

Adaptation of the superstitious beliefs attitude scale in sports to Turkish culture

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Abstract. The purpose of this study was to adapt the Superstitious Beliefs Attitude Scale in Sports, developed by Chuang and colleagues, into Turkish and to examine its validity and reliability. A total of 211 university students actively participating in different sports branches (101 females and 110 males) took part in the study. The Turkish adaptation of the scale was carried out using the translation-back translation procedure recommended by Brislin (1986). Data were analyzed using the SPSS and AMOS statistical software packages. Confirmatory Factor Analysis (CFA) was conducted to examine the construct validity of the Turkish version of the scale. The goodness-of-fit indices ($\chi^2/df = 3.25$, CFI = 0.94, NFI = 0.91, TLI = 0.92, RMSEA = 0.08) indicated that the three-factor model demonstrated an acceptable fit to the data. In addition, the Composite Reliability (CR) and Average Variance Extracted (AVE) values were within acceptable thresholds. The Cronbach's alpha coefficients for the overall scale and all subscales were also found to be acceptable. These findings indicate that the Turkish version of the scale is a valid and reliable measurement instrument. Consequently, the Turkish version of the Superstitious Beliefs Attitude Scale in Sports possesses satisfactory psychometric properties and can be recommended as an effective instrument for assessing athletes' superstitious belief tendencies.

Introduction

Elite and recreational superstitions observed in athletes are not only a reflection of individual psychology, but also functional practices aimed at coping with uncertainty, maintaining the perception of control, and regulating performance anxiety. Classical anthropological explanations state that rituals and superstitions increase in environments with high uncertainty and risk; this pattern is repeated in a wide range from fishermen and sailors to game sports (Malinowski, 1954). In the context of sports, numerous external variables, such as match results, referee decisions, field conditions, and opponent performance, remain outside the athlete's area of control. Therefore, athletes try to strengthen their perception of control through micro-rituals such as “lucky” objects they believe bring luck, repeating routines, specific prayer and touching behaviors, or number/color preferences (Schippers & Van Lange, 2006; Vyse, 2013).

Social and cognitive psychology literature shows that the effect of superstitions on performance is not entirely irrational or harmful; it can lead to functional results in the short term by increasing self-efficacy, self-confidence, and task focus. For example, experimental findings about the presence of a “lucky” object leading an increase on motor performance and problem-solving success suggest that these beliefs may mediate performance through a subjective sense of control and commitment to the goal (Damisch, Stoberock, & Mussweiler, 2010). Indeed, the anxiety-regulating and focus-enhancing effects of pre-match rituals in team and individual sports are also connected with self-regulation theories (Schippers & Van Lange, 2006). However, since excessive adoption of superstitions can lead to negative consequences such as externalizing errors or avoiding feedback, it is important to measure and understand this phenomenon in a balanced way (Vyse, 2013).

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The cross-cultural context is a critical determinant shaping the type and intensity of athletes' superstitions. Societal values, religious practices, individualism-collectivism tendencies, and the historical codes of the local sports culture guide which practices are considered as "normal", and which as "good luck" or "bad luck." Therefore, a ritual that is widespread and accepted in one culture, may not be classified as superstition in another; it may even be considered a performance routine. Scale adaptation literature, at this very point, emphasizes that semantic, conceptual, and metric equivalence must be ensured as well, beyond linguistic equivalence (Beaton, Bombardier, Guillemin, & Ferraz, 2000; Hambleton, 2005). Reliable and valid measurement tools are needed to measure how practices such as prayer, perception of the evil eye, number/color symbolism, and the use of "lucky jerseys/accessories," which are common in Turkish sports culture, manifest in different sports branches and levels.

In this context, the adaptation of the "Superstitious Beliefs Attitude Scale in Sports Scale" into Turkish aims to fill an important gap both theoretically and practically. At the theoretical level, the Turkish version of the scale can help to culturally differentiate the cognitive (causal attributions, control beliefs), affective (anxiety regulation, relaxation), and behavioral (ritual frequency, attachment) dimensions of athlete superstitions. In practice, coaches and sports psychologists, while staying within ethical and performance-oriented boundaries, can benefit from the anxiety-regulating function of rituals, while also recognizing the patterns of excessive rigidity or dysfunctional dependence earlier that may hinder performance (Schippers & Van Lange, 2006; Vyse, 2013).

The increasing professionalization in the Turkish sports ecosystem in recent years, the expansion of access to performance psychology services, and the widespread adoption of science-based practices in sports require a re-evaluation of superstition and ritual behaviors. On the one hand, athletes' efforts to regulate competition anxiety and increase focus through "lucky routines" seem to be parallel with psychological skills training programs while the identification of rigid rituals that may overshadow training and performance processes, and the transformation of dysfunctional patterns, require evidence-based interventions (Schippers & Van

Lange, 2006; Vyse, 2013). Therefore, the existence of a culturally appropriate, psychometrically sound Turkish scale will both provide an academic research with a powerful measurement tool and support the decision-making processes of field practitioners.

The aim of this study is to adapt the "Superstitious Beliefs Attitude Scale in Sports Scale" into Turkish, to present the evidence of its reliability and validity, and to test the measurement invariance of the scale across different athlete groups. The study will ensure the linguistic-conceptual equivalence of the scale, and then evaluate its construct validity with comprehensive psychometric analyses following the steps suggested in international guidelines (Beaton et al., 2000; Hambleton, 2005). Thus, a reliable and valid measurement tool will be provided for interdisciplinary research examining the prevalence, determinants, and relationship with performance indicators of superstitions in athletes in Turkey (Damisch et al., 2010; Hu & Bentler, 1999; Kline, 2015).

Material and Methods

This study is a methodological study conducted to adapt the Superstitious Beliefs Attitude Scale in Sports into Turkish and to examine its validity and reliability. Following the establishment of the scale's linguistic equivalence, its construct validity and reliability were evaluated through psychometric analyses.

Participants

The study group consisted of 211 participants. Of the participants, 110 were male and 101 were female, all of whom were university students actively engaged in sports. Among the participants, 126 (59.7%) were actively involved in individual sports, while 85 (40.3%) participated in team sports. In determining the sample size, the rule that the sample should be at least 10 times the number of items in the scale was taken into consideration. Considering that the translated scale consists of 15 items, the sample size was considered sufficient for conducting the validity and reliability analyses of the scale (Kline, 2015).

Measuring Instruments Used in the Research

The data collection tools used in the research consist of two parts. The first part includes a personal information form, and the second part includes the Superstition in Sport Scale, which is planned to be

adapted into Turkish culture.

Superstitious Beliefs Attitude Scale in Sports

Superstition Attitude Scale in Sports (SASS) was developed by Chuang and his colleagues (2024) to measure athletes' attitudes towards superstitions, which is specific to the sports context itself, and is a psychometrically valid measurement tool. Tobacyk's (2004) conceptualization of superstition was used as a basis to create a pool of 30 items. The initial sample consisted of 234 university athletes (148 males, 86 females). Exploratory factor analysis resulted in a 19-item and three-factor structure. These factors are named Ritual and Taboo (8 items, $\alpha=.88$); Lucky Objects (5 items, $\alpha=.86$); Folk Culture (6 items, $\alpha=.92$). The scale is a 6-point Likert type (1=strongly disagree, 6=strongly agree). As a result of the confirmatory factor analysis performed with the data obtained from 627 athletes (380 males, 247 females), the scale took its final form consisting of 15 items and 3 sub-dimensions. The adjustment indices are at an acceptable level (CFI=.94, TLI=.91, RMSEA=.07, SRMR=.04). The average variance explained values (AVE) of the sub-dimensions range between .46 and .66, which supports structural validity.

Translation Phase

The adaptation process of the scale into Turkish was meticulously carried out based on Brislin's (1986) model, one of the most widely accepted methods for the translation of cross-cultural measurement instruments. First, the items of the original scale were translated from English into Turkish by two experts working at the School of Foreign Languages at Selçuk University, who had both field knowledge and language proficiency. During the translation process, attention was paid to ensuring one-to-one correspondence at the word level while also maintaining conceptual and semantic consistency.

Subsequently, a back-translation process was conducted to evaluate the accuracy and semantic integrity of the Turkish form. The back-translated version was compared with the original scale, and the equivalence of the expressions in terms of meaning, wording, and cultural appropriateness was thoroughly evaluated by experts.

Following this stage, an expert panel consisting of three experts with doctoral degrees in the field of

Sports Sciences and one measurement and evaluation expert examined the Turkish form in terms of linguistic clarity, cultural appropriateness, and its ability to serve the intended purpose of measurement. Necessary revisions were made based on expert feedback, and the scale items were adapted to Turkish culture and sports terminology.

Finally, during the pilot testing phase, the scale was administered to 12 participants to evaluate the comprehensibility and conceptual consistency of the items. As a result of this multi-stage process, semantic, conceptual, and cultural equivalence of the Turkish version of the scale was achieved; the original structure of the measurement instrument was preserved, and the scale was successfully adapted to Turkish culture with high accuracy (Brislin, 1986). After finalizing the scale form, the data collection phase was initiated.

Data Collection Process

The data collection process in the research was carried out face to face. Participants were informed about the purpose of the research and the principles of confidentiality, and voluntary participation was taken as a basis.

Findings

The personal characteristics of the people participating in the research are given in Table 1. Table 1 includes the numerical data of the participants' gender, age, individual sports and team sports.

Table 1. Demographic characteristics of the participants.

	Variable	N	%
Gender	Male	110	52.13
	Female	101	47.87
	Total	211	100
Age	18-21	130	61.61
	22-25	52	24.64
	26-29	15	7.11
	30 and over	14	6.64
	Total	211	100
Sport Branch Type	Individual	130	61.60
	Sports		
	Team Sports	81	38.40
	Total	211	100

Confirmatory Factor Analysis

The suitability for Turkish culture of the structure of Superstition Attitude Scale in Sports developed by Chuang and his colleagues (2024), and which consists of 15 items and 3 sub-dimensions, was tested with

Confirmatory Factor Analysis. The analysis results of the CFA obtained below in the light of the data obtained for this study are given. Figure 1 shows the path diagram and Table 2 shows the adjustment values for CFA.

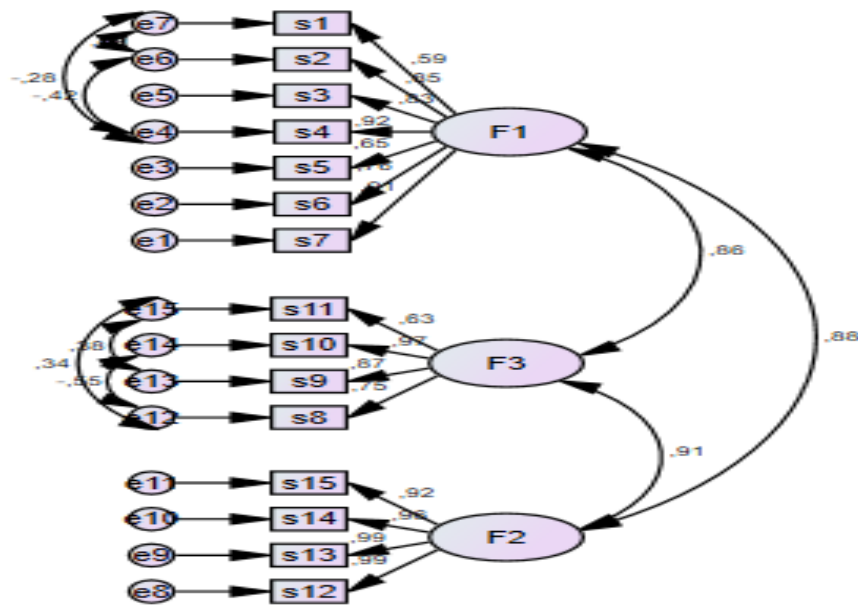


Figure 1. Confirmatory Factor Analysis Path Diagram

As a result of the DFA performed with the 15-item 3 sub-dimensional scale, it was determined that the standardized factor loadings varied between 0.59 and 0.99. The factor loadings obtained ranged from 0.63 to 0.99 were found to vary between. When the goodness of fit indices are examined ($\chi^2/df=3.25$; CFI=0.94; NFI=0.91; TLI=0.92; RMSEA=0.08), it is observed that

χ^2/df , GFI, CFI, NFI, TLI, and RMSEA values are at an acceptable level. Within this scope, the proposed 3 sub-dimensional 15-item model can be expressed as statistically acceptable (Hu and Bentler, 1999; Schermelleh-Engel et al., 2003; Kline, 2011; Byrne, 2016).

Table 2. CFA Goodness of Fit Values of Results.

Model Fit Index	Accepted Perfect Range	Range of Acceptable Fit values	Values from the Scale
χ^2/df	$0 < \chi^2/df < 3$	$3 < \chi^2/df < 5$	3.25
RMSEA	$0.00 < RMSEA < 0.05$	$0.05 \leq RMSEA < 0.10$	0.08
SRMR	$0.00 \leq SRMR < 0.05$	$0.05 \leq SRMR < 0.10$	0.053
CFI	$0.95 < CFI < 1.00$	$0.90 < CFI < 0.95$	0.94
NFI	$0.95 < NFI < 1.00$	$0.90 < NFI < 0.95$	0.91
TLI	$0.95 < TLI < 1.00$	$0.90 < TLI < 0.95$	0.92

In addition to the DFA results, CR (Composite Reliability), AVE (Average Variance Explained) and

MSV (Maximum Shared Variance) values were examined in order to evaluate the convergent and discriminant validity of the factors.

Convergent validity means that the items that make up a factor show a strong relationship both with each other and with the factor to which they

belong (Fornell and Larcker, 1981). AVE and CR values are calculated to evaluate convergent validity. In order to ensure convergent validity, the CR value must be greater than the AVE value, and the AVE value must be above 0.50 and the CR value must be above 0.70 (Hair et al., 2019). Also Cronbach Alpha values are given.

Table 3. CR, AVE and Cronbach Alpha values of the factors regarding the convergent and discriminant validity of the Superstition Attitude Scale in Sports.

	CR	AVE	Cronbach Alpha
Ritual and Taboo	0.91	0.62	0.92
Lucky objects	0.88	0.66	0.89
Folk Culture	0.92	0.68	0.98
Total			0.96

The CR and AVE values of the factors regarding the convergent and discriminant validity of the Superstition Attitude Scale in Sports are presented in Table 3. The fact that CR values are above 0.70 indicates that the factors are highly reliable. Additionally, the fact that AVE values are greater than 0.50 and lower than the CR values shows that the scale demonstrates convergent validity. The scale's Cronbach alpha coefficient was calculated as 0.96, and when examined at the factor level, it was found that the internal consistency coefficients of all factors were above 0.80. Therefore, the reliability analysis results of the scale can be considered acceptable

Discussion and Conclusion

This study aimed at adapting the Superstition Superstitious Beliefs Attitude Scale in Sports,, developed by Chuang and his colleagues (2024), into the Turkish culture. Based on the data obtained in line with this research, as in the original scale, the confirmatory factor analysis (CFA) indicated that the three-factor structure is also valid and reliable in the Turkish sample. The goodness-of-fit indices obtained indicate that the model demonstrates an acceptable level of fit. These values are consistent with the threshold values suggested by Hu and Bentler (1999) and Kline (2011), showing that the structural validity of the model is ensured.

The findings suggest that attitudes toward superstitions in sports are represented by similar factors within the cultural context. The scale's

subdimensions—"Rituals and Taboos," "Lucky Objects," and "Folk Culture"—indicate that the symbolic behaviors athletes perform before or during performance are related to both a sense of personal control and culturally learned practices. It is also pointed out in literature that athletes use superstitious behaviors as strategies to cope with stress, reduce performance anxiety, or maintain a sense of control (Buhrmann, 1977; Schippers & Van Lange, 2006; Womack, 1992). Particularly, beliefs and practices connected to folk culture are reflected in Turkish sports culture, and ritual behaviors are supported by social norms (Arlı, 2017; Ersoy & Diker, 2020).

The CR and AVE values obtained from the convergent validity analysis indicate that each factor has a strong relationship with its respective items (Fornell & Larcker, 1981; Hair et al., 2019). The high Cronbach alpha coefficients ($\alpha = 0.96$ for the total scale) support the internal consistency of the scale. These findings demonstrate that the scale is both psychometrically and culturally valid in the Turkish sample. Similar levels of high reliability and factor loadings have also been reported in studies conducted in different cultures (Chuang et al., 2024; Bleak & Frederick, 1998).

Considering the Turkish culture's predisposition toward superstitions (e.g., the evil eye, lucky colors, or certain prayer rituals), it is expected that the "Folk Culture" subdimension would have high factor loadings. This result supports the decisive influence of the cultural context on belief systems in sports

(Vyse, 2013). Therefore, it can be concluded that the scale can function as a structural and conceptual tool in the Turkish cultural context.

The findings indicate that the Superstition Attitude Scale in Sports has been successfully adapted into Turkish culture and that its three-factor structure is valid among Turkish athletes. All subdimensions of the scale showed high reliability, and the model's goodness-of-fit indices are within the acceptable limits reported in the literature. These results demonstrate that the scale can be used as a valid and reliable tool to measure the superstition attitudes of athletes in Turkey.

Moreover, the study contributes to cross-cultural psychological assessment and enhances the understanding of the cultural aspects of superstitions in sports. The scale is suitable for use in studies focusing on sports psychology, performance anxiety, stress management, and belief-based behaviors.

Recommendations

➤ Future studies are recommended to re-evaluate the psychometric properties of the developed Turkish version of the scale by applying it to athletes from different age groups and various levels of sport participation (amateur, professional, and elite). In this way, the validity and reliability of the scale can be further examined across different samples.

➤ Future research may investigate the relationships between athletes' attitudes toward superstitious beliefs and psychological variables such as performance anxiety, sport confidence, motivation, psychological resilience, and competitive performance. Such studies will contribute to a better understanding of the role of superstitious beliefs in athletes' behaviors and performance-related processes.

➤ Future studies may compare athletes from individual and team sports, different sport branches, and various levels of competition to determine whether superstitious belief tendencies differ according to sport type. In particular, examining pre-competition rituals and beliefs in lucky objects in terms of differences across sport branches is recommended.

Cross-cultural studies are also recommended to compare Turkish athletes' attitudes toward superstitious beliefs with those of athletes from

different cultural backgrounds. Such research may contribute to a better understanding of the extent to which superstitious beliefs in sports are influenced by cultural factors and may provide evidence regarding the international validity of the scale.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding this article.

Ethics Committee Report

Before the application, ethical approval was obtained from the Non-Interventional Clinical Research Ethics Committee of Selçuk University Faculty of Sport Sciences with the decision dated 01.10.2025 and numbered 251, and the research process was conducted in accordance with ethical principles.

Authors' Contributions

Study Design: ET, AE, ET, EFŞ.

Data Collection: AE, ET, EFŞ, TE.

Statistical Analysis: AE, ET, EFŞ,

Manuscript Preparation: ET, AE, ET, EFŞ, TE.

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