

Fan Attitude Scale (TTÖ) Validity and Reliability Study

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Abstract:

Introduction: Although there is an increase in the number of studies on different dimensions of sports branches in general, there are still relatively few studies both in the world and in Turkey on how different sports branch advocacy and community behavior are formed depending on a value system, the place and effect of advocacy in the daily life of individuals, whether fan attitudes differ or not.

Materials and methods: Between the 2021-2023 academic years, 334 university students studying at Van YüzüncüYıl University Department of Physical Education and Sports participated in the research. In the study, the mixed model of qualitative and quantitative research model used together was used. In the qualitative part of the research, the procedures related to the creation of the article pool by taking the opinions of university students towards advocacy were included, and in the quantitative step, the validity and reliability analyzes made in the Jamovi 1.6.12 and Lisrel 8.8 package program were included.

Results: Explanatory Factor Analysis (EFA), a four-dimensional structure consisting of 21 items was obtained. The scale consists of the sub-dimensions of Information about Fans (6), Feeling towards Fans (5), and Good Fan Habit (6) and Bad Fan Habit (4).

Conclusion: Following the Explanatory Factor Analysis, Confirmatory Factor Analysis (CFA) was performed and it is seen that the compliance indices of the structure of the scale obtained according to CFA are within the acceptable range. As a result of the item and reliability analyzes of the scale, the total variance rate announced by the scale is 57.52% and Cronbach's Alpha value is .79. After

all; It has been determined that the Fan Attitude Scale is a measurement tool that can measure the partisan attitudes of the participants as valid and reliable in measuring.

Introduction

Bad behaviors in the band and the presence of a leader directing them help us to see that the concept of leadership is effective in the stands. The multidimensional aspect of leadership has been the subject of many studies⁶⁷. Sports is a phenomenon in which individuals hold on to life and connect with love and develop physically and physiologically⁴⁶ and mentally feel happiness in people. The term fandom that exists in both individual and team sports in sports branches; It is a phenomenon that requires the person or people he enjoys to support to be with him at all times, that he watches live or electronically and expresses his devotion to him with cheers, and that he is generally wholeheartedly committed to even when things go negatively, where he does not give up hope for a moment. Fandom is basically an urban ritual performed with the participation of people who are devoted to the team⁵⁶. Fandom is generally examined within the framework of violence and fanaticism in football^{1,3,11,27,40,44}. Although there is an increase in the number of studies on different dimensions of sports branches in general, there are still relatively few studies both in the world and in Turkey on how different sports branch advocacy and community behavior are formed depending on a value system, the place and effect of advocacy in the daily life of individuals, social relation⁶⁶ and whether fan attitudes differ^{30,22,37}. In this context, it is very important to reveal how individual attitudes of violent fanatical behaviors, which are increasingly prominent in the phenomenon of spectators or partisanship, which are widely seen in society and gain an institutional character, can be objectively measured. In fact, attitude is a tendency that organizes the thoughts, feelings and behaviors of the individual in relation to objects, ideas, institutions, events and other people. In addition, it is very common to believe that behaviors are caused by the specific attitudes of individuals. Therefore, the measurement of attitudes is based on this basis⁴². When the field article was examined, it was determined that there was no measurement tool to measure the attitude of the fans. In this context, it is aimed to develop the Fan attitude Scale in order to measure the fan attitudes as valid and reliable.

Materials and methods

Model of the research

In the study, mixed method was used. The hybrid model is an approach that involves the combined use of qualitative and quantitative models throughout the research¹⁰. The combined use of qualitative and quantitative research produces more precise and complete information about theory and practice

The main assumption of mixed model studies is that the use of qualitative and quantitative research models together or blended together allows research problems and questions to be put forward better than using this model separately⁹.

Research group

Similar sampling method, one of the purposeful sampling methods, was used to determine the study group of the study. Similar sampling describes the selection of a similar subgroup, the situation, in relation to the problem of research from the universe and the study to be carried out here⁵. In contrast to maximum diversity sampling, a small and homogeneous sample is handled in the analogous sampling method and studied in detail³⁸.

First, 18 male and 10 female university students participated in the study to test the comprehensibility of the item pool. After the comprehensibility was tested, a total of 278 university students, 190 (male), 88 (Female), who were studying in the Department of Physical Education and Sports at Van YüzüncüYıl University between 2021 and 2023, participated. Finally, 28 more students, 17 (Men) and 11 (Women) studying in the Department of Physical Education and Sports, participated in the research for test, retest and CFA analysis. In this context, a total of 334 university students participated in the research. Researchers state that the size of the study group should be at least five (5) times the number of items on the scale^{58,60,4,43}.

Development process of TTÖ

The scale development process was done by following a certain order. First, attitude trait and attitude sub-dimensions were scanned for use on scale in the field literature. The theoretical structure of the feature to be measured and the investigation of the sub-dimensions of the scale in line with the theory should be investigated first in scale development studies¹⁴. In this context, the theory, definition, sub-dimensions (cognitive, affective and behavioral) of the attitude feature are defined and the attitude scales in the literature^{15,18,21,33,48,51,63} and attitude-oriented research^{26,24,28,29,65,69}. Following the literature review, face-to-face interviews (qualitative interviews) were conducted with 18 (11 males, 7 females) university students who voluntarily participated in the study. The questions posed to the students were prepared in line with the expert opinion and the questions in the interview forms were asked. Participants were asked questions about partisanship. Thus, the feelings and thoughts of the participants regarding partisanship were determined. The open-ended answers received from the participants, the developed attitude scales and the theoretical structure of the attitude feature and the article pool of the current scale were created by taking into account the literature in the literature. The articles created for the article pool have been kept as much as possible because the article pool is thought to be removed from

the narrative disorder, the incomprehensibility and the inability to be removed. As a result, the first pool of substances includes 49 items that are assumed to represent the cognitive, affective, and behavioral dimension. The number of substances appears to be at a sufficient level. In order to present the created article pool to the expert opinion, the article pool was presented to the expert opinion by placing appropriate, inappropriate and corrected boxes next to each article. The purpose of obtaining expert opinion of the presented article pool is to ensure the validity of the scope. Scope validity is the "expert opinion" of whether each item in the scale is suitable for the attitude characteristic to be measured^{25,59,68}. For scope validity, each expert evaluated the items in the item pool in terms of the fact that the expression was understandable, the language was simple-appropriate and met the feature. In this context, the article pool was presented to four faculty members from the field of Physical Education and Sports Teaching, two from the field of Measurement and Evaluation, and one faculty member from the field of Turkish Language and Literature. In line with the expert opinion, the article pool of 49 items was arranged as 42 articles and made ready for application as a draft scale. Before applying to the study group, the draft scale was prepared in 5-point likert type. In this context, participants were asked to evaluate their fan attitudes in five categories. The rating for the items on the scale is "Strongly Disagree", "Disagree", "I am undecided", "I agree", "I strongly agree". Positive attitude items; Negative attitude items 1, 2, 3, 4 and 5 were scored as 5, 4, 3, 2 and 1. The draft scale was applied to 28 university students with similar characteristics to the study group planned to be studied, and the comprehensibility and adequacy of the draft scale were tested. After this application, 2 articles that do not have the same meaning in the participants were removed and the final version of the 40-article draft scale was given. The 40-item draft scale was applied to the study group of 130 university students and after undergoing a series of validity reliability studies in order to reach the final form of the scale, the final scale form of 21 items was reached. The analyzes and findings made to reach the final scale are included in the section.

Results

Construct Validity

EFA (Exploratory Factor Analysis) and CFA (Confirmatory Factor Analysis) were applied to examine the structural validity of the Fan Attitude Scale (TTÖ).

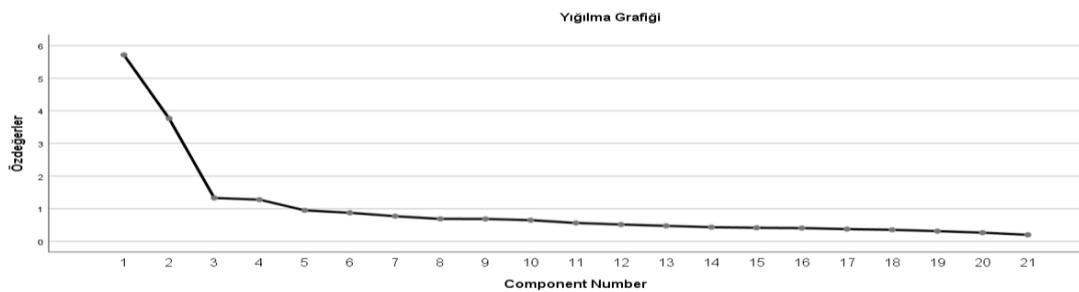
EFA (Exploratory Factor Analysis)

Table 1: KMO and Barlett Results

Kaiser Meyer Olkin KMO		,854
Bartlett's Sphericity Testi	x²	2856,580
	sd	210
	p	,000

Data were collected from a working group of 132 people for the structure validity and reliability studies of the TTÖ. EFA was applied to the data obtained as a result of this application. KaiserMayer-Olkin (KMO) and Barlett test were performed first when performing EFA (table. 1) Sample suitability 0.85; The chi-square value of Bartlett Sphericity test was found to be 2856.58 (sd=210; p=.000). The fact that this value is less than 0.05 shows that one of the factors in the correlation matrix can be excluded from the study⁵⁰. The fact that the Barlett test is significant with the KMO value being higher than .60 is accepted as evidence that the data provide suitable conditions for factor analysis⁶. KMO value is perfect as it approaches 1, and very good at 0.80s. Then, factor analysis was performed in line with the Maximum Likelihood method. Assuming that the factors that may arise of the scale are in relationship, the oblique rotation method (direct oblimin) was used⁵⁷.

Figure 1.EFA result Scree Plot



In the factorization of the scale, factors with an eigenvalue above 1 were considered significant and the Scree plot was used. In the examination of each factor load of TTÖ, a value of at least .40 was taken as a critical value. As a result of EFA, a 4-factor factor matrix with an equity value

above 1 and explaining approximately 57.52% of the total variance has emerged. When Scree Plot was examined (Figure 1), it was determined that it showed the four-factor structure. When the results of Figure 1 were examined, it was determined that the Scree Plot obtained from EFA showed the 4-factor structure.

Table 2: EFA Results of TTÖ

Material No		Information about fans (THB)	Fan sentiment (TYD)	Good fan habit (iTA)	Bad fan habit (KTA)
1	I know everything about my team.	,764			
2	I know the number of trophies my team has.	,804			
3	I know the number of championships my team has won.	,750			
4	I know the transfers my team has made.	,695			
5	I know what position my team's players are playing.	,658			
6	I know which country my team's players are from.	,579			
7	I would be happy when I saw the colors of my team.		,842		
8	I would be happy to receive my team's new kit.		,772		
9	If my team wins, I will feel a great pleasure.		,720		
10	I enjoy going to the stadium for my team.		,697		
11	I would be happy to go away for my team.		,676		
12	I would be happy when I saw the colors of my team.			,722	
13	I would be happy to receive my team's new kit.			,683	
14	If my team wins, I will feel a great pleasure.			,644	
15	I enjoy going to the stadium for my team.			,562	
16	I would be happy to go away for my team.			,516	
17	I would be happy when I saw the colors of my team.			,419	
18	I use profanity-bad words in my team's matches.				,746
19	I throw foreign objects on the field during my team's matches.				,707
20	I enter my team's matches illegally in the stadium.				,664
21	In my team's matches, I go inside the field and commit acts that cause harm.				,638
	Selfvalue	5,71	3,76	1,32	1,27
	Explained Variance	27,20	17,92	6,32	6,07
	Total		57,52		

When the EFA results were examined, according to the results of the structure validity of the TTÖ, a 4-factor structure with 21 items was obtained. It is seen that there is no factor load lower than .40 in the measurement tool and that the factor loads of the scale items vary between .41 and .95. taking into account the contents of the items collected in the factors and the theoretical structure⁶, the first factor was named as Information about the Fan (THB), the second factor was called Fan Emotion (TYD), the third factor was called Good Fan Habit (ITA) and the fourth factor was named Bad Fan Habit (KTA). The THB factor with an eigenvalue of 5.71 consists of 6 substances and explains 27.20% of the total variance. The TYD factor with an eigenvalue of 3.76 consists of 5 items and constitutes 17.92% of the total variance. The eigenvalue of the ITA factor consists of 1.32 and 5 items, which explains 6.32% of the total variance. The CTA factor with an eigenvalue of 1.27 consists of 4 items and explains 6.07% of the total variance (see KTA factor. (Table 2).

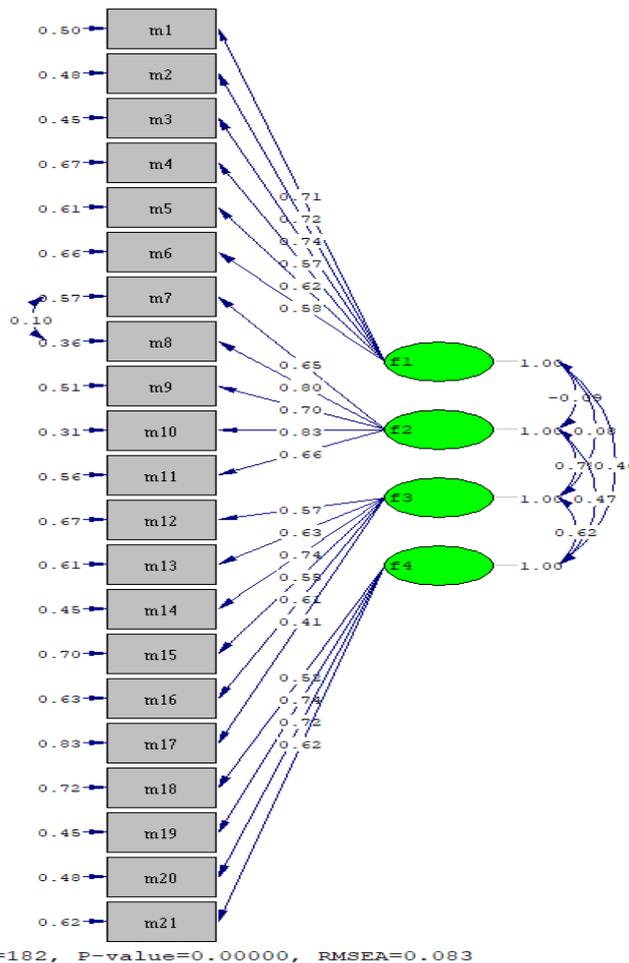
CFA (Confirmatory Factor Analysis)

CFA was applied to determine the compliance indices of the structure consisting of 21 items and four factors obtained as a result of EFA and to determine the suitability of the 4-factor structure obtained in EFA of TTÖ. Although the ranges to be considered regarding the fit indices are a controversial issue (Weston and Gore, 2006), value ranges for acceptable and well-assumed criteria are given in Table 2 in the literature^{2,12,16,17,34,35,41,49,47,53,61,62}.

Table 3. Confirmatory Factor Analysis Results

Model Fit Indexes	Good Range	Default	Acceptable Range	Fan attitude scale
χ^2 / sd	$0 < \chi^2 / sd < 2$		$2 < \chi^2 / sd < 5$	3,3
RMSEA	$0.00 < RMSEA < 0.05$		$0.05 < RMSEA < 0.10$,083
PGFI	$0.95 < PGFI < 1.00$		$0.50 < PGFI < 0.95$,67
PNFI	$0.95 < PNFI < 1.00$		$0.50 < PNFI < 0.95$,77
GFI	$0.85 < GFI < 1.00$		$0.90 < GFI < 0.95$,85
AGFI	$0.90 < AGFI < 1.00$		$0.85 < AGFI < 0.90$,81
IFI	$0.95 < IFI < 1.00$		$0.90 < IFI < 0.95$,92
NFI	$0.95 < NFI < 1.00$		$0.90 < NFI < 0.95$,89
CFI	$0.95 < CFI < 1.00$		$0.90 < CFI < 0.95$,92

In the results of the confirmatory factor analysis of the Fan Attitude Scale; The resulting fit index values were $\chi^2 / sd=3.3$, RMSEA=0.083, PGFI=0.67, PNFI=0.77, GFI=0.85, AGFI=0.81, IFI=0.92, NFI=0.89 and CFI=0.92 (see Table 3). Accordingly, it is seen that the model tested with CFA has sufficient indices of the observed compliance indices in order to reveal its adequacy. In this context, Table 3 The Path Diagram for TTÖ.



The Path Diagram for the TTO (Table 3) can be cited as evidence of the compliance indices obtained in the CFA. In Figure 2, F1= Fan Information (THB), F2= Fan Emotion (TYD), F3= Good Fan Habit (ITA), F4= Bad Fan Habit (KTA) are the factors.

Reliability

Table 4.Results of Reliability Analysis of TTÖ

TTÖ sub-dimensions	Number of items	Cronbach Alpha (α)	test re-test
Fan Information	6	,82	,79
Fan Sentiment	5	,85	,81
Good Fan Habit	6	,75	,72
Bad Fan Habit	4	,74	,70
Scale total	21	,79	,75

The reliability of the TTO was calculated by internal consistency and test retest methods. The internal consistency coefficients calculated on the data obtained from 132 students in the study were found as .85 for the Fan Information (THB) factor, .82 for the Fan Emotion (TYD) factor, .75 for the Good Fan Habit (ITA) factor and .74 for the Bad Fan Habit (KTA) factor. According to experts, if the internal consistency coefficient is between 0.80 and 1, the scale has high reliability^{7,58}.According

to these criteria for the reliability coefficient, it can be said that the internal consistency coefficients for the factors of the TTO are within sufficient limits. In order to reveal the invariance of the scale against time, the scale was applied to the similar sample group (n=28) two weeks apart. The test retest reliability coefficient obtained at the end of the application is .79, respectively; ,81; ,72 and 70. Considering that these values are higher than .70, it can be said that the test retest reliability coefficients are within sufficient limits.

Table 5. Average Declared Variance (AVE) and Combined Reliability (CR)

Sub-Dimensions	CR	AVE
Fan Information	0,82	0,52
Fan Sentiment	0,85	0,66
Good Fan Habit	0,76	0,42
Bad Fan Habit	0,74	0,43

Table 5 contains the results of the AVE value and CR value¹⁹ for convergent and divergent reliability analysis, which are used in the examination of the construct validity of the TTÖ and calculated according to each factor. In this context, as a result of the analyzes made for the validity of the decomposition and affinity of each factor, the combined reliability (CR) value was greater than .70^{39,45}. The combined reliability value was found to be greater than the average announced variance score⁸.

Discussion

In this study, which aims to measure fan attitude, it is aimed to develop a valid and reliable measurement tool. A total of 334 university students studying in the departments of Physical Education Teaching, Coaching and Sports Management from Van YüzüncüYıl University, which continued education between 2021-2023, participated in the research. The Kaiser-Mayer-Olkin (KMO) test result to determine the suitability of the data collected from the participants to EFA was 0.85; The chi-square value of Bartlett Sphericity test was determined as 2856.580 (sd=210; p=.000). After determining the suitability of the data for factor analysis, factor analysis was performed using the Maximum Likelihood method. It is known that attitude has a three-factor structure that includes thoughts, feelings and behaviors, but as a result of EFA, it was determined that the scale has a four-factor structure with 21 items. These factors are named as Fan Information (THB), Fan Sentiment (TYD), Good Fan Habit (ITB) and Bad Fan Habit Nutrition (KTA). The THB factor with an eigenvalue of 5.71 consists of 6 items and explains 22.20% of the total variance. The TYD factor with an equity value of 3.76 consists of 5 items and constitutes 17.92% of the total variance. The selfvalue of the ITA factor consists of 1.32 and 6 items, which explains 6.32% of the total variance. The CTA factor with an intrinsic value of 1.27 consists of 4 items and

explains 6.07% of the total variance. The scale explains 57.52% of the total variance. It was determined that the factor loads of the factors in the measurement tool were higher than .40 and the factor loads of each item in the scale varied between .41 and .84. Then the four-factor structure of the scale was confirmed as a result of CFA. In this context, as a result of CFA, it was seen that the scale had sufficient fit indices. In the results of the confirmatory factor analysis of the Fan Attitude Scale; The resulting fit index values are $\chi^2 /sd=3.30$, RMSEA=0.083, PGFI=0.67, PNFI=0.77, GFI=0.85, AGFI=0.81, IFI=0.92, NFI=0.89 and CFI=0.92. After the appropriateness of the confirmatory factor analysis was proven, the reliability of the scale was examined by internal consistency coefficient and test retest method. Accordingly, the internal consistency coefficients were found as .82 for the Fan Information (THB) factor, .85 for the Fan Emotion factor (TYD), .75 for the Good Fan Habit (ITA) factor and .74 for the Bad Fan Habit (KTA) factor. The reliability coefficient obtained at the end of the application for test re-test was calculated as .79, .81, .72 and .70, respectively. As a result of the item analysis, no item was removed from the scale and it was revealed that all of the items on the scale were distinctive.

In the last part of the analysis, the AVE and CR values were examined and the sub-dimensions of the mean declared variance (AVE) value were greater than 0.50 and all the sub-dimensions were greater than .70 in the combined reliability (CR) value (Nunnally and Bernstein, 1994; Raykov, 1998) and CR were found to be greater than the AVE score⁸.

Conclusion

In line with all the analyzes made, it was concluded that TTÖ is a valid and reliable measurement tool that can be used to measure fan attitudes. The lowest score that can be obtained from the TTÖ is 21 and the highest score is 105. It is explained that the 21 points that the participants will receive from the TTÖ are very low, 23-42 points are low, 43-63 points are medium, 64-84 points are high and 85-105 points are very high.

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