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Investigating the Psychometric Properties of Problem Gambling Severity Index in students

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Abstract

Objective: Problem Gambling is defined as one of the disorders associated with drug abuse. Gambling-related harm can affect multiple domains of life, including financial and health problems, psychological and emotional distress, and impaired social and cultural relationships. The aim of this study was investigating the psychometric properties of Problem Gambling Severity Index in Iranian students.

Method: The method of this study was correlational. The statistical population of this study was all students in the Azarbaijan Shahid Madani University in 2019. The sample size was 211 students (121 girls and 90 boys) that were selected through cluster sampling method and determined based on the fact that at least 5 people are required for each item for factor analysis of the Problem Gambling Severity Index and Addiction Tendency Questionnaire.

Results: In order to determine the psychometric properties of the Problem Gambling Severity Index, a confirmatory factor analysis method was used. Indirect path coefficients between the components of gambling behavior ($\beta = 1$, $p > 0.001$) and gambling consequences (($\beta = 0.97$, $P > 0.001$) with the Gambling Severity Index indicate a significant relationship between factors and the whole scale. The study of concurrent validity Gambling Severity Index with Addiction Tendency Questionnaire showed there is a positive and significant relationship between these Questionnaires ($r=0.57$, $p<0/001$). The reliability of the scale was obtained 0/79 using Cronbach's alpha.

Conclusion: According to the results, it can be said that Problem Gambling Severity Index is a stable and valid tool for examining gambling problems and can be used in Iran.

Keywords: Drug Abuse, Emotional Distress, Health problems, Problem Gambling, PGSI.

Introduction

In recent years, gambling has become a popular hobby, and most adults in most developed countries participate in one or more forms of gambling. For most participants, gambling seems to be a relatively harmless recreational activity (Turner, McDonald, Ialomiteanu, Mann, McCready, et al., 2019). However, the problem of gambling is associated with a high level of mental health problems and substance abuse and can cause significant harm. Such injuries include financial problems, relationship disorders or failures, emotional or mental disorders, impaired health, cultural harm, impaired performance at work or school, and criminal activity (McMahon, Thomson, Kaner & Bambra, 2019).

Gambling-related damages can affect multiple domains of life, including financial and health problems, psychological and emotional distress, and impaired social and cultural relationships. Also, gambling disorders and depression are mental disorders that are associated with significant impairments in performance and quality of life. Empirical evidence suggests that these two psychiatric disorders most often occur commonly more than what expected in the general population.

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In addition, depression is one of the most common psychological disorders among people with gambling disorders (Schluter, Kim, Poole, Hodgins, McGrath, Dobson, & Taveres, 2019). Despite many advances in understanding the biological and neurological factors involved in addiction, the disorder remains a major public health problem that is associated with individual and social suffering and has a high burden on the individual, family, and community (Dehghani, Rostami & Aslani, 2017).

Gambling Disorders the latest diagnostic and statistical version of mental disorders is a psychiatric state as an addiction with no relation to substance use. This disorder is characterized by a persistent and frequent pattern of gambling behavior that results in severe clinical distress (Bach, Steward, Granero, Aranda, Gutierrez et al., 2019). The prevalence of gambling problems among male adolescents is twice compared to females (Weidberg, Roz, Hermida, Loredo, Gosendo, et al., 2018).

Gambling has been reported as one of the most addictive behaviors among adolescents. In particular, with the rapid expansion of legal gambling opportunities and the emergence of new forms of gambling, including video games, gambling will increase significantly in the near future (Cosenza, Ciccarelli, & Nigro, 2019). In most parts of the world, gambling is legal and socially acceptable. However, some of gamblers (1 to 2 percent of the population) have gambling problems that are related to social, legal, and psychological problems and spend more money especially when they continue losing money (Sztainert, Hay, Wohl, & Abizaid, 2018).

Gambling has increasingly become a major problem in many developed countries. Increasing the number of media outlets that have been legalized for gambling has made it more accessible and easier for people to gamble. In addition, the increase in online gambling sites has led to a significant increase in the prevalence of gambling in this new environment (Churchill & Farrell, 2017).

The gambling problem, a condition that is associated with financial problems and severe consequences of mental health, may be directly related to a common competitive mindset (Hakansson, Kentta, & Akesdotter, 2018). Moore defines risk acceptance as exposing oneself to an injury or loss so that there is a risk of loss (Mashmol-Haji-Agha & Abolgasemi, 2017). Accordingly, gamblers have a high-risk tolerance, and gambling pathology is associated with changes in dopaminergic areas associated with reward, risk, and motivation. In addition, previous studies have identified the neurobiological association of problem gamblers with abnormalities in the brain's dopamine system, which is critical for reward sensitivity (Vieno, Canale, Potente, Scalese, Griffiths, et al., 2018).

Although there are different types of gambling, their common feature is that it stimulates the brain's reward system (Yazdi, Rumetshofer, Gnauer, Csillage, Rosenleitner, et al., 2019). During gambling, the uncertainty paradox often results in unpredictable decisions, and the neural mechanisms of such a decision based on an internal evaluation of the likely outcomes are still not understood. Various findings have identified the Paralympics' cortex as a key structure in evaluative decision-making. Paralympics' cortex also plays a major role in behavioral flexibility, which allows for the control of flexible behaviors and spontaneity based on internal evaluation (Passecker, Mikus, Vina, Anner, Dimidschstein, et al., 2019).

In addition, impulsivity is a central feature involved in the development and persistence of gambling disorder and has been suggested as one of the strongest features associated with this disorder. Impulsivity tends to act regardless of adverse consequences. Longitudinal studies also show that impulsivity has a strong etiological role in gambling disorder (Sharif-Razi, Hodgins, & Goghari, 2018). In the research literature, the terms cognitive impulsivity, impulsive decision making, and risky decision making have sometimes been used alternatively so that numerous studies using gambling tests have measured this

cognitive problems (Ghamari-Givi & Mojarrad, 2016). The prevalence of emotional disorders in gambling pathology is close to 40% and is most strongly associated with this disorder and shows the importance of examining the relationship between gambling and emotional states such as depression, anxiety, and stress. However, people who gamble in response to negative moods are different from those who gamble because of their excitement (Jautegui, Estevez & Onaindia, 2018).

Also, empirical studies show that alcohol consumption causes an increase in a variety of gambling behaviors, including increased betting, increased gambling time, and risk assessment difficulties (Huggett, Winiger, Corley, Hewitt, & Stallings, 2019). Kim and Lee (2011) argue that high sensitivity to reward and low sensitivity to punishment have a strong association with risky decisions, and high sensitivity to punishment and low sensitivity to reward make safer decisions after fail experience (Ciccarelli, Cosanza, Olimpio, Griffiths, & Nigro, 2019). Fiedler, Kairouz, Costes, and Weibmuller (2019) believe that the dose-response relationship indicates a positive association between gambling problems and money consumption. The share of income from troubled gamblers can be an important indicator of whether a game is beneficial or harmful to society. Games are less profitable when gambling revenue is increased.

Addictive disorders are a major public health challenge that carries the burden of human and social responsibility (Fiedler, Kairouz, Costes, & Weibmuller, 2019). The recent classification of addiction disorder with and without substance use (i.e. addictive behaviors) has recognized gambling disorder as an addictive disorder (Non-substance related disorders) associated with drug and substance abuse disorders (Luquiens, Miranda, Benyamina, Carre & Aubin, 2018). The pathology of gambling or gambling disorder is the most widely recognized study and behavioral addiction; however, despite extensive information of this addictive disorder, research into gambling disorder is still extensive in many areas (Grubbs, Chapman, & Shepherd, 2019).

Research on the Problem Gambling Severity Index (PGSI) has been limited. Preliminary research indicated that it has relatively good psychometric properties. In this initial research (N=3,120), adequate reliability in terms of both internal consistency (alpha= .84) and test-retest reliability (r= .78) was reported. Evidence for validity was less clear. This measure was developed explicitly for use with general (rather than clinical) individuals (Holtgraves, 2009). One of the effective and supportive factors in youth addiction tendency is the emotional atmosphere of the family and the degree of a good relationship with parents. Research has identified families as one of the most important factors in preventing or affecting children for addiction (Abdolmaleki, Farid, Habibi-Kaleybar, Hashemi, & GhoddoosiNejad, 2016). Also, the phenomenon of addiction has many unpleasant consequences that can call challenge the disintegration of families and divorce, orphaned children and their future, the involvement of the younger generation in this problem and the loss of financial and economic resources, the filling of prisons, and other disorders (Rezaee, Eslami, & Mahdipour-Khorasani, 2014).

Although the effect of gambling on various aspects of a gambler's life has been emphasized in numerous studies outside of Iran, the study of examining gambling in Iran was not found. Therefore, based on above mentioned and many problems resulting from addiction to gambling, more research in this field is essential. In this regard, it is important to have a tool to do a comprehensive and reliable evaluation.

Therefore, the main purpose of this study is to evaluate the psychometric properties of the Problem Gambling Severity Index for Iranian students.

Method

Participants

Since the number of items is less than 10, the sample size required for the study should be at least 200

people (Myers, Gamst & Garino, 2016); therefore, 211 people (90 males and 121 females) were selected through the cluster sampling method. The total number of undergraduate students was 4707, which includes 2878 girls and 1919 boys. From seven colleges, one training group was select randomly and from each training group, one entry group was select randomly again, which in total, seven entry groups, and after removing 15 distributed questionnaires, 211 questionnaires were collected and analyzed. The statistical population was all the students of Azarbaijan Shahid Madani University in 2019. Inclusion criteria were being a student of Azarbaijan Shahid Madani University and consent to participate in this research. Also, the exclusion criteria were being the students of other universities and unwillingness to participate in the research. The questionnaire was translated to Farsi, and then the translated version was reviewed. After the final approval of the translated version, the questionnaire was administered to students. For each item, the individual's answer was rated on a 4-point Likert scale (0 = never, 1 = sometimes, 2 = most of the time, and 3 = almost always). A score of 0 to 3 was given for each item. In this research, the subjects have been assured the confidentiality of their information and anonymity, so they were asked not to enter their personal details in the questionnaire.

Objectives

The present study aimed at answering the question of whether the psychometric properties of the Problem Gambling Severity Index Questionnaire are appropriate for Iranian students.

Materials and procedure

Problem Gambling Severity Index (PGSI): The questionnaire was developed by Holtgraves in 2009 (Holtgraves, 2009). This tool was designed to measure the prevalence of gambling problems in the community and to identify the types of gambling problems in the general population. The instrument has been validated in a sample of 3120 people in Canada and has measured gambling problems for the past twelve months. The results of this study reported the alpha coefficient of the whole sample between 0.53 and 0.70. This tool is suitable for determining the severity of gambling problems as well as screening in the general and non-clinical population (Maarefvand, Rafimanesh, Mohammadi, Morshedi, & Ajami, 2017). The questionnaire consists of 9 items: 4 items measure gambling behavior (How many times do you bet more than you could pay?) {Bet}; (How much do you need to gamble with more money to feel the same excitement?) {Tolerance}; (Are you coming back the next day to try to win back the money you lost?) {Chase}; (Have you borrowed money or sold something to earn gambling money?) {Borrowed}, and 5 items that assess the adverse consequences of gambling: (How much do you feel you have gambling problems?) {Felt problem}, (How many people have criticized your betting or told you that you had a gambling problem, regardless of whether that was right or wrong?) {Criticized}, (How much did you felt guilty when you bet?) {Felt guilty}, (How much is gambling causing a health problem such as stress or anxiety?) {Health problem}, (How much gambling has caused financial problems for you or your family?) {Financial problem}. For each item, respondents are scored on a 4-point Likert scale (0 = never, 1 = sometimes, 2 = most of the time and 3 = almost always) (Holtgraves, 2009).

Addiction Tendency Questionnaire: This questionnaire was developed by Weed and Butcher in 1992 and was standardized in Iran by Zargar. The questionnaire consists of 41 items (5 of which are false), with a score of 0 (strongly disagree) to 3 (strongly agree). These items are reversed in questions 6,12,15, and 21. To obtain the overall score of the questionnaire, the scores of all item (excluding the false items) are summed up. False items are items 12, 13, 15, 21, and 33. This score is ranged from 0 to 108. Higher scores indicate greater

readiness of the respondent for addiction, and vice versa. The validity of this scale reported 0.90 using Cronbach's alpha formula (Mohammadkhani, Sh., Yeganeh, T., & Karimpour, 2015).

Results

Descriptive data

The sample consisted of 121 girls and 90 boys and their mean age ranged from 19 to 25 years. Confirmatory factor analysis was used to determine the construct validity of this scale. In confirmatory factor analysis of this scale, chi-square index, CMIN/DF, GFI, AGFI, CFI, NFI, and RAMSEA were investigated and the results are reported in Table 1.

above 90%, indicating the ideal fit of the model. The RAMSEA is 0.001 which is less than 0.05 and is desirable. Problem Gambling Severity Index includes 2 gambling factors. Indirect path coefficients between the components of gambling behavior (β = 1, p >0.001) and gambling consequences (β = 0.97, P >0.001) with the Gambling Severity Index indicate a significant relationship between factors and the whole scale.

KMO's test is 0/80 which shows the sample size is suitable for factor analysis. Bartlett's test is 0/00 that indicates the results can be generalized to the whole society. The confirmatory factor analysis coefficient is shown in table 2.

Table1. Confirmatory Factor Analysis of Problem Gambling

chi-square	CMIN/DF	GFI	AGFI	CFI	NFI	RAMSEA
0/4	0/41	0/99	0/99	1	0/99	0/001

Table2. Mean, Standard deviation and factor analysis coefficient problem gambling severity index

Questions	mean	Standard deviation	factor analysis coefficient
1. When you think of the past 12 months, have you bet more than you could really afford to lose?	0/16	0/42	0//60
2. Still thinking about the last 12 months, have you needed to the gamble with larger amounts of money to get the same feeling of excitement?	0/28	0/65	0/58
3. When you gambled, did you go back another day to try to win back the money you lost?	0/43	0/74	0/58
4. Have you borrowed money or sold anything to get money to gamble?	0/27	0/63	0/62
5. Have you felt that you might have a problem with gambling?	0/42	0/82	0/67
6. Has gambling caused you any health problems, including stress or anxiety?	0/87	1/12	0/59
7. Have people criticized your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?	0/45	0/88	0/73
8. Has your gambling caused any financial problems for you or your household?	0/44	0/86	0/74
9. Have you felt guilty about the way you gamble or what happens when you gamble?	0/95	1/21	0/54

According to Table 1, GFI, AGFI, and CFI are

Table 2 shows that the obtained factor coefficients

are appropriate for the questions. This index has 9 questions that 4 items evaluate gambling behaviors and 5 items evaluate the adverse consequences of gambling. In this research, studies showed that these questions have good validity and were not changed.

Figure 1 shows the graph of the estimated model. As shown in Fig. 1, the largest factor is related to item 8 and the smallest factor to items 2 and 3.

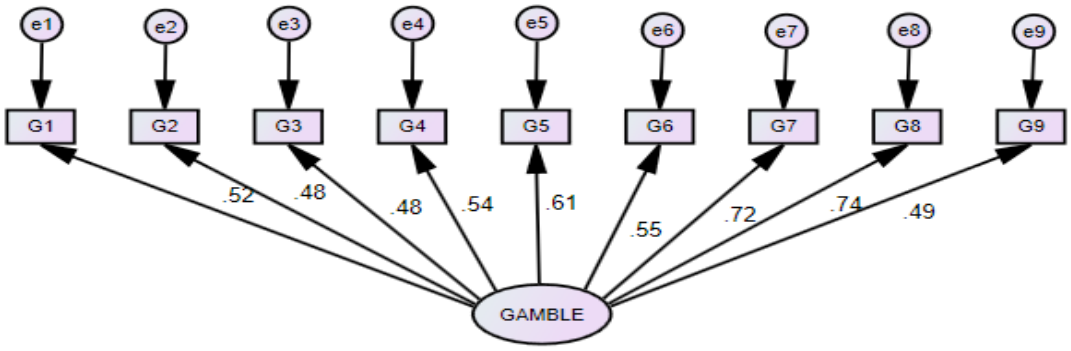

Figure1. Estimated model diagram of problem gambling severity index

To assess the validity of the Problem Gambling Severity Index, its relationship with addiction tendency scale scores was investigated. The results showed that the correlation between problem gambling severity index and addiction tendency scale was r =0.57 at p<0/001, which indicates there is a significant positive relationship between the two scales, i.e. the higher score the individual obtains on the addiction tendency questionnaire, the higher score on the problem gambling severity scale he is expected to get. Cronbach's alpha coefficient was used to assess the validity of the problem gambling severity index. Cronbach's alpha results are reported in Table3.

Table3. Cronbach's alpha coefficients for problem gambling severity index and its subscales

Statistical index	Total validity coefficient	Gambling consequences subscale	Gambling behavior subscale
Cronbach's alpha	0/79	0/77	0/70

Table4. T criterion score and percentage rank calculated for each raw score

raw score	Frequency	T criterion score	Percent rank	raw score	Frequency	T criterion score	Percent rank
0	75	41	18/01	9	3	60/02	80/09
1	14	43/11	39/10	10	10	62/13	83/18
2	13	45/22	45/50	11	5	64/24	86/73
3	18	47/34	52/84	12	11	66/35	90/52
4	11	49/45	59/72	13	6	68/47	94/55
5	10	51/56	64/69	15	6	72/69	97/39
6	9	53/68	69/11	16	2	74/81	99/29
7	11	55/79	73/93	18	1	79/03	100
8	6	57/90	77/96				

The results in Table 3 show that the Problem Gambling Severity Index Questionnaire has good

validity in the present study.

Percentage rank and T-score were used to determine the cut-off point of this scale. The T criterion score and the percentage rank calculated for each raw score are presented in Table 4.

Table 5 shows that tests with raw scores of 2 and lower had lower gambling and those with raw scores of 3 and upper have more gambling.

Discussion

The purpose of this study was to investigate the psychometric properties of the Problem Gambling Severity Index in Iranian students. To do that, confirmatory factor analysis was used to assess the construct validity of the Problem Gambling Severity Index. The results showed that the factor structure of the Iranian sample was fitted with the questionnaire.

Addiction is a multifactorial phenomenon and a very complex physical, psychological, social, and spiritual disorder that has a recurrent nature (Arjmand Ghujur, Mahmoud Aliloo, Khanjani & Bakhshipour, 2020). People with problem gambling disorders often suffer from cognitive distortions such as the illusion of control, high levels of psychological trauma, and dysfunctional personality traits, such as seeking a new something (Bach et al, 2019).

psychopathological evidence suggests that attentional control has a significant role in addiction. Failure to attention control and attention bias causes individuals to continue or return behavioral problems (Azarmehr & Ahmadi, 2020). Also, gambling disorders and depression are mental disorders that are associated with significant impairments in performance and quality of life. Empirical evidence suggests that these two psychiatric disorders most often occur in the general population more commonly than expected. In addition, depression is one of the most common psychological disorders among people with gambling disorders (Schluter, Kim, Poole, Hodgins, McGrath, Dobson, & Taveres, 2019). Despite the diagnostic implications of gambling pathology from impulse control disorder to addictive behaviors, it is still recognized as a behavioral marker and a diagnostic criterion for gambling disorder. The Chase is defined as irrational behavior in which people gamble and lose and continue gambling. For gamblers, financial loss serves as an incentive to continue gambling to recover lost money: more money lost more interest in the chase. Weidberg et al. (2018) believe that there are potential factors for gender differences in gambling (Weidberg et al., 2018).

Among psychological factors, research on adult gambling shows that gambling motivations vary by gender. Women routinely play gambling to manage depression, while men see gambling as a way to promote themselves. Cognitive impairment in gambling disorder is under investigation. Research on addiction without substance use seems to be a great opportunity to get more information about the cognitive impairments associated with the addiction process without intoxication (Luquiens et al, 2018).

Regarding the relationship between addictive behaviors and gambling problems, the present study did it by assessing Problem Gambling Severity Index properties by examining its concurrent validity and its relationship with the addiction tendency scale. The results showed that there is a positive relationship between gambling and addiction tendency and respondents with high addiction tend to score higher in the problem gambling severity index. This result is consistent with the findings of Turner et al. (2019) in that drug addiction increases the risk of gambling problems (Turner et al, 2019). In their research, they showed that different types of individuals and social factors influence the risk of gambling. These factors include access to gambling opportunities, gambling misconceptions, behavioral disorders, and social factors, including being young and male, alcohol and drug use problems, and mental disorders, such as depression, anxiety, and suicide. In addition, in the present study, the Cronbach's alpha coefficient was 0.79, that indicates the high internal consistency of each question with the whole scale and its acceptable validity in the present sample. In order to determine

the psychometric properties of Problem Gambling Severity Index, confirmatory factor analysis method was used for its reliability and validity.

The prevalence of gambling in recent years has led to a renewed interest in understanding the concepts of gambling behavior. Moreover, there are mental health costs for individuals that must be allocated to them (and their families). Depression is one of the most common conditions associated with gambling, and empirical research supports the link between gambling and depression. It is clear that there is a problem and pathology of gambling and for some gamblers, it is not constructive, so why they continue to gamble and thus behave abnormally has been a concern for researchers always. The gambler's damages show that for some people, the ability to stop gambling is inhibited. It is commonly thought that this inhibition is present in people who have a gambling addiction and this limits their ability to reduce gambling (loss of control) (Churchill et al., 2017).

Based on the above mentioned, the present study shows that the Problem Gambling Severity Index can be an appropriate and valid tool for Iranian society. Therefore, this questionnaire can be used in research institutes and universities. It should be noted that the statistical population of this study included only the students of Azarbaijan Shahid Madani University in 2019, which limits the generalizability of the results. Therefore, it is suggested that future research be done in statistical populations with other age and educational conditions and other regions.

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-Appendix

Problem gambling severity index (PGSI)

Questions	Never	Sometimes	Most of the time	Almost always
1. When you think of the past 12 months, have you bet more than you could really afford to lose?	0	1	2	3
2. Still thinking about the last 12 months, have you needed to the gamble with larger amounts of money to get the same feeling of excitement?	0	1	2	3
3. When you gambled, did you go back another day to try to win back the money you lost?	0	1	2	3
4. Have you borrowed money or sold anything to get money to gamble?	0	1	2	3
5. Have you felt that you might have a problem with gambling?	0	1	2	3
6. Has gambling caused you any health problems, including stress or anxiety?	0	1	2	3
7. Have people criticized your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?	0	1	2	3
8. Has your gambling caused any financial problems for you or your household?	0	1	2	3
9. Have you felt guilty about the way you gamble or what happens when you gamble?	0	1	2	3