following instruments were used: Online Gambling Disorder Questionnaire, Internet Gaming Disorder Scale, and Generalized Problematic Internet Use Scale.

**Results:** A total of 243 (77.1%) of 315 subjects who participated in the study were women, and their mean age was  $20.49 \pm 2.54$  years. The Cronbach's alpha coefficient of the Online Gambling Disorder Questionnaire was found to be 0.939. In validity analysis, the Kaiser-Meyer-Olkin value was determined to be 0.887 (Bartlett sphericity test;  $P < .001$ ) and was found to be compatible with factor analysis. In investigation of the co-test validity of the Online Gambling Disorder Questionnaire, as scores on the Online Gambling Disorder Questionnaire scale increased, scores on the Internet Gaming Disorder Scale-20 and Generalized Problematic Internet Use Scale increased in women ( $r=0.214, P < .001$  and  $r=0.161, P < .05$ ; respectively) but did not change in men ( $r=0.115, P > .05$  and  $r=0.032, P > .05$ ; respectively).

**Conclusion:** In general, the results suggest that the Online Gambling Disorder Questionnaire has a stable and unidimensional structure. Preliminary psychometric results indicate that the Online Gambling Disorder Questionnaire has good validity and reliability properties.

**Keywords:** Addiction, internet addiction, gambling, online gambling, cross-cultural validation

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## INTRODUCTION

While gambling addiction has been considered a public health problem since the 1990s, the development of information and communication technologies has brought gambling addiction into the online realm.<sup>1</sup> In parallel with technological development, behavioral addictions such as the internet, social media, online gaming, and gambling have now been added to well-known addictions such as tobacco, alcohol, and drugs.<sup>2</sup> In this sense, online gambling is an activity that individuals can participate in without time and place limitations through the internet environment. With this aspect, it may be possible to create a disease burden in terms of both gambling and internet and other behavioral addictions. By definition, gambling means risking something valuable to win something even more valuable based on chance. Thus, it is based on a decision-making process between relative risk and reward.<sup>3</sup> Online gambling addiction is rapidly increasing in addiction areas. Examples of online gambling sites include online lotteries, online casinos, online betting, online poker sites, and so on.<sup>4</sup> Gambling may serve entertainment purposes or manifest itself in a pathological dimension. Gambling behavior that is not for entertainment is referred to as problematic or pathological gambling, depending on the degree to which it impairs functionality.<sup>5</sup> Pathological gambling was first introduced into the psychiatric diagnostic system with the Diagnostic and Statistical Manual of Mental Disorders (DSM)-III. In DSM-IV, the symptoms of pathological gambling were renewed, and the criteria were aligned with the criteria for substance dependence. In these 2 editions of the DSM, pathological gambling is classified under the heading of impulse control disorders.<sup>6</sup> With the DSM-5, the nomenclature of pathological gambling was changed to gambling disorder, and the diagnosis was grouped under the title of "substance-related and addictive disorders."<sup>7</sup> Although gambling disorder was included in the group of addictive behaviors in the recently published International Classification of Disease (ICD)-11, it is emphasized that this persistent and repetitive behavior can be online or offline.<sup>8</sup>

Online gambling is currently legal in many countries around the world and continues to spread worldwide. Even if countries take

appropriate measures and enact bans as legislation, it is not possible to prevent this behavior. Globally, epidemiological studies show that the prevalence of normal and online gambling varies from country to country. In a study conducted in the United States, which included 3634 individuals, 69.8% of participants had gambled in the past 12 months and reported that 5.3% of them gambled online and 19.2% gambled both normally and online.<sup>9</sup> In addition, a study conducted in Italy found that the frequency of online gambling among adolescents was 7.4%.<sup>10</sup> In another representative study conducted in Greece, it was reported that 37.23% of adolescents played online gambling according to DSM-IV, and 4.1% of them showed signs of addiction.<sup>11</sup> Although it is known that there are studies on internet addiction in different age groups, there are few studies on this topic in our country, especially in the literature review on the prevalence of online gambling/betting. In the literature, the only Turkish study conducted on the adolescent age group was by Arıcak et al<sup>12</sup>, and the prevalence of online betting was reported to be 12.4%. In the literature, there are a limited number of scales to assess online gambling addiction, and studies conducted in Turkey are not sufficient yet, for this new addiction type. One of them is the "Online Gambling Addiction Scale," developed by Karabrahimoğlu et al.<sup>13</sup> Another scale is the "Online Gambling Disorder Questionnaire (OGD-Q)" by González-Cabrera et al.<sup>14</sup> We demonstrated its validity and reliability in our study. Both scales assess the degree of online gambling addiction. We preferred the OGD-Q because it is shorter and can be better when used in practice to assess risk. This study aims to determine the Turkish validity and reliability of the OGD-Q, which measures the degree of online gambling behavior that has recently threatened the social fabric and become a significant public health problem.

## METHODS

### Sample

This research is a methodological study conducted on students of Ankara Yıldırım Beyazıt University Health Vocational School. For determining the sample size, we aimed for 200 or more students so that it would be at least 10 times the number of items on the scale. Participants who were over 18 years of age, answered more than

**Table 1. OGD-Q's Factor Loadings Items, Item-Total Correlations, and Cronbach's Alpha Coefficients When Item Is Deleted**

| Online Gambling Disorder Questionnaire (OGD-Q)   | 1     | 2     | 3     |
|--|-------|-------|-------|
| 1. Do you feel the need to spend more and more money to get the high you desire?   | 0.740 | 0.681 | 0.927 |
| 2. Do you feel nervous, irritated, or angry when trying to reduce or stop gambling online?   | 0.601 | 0.539 | 0.936 |
| 3. Have you tried to control, reduce, or stop gambling online and have not been able to do so?   | 0.758 | 0.713 | 0.925 |
| 4. Have you ever felt that online gambling has had negative consequences at a personal, social, family, or academic/work level, and you have still continued to gamble?  | 0.836 | 0.784 | 0.923 |
| 5. Do you often think about online gambling, for example, remembering past bets, planning your next bets, thinking about ways to make more money gambling online, reliving some moments related to online gambling, etc.?                              | 0.679 | 0.614 | 0.931 |
| 6. Do you bet or gamble online when you feel sad, anxious, or guilty, in order to feel better or to stop thinking about how you feel?  | 0.856 | 0.813 | 0.922 |
| 7. Do you feel like you have little control over online gambling (e.g., gambling more than you would like, spending more money than you would like, gambling in places where you shouldn't do that, not being able to stop gambling when you want to)? | 0.871 | 0.823 | 0.921 |
| 8. After losing money on a bet or in online gambling, do you usually gamble again to try to get that money back?   | 0.839 | 0.785 | 0.922 |
| 9. Do you lie to others to conceal how much time you gamble or how much you actually spend on online gambling?   | 0.857 | 0.807 | 0.922 |
| 10. Have you ever asked someone for money to improve or overcome the bad economic situation that online gambling has caused you?   | 0.815 | 0.758 | 0.926 |
| 11. Have you felt that you prioritized gambling over other areas of your life that had previously been more important (e.g., studying, hanging out with friends, sleeping less if you gamble at night, etc.)?  | 0.820 | 0.783 | 0.922 |
| Explained variances: 62.82% Cronbach's alpha: 0.939  |       |       |       |

1, factor loadings; 2, item-total correlation coefficient; 3, Cronbach's alpha value when a item is deleted.

90% of the questionnaire, and did not report any referral to mental health services were included in this study. A total of 68 subjects who did not agree to participate in the study or did not answer 90% of the questions in the questionnaire were excluded from the study group. The study was conducted with a total of 315 subjects. The questionnaire was completed online, and informed consent was obtained from the participants. The author's consent was obtained for the use of the questionnaire in the study, and approval was obtained from the Ethics Committee of Ankara Yıldırım Beyazıt University (Date: February 16, 2021, No: 70) University, as well as administrative approvals.

**Research Design**

Since the questionnaire was adapted from different languages and cultures, language and content validity were assessed in the first phase of our study, while construct validity, concurrent criterion validity, internal consistency, and test-retest reliability were assessed in the second phase. In the first phase, the OGD-Q items were translated into Turkish by 2 foreign language experts using the back-translation method. Subsequently, the Turkish form, which was created by the joint decision of the 2 experts, was translated into the native language by another language expert. The final approved Turkish form was submitted to the opinion of 15 experts consisting of academicians and research assistants for content validity review. The Content Validity Index (CVI) was calculated based on feedback from the experts. After the percentage analysis, the CVI value for the OGD-Q scale was 0.65. In the next step, 20 students who were not part of the sample were presented with the questionnaire, and their feedback on comprehensibility was obtained. The items were found to be understandable by the students, and no changes were made. In addition, the back-translation method was evaluated by re-administering the questionnaire to 30 students in the sample at 3-week intervals.

**Data Collection Instruments**

The first part of the study questionnaire includes sociodemographic information (age and gender) and risk factors for online betting (impact of online betting on one's life, type of game, gaming frequency, money spent-earned, credit status, sale of items, broadcast status-time spent betting, etc.). The second part consisted of the OGD-Q, Internet Gaming Disorder Scale (IGD-20), and Generalized Problematic Internet Use Scale (GPIUS).

Online Gambling Disorder Questionnaire is a 1-dimensional scale developed by González-Cabrera et al.<sup>14</sup> The scale consists of 11 questions and the answers to the questions change as "never, occasionally, frequently, very often, and daily." To get the prevalence of online gambling in the community, all items were split into 2. On the scale, any item with a rating equal to or greater than 3 is classified as "an addiction problem." Items with a rating below "never and occasionally" are classified as "without addiction problem." Participants who score 4 or more over 12-month or more period are categorized as having a "disorder for online gambling." Participants who score 4 or more in a 6- to 12-month period are categorized as having "problematic online gambling." Those scoring 4 or more points in the past 6 months are categorized as "at risk for online gambling." Generally, higher scores on the scale indicated greater online gambling problems.<sup>14</sup>

The IGD-20 was developed by Pontes et al<sup>15</sup> in 2014. Çakıroğlu and Soylu<sup>16</sup> made the Turkish adaptation of this scale. The scale consists of 20 items, including "salience, mood modification, tolerance,

**Table 2. Correlation of the Study Group's Scores from the OGD-Q Scale According to Gender with the Scores They Got from the IGD-20 and GPIUS and Sub-scales**

|                         | OGD-Q   | IGD-20  | Salience | Mood Modification | Tolerance | Withdrawal | Conflict | Relapse | GPIUS Total Score | Social Benefits | Mood Alteration | Negative Outcomes | Cognitive Preoccupation | Compulsive Internet Use |
|-------------------------|---------|---------|----------|-------------------|-----------|------------|----------|---------|-------------------|-----------------|-----------------|-------------------|-------------------------|-------------------------|
| OGD-Q                   | -       | 0.214** | 0.247**  | 0.074             | 0.186**   | 0.182**    | 0.077    | 0.194** | 0.161*            | 0.115           | 0.148*          | 0.072             | 0.129*                  | 0.160                   |
| IGD-20                  | 0.215** | -       | 0.852**  | 0.767**           | 0.844**   | 0.863**    | 0.782**  | 0.860** | 0.321**           | 0.209**         | 0.172**         | 0.245**           | 0.330**                 | 0.321**                 |
| Salience                | 0.144*  | 0.875** | -        | 0.541**           | 0.844**   | 0.841**    | 0.640**  | 0.822** | 0.367**           | 0.192*          | 0.209**         | 0.279**           | 0.389**                 | 0.352**                 |
| Mood modification       | 0.052   | 0.717** | 0.530*   | -                 | 0.581**   | 0.614*     | 0.449*   | 0.595** | 0.245**           | 0.113           | 0.196**         | 0.172**           | 0.256**                 | 0.216**                 |
| Tolerance               | 0.157** | 0.863** | 0.804**  | 0.549**           | -         | 0.880**    | 0.640**  | 0.862** | 0.370**           | 0.236**         | 0.210**         | 0.301**           | 0.359**                 | 0.347**                 |
| Withdrawal              | 0.274** | 0.812** | 0.700**  | 0.481**           | 0.708**   | -          | 0.689**  | 0.918** | 0.389**           | 0.273**         | 0.208**         | 0.303**           | 0.375**                 | 0.365**                 |
| Conflict                | 0.201** | 0.726** | 0.605**  | 0.286*            | 0.598**   | 0.506**    | -        | 0.706** | 0.235**           | 0.220**         | 0.090           | 0.191**           | 0.240**                 | 0.245**                 |
| Relapse                 | 0.153*  | 0.799** | 0.649**  | 0.425**           | 0.671**   | 0.852**    | 0.600**  | -       | 0.383**           | 0.298**         | 0.198**         | 0.291**           | 0.379**                 | 0.371**                 |
| GPIUS total score       | -0.132* | 0.505** | 0.433**  | 0.242             | 0.440**   | 0.402**    | 0.489**  | 0.451** | -                 | 0.687**         | 0.770**         | 0.859**           | 0.863**                 | 0.814**                 |
| Social benefits         | 0.138*  | 0.174   | 0.173    | -0.028            | 0.087     | 0.310      | 0.133    | 0.323** | 0.556**           | -               | 0.481**         | 0.517**           | 0.414**                 | 0.438**                 |
| Mood alteration         | -0.102* | 0.415** | 0.264*   | 0.430**           | 0.369**   | 0.308*     | 0.232*   | 0.317** | 0.694**           | 0.297*          | -               | 0.558**           | 0.528**                 | 0.462**                 |
| Negative outcomes       | -0.138* | 0.530** | 0.483**  | 0.228             | 0.511**   | 0.373**    | 0.556**  | 0.401** | 0.896**           | 0.281*          | 0.549**         | -                 | 0.751**                 | 0.676**                 |
| Cognitive preoccupation | 0.154*  | 0.430** | 0.381**  | 0.108             | 0.393**   | 0.375**    | 0.474**  | 0.446** | 0.892**           | 0.372**         | 0.487**         | 0.866**           | -                       | 0.825**                 |
| Compulsive internet use | 0.012   | 0.412** | 0.373**  | 0.050             | 0.362**   | 0.346**    | 0.508**  | 0.435** | 0.866**           | 0.472**         | 0.437**         | 0.793**           | 0.796**                 | -                       |

Boys' correlations are below the diagonal and girls are above.

\*\*Correlation is significant at the 0.01 level (2-tailed); \*Correlation is significant at the 0.05 level (2-tailed).

GPIUS, Generalized Problematic Internet Use Scale; OGD-Q, Online Gambling Disorder Questionnaire; IGD-20, Internet Gaming Disorder Scale-20.

withdrawal, conflict, relapse" sub-scales and is a 5-point Likert-type. An increase in the score obtained from the scale indicates an increase in addiction.

The GPIUS, validated in Turkish in 2019 by Canoğulları Ayazseven et al<sup>17</sup>, was developed in 2010 by Caplan.<sup>18</sup> The scale has the sub-scales of "preference for online social interaction, mood alteration, negative outcomes, cognitive preoccupation, and compulsive use internet use." It consists of 15 items and a 5-point Likert scale. As the score obtained from the scale increases, it indicates problematic internet use.

### Statistical Analysis

All descriptive data of the study were analyzed by number, percentage, mean, median, standard deviation, and interquartile ranges. The Mann–Whitney *U* test was used to compare the means of the groups because the data did not have a normal distribution. In the reliability analysis for the scale, item-total correlation, internal consistency (Cronbach's alpha), and test–retest correlation were evaluated separately. Because the data in the scale had ordinal characteristics, the Spearman method, which is a non-parametric correlation analysis, was used for the correlation analysis in the context of concurrent validity. For construct validity, exploratory factor analysis according to Kaiser–Meyer–Olkin (KMO) analysis was used.

## RESULTS

A total of 243 (77.1%) of 315 subjects who participated in the study were women, and their mean age was  $20.49 \pm 2.54$  (range, 18–38) years. The mean score of the subjects on the OGD-Q was  $11.67 \pm 2.84$  (range, 11–46). While OGD-Q scores did not change with age ( $r=0.020$ ;  $P=.728$ ), they were higher in men than in women ( $Z=5.321$ ;  $P < .001$ ). 13.3% ( $n=42$ ) of the study group reported gambling at least once in their lifetime, and 8.6% ( $n=27$ ) reported gambling in the past 12 months. According to the DSM-5 criteria (4 or more criteria for 12 months or longer), 2.22% ( $n=7$ ) of the total sample were classified as having an "online gambling disorder."

### Reliability Analysis of Online Gambling Disorder Questionnaire

It was found that the item-total correlation coefficients of the items in the scale ranged from 0.539 to 0.823. The Cronbach's alpha coefficient was found to vary between 0.921 and 0.936 when one of the items was removed. The Cronbach's alpha coefficient of the OGD-Q, which consists of 11 items, was found to be 0.939. The factor loadings of the OGD-Q items, the overall item correlations, and Cronbach's alpha coefficients when one item was excluded are shown in Table 1.

### Test–Retest Reliability of Online Gambling Disorder Questionnaire

Twenty individuals who had participated in the study answered the OGD-Q again 3 weeks later. While participants scored a mean of  $12.67 \pm 2.54$  on the first assessment, their later mean score was  $11.59 \pm 2.45$  ( $P > .05$ ). Intraclass correlation coefficient of the OGD-Q was 0.896.

### Validity Analysis of Online Gambling Disorder Questionnaire

In the study, the KMO value was determined to be 0.887 and Barlett's test's *P* value was below .001, and the database was found to be compatible with factor analysis. Factor analysis revealed that a unidimensional structure consisting of 11 items explained 62.82% of the total change in OGD-Q scores. After principal component analysis, the factor loadings of the items in the scale ranged from 0.601 to 0.871.

### Concurrent Validity of Online Gambling Disorder Questionnaire

To investigate the co-test validity of the OGD-Q, the relationship between the IGD-20 and GPIUS scales and their sub-scales and the OGD-Q was examined. As scores on the OGDQ scale increased, scores on the IGD-20 and GPIUS increased in women ( $r=0.214$ ,  $P < .001$  and  $r=0.161$ ,  $P < .05$ ; respectively) but did not change in men ( $r=0.115$ ,  $P > .05$  and  $r=0.032$ ,  $P > .05$ ; respectively). The correlation of the study group's OGD-Q scores by gender with the scores they obtained in the IGD-20 and GPIUS and their sub-scales is shown in Table 2.

In addition, those who had never participated in online gambling at least once in their lives and those who had never participated in online gambling in the past 12 months had higher scores on the OGD-Q ( $Z=10.964$ ;  $P < .001$ ,  $Z=9.740$ ;  $P < .001$ , respectively). The distribution of OGD-Q scores in the study group by online gambling status is shown in Table 3.

## DISCUSSION

Online gambling refers to a range of betting and gambling activities offered through computers, cell phones, internet-enabled devices, smartphones, tablets, and digital television. This type of gambling, facilitated by technological advances, the increasing availability of the internet, and the ownership of internet-enabled devices, is an activity that can be engaged privately at any time and place via high-speed internet connections that allow for quick placement of bets and notification of results. Given the high stakes, rapid feedback, and instant, easy access to a variety of betting options, there is growing concern that online gambling may lead to excessive gambling.<sup>19</sup> This study was conducted to test the validity and reliability of the Turkish version of the questionnaire measuring online gambling disorders among university students.

The literature has examined whether young people have gambled in the past 12 months or throughout their lifetime and has reported a low or moderate prevalence of problem gambling. Gambling participation reported that about one-third or more of adolescents or young adults had gambled at least once in their lifetime.<sup>20</sup> In the past 12 months, gambling participation ranged widely.<sup>20,21</sup> Differences in gambling participation are thought to depend on whether the study accounted for all gambling activities, such as playing cards with family, lottery, or private betting with peers, as well as the size of the study population.<sup>22</sup> In addition, developing

**Table 3. The Distribution of OGD-Q Scores in the Study Group by Online Gambling Status**

|  | No     |        |        | Yes    |        |        | Test Value Z; <i>P</i>  |
|--|--------|--------|--------|--------|--------|--------|-------------------------|
|  | Median | IQR 25 | IQR 75 | Median | IQR 25 | IQR 75 |                         |
| Have you ever had an online gambling bet in your life?     | 11.00  | 11.00  | 11.00  | 13.00  | 11.00  | 14.00  | <b>10.964; &lt;.001</b> |
| Have you had an online gambling bet in the last 12 months? | 11.00  | 11.00  | 11.00  | 13.00  | 12.00  | 15.00  | <b>9.740; &lt;.001</b>  |

OGD-Q, Online Gambling Disorder Questionnaire; IQR, interquartile range.



countries, where unemployment and poverty prevailed, were more risky. In our study, the prevalence of gambling at least once in a lifetime was found to be 13.3%, and the prevalence of gambling in the past 12 months was found to be 8.6%. The prevalence rates for problem gambling ranged from 3.6% to 5.6% in most studies.<sup>20,22-24</sup> In our study, this rate was found to be 2.22%.

Studies show that gambling is normalized among young people and is a larger part of their daily lives. According to the literature, older adolescents are more likely to have problems with gambling than younger adolescents.<sup>20,22,25</sup> In our study, although OGD-Q scores did not change with age, males had higher scores than females. Sharman et al<sup>26</sup> have reported that being male is 25 times more likely to be a moderate to high-risk gambler.

In general, the results of the study's factor analysis suggest that the OGD-Q has a stable and unidimensional structure with robust psychometric properties. Preliminary psychometric results indicate that the OGD-Q has good validity and reliability properties. In the study, the factor loadings of the items in the scale varied from 0.601 to 0.871 according to principal component analysis and showed a significant and strong structure.

In the original study on the scale, it was reported that these values ranged from 0.63 to 0.85.<sup>14</sup> The item-total correlation coefficients of the items composing the scale ranged from 0.54 to 0.82, and in the original study on the scale, these values were reported to range from 0.62 to 0.84.<sup>14</sup>

In our study, as the OGD-Q score increased, a positive correlation was found between the IGD-20 and GPIUS total scores. In addition, those who have never gambled on online gambling in their lives and those who have never gambled on online gambling in the past 12 months have higher OGD-Q scores. These data suggest that the study is adequate in terms of co-test validity. In assessing the test-retest reliability of the OGD-Q scale, 20 subjects who participated in the study answered the scale again 3 weeks later, and no difference was found between the mean scores. The Cronbach's alpha coefficient of the OGD-Q, which consists of 11 items, was reported to be 0.939. In the original scale study, this value was reported as 0.94.

Despite the strengths of our study, such as a sufficient sample size, it also has some limitations. For instance, due to the current pandemic risk, face-to-face interviews could not be conducted, and the sample consisted mainly of women from a single faculty.

In addition, the results of this study are based on self-report, which poses a risk of resource bias. Despite these limitations, the study highlights the potential of the OGD-Q in clinical and research settings and the fact that it is a valid and reliable measurement tool in the Turkish population.

In conclusion, this study demonstrated that the OGD-Q is a unidimensional scale with 11 items and robust psychometric properties in the general young population of Turkey. The validity and reliability assessment results of the OGD-Q indicate that it is a sufficient psychometric instrument for assessing online gambling disorders.

**Ethics Committee Approval:** Ethical committee approval was received from the Ethics Committee of Ankara Yıldırım Beyazıt University (Date: February 16, 2021, No: 70).

**Informed Consent:** Verbal informed consent was obtained from all participants who participated in this study.

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