

Attitude scale toward traditional children's motor games: a validity and reliability study

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ABSTRACT

The aim of this study was to develop a scale that can validly and reliably measure students' attitudes towards traditional children's motor games. While developing the scale, an item pool was created, expert opinion was taken, a preliminary application was made and then validity and reliability studies were conducted. At first, an item pool was created with 31 students. Afterwards, a preliminary application was made on a group of 15 or 20 people. Exploratory Factor Analysis (EFA) was conducted with 795 participants, and Confirmatory Factor Analysis (CFA) was conducted with 392 participants. A valid and reliable measurement tool was developed based on the responses of a total of 1,187 participants. As a result of EFA, it was determined that the final scale consisted of 20 items and 2 sub-dimensions named as Positive Attitudes and Negative Attitudes, and this structure was confirmed by CFA. Cronbach's alpha reliability coefficients were calculated as .95 for the Positive Attitudes sub-dimension, .91 for the Negative Attitudes sub-dimension and .95 for the whole scale. As a result, the findings show that the developed scale can measure students' attitudes towards traditional children's motor games in a valid and reliable way.

KEYWORDS

Traditional Children's Motor Games; Attitude; Student; Validity; Reliability

1. INTRODUCTION

Culture is a set of values that has existed with human beings and has come from the past to the present (Yıldızbaş & Apaydın, 2002) and is the concrete form of self-expression as a society. Throughout the history of mankind, methods of self-expression have differed (Sallabaş, 2020). One

of these methods is Traditional Children's Games (TCD), whose cultural importance cannot be denied (Akbari et al., 2009). Whether the individual is aware of it or not at every stage of his/her life, while socializing with the heritage of the society he/she is in, which has lasted for many years and has been filtered from its culture, he/she keeps the elements that express himself/herself alive by ensuring the continuity of culture (Özdemir, 2006) and transfers them to the next generations.

TCD contains many features, especially cultural elements. Essentially, the aim is to transfer these elements from generation to generation, including critical perspective, intelligence and action, and taking these elements from the beliefs and customs of the society (Turan et al., 2020). It is also the first and most important common element of social life (Özdemir, 2006). While it contributes significantly to the cognitive, affective, psychomotor and social development of the child (Sallabaş, 2020), it forms an integral part of the social life of humanity and can also differ depending on the climate and geography of the region (Rouhi Dehkordi, 2017). It is a set of values that enable children to rest and have fun without any production effort, especially in the time outside of daily work (Borataş, 2013), that is alive, living, changing and developing with time and space (Yılmaz, 2016), that contributes to the development of the child qualitatively and quantitatively in addition to entertainment, and that ensures the continuation of the structure of the culture by affecting the child in development in terms of education (Sümbüllü & Altınışik, 2016).

Attitude is also defined as a psychological disposition (Johnson et al., 2022) and a latent (Fishbein & Ajzen, 2010) , which is expressed by a certain degree of positive or negative evaluation of a particular entity, a mental residue with experience, which can include a wide variety of cognitive, emotional and behavioral relationships, and can be seen in simple or complex forms. Attitude is important for the individual because it translates into behavior when it is strong and aligned with core values or linked to social commitments. Attitudes are automatically activated when exposed to something (Johnson et al., 2022). Education plays an important role in shaping and changing individuals' attitudes, and students' interactions with their teachers, with each other and the classroom environment can also be effective in attitude development. Therefore, teachers should create supportive and encouraging learning environments to help students develop positive attitudes. From this point of view, this study aims to develop a scale that can validly and reliably measure attitudes towards Traditional Children's Games, which belong to our culture and contain values that should be transferred to the next generations.

2. METHODS

2.1. Participants

The sample of this study consisted of 1,187 students (551 males, 46.4%; 636 females, 53.6%) aged between 8 and 25 years who were enrolled in primary, secondary, high school, and university levels during the 2024–2025 academic year in public schools affiliated with the Ministry of National Education in various regions of Turkey (Table 1).

Table 1. Demographic characteristics of the sample (N = 1187)

Characteristics	Categories	n	Percent
Gender	Male	551	46.4
	Female	636	53.6
	Total	1187	100.0
School level	Primary School	362	30.5
	Secondary School	599	50.5
	High School	177	14.9
	University	49	4.1
	Total	1187	100.0

The first study group of this research consists of a total of 795 people (362 males and 433 females) between the ages of 8 and 25 studying in primary, secondary, high school and university in the 2024-2025 academic year in public schools in various regions of Turkey affiliated to the Ministry of National Education. While determining the study group in the research, volunteerism was taken as a basis and students actively attending school were included in the process.

Exploratory Factor Analysis (EFA), Cronbach's Alpha reliability coefficient calculation and item analysis were conducted with the data collected from this group. When the literature is examined, it is seen that there are different opinions about the sample size of scale studies. In general, it is recommended that the sample size should be 5-10-20 times the number of items (Kass & Tinsley, 1979; Kline, 2011; Tavşancıl, 2018). From another perspective, it is stated that a sample size of 500 people is very good, 300 people is good, 200 people is sufficient, 100 people is weak and 50 people is very weak (DeVellis, 2012). The fact that the study group consists of 795 people shows that it is appropriate in both respects.

This second study group of the research consists of 392 people, 189 males and 203 females, who are between the ages of 8 and 22 and studying in primary, secondary, high school and university in the 2024-2025 academic year in public schools in various regions of Turkey affiliated to the

Ministry of National Education. While determining the study group in the research, volunteerism was taken as a basis and students who were actively attending school were included in the process. Confirmatory Factor Analysis (CFA), Cronbach Alpha reliability coefficient calculation and item analysis were performed on the data of this group.

2.2. Data Collection

After obtaining the ethics committee permission and the necessary permissions from the Ministry of National Education, the scale form was prepared as a Google Form. The Google Forms link was sent to provincial and district directorates of national education, schools and teacher groups for students to participate in the study by adding explanatory information about the research topic in a way that students could understand. Participation in the study was completely voluntary. The Google Form link remained active for 30 days. During this period, a total of 795 students responded to the form and EFA was conducted with these data. As a result of EFA, the Google form was organized and sent to the relevant groups for CFA with the remaining items in the scale. The Google form link remained active for 20 days and 392 more students were reached during this period. In total, 1187 students voluntarily participated in the study.

2.3. Scale Development Process

The first thing to be done in scale development studies is to determine the audience to which the scale to be developed will be applied and to comprehensively investigate the theoretical structure to be measured (DeVellis, 2012). In this context, the domestic and foreign literature on attitudes was reviewed in detail. While developing a scale, an item pool should be created, expert opinion should be taken, a preliminary application should be made, and then validity and reliability studies should be conducted (Tavşancıl, 2018).

In the creation of the scale of attitudes towards traditional children's motor games, first of all, a semi-structured interview form prepared by experts was given to a total of 24 students, 11 male and 13 female. Do traditional children's motor games have an effect on the person? What do traditional children's motor games make you feel? Why do you play traditional children's motor games? etc. opinions were taken. On the basis of volunteerism, a total of 31 students, 14 male and 17 female, from secondary school 7 and 8 grade students were asked to write their thoughts about traditional children's motor games in the form of a composition and attitude statements were tried to be obtained by analyzing the written compositions.

In addition, the studies in the literature that developed attitude scales were also examined. A scale item pool consisting of a total of 54 items was created by supporting the views of the participants and the structure of the concept of attitude in the literature. In the prepared scale item pool, attention was paid to write negative and positive items in cognitive, affective and behavioral dimensions. The item pool was tried to be as large as possible since the items that do not have attitude characteristics, have expression disorders, are incomprehensible and contain ambiguous expressions will be removed from the scale. In this direction, the scale was formed with 54 items that were assumed to reflect the cognitive, emotional and behavioral dimensions of attitude. For each item in the item pool, appropriate (2) should be corrected (1) not appropriate (0) sections were created and presented to expert opinion. Getting expert opinion is important for content validity. Content validity is related to whether the questions (scale items) in the measurement tool represent what is intended to be measured and whether they are suitable for the purpose (Karasar, 2019). The draft scale items were examined by 6 experts, 3 items were corrected and reused, and 7 items were completely removed from the scale. As a result of these processes, the draft scale consisting of 47 items was finalized. The scale items were graded on a 5-point Likert scale: Strongly Disagree (1), Disagree (2), Undecided (3), Agree (4), Strongly Agree (5).

2.4. Preliminary Application

Preliminary application is the removal of incomprehensible items from the scale (Çarkıç, 2020). Applied on a group of 15 or 20 people, the pretest application is conducted face-to-face with the researcher. The aim here is to reveal why individuals do not understand which parts of the prepared scale items. Thus, it is to determine the comprehension difficulties and reasons for the items. After applying the trial draft scale, it was seen that 2 items were not clearly understood and these items were removed from the scale. As a result, the scale consisting of 45 items was prepared to be administered to students online.

2.5. Statistical Analyses

In the final scale, data were collected from 795 students (362 males and 433 females) from the first group and 392 students (189 males and 203 females) from the second group. Outliers or erroneous values were corrected before starting the data analysis. EFA is a statistical method that transforms a large number of interconnected variables into a small number of independent and meaningful factors, and EFA allows items that do not measure the targeted construct in a measurement tool or that load on more than one dimension to be easily distinguished (Worthington & Whittaker, 2006). One of the commonly used methods for determining these factors is known as

Principal Component Analysis (PCA). Principal component analysis uses the correlations between variables to develop a small set of components that empirically summarize the correlations between variables. It provides a description of the relationship rather than a theoretical analysis (Tabachnick & Fidell, 2013). Various rotation techniques are used for easier interpretation of factors. The Promax technique is one of these techniques and allows to clearly identify which factors the variables are related to, even if there is correlation between the factors (Aslan et al., 2018; Tabachnick & Fidell, 2013). Confirmatory factor analysis can be used as a complementary and validation of EFA (Erkuş & Selvi, 2019). Cronbach's alpha and Spearman Brown coefficient were analyzed for the reliability of the scale. Cronbach's alpha coefficient questions whether the items in the scale form a homogeneous structure and the overall reliability of the scale (Özdamar, 2011). The Spearman-Brown coefficient is calculated by dividing the scale into two equal parts (Tavşancıl, 2018). In general, a reliability coefficient higher than 0.70 is considered sufficient (Nunnally & Bernstein, 1994).. According to some experts, this coefficient has high reliability when it is between 0.80 and 0.90 (Alpar, 2006; Tavşancıl, 2018), while it is said to have very high reliability when it is between 0.90 and 1 (Özdamar, 2011). The data were first entered into SPSS 23 and Lisrel 8.7 package programs and analyzed within the scope of validity and reliability.

3. RESULTS

3.1. Construct validity / Exploratory Factor Analysis (EFA)

In this study, firstly, Exploratory Factor Analysis (EFA) was conducted for the construct validity of the Attitudes towards Traditional Children's Games Scale (ATTS). In the second stage, Confirmatory Factor Analysis (CFA) was applied. In the study, (KMO-Kaiser-Meyer-Olkin) Sampling Adequacy Test and (Bartlett's Test of Sphericity) Bartlett's Test of Sphericity were utilized. The KMO measurement value was .970 and the Bartlett's Test of Sphericity chi-square value was $\chi^2 = 12158,410$ (sd = 190, $p < 0.00$).

Before the factor analysis, KMO coefficient was calculated and Bartlett's Test of Sphericity was applied to assess the suitability of the data. It is said that factor analysis can be performed if the KMO value is greater than 0.5 (Kaiser, 1974). In this aspect, since the KMO value was 0.970, factor analysis can be applied. Bartlett's Sphericity Test, which tests whether the data are normally distributed, is a statistical method used. The fact that the statistical results of this test are significant shows that the data are normally distributed. As a result of the analyzes, it can be said that the data of the scale is suitable for factor analysis. Then, PCA (Principal Component Analysis) method and

promax rotation technique were used. Principal component analysis PCA uses correlations between variables to develop a small set of components that empirically summarizes the correlations and provides a description of the relationship rather than a theoretical analysis (Tabachnick & Fidell, 2013). The Promax rotation method provides a simple structure that clarifies which factors each variable is related to and which factors it is not related to when a relationship between factors is found (Tabachnick & Fidell, 2013). The criteria used in exploratory factor analysis are as follows: The eigenvalue for each factor should be at least 1, the factor loading should be at least .40, and the difference between the factor loadings should be at least 0.20 for items that load significantly on more than one factor (DeVellis, 2012; Field, 2009; Tabachnick & Fidell, 2013). In addition, ambiguous items with factor loadings above .40 and loading .40 and above on more than one factor and the difference between them being less than .20, or items 2, 3, 5, 9, 10, 10, 11, 14, 16, 18, 23, 24, 25, 26, 28, 33, 34, 35, 36, 38, 39, 40, 41, 42, 44, 45 that did not load more than .30 on any factor were removed from the scale. Factors with eigenvalues above 1 after EFA were retained and shown in the Scree Plot table (see Figure 1).

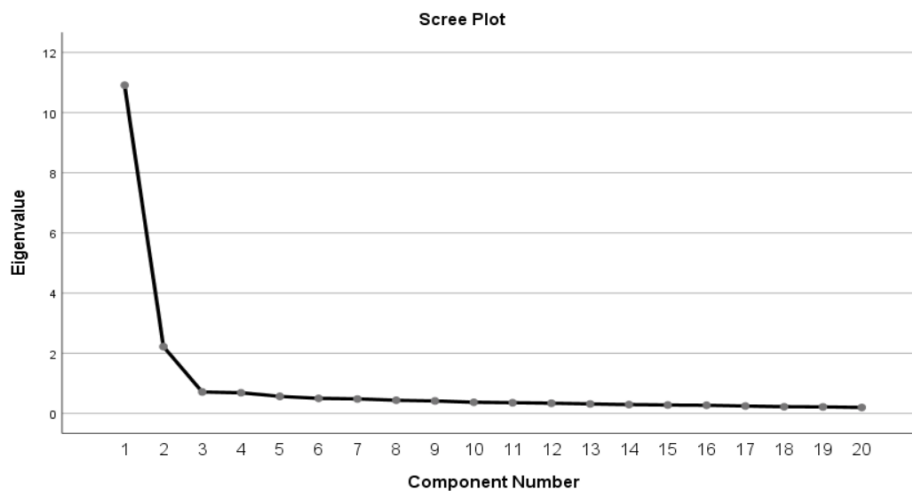


Figure 1. Scree Plot picture obtained as a result of exploratory factor analysis

Figure 1 shows the 2-factor structure. The table below shows the item loadings, item means, item standard deviation values and variance explained values obtained as a result of EFA.

Table 2. EFA Results of the TCG Attitude Scale

Items	Positive attitudes	Negative attitudes	Communalities
I4 Traditional children's games attract my attention.	.862		.670
I7 I care about traditional children's games.	.843		.664
I12 I would like to participate in traditional children's games.	.806		.726
I32 I like traditional children's games.	.804		.703
I8 Learning traditional children's games excites me.	.794		.635
I30 Traditional children's games make me happy.	.786		.716
I1 I enjoy playing traditional children's games.	.786		.616
I29 I strive to learn traditional children's games.	.785		.657
I6 Traditional children's games increase my sociality.	.770		.550
I37 Traditional children's games entertain me.	.763		.722
I17 I want traditional children's games to become widespread.	.763		.526
I27 I play traditional children's games by giving myself.	.759		.702
I19 I want traditional children's games to always exist in my life.	.759		.621
I13 I enjoy watching traditional children's games.	.756		.468
I22 I am not interested in traditional children's games. **		.890	.783
I20 I can not focus on traditional children's games. **		.873	.668
I21 I am reluctant to traditional children's games. **		.863	.764
I43 I do not prefer to play traditional children's games. **		.816	.642
I31 I hate traditional children's games. **		.785	.609
I15 I don't feel like playing traditional children's games. **		.767	.687
Eigenvalues:	10.910	2.218	
Percentage of the variance:	54.551	11.088	
Total Variance Explained:	65.639		

Note. ** Items marked are reversed items.

When Table 2 is examined, it is seen that the TCG attitude scale consists of 20 items. Factor 1 consists of 4, 7, 12, 32, 8, 30, 1, 29, 6, 37, 17, 27, 19, 13 items and explains 54.55% of the variance and Factor 2 consists of 22, 20, 21, 43, 31, 15 items and explains 11.08% of the variance and the total variance explained is 65.63%. In social sciences, it is stated that the variance explained should be between 40% and 60% (Tavşancıl, 2018). According to the EFA results in the study, the explained variance values were above these values. It was stated that the load that each item should give to the factor should be minimum .32 (Tabachnick & Fidell, 2013). In the study, factor loading values were determined as a minimum value of .40. The factor loading values of the items in the measurement tool vary between .75 and .89. In addition, the common factor variance, which shows how much of the variance each factor explains, should be greater than .03 (Pallant, 2020). Looking at the table above, it can be said that each item is greater than .03 and explains enough variance for the two-

factor structure. According to these findings, it can be shown as evidence that the items in the scale strongly represent the dimension they are in.

Correlation coefficients were examined to measure the relationships between the two factors in the scale. Scale sub-dimension correlations are shown in Table 3. According to the table, the scale subscale correlation was found to be .598 and ($p < 0.01$).

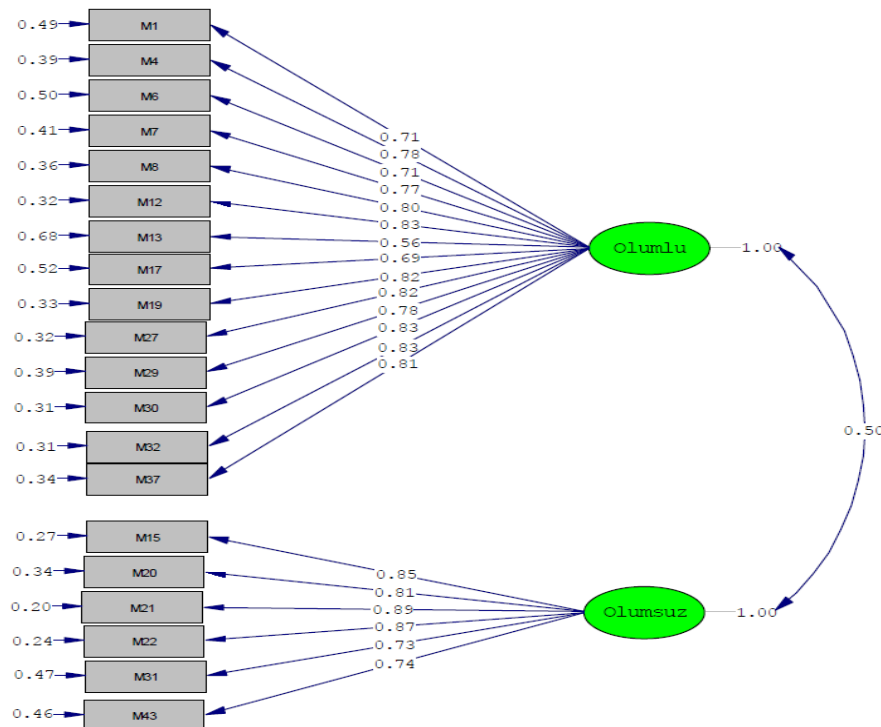
Table 3. Inter-factor correlation values of the TCG attitude scale

Sub-dimensions	Positive attitude	Negative attitude
Positive attitude	1	,598**
Negative attitude	,598**	1

Note. ** $p < 0.01$

Confirmatory Factor Analysis (CFA)

After obtaining a structure of 2 factors and 20 items as a result of the exploratory factor analysis, CFA was conducted using Lisrel 8.7 program on a total of 392 students, 189 male and 203 female, in the second study group for the degree of conformity of the structure obtained. CFA is used as a test method to verify the structure represented in exploratory factor analysis (Erkuş & Selvi, 2019; Pohlmann, 2004) (Fig 2).



Note. Chi-Square=646.18, $df=169$, $P\text{-value}=0.00000$, $RMSEA=0.085$

Figure 1. CFA model of traditional children's games scale

In Figure 2, positive attitudes and negative attitudes towards traditional children's games are represented as 2 sub-dimensions. When the factor loadings of the items are examined, it is seen that the factor loadings vary between 0.56 and 0.89. When the loading values of the items in the factor are higher than 0.32, it is said that they measure the desired feature to be measured (Tabachnick & Fidell, 2013). Table 4 presents the CFA fit indices criteria and results of the TCG Attitude Scale.

Table 4. CFA fit indices criteria and results

Model Fit Indices	Good Default Interval	Acceptable Interval	TCG
X ² / sd	0 < X ² / sd < 2	2 < X ² / sd < 5	3.8
RMSEA	0.00 < RMSEA < 0.05	0.05 < RMSEA < 0.10	0.085
NFI	0.95 < NFI < 1.00	0.90 < NFI < 0.95	0.97
PNFI	0.95 < PNFI < 1.00	0.50 < PNFI < 0.95	0.86
CFI	0.95 < CFI < 1.00	0.90 < CFI < 0.95	0.98
IFI	0.95 < IFI < 1.00	0.90 < IFI < 0.95	0.98
GFI	0.95 < GFI < 1.00	0.85 < GFI < 0.95	0.90
AGFI	0.90 < AGFI < 1.00	0.80 < AGFI < 0.90	0.85
PGFI	0.95 < PGFI < 1.00	0.50 < PGFI < 0.95	0.69

Source. (Anderson & Gerbing, 1984; Brown, 2015; Cole, 1987; Hu & Bentler, 1999; Kline, 2011; Marsh et al., 1988; Mishra et al., 2021; Schermelleh-Engel et al., 2003; Sümer, 2000; Tabachnick & Fidell, 2013; Thompson, 2004; Wheaton et al., 1977)

Confirmatory factor analysis was performed on the 20-item scale with 2 factors to reveal the validity of the traditional children's games attitude scale. The fit indices of the model were calculated as RMSEA=0.085, NFI=0.97, PNFI=0.86, CFI=0.98, IFI=0.98, GFI=0.90, AGFI=0.85 PGFI=0.69. According to some researchers, a χ^2/df value less than 5 may be sufficient for model-data fit (Wheaton et al., 1977). It was seen that the fit indices calculated in the traditional children's games scale were in the acceptable and good range. In addition, it can be said that the 2 sub-dimensions of the confirmatory factor analysis results for the attitude towards traditional children's games scale are acceptable according to the fit indices.

Table 5 presents the results of the independent samples t-test conducted between the lower 27% and upper 27% groups of the TCGAS scores.

Table 5. TCGAS results of t-test analysis for lower 27% and upper 27% groups

Factor	İtem no	Item test correlation	Lower %27 Group n		Upper %27 Group n		t	p
			x	ss	x	ss		
Positive attitudes	I4	.778	2.65	1.08	4.61	.54	18.35	.000
	I7	.777	2.73	1.08	4.62	.55	17.84	.000
	I1	.745	2.80	1.03	4.68	.58	16.01	.000
	I12	.823	2.69	1.08	4.87	.35	19.90	.000
	I32	.807	3.05	1.14	4.87	.33	20.13	.000
	I8	.760	2.67	1.10	4.71	.57	18.92	.000
	I30	.814	2.87	1.10	4.82	.39	20.06	.000
	I6	.696	2.93	1.15	4.70	.52	15.89	.000
	I29	.776	2.54	1.11	4.63	.59	18.23	.000
	I17	.676	3.20	1.22	4.82	.57	15.51	.000
	I13	.622	2.98	1.18	4.53	.72	11.94	.000
	I37	.816	2.93	1.07	4.87	.34	19.30	.000
	I19	.751	2.90	1.07	4.80	.49	19.59	.000
	I27	.803	2.62	1.14	4.78	.48	19.81	.000
Negative attitudes	I22	.822	2.93	1.16	4.88	.40	21.50	.000
	I20	.723	3.02	1.10	4.78	.53	19.12	.000
	I21	.811	2.84	1.10	4.87	.36	22.33	.000
	I43	.711	2.89	1.09	4.82	.547	16.69	.000
	I31	.689	3.40	1.163	4.95	.338	16.37	.000
	I15	.747	2.79	1.110	4.85	.453	20.74	.000

When Table 5 is examined, a statistically significant difference was observed in the total scores of the lower and upper groups of 27% regarding the item analysis of the scale, which can be shown as an evidence of item discrimination according to (Erkuş, 2019). According to the CFA results of the scale, t values were analyzed to determine the significance of each item. The results of the analysis show that the t values vary between 11.84 and 22.33. The t values for all items were statistically significant at $p < .01$ level. These results show that the 20-item measurement tool provided a good fit and was usable after CFA.

3.2. Findings Related to Item Analysis and Reliability

In this section, the values related to item analysis and reliability of the “TCGAS” are presented. Table 6 presents the internal consistency and item reliability results of the TCGAS. The table includes item means, standard deviations, corrected total item correlation values, and Cronbach’s alpha coefficients if items are deleted.

Table 6. Cronbach's Alpha and total item correlation results

Factors	Items	\bar{X}	ss	Total item correlation	Cronbach's alpha with item removed
	I4	3.73	1.075	.778	.952
	I7	3.77	1.040	.777	.952
	I1	3.86	1.043	.745	.953
	I12	3.89	1.086	.823	.951
	I32	4.06	.982	.807	.951
	I8	3.81	1.107	.760	.952
	I30	3.98	1.015	.814	.951
	I6	3.96	1.035	.696	.954
	I29	3.69	1.130	.776	.952
	I7	4.11	1.033	.676	.954
	I3	3.78	1.075	.622	.955
	I37	4.02	.997	.816	.951
	I19	3.88	1.039	.751	.952
	I27	3.83	1.105	.803	.951
	I22	3.99	1.116	.822	.883
	I20	3.90	1.093	.723	.898
	I21	3.91	1.126	.811	.885
	I43	3.90	1.196	.711	.900
	I31	4.28	1.023	.689	.902
	I15	3.88	1.159	.747	.894

Table 7 presents the internal consistency reliability results of the TCGAS for its sub-dimensions and the overall scale.

Table 7. Results of the reliability analysis of the TCGAS

TCGAS Sub-dimensions	Number of Items	Cronbach Alpha (α)	Split-half
Positive attitudes	14	,955	,930
Negative attitudes	6	,910	,853
Scale Total	20	,954	,926

In order to test the reliability of the scale of attitudes towards traditional children's motor games, Cronbach's alpha coefficient and two-half reliability coefficient were used. Reliability refers to the consistency of the items in a questionnaire or test with each other and the extent to which the scale reflects the problem of interest. The alpha coefficient is a model based on correlation and gives the alpha number. This number, which can take values between 0 and 1, is equal to Kr-20. Split-half model divides the scale into two equal parts and examines the correlation between these parts. A reliability coefficient above 0.70 is considered sufficient by researchers (DeVellis, 2012; Kline, 2011; Nunnally & Bernstein, 1994; Özdamar, 2011). Looking at the table above, it can be said that the

internal consistency coefficients of the traditional children's motor games attitude scale have very high reliability.

4. DISCUSSION

The aim of this research was to develop a valid and reliable measurement tool that could measure the attitudes of primary, secondary, high school and university students towards traditional children's motor games, which are considered an important part of cultural transmission processes (Akbari et al., 2009) and contribute to the continuity of cultural values across generations (Özdemir, 2006). The five-point Likert-type scale has 2 sub-dimensions as positive and negative dimensions and 20 items. In the process of developing the scale, foreign and domestic literature on attitudes was reviewed in detail, considering that attitudes are shaped through cognitive, emotional and behavioral processes (Johnson et al., 2022; Fishbein & Ajzen, 2010).

In the creation of the scale of attitude towards traditional children's motor games, first of all, a semi-structured interview form prepared by experts was applied to a total of 24 students, 11 male and 13 female. A total of 31 students (14 males and 17 females) from 7 and 8 grades of secondary school were asked to write their thoughts about traditional children's motor games in the form of essays, in line with the understanding that such games are part of the social and cultural heritage that individuals internalize through socialization processes (Özdemir, 2006). In addition, attitude scales studies were examined by reviewing the literature and a scale item pool consisting of 52 items in total was created by supporting the structure of the concept of attitude. Then, the draft scale items were examined by 6 experts, 3 items were corrected and reused and 7 items were completely removed from the scale and the draft scale consisting of 45 items was finalized. Then, the 43-item scale was pre-applied to 25 students and 2 items that were not understood were removed from the scale.

First, Exploratory Factor Analysis (EFA) was conducted for the construct validity of the Attitudes Towards Traditional Children's Games Scale (TCGAS). In the study, sampling suitability was measured as KMO measurement value ,970 and Bartlett Sphericity test chi-square value $\chi^2 = 12158,410$ (sd = 190, $p < 0,00$). Then, PCA (Principal Component Analysis) method and promax rotation technique were used. For each factor, the Eigen Value (eigenvalue) was taken as at least 1 and the factor loading was taken as at least .40. Accordingly, the TCG attitude scale consisted of 20 items. Factor 1 consists of items 4, 7, 12, 32, 8, 30, 1, 29, 6, 37, 17, 27, 19, 13 and explains 54.55% of the variance and Factor 2 consists of items 22, 20, 21, 43, 31, 15 and explains 11.08% of the

variance and the total variance explained is 65.63%. The factor loadings of the items in the scale ranged between .75 and .89.

Traditional children's games, as emphasized in the literature, are not only recreational activities but also cultural tools that carry values, beliefs and customs from society to future generations (Turan et al., 2020), while also contributing to children's cognitive, affective, psychomotor and social development (Sallabaş, 2020). Therefore, the factor structure obtained in this study can be interpreted within the framework of these multidimensional developmental and cultural functions.

According to these findings, there is evidence that the items in the scale strongly represent the dimensions to which they belong. The relationship between the two factors in the scale was found to be a moderate positive relationship of .598. After obtaining the 2-factor and 20-item structure, CFA was conducted on a total of 392 students using the lisrel 8.7 program for the degree of conformity of the structure obtained. As a result of the CFA, factor loadings ranged between 0.56 and 0.89. The fit indices of the model were RMSEA=0.085, NFI=0.97, PNFI=0.86, CFI=0.98, IFI=0.98, GFI=0.90, AGFI=0.85 PGFI=0.69.

According to these data, it can be said that the confirmatory factor analysis results of the attitude towards traditional children's motor games scale are acceptable according to the fit indices of the 2 sub-dimensions. Regarding the item analysis of the scale, a statistically significant difference was observed in the total scores of the 27% lower and upper groups in 2 sub-dimensions ($t = p < .01$). According to the CFA results, t values were analyzed to determine the significance of each item. The results of the analysis showed that the t values ranged between 11.84 and 22.33. As a result, it can be said that after CFA, the 20-item measurement tool provided a good fit and was usable.

Cronbach's alpha coefficient and two-half reliability coefficient were used to test the reliability of the scale of attitudes towards traditional children's motor games. The positive attitudes sub-dimension of TCG consisted of 14 items and Cronbach's alpha (α) = ,955 Split-half = ,930, negative attitudes consisted of 6 items and Cronbach's alpha (α) = ,910 Split-half = ,853, and the total scale consisted of 20 items and Cronbach's alpha (α) = ,954 Split-half = ,926.

5. CONCLUSIONS

In the light of these data, it can be said that the attitude towards traditional children's motor games scale is highly reliable. As a result of this research, a valid and reliable measurement tool for assessing attitudes towards traditional children's motor games was successfully developed.

6. REFERENCES

1. Akbari, H., Abdoli, B., Shafizadeh, M., Khalaji, H., Hajhosseini, S., & Ziaee, V. (2009). The effect of traditional games in fundamental motor skill development in 7-9 year-old boys. *Iranian Journal of Pediatrics*, *19*(2), 123–129.
2. Alpar, R. (2006). Spor bilimlerinde uygulamalı istatistik (3rd ed.). Nobel. Nobel.
3. Anderson, J. C., & Gerbing, D. W. (1984). The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory factor analysis. *Psychometrika*, *49*(2), 155–173. <https://doi.org/10.1007/BF02294170>
4. Aslan, A. M., Kara, F. İ., Kayır, M., & Kan, A. (2018). Psikolojik danışma yardımı vermeye yönelik tutum ölçeği'nin geliştirilmesi. *Journal of Turkish Studies*, *13*(27), 107–122. <https://doi.org/10.7827/TurkishStudies.14444>
5. Brown, T. A. (2015). Confirmatory factor analysis for applied research (Second edition). Methodology in the social sciences. The Guilford Press.
6. Çarkıcı, J. (2020). Ölçek geliştirme klavuzu. İstanbul: Çizgi kitapevi.
7. Cole, D. A. (1987). Utility of confirmatory factor analysis in test validation research. *Journal of Consulting and Clinical Psychology*, *55*(4), 584–594. <https://doi.org/10.1037/0022-006x.55.4.584>
8. DeVellis, R. F. (2012). *Scale development: Theory and applications* (3rd ed.). Sage.
9. Erkuş, A. (2019). *Psikolojide ölçme ve ölçek geliştirme-I: Temel kavramlar ve işlemler*. Pegem Akademi Yayıncılık.
10. Erkuş, A., & Selvi, H. (2019). *Psikolojide ölçme ve ölçek geliştirme III: ölçek uyarlama ve "norm" geliştirme*. Pegem Akademi Yayıncılık. <https://doi.org/10.14527/9786052416594>
11. Field, A. P. (2009). *Discovering statistics using SPSS* (3rd ed.). SAGE.
12. Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. Psychology Press.
13. Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. <https://doi.org/10.1080/10705519909540118>
14. Johnson, B. T., Martinez-Berman, L., & Curley, C. M. (2022). *Formation of attitudes: How people (wittingly or unwittingly) develop their viewpoints*. In Oxford Research Encyclopedia of Psychology. <https://doi.org/10.1093/acrefore/9780190236557.013.812>
15. Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, *39*(1), 31–36. <https://doi.org/10.1007/BF02291575>
16. Karasar, N. (2019). *Bilimsel araştırma yöntemi: Kavramlar, ilkeler, teknikler* (34th ed.). Nobel Yayıncılık.
17. Kass, R. A., & Tinsley, H. E. A. (1979). Factor Analysis. *Journal of Leisure Research*, *11*(2), 120–138. <https://doi.org/10.1080/00222216.1979.11969385>
18. Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). Methodology in the social sciences. New York: Guilford.
19. Marsh, H. W., Balla, J. R., & McDonald, R. P. (1988). Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. *Psychological Bulletin*, *103*(3), 391–410. <https://doi.org/10.1037/0033-2909.103.3.391>
20. Mishra, S., Sharma, M., Sharma, R. C., Singh, A., & Thakur, A. (2021). Development of a Scale to Measure Faculty Attitude towards Open Educational Resources. *Open Praxis*, *8*(1), 55. <https://doi.org/10.5944/openpraxis.8.1.236>
21. Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill series in psychology. London: McGraw-Hill.
22. Özdemir, N. (2006). *Türk Çocuk Oyunları*. Akçağ Yayınları.

23. Pallant, J. (2020). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS* (4th ed.). Open University Press; McGraw-Hill.
24. Pohlmann, J. T. (2004). Use and interpretation of factor analysis in the journal of educational research: 1992-2002. *The Journal of Educational Research*, 98(1), 14–23. <https://doi.org/10.3200/JOER.98.1.14-23>
25. Rouhi Dehkordi, M. (2017). The Educational Impact of Traditional Games the Role of Zurkhaneh Sport in Educating Children. *International Journal of Science Culture and Sport*, 5(24), 134–139. <https://doi.org/10.14486/IntJSCS659>
26. Sallabaş, M. (2020). Halk biliminin işlevleri bağlamında geleneksel çocuk oyunları: RTÜK çocuk oyunları. *Millî Folklor*, 16(126), 99–109.
27. Schermelleh-Engel, K., Moosbrugger, H. M., & Hans (2003). Evaluating the Fit of Structural Equation Models: Tests of Significance and Descriptive Goodness-of-Fit Measures. *Methods of Psychological Research Online*, 8(2), 23–74.
28. Sümbüllü, Y. Z., & Altınışık, M. E. (2016). Geleneksel çocuk oyunlarının değerler eğitimi açısından önemi. *Erzurum Teknik Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 1(2), 73–85.
29. Sümer, N. (2000). *Yapısal Eşitlik Modelleri*. İstanbul: Türk Psikoloji Yayınları.
30. Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Boston: Pearson Education.
31. Tavşancıl, E. (2018). *Tutumların ölçülmesi ve SPSS ile veri analizi* (6th ed.). Nobel Yayıncılık.
32. Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications*. American Psychological Association.
33. Turan, B. N., Gözler, A., Turan, M., İncetürkmen, M., & MEYDANI, A. (2020). Geleneksel Çocuk Oyunlarına Yönelik Öğretmen Görüşleri. *Gaziantep Üniversitesi Spor Bilimleri Dergisi*, 5(3), 231–241. <https://doi.org/10.31680/gaunjss.757332>
34. Wheaton, B., Muthen, B., Alwin, D. F., & Summers, G. F. (1977). Assessing reliability and stability in panel models. *Sociological Methodology*, 8, 84-136. <https://doi.org/10.2307/270754>
35. Worthington, R. L., & Whittaker, T. A. (2006). Scale Development Research. *The Counseling Psychologist*, 34(6), 806–838. <https://doi.org/10.1177/0011000006288127>
36. Yıldızbaş, F., & Apaydın, Ş. (2002). Kültür ve çocuk oyunları ilişkisi. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, 2(1), 96–104.
37. Yılmaz, I. (2016). Bingöl geleneksel çocuk oyunları. *Bingöl Araştırmaları Dergisi*, 3(1), 67–86.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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