ADAPTATION OF THE GAME ADDICTION SCALE TO TURKISH: VALIDITY AND RELIABILITY STUDY

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ABSTRACT

The aim of this study is the adaptation of the Turkish version of the Game Addiction Scale which was developed by Lemmens, Valkenburg and Peter (2009). The 1442 participants aged 15-18 were the study group of this adaptation study. The reliability coefficient (cronbach alpha) for the adaptation of the Game Dependence Scale was found to be 0.95. In the study, exploratory factor analysis was used for construct validity, and confirmatory factor analysis was used to test the accuracy of the factor structure obtained. The reliability and validity analyses of the Turkish version of the Game Addiction Scale were evaluated and the values obtained were within the expected limits; The scale was adapted to be a valid and reliable measurement tool in Turkish culture.

Keywords: Factor analysis, game addiction, scale, adaptation

INTRODUCTION

With the rapid changes in information and communication technologies, the usage areas of these technologies have expanded and the frequency of usage has also been affected. When the frequency of usage of technologies goes outside the controllable periods, the concept of dependence of the related technology arises. When the studies in the literature are examined, expressions such as technology addiction, smart phone addiction, social media addiction, internet addiction, game addiction are encountered. Nowadays, it is stated that playing in a controlled manner, without excessive, provides positive contributions such as relaxation, tension and stress to the lives of individuals (Green and Bavelier, 2003; Prot et al., 2014). If the game play activities are excessive, if uncontrollable, causes changes in the individual's feelings and thoughts-social life, problematic or dependent use is mentioned (Akçay and Özcebe, 2012; Akçayır, 2013; Arslan et al., 2014; Aydoğdu-Karaaslan, 2015 Gentile and Anderson, 2006; Griffiths and Davies, 2005; Griffiths and Meredith, 2009; Horzum, Ayas and Balta, 2008; Lieberman, Fisk, and Biely, 2009; Ogel, 2012; Smith, 2004; Torun, Akcay and Colaklar, 2015; ; Yengin, 2010; Young, 2009). In addictive and violent behaviors of individuals (Trudewind and Steckel, 2003; Hartmann, 2007), the addiction of game addiction in individuals is associated with changes in anxious and anxious feelings (Schulte-Markwort, 2005), physical, psychological and social adverse effects (Grüsser and Thalemann, 2006), epileptic seizure. It is stated that the possibility of undesirable situations such as blood circulation and heart failure, social isolation, delay in social skills, not paying attention to family and school studies (Griffiths and Davies, 2005) are increased. Lemmens, Valkenburg and Peter (2009) describe the addiction as an individual's excessive use of computer games or video games, digital games, and the inability to control or change the level of overuse, as well as causing social and emotional changes in this process.

Use of extreme game play for the concept of game addiction in the literature (Charlton and Danforth, 2007; Grüsser, Thalemann and Griffiths, 2007), playing obsessive / compulsive

game (Grüsser, Thalemann and Griffiths, 2007), game addiction (Charlton and Danforth, 2007; Chiu, Lee and Huang, 2004; Chou and Tsai, 2007; Chou and Ting, 2003; Irmak and Erdogan, 2016; Ko et al., 2005; Lemmens, Valkenburg, and Peter, 2008; Expressions such as pathological play (Gentile, 2009; Young, 2009) and problem play (Desai et al., 2010) are used. In this study, it was preferred to use the concept of game addiction.

Game addiction measurement tools developed for the purpose of determining game addiction suitable for Turkish culture (Horzum, Ayas and Balta, 2008; Kaya, 2013), adapted (Akın, Usta, Başa and Özçelik, 2016; Arıcak, Dinç, Yay and Griffths, 2018; Hazar and Hazar, 2017; Ilgaz, 2015; Irmak and Erdoğan, 2015; Taş, 2017). When the domestic and foreign related literature is examined, it is noteworthy that the number of children in different age groups can be evaluated in terms of game addiction. In this study, adaptation of the measurement tool (Game Addiction Scale, GAS) developed by Lemmens, Valkenburg and Peter (2008, 2009), which can be used to determine the level of game addiction by evaluating the person himself / herself by evaluating the game addiction level as a type of technological addiction.

METHOD

The research group consisted of 1442 participants, ranging from 15-18 years of age. 49.9% of the participants were women (N = 720) and 50.06% of men (N = 722). Developed by Lemmens, Valkenburg and Peter (2008, 2009) and collected under 4 factors, 21-item Game Dependence Scale (ADQ) was used for self-report. they are asked to mark 5 "Never, Rarely, Sometimes, Often and Always" and they are given 1, 2, 3, 4 and 5 points respectively. The original language was translated into Turkish by 4 experts and these translations were compared in terms of semantic, conceptual, idiomatic and experiential measures. In accordance with the stated criteria, four translations were found to be consistent, but the simplest expressions were preferred. After completion of the Turkish translation, the scale was studied by 2 experts; the intelligibility of the substances has also been approved by experts.

In the adaptation study for the scale, exploratory factor analysis was used for construct validity, and confirmatory factor analysis was used to test the accuracy of the factor structure obtained. The main component analysis method was used in exploratory factor analysis and the maximum likelihood method was used in confirmatory factor analysis. For the reliability of the scale, Cronbach's alpha value (internal consistency coefficient), which aims to achieve internal consistency coefficient, was evaluated as a criterion. Kaiser-Meyer-Olkin (KMO) coefficient and Barlett Sphericity test were applied to determine the suitability of the data and the sample for basic component analysis (Tabachnick and Fidell, 2007). In order to make the factors more simple and easy to understand, Varimax vertical rotation technique which is the most frequently used (Ho, 2006) has been applied. Varimax method with less variable, the maximum variance of the factor is made to be rotated (Tavşancıl, 2006). The lower limit of item self-values was taken as 1.00 in determining the factor number (Aşkar and Dönmez, 2005). Corrected-item total correlation scores were used to determine the items to be included in the scale. The data of the participants were randomly divided into two; The first data set was obtained from the explanatory factor and the second data set was subjected to confirmatory factor analysis.

FINDINGS

The arithmetic mean values, standard deviation values, item-scale correlation coefficients, and lower-upper 27% group t values of the items included in the trial form of Game Addiction Scale are given in Table 1.

Table 1. Descriptive Statistics of the Substance of the Game Dependency Scale

Items	N	Mean	Sd	ItemTotal Correlation [1]	Distinction t Value (Lower %27- Upper%27)[2]	p
1	721	3,74	0,1	0,67	10,36	0,00
2	721	2,54	0,1	0,72	9,82	0,00
3	721	2,36	0,1	0,68	11,96	0,00
4	721	3,46	0,2	0,64	10,42	0,00
5	721	2,57	0,2	0,52	12,27	0,00
6	721	3,61	0,2	0,78	12,54	0,00
7	721	4,82	0,1	0,71	10,18	0,00
8	721	3,32	0,2	0,59	9,68	0,00
9	721	2,16	0,2	0,69	9,26	0,00
10	721	2,71	0,0	0,61	10,44	0,00
11	721	4,65	0,1	0,58	10,65	0,00
12	721	4,28	0,0	0,65	11,48	0,00
13	721	2,44	0,1	0,60	9,09	0,00
14	721	3,16	0,2	0,55	9,46	0,00
15	721	2,02	0,3	0,74	11,09	0,00
16	721	3,73	0,1	0,69	7,88	0,00
17	721	4,98	0,2	0,57	9,87	0,00
18	721	3,22	0,1	0,85	9,04	0,00
19	721	2,46	0,2	0,54	11,12	0,00
20	721	2,42	0,1	0,72	10,17	0,00
21	721	3,84	0,3	0,66	11,57	0,00

[1]$n=721$ [2]$n_1=n_{2=}$ 195

As can be seen in Table 1, the arithmetic mean values of substances vary between 1,600 and 2,483. It is observed that the standard deviation values of the articles also vary between 0.1 and 0.3. As seen in Table 1, the correlation coefficients between the item score and the scale score for each item ranged between 0.52 and 0.85. In addition, all of these values were statistically significant at the level of 0.01. The arithmetic mean values of the items ranged between 2.02 and 4.98.

The scale scores of the participants in the measurement tool were collected from the highest to the lowest and 195 people with the lowest scores from the group of 721 and the lower with 27%. group. The difference between the average of the points obtained from the upper group and the average of the scores obtained from the subgroup for each item was analyzed by using the Independent Groups t-Test and the results obtained are presented in Table 2. The mean scores of the responses of the participants in the lower and upper groups to the items showed a statistically significant difference at 0.01 level for all items. The total test score of the experimental scale was 52.70 in the total test score, 36,00 in the peak, 36,00 in the median, 13,2 in the standard deviation, 127,02 in the variance and 94,00 in the variance. The lowest score in the group is 21 and the highest score is 105. The coefficient of skewness was -0.56, the coefficient of creep was 0.83. According to these findings, it can be interpreted that the data obtained are very close to normal distribution.

Validity of the Game Dependency Scale

The two-stage method was used to determine the construct validity of the scale. In the first stage, the exploratory factor analysis was performed on the data obtained from the first group of 721 individuals. Then, as a result of exploratory factor analysis, confirmatory factor

analysis for each dimension was performed. In factor analysis, it is sufficient to have 200 participants or 10/1 to 2/1 subjects (Kline, 2005). Therefore, the data obtained were found to be sufficient for factor analysis.

The extent to which a test can be measured accurately in the context of the desired behavior is called the construct validity (Büyüköztürk, 2007; Fraenkel and Wallen, 2008; Büyüköztürk et al., 2010). Factor analysis (basic component analysis) was used to examine the construct validity of the scale (Tabachnick and Fidell, 2007). Exploratory factor analysis was performed to determine the factor structure of the scale. Prior to factor analysis, the results of the Kaiser-Meyer Olkin (KMO) and Barlett tests conducted for the purpose of examining the suitability of the data and sample for the analysis of the basic components were examined. The fact that the KMO coefficient and the Bartlett test were found to be significant (p <0.001) indicate that the suitability of the dataset for principal component analysis and the size of the sample were sufficient (Field, 2005; Büyüköztürk, 2007). The Kaiser-Meyer-Olkin value of the study was found to be 0,92 and this value could be considered excellent (Tabacknick and Fidell, 2001). The results of the Bartlett Sphericity Test were calculated as X2721 = 2176,02 (p <0,001). This result is evidence that the data comes from a multivariate normal distribution (Tabacknick and Fidell, 2001). These findings show that the data obtained from the trial application can be subjected to factor analysis.

Findings Related to Exploratory Factor Analysis of Game Addiction Scale

The 21-item trial item of the Game Dependency Scale was subjected to the basic component factor analysis and varimax was used as the rotation method. As a result of this analysis, it is seen that there are seven factors whose eigenvalue is over 1. In addition, the slope-deposition graph was examined to determine the number of factors and is shown in Figure 1.
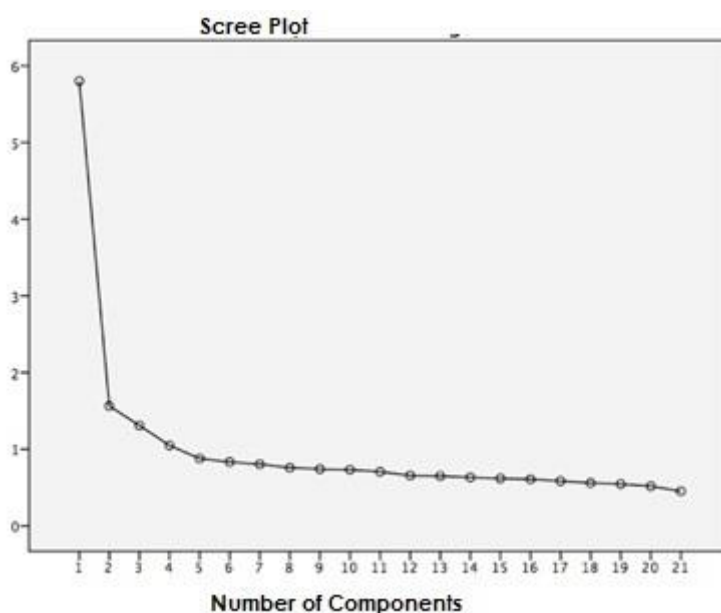

Figure 1. Scree Plot Chart for Game Addiction Scale Trial Form

When Figure 1 is examined, it is seen that the graphic plateau after the seventh factor. That is, the contributions of the eighth and subsequent factors to variance are close to each other. It is seen that the Game Dependence Scale was collected under seven factors with an eigenvalue greater than 1 in 21 trial forms. When the substances entering each factor were examined, it was observed that the substances measured similar properties. After the decision was made to

have seven factors, exploratory factor analysis was repeated for seven factors. The results are given in Table 2.

Table 2 shows the variance and eigenvalues of seven factors with eigenvalues above 1. The total variance ratio of the seven factors with eigenvalues greater than 1 is 21,28%.

Table 2. Game Dependency Scale's Eigenvalues and Factors Explained by Variance Rates

		Eigenvalues			Total of Rotated Squares	
Factor	Value	Explained Variance (%)	Total Variance (%)	Value	Explained Variance (%)	Total Variance (%)
1	5,80	27,63	27,63	2,35	11,23	11,23
2	1,56	7,44	35,07	2,25	10,71	21,94
3	1,30	6,23	41,31	1,76	8,41	30,36
4	1,04	4,99	46,30	1,70	8,12	38,48
5	,87	4,18	50,49	1,61	7,67	46,15
6	,83	3,96	54,45	1,36	6,51	52,67
7	,80	3,82	58,28	1,17	5,61	58,28

The factor loadings of each item in seven different factors are given in Table 2. According to Kline (2005), factor load value is a coefficient explaining the relation of substances with factors. According to Tabacknick and Fidell (2001), the load value of each material should be 0.32 or higher. In addition, if the items have a higher load value than the acceptance level of more than one factor (0,32) and the difference between the load values of two or more factors is less than 0,10, these substances should be removed from the scale because they show overlap (Tabacknick and Fidell, 2001). When the items are considered to meet the acceptance level of the factor loadings, there is no item that has a value below the 0.32 acceptance level. When the items were examined in terms of intersection, it was observed that there was not any substance indicating convergence feature.

Table 3 shows the factor loadings of 21 items in the Game Dependency Scale on seven different factors.

When Table 3 is examined, it is seen that the factor loads of the items ranged between 0.02 and 0.89. As a result of factor analysis, it was seen that items in the scale were grouped under seven main factors and factor load values of the items of these factors are given in Table 4.

In addition, the item-total correlations and discriminants related to item analysis are given in Table 4.

Table 3 and 4 show that the first factor consists of the 1st, 2nd and 3rd items. When the statements within the scope of the first factor are examined, it is seen that all of them contain questions about clarifying the process and the first factor is named as Salience. The characteristic factor consists of 3 items with factor loads ranging from 0.77 to 0.59. The variance explained by the related factor is 11,23%.

Table 3. Factor Loads of Substances in Game Addiction Scale

Items	Factor						
	1	**2**	**3**	**4**	**5**	**6**	**7**
1	,77	,05	,23	,08	,10	,25	,20
2	,68	,02	,08	,19	,25	,08	,09
3	,59	,24	,21	,08	,07	,13	,24
4	,18	,48	,09	,29	,03	,21	,29
5	,22	,47	,13	,25	,06	,14	,26
6	,16	,41	,03	,05	,20	,10	,20
7	,11	,23	,48	,14	,05	,14	,23
8	,19	,21	,45	,09	,25	,25	,05
9	,10	,17	,44	,08	,17	,07	,04
10	,04	,22	,13	,89	,18	,18	,05
11	,29	,21	,19	,87	,08	,03	,22
12	,16	,15	,19	,47	,14	,10	,15
13	,22	,20	,22	,02	,87	,07	,02
14	,10	,13	,17	,16	,72	,07	,05
15	,25	,25	,27	,24	,68	,11	,18
16	,26	,23	,01	,17	,14	,77	,24
17	,02	,03	,00	,13	,18	,63	,23
18	,27	,22	,02	,16	,16	,56	,17
19	,20	,23	,14	,19	,16	,22	,59
20	,12	,058	,21	,145	,283	,219	,445
21	,21	,146	,20	,256	,153	,179	,423

Table 3 and 4 show that the second factor consists of items 4, 5 and 6. When the expressions within the second factor were examined, it was determined that all of these were related to the tolerance shown in the process and the second factor was named as Tolerance. The tolerance factor consists of 3 items with factor loads ranging from 0,48 to 0,41. The variance explained by the related factor is 10,71%.

Table 3 and 4 show that the third factor consists of items 7, 8 and 9. When the expressions within the third factor were examined, it was determined that all of these were related to the changes occurring in the case of the individual and the third factor was named as Mood modification. Mood modification factor consists of 3 items with factor loads ranging from 0,48 to 0,44. The variance explained by the related factor is 8,41%.

Table 4. Results of the Exploratory Factor Analysis for Game Addiction Scale

Trial Form

Factor 1: Salience		**Explained Variance: %**11,23
Item	**Expressions**	**Item Total Corelation**
1	Have you considered playing games all day long?	,77
2	Have you spent most of your free time on games?	,68
3	Did you feel you were addicted to a game?	,59
Factor2 : Tolerance		**Explained Variance: %**10,71
		Item Total Corelation
4	Have you played games longer than you think?	,48
5	Have you increased the time you spend on games?	,47
6	Did you ever stop yourself when you started playing?	,41
Factor 3: Mood modification		**Explained Variance : %**8,41
		Item Total Corelation
7	Did you play the game to forget the real life?	,48
8	Did you play games for stress?	,45
9	Have you played games to make yourself feel better?	,44
Factor4: <u>Relapse</u>		**Explained Variance: %**8,12
		Item Total Corelation
10	Did you fail to reduce the time you spent on the game?	,89
11	Have other people tried and failed to reduce the time you spent on the game?	,87
12	Did you try to reduce the time you spent on the game and failed?	,47
Factor 5: Withdrawal		**Explained Variance: %**7,67
		Item Total Corelation
13	Did you feel bad when you couldn't play games?	,87
14	Have you been angry because you're not playing games?	,72
15	Have you been stressed when you can't play?	,68
Factor 6: Conflict		**Explained Variance : %**6,51
		Item Total Corelation
16	Have you discussed with other people (family, friends, etc.) about the time you spent on games?	,77
17	Have you been ignoring others (family, friends, etc.) for playing games?	,63
18	Have you been lying about the time you spent on games?	,56
Factor 7: Problems		**Explained Variance: %**5,61
		Item Total Corelation
19	Did the time you spent on the games cause you to sleep?	,59
20	Have you neglected your other important activities (school, work, sports, etc.) to play?	,44
21	Did you feel bad after playing a game for a long time?	,42
		Total Explained Variance: %58,28

p<0,001

Table 3 and 4 show that the fourth factor consists of 10th, 11th and 12th items. When the statements within the fourth factor were examined, it was determined that all of these were related to the repetition of the situation and the fourth factor was named as Relapse. The Relapse factor consists of 3 items with factor loads ranging from 0.89 to 0.47. The variance explained by the related factor is 8,12%.

Table 3 and 4 show that the fifth factor consists of 13th, 14th and 15th items. When the expressions within the scope of the fifth factor were examined, it was determined that all of these were related to whether they were trying to withdraw when they were uncomfortable with the situation and the fifth factor was named as, Withdrawal. The withdrawal factor consists of 3 items with factor loads ranging from 0.87 to 0.68. The variance explained by the related factor is 7,67%.

When the tables 3 and 4 are examined together, it is seen that the sixth factor consists of the 16th, 17th and 18th items. When the expressions within the scope of the sixth factor were examined, it was determined that all of these were related to whether there was a conflict or not, and the sixth factor was named as Conflict. The conflict factor consists of 3 items with factor loads ranging from 0.77 to 0.56. The variance explained by the related factor is 6,51%.

When the tables 3 and 4 are examined together, it is seen that the seventh factor consists of articles 19, 20 and 21. When the statements within the scope of the seventh factor were examined, it was determined that all of these were related to the problems experienced by the individual and the seventh factor was named as Problems. The problems consist of 3 items with factor loads ranging from 0.59 to 0.42. The variance explained by the related factor is 5,61%.

Findings on the Factor Analysis of Game Addiction Scale

The main factors related to Game Addiction Scale were determined by exploratory factor analysis. Confirmatory factor analysis was carried out to determine whether the relationship between the factors determined and the factors related to each factor was adequate and the factors determined were sufficient to explain the original structure. In this context, the path diagram of confirmatory factor analysis is given in Figure 2 and the fit indices (goodness of fit values) are given in Table 5.
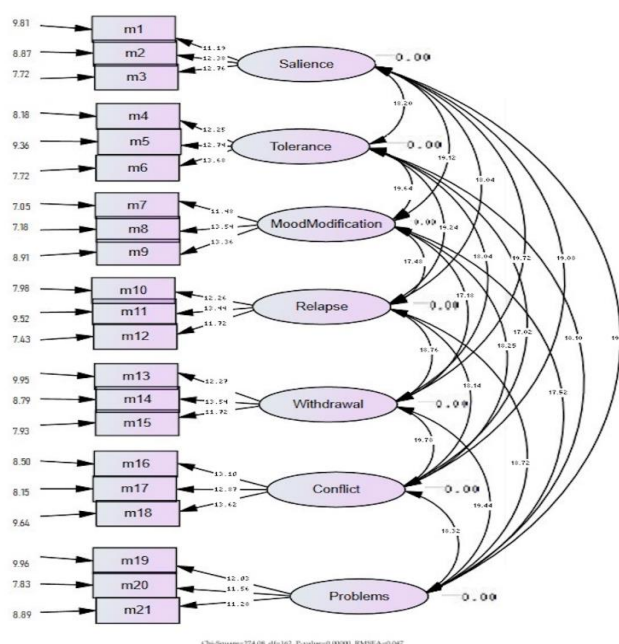

Figure 2. Confirmatory Factor Analysis of Game Addiction Scale

When the coefficients shown in Figure 2 are examined, the level of representing all of the items (the observed variable) with its own implicit variable is significant at the level of 0.01. It is observed that the t values calculated for each item are greater than 2. 56 which is the critical value determined for the level of 0.01 (Çokluk, Şekercioğlu and Büyüköztürk, 2010). This means that each substance represents its implicit variable well and can therefore be included in the scale.

After the parameter estimation for the model adaptation, the goodness of fit indices, which allow the evaluation of the model as a whole, were examined. For the GFI, CFI, NFI, RFI, IFI and AGFI indices, the acceptable fit value is 0.90 and the perfect fit value is 0.95 (Marsh, Hau, Artelt, Baumert and Peschar, 2006). Compliance indices for the Game Dependency Scale are given in Table 5.

Table 5. Compliance Indexes Resulted from Game Dependence Scale Confirmatory

Factor Analysis

Goodness of Fit Indexes Values	Values
Degree of Freedom (sd)	436
Chi-Square (X^2)	1249,24 (p = 0.0)
X^2/sd	2,86
Approximate Square Root (RMSEA)	0,04
Comparative Compliance Index (CFI)	0,94
Favor Index (GFI)	0,91
Regulatory Goodness Index (AGFI)	0,87
Now the square root of the means (RMR)	0,04
Normed Adaptation Index (NFI))	0,92
Unregulated Adaptation Index (NNFI)	0,97

The chi-square is a goodness of fit index used to test whether the covariance matrix of the original variable differs from the proposed matrix. The ratio of the calculated chi-square value to the degree of freedom is very important. The fact that this ratio is below 3 is the perfect fit and the fact that it is less than 5 corresponds to moderate compliance (Kline, 2005). As shown in Table 5, the calculated chi-square value in this study was 1249.24 and the degree of freedom was 436. The ratio of the calculated chi-square value to the degree of freedom is 1249,24 / 436 = 2,86, indicating that the value obtained is the perfect fit between the matrix of the original variable and the proposed matrix. In the literature, it is accepted that 2-3 of the x2 / sd value is acceptable, while the value of 0-2 is considered to be a good fit value (Schermelleh-Engel, Moosbrugger and Müller, 2003).

The average square root of the approximate errors (RMSEA) is a good fit between 0,05 and 0,08. This index, which is used to estimate population covariance in the decentralized X2 distribution, is between 0,00 and 0,05. Brown, 2006; Brown and Cudeck, 1993; Sumer, 2000; Byrne and Campbell, 1999; Westorn and Gore, 2006). As shown in Table 5, the mean error square root value obtained in this study is 0.04, which indicates a perfect fit.

The mean square root of the mean (RMR) is the mean of the covariance matrix between the predictive covariance matrix of the universe and the covariance matrices of the sampling. The

RMR value is between 0 and 1 and it is less than 0,05 and less than 0,08 indicates a good fit (Brown, 2006). As shown in Table 5, the RMR value obtained in this study was found to be 0.04, indicating that there is a perfect fit.

Compares the covariance matrix produced by the comparative conformity index (CFI) independence model (model that predicts no relationship between latent variables) and the covariance matrix produced by the proposed structural equation model. The 0.97 to 1.00 range from the critical values determined for this index indicates the existence of a good fit and the 0.95 to 0.97 range indicates an acceptable fit (Tabachnick and Fidell, 2001). As seen in Table 5, the value of the comparative fit index calculated in this study is 0.94. This value shows that there is a good fit.

The goodness fit index (GFI) shows the model to measure the ratio of the covariance matrix in the sample and is accepted as the sample variance in which the model is described (Çokluk, Şekercioğlu and Büyüköztürk, 2010). The goodness fit index is between 0 and 1 and 1 corresponds to perfect fit and 0 means absence. The GFI value is between 0,95 and 1,00 shows the existence of a perfect fit, and the difference between 0,90 and 0,95 indicates an acceptable fit (Sümer, 2000). As shown in Table 5, the goodness of fit index obtained in this study is 0.91, which indicates an acceptable fit.

The adjusted goodness of fit index (AGFI) is the value of goodness of fit index (GFI), adjusted according to the degree of freedom. The critical values for this index range from 0.90 to 1.00, indicating the presence of a good fit and an acceptable fit of 0.85 to 0.90. As seen in Table 5, the value of the adjusted wellness adjustment index calculated in this study is 0.87, and this value indicates an acceptable fit.

Evaluates the model estimation by comparing the X2 value of the model of independence to the normalized fit index (NFI). However, in small samples, NFI may give less harm than existing for the model. In this case, NFI is recalculated by taking in to account the degree of freedom, and this value is called the Non-harmonized index of conformity (NNFI) (Tabachnick and Fidell, 2001). The critical value determined for these indices is between 0.90 and 1.00, indicating the good fit. As shown in Table 5, the NFI and NNFI values calculated in this study are 0.92 and 0.97, respectively. These values indicate a good fit.

When the values obtained and the expected critical values are compared, it is seen that the values obtained in this study take place within acceptable measurements. When the results obtained are examined as a whole, the fit indices and basic parameter estimations of the established measurement model show that the model is in harmony with the data. According to this result, each factor correctly represents the expressions that make up it.

Findings Regarding the Reliability of the Game Dependency Scale

Internal consistency reliability (Cronbach alpha coefficient) was calculated to determine the reliability of the Game Addiction Scale. The Cronbach alpha coefficient of .70 and above is generally accepted as an indicator of the reliability of the scale (Özgüven, 1994).

Cronbach alpha internal consistency reliability of the Game Dependency Scale

Cronbach α internal consistency coefficient of the Game Dependency Scale was 0.92 for factor 1; 0.87 for factor 2; 0.85 for factor 3; 0.93 for factor 4; 0.91 for factor 5; 0.88 for factor 6; It is 0.86 for the factor 7 and 0.959 for the whole scale. These coefficients are acceptable for each factor and for the whole scale and can be interpreted as having internal consistency reliability of the scale.

DISCUSSION AND CONCLUSION

Developed by Lemmens, Valkenburg and Peter (2008, 2009) and collected under 4 factors, 21-item Game Dependence Scale (ADQ) was used for self-report. they are asked to mark Never, Rarely, Sometimes, Often, Always "and they are given 1, 2, 3, 4 and 5 points respectively. In the research group, 49,9% of 1442 participants aged between 15-18 were female (N = 720) and 50,06% were male (N = 722). As shown in Table 1, the arithmetic mean values of the substances vary between 1,600 and 2,483. The standard deviation values of the substances range from 0.1 to 0.3. The correlation coefficients between the item score and the scale score for each item ranged between 0.52 and 0.85. In addition, all of these values were statistically significant at the level of 0.01. The arithmetic mean values of the items ranged between 2.02 and 4.98. The lowest score in the group is 21 and the highest score is 105. The coefficient of skewness was -0.56, the coefficient of creep was 0.83. According to these results, it can be interpreted that the data obtained are very close to the normal distribution. The Kaiser-Meyer-Olkin value of the study was found to be 0,92 and this value could be considered excellent (Tabacknick and Fidell, 2001). The results of the Bartlett Sphericity Test were calculated as $X2721 = 2176,02$ (p <0,001). This result is evidence that the data comes from a multivariate normal distribution (Tabacknick and Fidell, 2001). The results of Kaiser Meyer Olkin and Bartlett Sphericity Test, which show the suitability of the data obtained from the experimental application of the scale for factor analysis, demonstrate that the sample is sufficient.

The Game Dependence Scale was collected under seven factors (significance, tolerance, state change, repetition, withdrawal, conflict and problems) with an eigenvalue greater than 1 in the trial form of 21 items (Figure 1). When the substances entering each factor were examined, it was observed that the substances measured similar properties. The total variance ratio of the seven factors with eigenvalues greater than 1 is 21,28%. When the factor load values of the items (Table 3) are examined in order to meet the acceptance level, there is no substance that is below the 0.32 acceptance level. When the items were examined in terms of intersection, it was observed that there was not any substance indicating convergence feature. Factor loads range from 0.02 to 0.89.

When the confirmatory factor analysis of the Game Dependency Scale (Figure 2) is examined, the level of representing all of the items (the observed variable) own implicit variable is significant at the level of 0.01. It is observed that the t values calculated for each item are greater than 2. 56 which is the critical value determined for the level of 0.01 (Çokluk, Şekercioğlu and Büyüköztürk, 2010). This means that each substance represents its implicit variable well and can therefore be included in the scale.

When the fit index obtained as a result of Game Dependence Scale confirmatory factor analysis is examined, Degree of Freedom (df) = 436, Chi-Square (X2) = 1249.24 (p = 0.0), X2 / df = 2,86, Mean Square root of Approximate Errors (RMSEA) = 0.04, Comparative Compliance Index (CFI) = 0.94, Goodness of Fit Index (GFI) = 0.91, Adjusted Goodness of Fit Index (AGFI) = 0.87, Now The Root of Meanings (RMR) = 0.04, Normed Adaptation Index (NFI) = 0.92 and The index (NNFI) was found to be 0,97, and when the obtained values and the expected critical values were compared, it was seen that the values obtained in this study were within acceptable measurements. When the results obtained are examined as a whole, the fit indices and basic parameter estimations of the established measurement model show that the model is in harmony with the data. According to this result, each factor correctly represents the expressions that make up it. Cronbach α internal consistency coefficient of the Game Dependency Scale was 0.92 for factor 1; 0.87 for factor 2; 0.85 for factor 3; 0.93 for factor 4; 0.91 for factor 5; 0.88 for factor 6; It is 0.86 for the factor 7 and

0.95 for the whole scale. These coefficients are acceptable for each factor and for the whole scale and can be interpreted as having internal consistency reliability of the scale.

Game addiction can affect individuals' daily lives, family / friend relations and even education activities. The presence of the game addiction in individuals and the level of this presence is important for the researchers. Many psychological tests and measurement tools have been developed to measure game dependence. With a large sample, a measurement tool that can reveal game addictions of today's adolescents was adapted to Turkish. The validity and reliability studies were completed and the updated tool was updated. Thus, it is aimed to contribute to the national literature and to eliminate the lack of adequate and up to date measurement tools.

It has been concluded that the Game Dependence Scale, which is adapted to Turkish culture, is a valid and reliable tool that can be used to determine the tendency of individuals to play addiction or dependence. The validity and reliability studies of the Game Dependency Scale, which is significant, and the implementation of the Game Dependency Scale on different samples will help to identify the individuals who have a tendency to play addicts or games.

SUGGESTIONS

With the scales that can be used to determine game addiction developed or adapted to Turkish in the literature, it can be determined whether individuals are game addicts. However, only the person's self-evaluation as a result of "game addict" or "not addicted to the game" will not be enough. For the same sample, improved game dependency scales can be prepared and validated and validated in Turkish, and validity and reliability studies can be obtained. When the data obtained from the opinions of the families are evaluated together with the results obtained from the game dependence scale (self-report), the findings will be more significant. Therefore, it is recommended to pay attention to this issue in studies to determine the addiction of the game.

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