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Turkish Reliability and Psychometric Properties of the Binge-Watching Addiction Questionnaire Among Adolescents

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ABSTRACT

Objective: Binge-watching is a behavioral phenomenon researched more frequently in recent years. The diagnostic criteria and screening tools proposed in this regard are useful for detecting this behavior. In this study, the Turkish reliability of a scale used for adults was investigated.

Methods: Online surveys, "The Binge-Watching Addiction Questionnaire prepared by Google Forms, were delivered to the participants, aged between 12 and 17. The scale was reapplied to 102 of the participants 2 weeks later. The suitability of 20 items to Turkish culture was evaluated by confirmatory factor analysis.

Results: Acceptable fit was found in terms of root mean square error of approximation and χ^2/df criteria, values close to the threshold value were obtained when examined in terms of other fit criteria, and acceptable fit was found when the scale was evaluated in terms of model fit indices. The Cronbach alpha coefficients are good for Global, acceptable for Craving and Dependency, and poor for Anticipation and Avoidance. According to the retest findings, Cronbach's alpha coefficients were 0.870 for Global, 0.758 for Craving, 0.723 for Dependency, 0.621 for Anticipation, and 0.594 for Avoidance.

Conclusion: According to the results, the reliability of the Binge-Watching Addiction Questionnaire was an acceptable psychometric property.

Keywords: Binge-watching, behavioral, addiction, reliability, internet

INTRODUCTION

Recently, television viewing habits and broadcasting have changed with the development of technology and the spread of online opportunities. The constant availability of broadcasts on digital platforms, the simultaneous broadcasting of all episodes of the watched TV series, and the ad-free content pushed users to watch broadcasts continuously for long periods.[1] This innovation against traditional streaming eliminated a week's waiting period required for viewers to watch the series' episodes. Consecutive watching of full episodes of TV series has become a popular viewing pattern on streaming platforms (e.g., Netflix, Amazon Prime, YouTube video, etc.). These digital streaming services allow audiences to watch more than 1 episode in 1 sitting, sometimes even the entire season of the series. This behavioral phenomenon is described as binge-watching (BW). Although there is

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no consensus about the description of BW, different authors defined BW as watching in 1 sitting 3 or more episodes of the same TV series or content. In this definition, "binge" term defines consecutive and intense watching. According to related studies, the prevalence of BW behavior was reported from 53% to 73% in various countries. Among binge-watchers, 60% of them reported BW behavior more than once a week, particularly young adults and college students.[2] Although there are different definitions, the most common definitions of BW are "watching multiple episodes (between 1 and 6 episodes) of TV series in 1 sitting"[3] or "watching 3 or more hours of content in a single setting."[4]

Several studies have evaluated BW behavior, causes, effects, and related psychological factors of this novel behavioral disturbance and its effect on psychological well-being and health. Increased levels of anxiety, depression, and social isolation increased sedentary habits and disturbed eating habits, and negative effects on psychological and social well-being were reported among binge-watchers.[5] In a study conducted with adolescents, the results of the analysis suggested a significant correlation between BW and emotional, behavioral, cognitive, and attention problems.[6] Binge-watching behavior is considered a potential behavioral addiction although some characteristics do not entirely fulfill the behavioral addiction criteria.[7] Some studies define BW as an addiction, but others could suggest it as highly entertaining behavior and a healthy way of spending free time.[3] In addition to psychological problems, BW behavior causes some negative effects on psychical health, such as heart disease and obesity caused by a sedentary lifestyle.[8]

It is important to measure BW behavior because of its recognition and early intervention. Due to the increasing interest in BW behavior, various scales have been developed in this regard. The Problematic Series Watching Scale (PSWS)[9] evaluates problematic TV series watching, the Series Watching Engagement Scale (SWES)[10] measures engagement in watching TV series, and the Watching TV Series Motives Questionnaire (WTSMQ) and the Binge-Watching Engagement and Symptoms Questionnaire (BWESQ) [7] assessing TV series watching reasons and BW engagement and symptoms are the most known scales that are used in this area.

Because of the potential limitations of these scales, Forte et al[5] developed Binge-Watching Addiction Questionnaire (BWAQ) and evaluated its factorial structure in an Italian sample, adopting a factorial confirmative approach. This scale is a 20-item self-report scale, and according to the validation study, it consists of 4 structures (Craving, Dependency, Anticipation, and Avoidance). The Craving subscale allows determining the pleasure experienced during watching, involving the mood situation. The Dependency scale refers to the core characteristic of a pathological addiction behavior characterized by an imperative. The Anticipation scale and the Avoidance scale define other directions not usually analyzed in BW but potentially associated with problematic behavior, which can develop into addiction.

MAIN POINTS

- The fact that binge-watching behavior is a newly defined phenomenon and the diagnostic criteria are not clear indicates that a measurement tool that measures this behavior is important.
- In this study, the validity of the Binge-Watching Addiction Questionnaire, which was previously developed for adults, was investigated in Turkish adolescents.
- According to the findings obtained, it is thought that the scale is valid in Turkish and could be used for measuring binge-watching in adolescents.

In this study, we evaluated the Turkish reliability and psychometric properties of BWAQ. Our main aim is to develop a validated measurement scale that could be used in Turkish to determine BW behavior more accurately. The aim of our study is to introduce a tool in the Turkish language that can measure BW behavior healthily.

MATERIAL AND METHODS

Participants and Procedure

The participants of age 12-17 years were included in this study. The exclusion criteria were the participants who were over 18 years of age, were under 12 years of age, with psychiatric disorders, using medications, and had an additional disease. We excluded these participants to eliminate the potential effect of these factors on BW. After the exclusion criteria were applied, 189 participants were included in the study. We reached our participants through social media. We asked the adolescents to fill in the scales by sending them to survey monkey. Adolescents without parental consent, who did not want to participate in the study, and who did not use the smart telephone or internet were excluded from the study. We contacted people who are representatives of the defined population. Online survey "The BWAQ (prepared by Google Forms), was delivered to the participants with social communication services (online message applications and message groups). In addition to these questionnaires, the questions containing demographic data (age, sex, family income level, etc.) were administered to the participants. Each participant completed the survey voluntarily. A unique study identification was assigned for these participants to ensure confidentiality after the survey was completed. This study was approved by Selçuk University Ethical Committee (Approval date: May 5, 2021, approval number: 2021/231).

The BWAQ was developed by Forte et al[5] to evaluate BW behavior. The survey consisted of 20 items. Each item is a ranged 5-point Likert scale, from 0 (never) to 4 (always). Cronbach's alpha value of the scale was found as 0.92. The total score obtained from this survey reflects the severity of addictive behavior in BW. In the original study, both the Italian and English versions of the scale were presented. The scale was translated to Turkish from its English version by the second author of this article (Y.Ö). After that, the Turkish version of the scale was re-translated to English and evaluated for consistency. A pilot study was not conducted for this study.

Statistical Analysis

Data were evaluated using IBM's Statistical Package for Social Sciences software Statistics Standard Concurrent User V 26 (IBM SPSS Corp., Armonk, NY, USA), Amos V23), and MedCalc® Statistical Software version 19.6 (MedCalc Software Ltd, Ostend, Belgium). Descriptive statistics were given as several units (n), percent (%), mean ± standard deviation (mean ± SD), median (M), minimum (min), and maximum (max) values. The suitability of 20 items in the original scale to Turkish culture was evaluated by confirmatory factor analysis (CFA). As the goodness of fit indexes in CFA, Chi-squared/degrees of freedom, standardized root mean squared residual (SRMR), root mean square error of approximation (RMSEA), comparative fit index (CFI), Joreskog goodness of fit (GFI), Joreskog adapted goodness of-fit (AGFI), Bentler–Bonett normed fit index (NFI), and Bentler–Bonett non-normed fit index (NNFI) were used. Path and

standardized path diagrams were created for confirmatory factor analysis (CFA). The internal consistency between the scale items was evaluated with Cronbach's alpha coefficient. For reliability, matched paired-samples *t*-test, intraclass correlation coefficient (ICC), and Bland–Altman charts were used. The normality of the differences between the first and second measurements of the scale scores was evaluated with the Shapiro–Wilk test of normality. A *P* value of <.05 was accepted to be statistically significant.

RESULTS

The study sample consisted of 189 participants. Of them, 110 were girls (58.2%) and 79 were boys (41.8%). The mean age of the sample was 15.3 ± 1.8 (min = 11 max = 18). Descriptive statistics were given in Table 1. The average age of the participants is 15. The distribution of maternal education levels is as follows: university graduates (28.0%), high school graduates (27.0%) primary school graduates (23.3%), secondary school graduates (14.8%), master's degree (5.3%), and doctorate degree (1.6%). The distribution of paternal education levels is as follows: university graduates (40.0%), high school graduates (18.0%), primary school graduates (14.3%), secondary school graduates (13.2%), master's degree (%11.6), and doctorate degree (2.7%). When the income status of the participants is examined, it is seen that 6.9% of them are below the minimum wage, 17.5% of them are minimum wage, 25.9% are two fold of the minimum wage, 49.7% are more than two fold the minimum wage.

The factors in the original scale are presented in Table 2. The suitability of the structure in Table 2 to Turkish Culture was appraised by CFA. The values of χ^2/df, SRMR, RMSEA, CFI, GFI, AGFI, NFI, and NNFI are the criteria that show the strongest model fit among the fit indices of the model as a result of CFA and are given in Table 3. Table 3 also shows the threshold values for the limits of fit. Considering these values mentioned the Table 3, the path diagram and standardized coefficients, and path diagram results of the model obtained by creating 4 factors are given in Figures 1 and 2. When model fit indices criteria are examined within the limits of Table 3, the acceptable fit was found in terms of RMSEA and χ^2/df criteria, values close to the threshold value were obtained when examined in terms of other fit criteria, and the acceptable fit was found when the scale was evaluated in terms of model fit indices.

According to the results in Table 3, Figures 1 and 2, the original scale structure is valid for Turkish adolescents. Table 4 shows the statistics of the global and sub-dimensions obtained from the data of our study. According to Table 4, the Cronbach alpha (coefficients) coefficients are good for Global, acceptable for Craving and Dependency, and poor for Anticipation and Avoidance.[11]

In the study, the scale was reapplied to 102 of the participants 2 weeks later. According to the retest findings, Cronbach's alpha coefficients were 0.870 for Global, 0.758 for Craving, 0.723 for Dependency, 0.621 for Anticipation, and 0.594 for Avoidance. Reliability analysis results are given in Table 5. According to Table 5, although the differences between the first and second measurements for Global and Avoidance are statistically significant, the effect sizes have a minimal value. The differences between the first and second measurements of the Craving, Dependency, and Anticipation dimensions are not statistically significant. The ICCs showing the agreement between the first and second measures of the global and factors are excellent. Figure 3 shows the Bland–Altman Chart showing the agreement between the first and second measurements. According to Figure 3, the value of approximately 95% of the participants is between ±1.96 SD limits. According to Table 5 and Figure 3, it is seen that the scale is a reliable scale for Turkish adolescents.

Table 1. Descriptive Statistics

Variables	Statistics
Gender, n (%)	
Female	110 (58.2)
Male	79 (41.8)
Age (years)	
Mean ± standard deviation	15.3 ± 1.8
M (min-max)	15.0 (11.0-18.0)
Maternal educational level, n (%)	
Primary school graduate	44 (23.3)
Secondary school graduate	28 (14.8)
High school graduate	51 (27.0)
University graduate	53 (28.0)
Master's degree	10 (5.3)
Doctorate degree	3 (1.6)
Paternal educational level, n (%)	
Primary school graduate	27 (14.3)
Secondary school graduate	25 (13.2)
High school graduate	34 (18.0)
University graduate	76 (40.2)
Master's degree	22 (11.6)
Doctorate degree	5 (2.7)
Family income, *n* (%)	
Below minimum wage	13 (6.9)
Minimum wage	33 (17.5)
Two-fold of minimum wage	49 (25.9)
More than two-fold of minimum wage	94 (49.7)

Table 2. Factor Structure of Original Scale

Factor Name	Item
Craving	7, 8, 9, 10, 12, 15, 16, 17, 20
Dependency	1, 2, 11, 13
Anticipation	3, 5, 19
Avoidance	4, 6, 14, 18

Table 3. Binge-Watching Addiction Questionnaire Modification Indices in Confirmatory Factor Analysis Results

Statistics	Indices	Cut-off	Results
Chi-squared/degrees of freedom	χ^2/df	<3	1.614
Probability value for the model	*P*	<.05	<.001
Standardized root mean squared residual	SRMR	<0.05	0.0623
Root mean square error of approximation	RMSEA	<0.10	0.057
Comparative fit index	CFI	≥0.95	0.897
Joreskog goodness-of-fit	GFI	≥0.90	0.872
Joreskog adapted goodness-of-fit	AGFI	≥0.85	0.837
Bentler-Bonett normed fit index	NFI	≥0.90	0.772
Bentler-Bonett non-normed fit index	NNFI	≥0.95	0.899

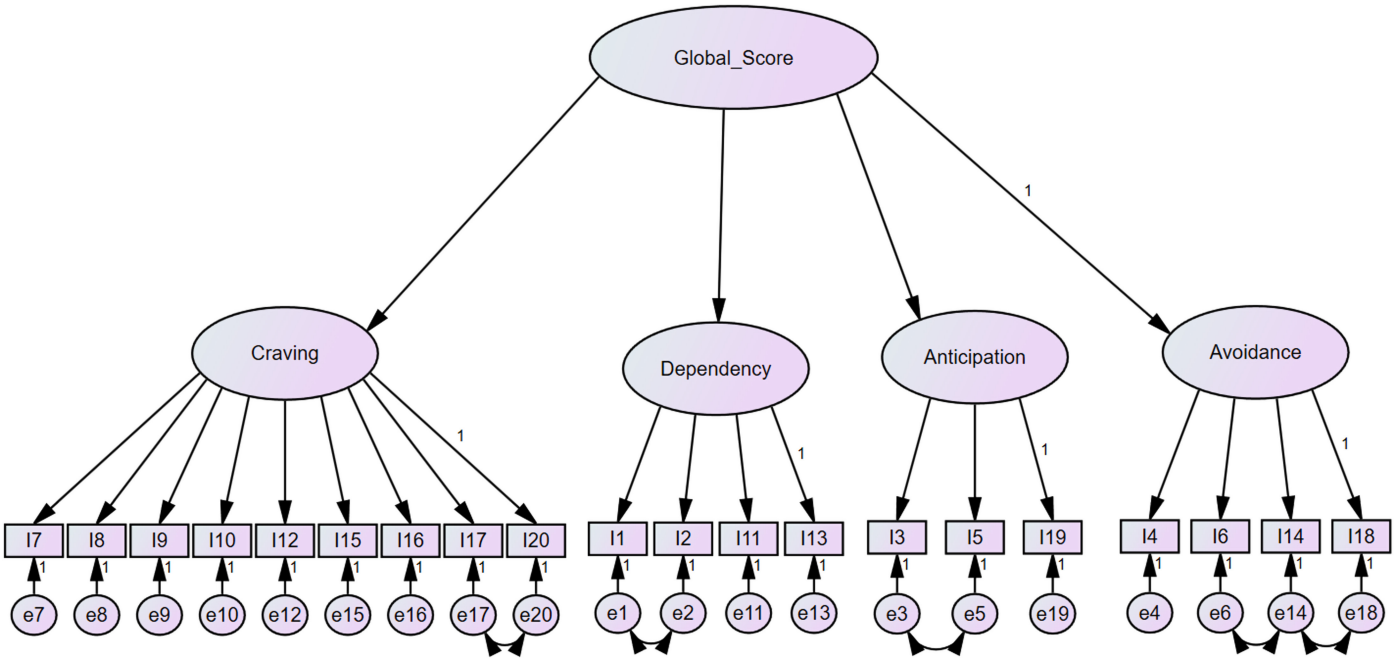

Figure 1. Path diagram.

DISCUSSION

In this study, we objected to analyzing the reliability and psychometric properties of BWAQ in Turkish. According to the results, the reliability of the BWAQ was acceptable for psychometric properties and fit.

In the original scale, there were 4 factors: Craving, Dependency, Anticipation, and Avoidance. The same factor structure and the same items were validated in our study. Craving subscale measures a strong desire to watch (items 7, 8, 9, 10, 12, 15, 16, 17, 20). The dependency factor (items 1, 2, 11, 13) measures BW behavior, repetitive pathological watching addiction, and loss of control, which also affects daily life functionality. The anticipation factor (items 3, 5, 19) measures the pleasure that encourages the display of BW behavior. The avoidance factor (items 4, 6, 14, 18) refers to the individual seeking a justification for her behavior and minimizing the impact of BW behavior in daily life.[5]

Definitions of BW behavior are not yet clear, and there are different approaches in the literature on this subject. Generally, BW was described as watching 2 or more episodes of the same series sitting

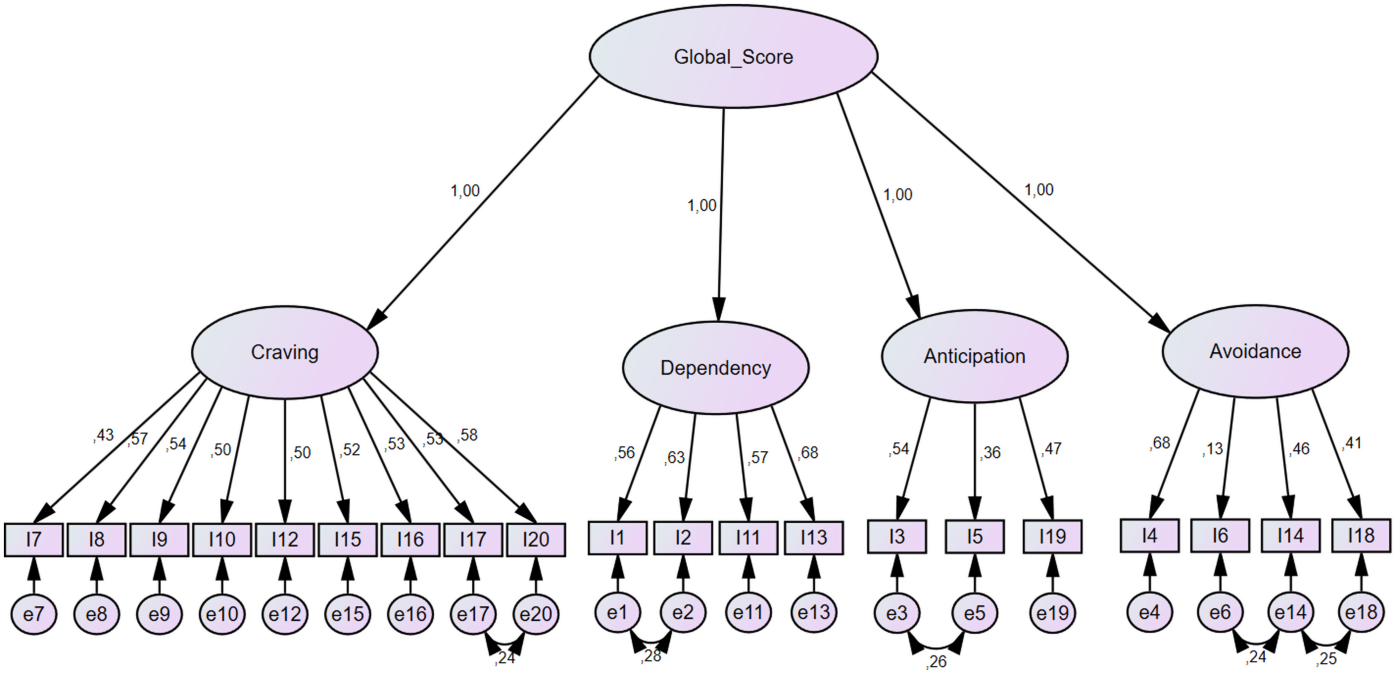

Figure 2. Path diagram (standardized coefficient).

Table 4. Item Statistics of Global Score and Factor Scores

	Number of Items	Cronbach's Alpha	Mean	Standard Deviation	*M*	Minimum	Maximum
Global	20	0.877	28.8	12.8	30.0	0.0	64.0
Craving	9	0.791	13.1	6.6	13.0	0.0	32.0
Dependency	4	0.749	6.8	3.4	7.0	0.0	15.0
Anticipation	3	0.544	4.6	2.7	5.0	0.0	12.0
Avoidance	4	0.594	5.2	3.1	11.0	0.0	11.0

Table 5. Reliability Analysis

	First Test	Second Test	Matched Paired-Samples *t* Test				
	Mean ± Standard Deviation	Mean ± Standard Deviation	*t*	*P*	Effect Size	Intraclass Correlation Coefficient	*P*
Global	27.3±12.0	28.1±12.3	4.380	<.001	0.065	0.989	<.001
Craving	12.5±6.2	12.7±6.2	1.566	.120	0.032	0.983	<.001
Dependency	6.7±3.3	6.6±3.3	0.130	.897	0.030	0.974	<.001
Anticipation	4.6±2.7	4.5±2.7	0.506	.614	0.037	0.959	<.001
Avoidance	5.1±3.3	5.3±3.2	2.451	.016	0.061	0.967	<.001

or showing for at least 3 hours in 1 sitting. However, there are situations that do not fill this definition but affect daily functioning. For this reason, we consider it important to measure BW behavior and determine its severity. The aim of our study is to test the reliability of a scale in Turkish adolescents, which was designed for adults and validated in their mother tongue.[5] However, these indicators do not reveal much about the motivations and psychological causes of BW. An equal amount of watching time may present different problems for each individual. For this reason, we argue that after a general definition of the concept, different studies on its possible pathological effects will be beneficial in the development of the concept.

Previous research suggests that BW can lead to depression,[12-14] anxiety and fatigue,[15] loneliness,[16,17] lack of self-regulation,[18] and sleep problems.[19] Some studies have focused on the behavioral addiction potential of BW.[20] The research indicated that this behavioral addiction model is a risk factor for health, psychological, and daily functioning.[8,21] Also, studies contain important findings regarding the potentially problematic effects of BW addiction. Another important aim of this study is to handle the pathologizing process of the viewing experience. In many literature surveys, viewing television is usually considered an entertaining, enjoyable activity,[18] and relaxation and hedonism.[16] According to Pittman and Sheehan,[16] binge-watcher have hedonistic motivations such as the desire to relax and see the program before everyone else. Thus, pathological BW behavior can be guessed to arise from expectations of avoidance or a desire to cope with negative emotional states. In the BW behavior, the obsessive process of viewing behavior is emphasized. Therefore, normal viewing behavior and pathological addictive behavior were separated in this study. This study presents an assessment scale that will make this behavior noticeable before it becomes an addiction. These results go along with other research

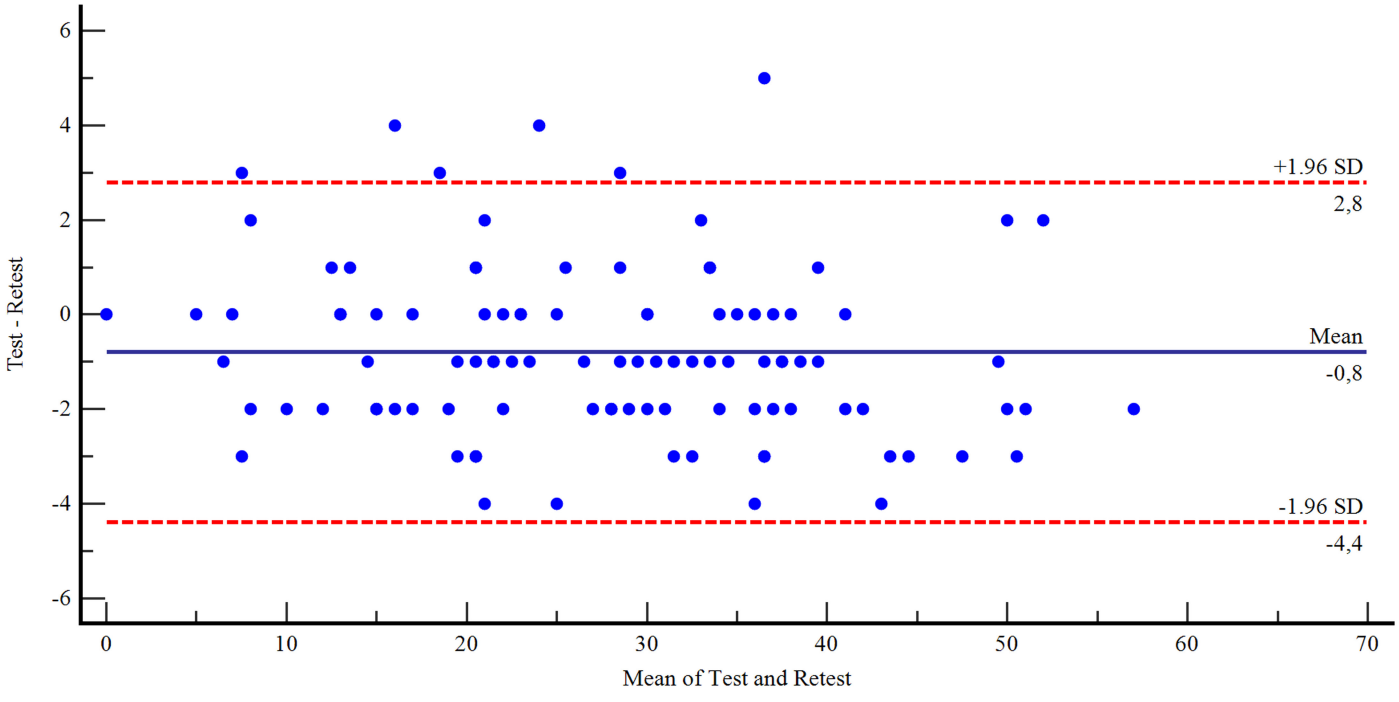

Figure 3. Bland–Altman plot for test and retest (n = 102).

that discovered a similar percentage of behavioral addictions in the general population.[5] Similar to some concerns about the addictive potential of BW,[15,22] this study also found that adolescents are at risk for BW addiction. Finally, given the popularity of the behavior, research on BW and mental health is currently limited. Further studies are required to evaluate the effects of BW on various pathological diseases.

There are several limitations to this study. The most important limitation of the study is that the sample has only Turkish adolescents (12-17 years of age). For this reason, these scales should be validated in adults and further intercultural research should test their psychometric construction. Further studies using similar analyses, such as the original English version of the BWAQ, are required. Secondly, there is no questionnaire for measuring BW in Turkish. Therefore, we could not assess the external criteria. The other limitation is the lack of comparison between the BWAQ and other surveys designed for BW behavior. In the original version, this study was conducted on adults and Italians, and the English version is also presented in the article. The scale was translated from the English version, which is considered as an important limitation. Also, we could not provide a cut-off value for this scale. Cut-off value could be an important component of adaptation of scales to different cultures in which the lengths of TV series episodes are different.

In conclusion, we have conducted a reliability study about BWAQ and found that this scale is reliable in Turkish. The main strength aspect of this study is that it presents the first measurement tool for BW behavior in Turkish. Despite its limitations, it is considered important to study a validated measurement tool that could be used in Turkish.

Data Availability Statement: Deidentified individual participant data will not be made available.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Selçuk University (Date: May 5, 2021, Number: 2021/19).).

Informed Consent: Written informed consent was obtained from participants who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - Y.Ö.; Design - S.B.A.; Supervision - S.B.A.; Data Collection and/or Processing - Y.Ö., S.B.A.; Analysis and/or Interpretation - S.B.A.; Literature Search - Y.Ö., S.B.A.; Writing Manuscript - S.B.A.; Critical Review - Y.Ö., S.B.A.

Declaration of Interests: The authors have no conflicts of interest to declare.

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