

# The Validity and Reliability of the Turkish Pet Attitude Scale

## *Türkçe Evcil Hayvan Tutum Ölçeğinin Geçerlik ve Güvenirliği*

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Pet attitude scale, Turkish version, validity, reliability

### Anahtar Kelimeler

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### Abstract

**Objective:** This study tests the Turkish validity and reliability of the Pet Attitude Scale (PAS) and adapt it to Turkish society.

**Materials and Methods:** The study population consisted of students in the departments of health at a university in Western Turkey. No sampling method was used; and the entire population was included in the study. Data were collected using a questionnaire on the participants' sociodemographic characteristics and the PAS, which consisted of 18 items scored between 1 and 7 under three factors: love and interaction, pets in the home, and joy of pet ownership. The construct validity of the scale was evaluated by Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The reliability of the PAS was assessed by Cronbach's alpha internal consistency coefficient, the item-total correlation, and the test-retest analysis.

**Results:** The scale factors' Cronbach's alpha reliability coefficient ranged between 0.45 and 0.92, the items' factor loads ranged between 0.51 and 0.85, and the total item correlation coefficients ranged between 0.31 and 0.77. The CFA supported the three-factor structure yielded by the EFA and showed good fit indices.

**Conclusion:** The scale was reliable for Turkish society compared to the original PAS. The factor structure resembled the results of a reevaluation of PAS. Thus, it can be suggested that the PAS is valid and reliable for application in Turkish society.

### Öz

**Amaç:** Bu çalışmanın amacı Pet Tutum Ölçeği'nin (PTÖ) Türkçe geçerlik ve güvenilirliğini test etmek ve Türk toplumuna uyarlamaktır.

**Gereç ve Yöntemler:** Araştırmanın evrenini Batı Türkiye'deki bir üniversitenin sağlık bölümlerinde okuyan öğrenciler oluşturdu. Örnekleme yöntemi kullanılmadı ve tüm popülasyon çalışmaya dahil edildi. Veriler, katılımcıların sosyo-demografik özelliklerine ilişkin bir anket ve 1 ile 7 arasında puanlanan 18 maddeden oluşan Evcil Hayvan Tutum Ölçeği kullanılarak üç faktör altında toplanmıştır: sevgi ve etkileşim, evde evcil hayvanlar ve evcil hayvan sahiplenme sevinci. Yapı geçerliği ölçeğin özellikleri açımlayıcı faktör analizi (AFA) ve doğrulayıcı faktör analizi (DFA) ile değerlendirilmiştir. Evcil hayvan tutum ölçeğinin güvenilirliği Cronbach alfa iç tutarlılık katsayısı, madde-toplam korelasyonu ve test-tekrar test analizi ile değerlendirilmiştir.

**Bulgular:** Ölçek faktörlerinin Cronbach alfa güvenilirlik katsayısı 0,45-0,92, maddelerin faktör yükleri 0,51-0,85 ve toplam madde korelasyon katsayıları 0,31-0,77 arasında değişmektedir. DFA, AFA tarafından elde edilen üç faktörlü yapıyı destekledi ve iyi uyum indeksleri gösterdi.

**Sonuç:** Ölçek, orijinal PTÖ ile karşılaştırıldığında Türk toplumu için güvenilirildi. Faktör yapısı, PTÖ'nün yeniden değerlendirilmesinin sonuçlarına benziyordu. Böylece evcil hayvan tutum ölçeğinin Türk toplumunda uygulanması için geçerli ve güvenilir olduğu söylenebilir.

## Introduction

Animal-assisted interventions are interventional programs that constitute integral parts of targeted treatment procedures. They are supportive methods for ameliorating physical, psychological, and social problems of individuals (1). Studies have shown that being with pets regulates the hemodynamic parameters such as heart rate, increases neurohormonal activity, and reduces pain (2-4).

Although the relationship between having a pet and psychological health could not be shown, most studies have reported that people with a pet have better mental health (4,5). Various studies have shown that supporting positive moods affects empathy and socialization, and reduces the sense of loneliness (6-9).

Pets affect the general health of weaker populations such as elderly people, children, and those with psychiatric disorders, and even our relationships with other people (10). It was found in the elderly that social and cardiovascular health was positively affected by the support of pets (11). It was also reported that support of pets was effective on mental, physical, and social health and wellness of children and that it was recommended to be applied for educational and health purposes in children with special needs (12). A study reported that a positive approach towards pets encourages people to approach other people more positively (13).

The literature includes few studies on people-animal relationships in Turkey (14,15). The number of pets in homes has significantly increased in Turkey in the last decade. In addition, many pets on the streets often lead to contact between humans and animals. Along with the increase in the number of house pets in urban areas, various opinions have also come forth in society regarding the relationship between humans, pets, and houses. Institutional and social awareness has also increased on animal rights, welfare, and even animal health (16). This suggests that this topic will become a popular and required research field in Turkey soon.

Various measurement tools exist to assess the quality of pet owners' relationships (17-21). It was determined that the Pet Attitude Scale (PAS) was the commonly used measurement method (13,22-24) and the same scale using the form in English was applied to individuals in different cultures (25).

Bringing the scales on which knowledge had accumulated and recognized in international publications into Turkish language and using them shortens the time that an investigator would spend for preparing a new scale and provides the investigator ease of communication and information comparable to the results obtained in different communities. In addition, adapting the scales to Turkish might not facilitate researchers who do not have enough accumulation of knowledge and experience to develop a scale (26).

Römpke, while implementing the adaptation of PAS to the German language, stated that testing individuals with measurement tools in a language appropriate for their own culture would be more reliable, and more precise results might be gotten with better understanding the survey questions asked in their native language (27).

The fact that no scale had been developed in Turkey on this subject was the determinative factor in planning our study. With the suggestion that it would be a preliminary reference work for initiation of research on human-animal relationships, this study aimed to test the validity and reliability of the PAS and to implement its adaptation to the Turkish society.

## Materials and Methods

### Aim

This study aims to adapt the PAS into Turkish and test its validity and reliability.

### Study Design and Participants

This was a methodological study. Students who were receiving education and training in various health departments of a university located in Western Turkey constituted the study group. A sample size of

300 participants was required to find a test's factor structure (28). The research was completed with 304 students who filled the forms completely. For gathering research data, the questionnaire, which was prepared by the investigators and containing sociodemographic characteristics of students, and PAS were used.

#### Ethical Consideration

Permission was obtained via e-mail for the adaptation of the PAS, which was developed by Templer et al. (29), into Turkish. In addition, the approval of the Faculty of Dentistry, Clinical Research Ethics Committee was obtained with number 2018/026 to conduct the study. The participants were informed about the study and that their personal information would be kept confidential. Those who volunteered were included in the study.

#### Data Collection

The data was collected with the students in the departments of health at a university in Western Turkey on weekdays during the course breaks between May 14 and June 5, 2018. The polls were distributed to the students, who were asked to complete the questionnaires. A second interview was carried out with 77 of the students three weeks later. The data collection process took approximately 12 to 15 minutes for each student.

#### The Pet Attitude Scale

PAS was modified by Templer et al. (29) in 2011 and had 18 items as a 7-point Likert type scale. Each item was scored between 1 and 7. The scale had three subscales that indicated individuals' attitudes towards pets, which were Love and Interaction (items 1, 2, 3, 5, 7, 8, 10, 11, 14, 16, 18), Pets in the Home (items 6, 9, 12, 13, 15) and Joy of Pet Ownership (items 4,17). The minimum and maximum scores were 18 and 126, respectively. The PAS was completed in 7 to 10 minutes. Templer et al. (29) found Cronbach's  $\alpha$  coefficient to be 0.92 for PAS (29).

#### Language Validity

First, the PAS was translated from English into Turkish to test language validity. Then, the Turkish version was back-translated into English by two linguists. The researchers reviewed the English back-translation by comparing it to the original scale. A preliminary study was conducted with 18 students using the PAS. No item was removed from PAS.

#### Statistical Analysis

Data were analyzed using the Cronbach's  $\alpha$  reliability coefficient, the Pearson Product-Moment Correlation Coefficient, factor analysis, the Barlett test, the Kaiser-Meyer Olkin test, correlations, numbers, and percentages. The  $p < 0.05$  was considered significant.

#### Results

The sociodemographic characteristics of the students are shown in Table 1. The average age of the students was 22. Of them, 62.8% were female, 99% were single, 72.4% studied nursing, 21.7% studied medicine, and 5.9% studied dentistry.

#### Validity

An EFA was applied using varimax rotation to determine the dimensional structure of the scale. The KMO value was used to test the suitability of the items for factor analysis, and the value obtained was determined to be 0.911. All values for the measure of sampling adequacy (MSA) were determined to be greater than 0.5 (all MSA  $> 0.872$ ). The Bartlett test for sphericity confirmed that the data was suitable for factor analysis ( $\chi^2 = 2778.40$ ,  $df = 153$ ,  $p < 0.001$ ). In the first attempt, a 3-factor structure with an eigenvalue greater than 1 was obtained. The first factor consisted of the items 1, 2, 3, 5, 7, 8, 10, 11, 14, 16 and 18, whereas the second factor consisted of the items 6, 9, 12, 13, and 15 and the third factor consisted of the

**Table 1. The sociodemographic characteristics of the students (n=304)**

|                |  | Mean | SD    |
|----------------|--|------|-------|
| Age            |  | 22.7 | 1.2   |
|                |  | n    | %     |
| Gender         | Female                                   | 191  | 62.8  |
|                | Male                                     | 113  | 37.2  |
| Total          |  | 304  | 100.0 |
| Marital status | Single                                   | 301  | 99.0  |
|                | Married                                  | 3    | 1.0   |
| Total          |  | 304  | 100.0 |
| School         | Medical faculty                          | 66   | 21.7  |
|                | Faculty of dentistry                     | 18   | 5.9   |
|                | School of health - department of nursing | 220  | 72.4  |
| Total          |  | 304  | 100.0 |

SD: Standard deviation

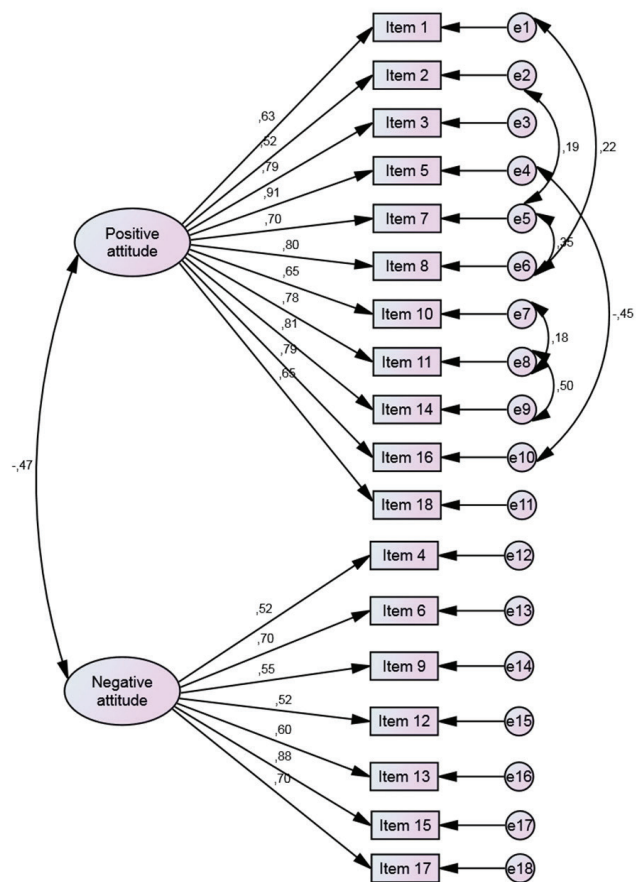
items 4 and 17. These three factors were determined to explain 57.4% of the total variance. The CFA performed for this structure revealed  $\chi^2=467.614$ ,  $df=132$  ( $p<0.001$ ),  $\chi^2/df=3.54$ ,  $RMSEA=0.075$ ,  $GFI=0.86$ ,  $CFI=0.88$ , and  $IFI=0.89$ . The values obtained were determined to be outside the acceptable levels, even though close. Additionally, when the levels of internal consistency were analyzed, it was found to be 0.92 for the first factor, 0.76 for the second factor, and 0.45 for the third factor; the internal consistency was not at an acceptable level for the third factor. When the results of CFA and the problems related to the internal consistency level of the third factor were considered, it was concluded that such a 3-factor structure was not suitable, and the suitability of a 2-factor structure was tested.

The evaluation revealed that the first factor consisted of items 1, 2, 3, 5, 7, 8, 10, 11, 14, and 16, whereas the second factor consisted of items 4, 6, 9, 12, 13, 15, and 17. Therefore, the first factor was observed to consist of items related to positive behaviors, whereas the second factor consisted of items related to negative behaviors. The two factors were determined to explain 53.7% of the total variance. The factor loads of the items in the first factor were found to range from 0.569 to 0.883, whereas the factor loads of the items in the second factor from 0.592 to 0.832. CFA performed for this structure revealed  $\chi^2=279.891$ ,  $df=128$  ( $p<0.001$ ),  $\chi^2/df=2.19$ ,  $RMSEA=0.063$ ,  $GFI=0.905$ ,  $CFI=0.949$ ,  $IFI=0.950$  and  $SRMR=0.049$ . The results confirmed that this 2-factor structure had an acceptable level of suitability. The CFA Path Diagram of PAS-TR following the construction of the second CFA model was shown in Figure 1.

**Reliability**

Cronbach’s  $\alpha$  was used to determine the internal consistency level of PAS-TR. The internal consistency level was found to be 0.925 for the first factor, 0.824 for the second factor, and 0.906 for the entire scale. When the corrected item-total correlation levels were analyzed, it was determined that the items with the highest level were the items 5 and 8 (0.772 and 0.733, respectively) and those with the lowest level were the items 9 and 12 (0.313 and 0.370, respectively).

The test-retest results of the PAS revealed that the intraclass correlation coefficient (ICC) level was 0.738 (good) for the first factor, 0.776 (excellent) for



**Figure 1.** The path diagram of the Pet Attitude Scale the second factor, and 0.773 (excellent) for the entire scale (30).

**Discussion**

In this study, PAS, which was modified by Templer et al. (29) in 2011, was adapted into Turkish. The psychometric features were tested on students in the departments of health in Turkey.

**Validity**

EFA and CFA were performed to determine the structural validity of PAS-TR. It was found that the scale was grouped under two factors in the Turkish version like the original scale and explained 53.7% of the total variance. A variance ratio ranging from 40% to 60% determined in the analysis of the scale has been considered sufficient (31). It has been shown in studies that items with a factor load below 0.30 must be not including during evaluation (32,33). It was determined in our study that the factor loads of PAS-TR ranging from 0.559-0.853 (Table 2); thus, no one

**Table 2. Item-total score correlation coefficients, factor loadings of Pet Attitude Scale (n=304)**

|         | 3-factor structure |          |          | 2-factor structure |          |
|---------|--------------------|----------|----------|--------------------|----------|
|         | Factor 1           | Factor 2 | Factor 3 | Factor 1           | Factor 2 |
| Item 1  | 0.602              | -0.003   | -0.377   | 0.632              | -0.212   |
| Item 2  | 0.637              | -0.272   | 0.350    | 0.569              | -0.063   |
| Item 3  | 0.788              | -0.121   | -0.148   | 0.788              | -0.189   |
| Item 4  | -0.118             | 0.355    | 0.592    | -0.161             | 0.592    |
| Item 5  | 0.856              | -0.110   | -0.167   | 0.853              | -0.210   |
| Item 6  | -0.113             | 0.636    | 0.110    | -0.200             | 0.730    |
| Item 7  | 0.764              | -0.234   | 0.114    | 0.729              | -0.138   |
| Item 8  | 0.826              | -0.160   | -0.090   | 0.815              | -0.200   |
| Item 9  | 0.001              | 0.519    | 0.289    | -0.024             | 0.656    |
| Item 10 | 0.675              | 0.028    | -0.217   | 0.708              | -0.063   |
| Item 11 | 0.768              | 0.046    | -0.432   | 0.818              | -0.164   |
| Item 12 | -0.112             | 0.703    | 0.043    | -0.087             | 0.617    |
| Item 13 | -0.034             | 0.607    | -0.027   | -0.081             | 0.669    |
| Item 14 | 0.785              | -0.035   | -0.384   | 0.826              | -0.193   |
| Item 15 | -0.253             | 0.580    | 0.448    | -0.224             | 0.832    |
| Item 16 | 0.769              | -0.091   | -0.124   | 0.777              | -0.127   |
| Item 17 | -0.316             | 0.192    | 0.636    | -0.299             | 0.678    |
| Item 18 | 0.669              | -0.146   | -0.085   | 0.661              | -0.165   |

the scale items were removed. The factor structure of PAS-TR determined by factor analysis was found to have construct validity.

CFA supported the 2-factor structure of the scale obtained as the result of EFA. The evaluation did not reveal good compliance regarding the  $\chi^2/df$  ratio and the RMSEA value. It has been stated in the literature that  $\chi^2/df < 3$  indicates a perfect fit, and the acceptable RMSEA value is  $\leq 8$  (34,35). The confirmatory factor analysis for this structure revealed the results as  $\chi^2=279.891$ ,  $df=128$  ( $p < 0.001$ ),  $\chi^2/df=2.19$ ,  $RMSEA=0.063$ ,  $GFI=0.905$ ,  $CFI=0.949$ ,  $IFI=0.950$  and  $SRMR=0.049$ . These results confirmed the suitability of the 2-factor structure.

### Reliability

Reliability was assessed using Cronbach's  $\alpha$  internal consistency coefficient, item-total correlation, and retest-retest analysis. Cronbach's  $\alpha$  consistency coefficient was calculated as an indicator of inner consistency and homogeneity of the PAS-TR. The scale is classified as quite reliable between 0.60 and 0.79, and highly reliable between 0.80 and 1.00 (36).

Cronbach's alpha coefficient was determined as 0.92-0.93 in the validity and reliability study of the original scale (29). In this study, Cronbach's  $\alpha$  coefficient was used for determining the internal consistency of the PAS. The internal consistency level was calculated as 0.925 for the first factor, 0.824 for the second factor, and 0.906 for the entire scale. When the corrected item-total correlation levels were investigated, it was found that the items with the highest level were items 5 and 8 (0.772 and 0.733, respectively), whereas those with the lowest level were items 9 and 12 (0.313 and 0.370, respectively). The internal consistency of PAS-TR was high. PAS-TR is a reliable scale having internal consistency.

The items of the scale having low coefficients are considered not reliable enough. When the correlation coefficient of the item is under 30, it is suggested that insufficient reliability is present (37). The item-total correlation scores of PAS-TR were 0.313-0.772. The total score correlation coefficients of entire items in the scale were above 0.30. From this aspect, the total correlation values of PAS-TR were at the suitable reliability level.

When PAS-TR was done 77 students with an interval of three weeks for test-retest analysis, high-level positive statistically significant relationships were found to be present regarding the entire scale and all its sub-dimensions. Consistency of PAS-TR with time was determined. This result revealed that the internal consistency of the scale was high and that reliable results could be obtained in more than one application of the scale (31).

## Conclusion

The results of this study in which we had measured the validity and reliability of the PAS revealed that the PAS adapts well to Turkish society.

## Ethics

**Ethics Committee Approval:** The present cohort study was designed as a survey and was approved by the Clinical Research Ethics Committee of Adnan Menderes University Faculty of Dentistry (decision no: 98318678-020, date: 28.03.2018).

**Informed Consent:** Consent was obtained from the questionnaire participants.

**Peer-review:** Externally peer-reviewed.

## Authorship Contributions

Concept: R.Ç.A., Design: R.Ç.A., Data Collection or Processing: A.K., M.Ş.A., Analysis or Interpretation: S.Ç.S., F.A., Literature Search: R.Ç.A., A.K., M.Ş.A., Writing: R.Ç.A.

**Conflict of Interest:** No conflict of interest was declared by the authors.

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