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Development of Attitude Towards Animals Scale For Children Aged 4-6 Within the Scope of Environmental Education*

Çevre Eğitimi Kapsamında 4-6 Yaş Arası Çocukların Hayvanlara Yönelik Tutum Ölçeği Geliştirilmesi

*This study is derived from the doctoral thesis.

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ÖZET

Çalışma, 4-6 yaş çocuklarda hayvan sevgisini ölçen bir araç geliştirmeyi amaçlıyor. Okul öncesi, ilkököl öğretmenliği ve psikolojik danışmanlık uzmanlarından oluşan bir ekip, bilgi, duygu ve davranış boyutlarını içeren 75 maddelik bir soru havuzu hazırladı. Ölçeğin içeriği ve anlaşılabilirliği uzman görüşüyle değerlendirildi. Geçerlik ve güvenilirlik analizi için madde analizi, açıklayıcı ve doğrulayıcı faktör analizi yapıldı ve Cronbach alfa güvenilirlik katsayısı hesaplandı. Açıklayıcı faktör analizi sonucunda ölçeğin yapısal geçerliği incelendi ve Kaiser-Meyer-Olkin değeri 0,871 olarak bulundu. Ölçek maddelerinin faktör yükleri ve madde-toplam korelasyonları değerlendirildi. Sonrasında örneklem sayısı 244'e çıkarıldı ve doğrulayıcı faktör analizi ile modelin uygunluğu test edildi. Bu analiz sonucunda ölçek maddesi 13'e düşürüldü. Ölçeğin iç tutarlılık güvenilirlik değerleri bilişsel, duyuşsal ve davranışsal boyutlarda sırasıyla 0,92, 0,92 ve 0,85 olarak bulundu. Yarı yarıya güvenilirlik katsayıları da benzer şekilde yüksek çıktı. Bu analizler sonucunda, Hayvanlara Karşı Tutum Ölçeği geçerli ve güvenilir bir araç olarak değerlendirildi.

Anahtar Kelimeler: Ölçek Geliştirme, Hayvan Sevgisi, Çevre Eğitimi.

ABSTRACT

The study aims to develop a tool to measure the love for animals in children aged 4-6. A team consisting of experts in preschool education, primary school teaching, and psychological counseling prepared a pool of 75 questions covering knowledge, emotion, and behavior dimensions. The content and understandability of the scale were evaluated through expert opinion. For validity and reliability analysis, item analysis, exploratory and confirmatory factor analysis were conducted, and the Cronbach alpha reliability coefficient was calculated. The exploratory factor analysis examined the structural validity of the scale, and the Kaiser-Meyer-Olkin value was found to be 0.871. The factor loadings and item-total correlations of the scale items were assessed. Subsequently, the sample size was increased to 244, and confirmatory factor analysis was performed to test the suitability of the model. As a result of this analysis, the number of items in the scale was reduced to 13. The internal consistency reliability values of the scale were found to be 0.92 in the cognitive dimension, 0.92 in the affective dimension, and 0.85 in the behavioral dimension. Split-half reliability coefficients were similarly high. Following these analyses, the Attitude Toward Animals Scale was deemed a valid and reliable tool.

Keywords: Scale Development, Animal Love, Environmental Education



Introduction

Humans and animals have interacted in various ways for many years. This interaction has been investigated and examined from different perspectives, and many researchers tried to explain the human-animal relationship with various approaches. In today's conditions, especially the love and friendship dimension of this relationship has come to the fore. Animals have sometimes become a friend with whom people share their loneliness, sometimes a person's best friend and sometimes a member of the family (Onal et al., 2020).

The relationship between humans and animals has been going on for centuries. In this relationship, humans are the party that gains more from animals. In the relationship between humans and animals, the child has a special place in establishing a love bond with the animal without expecting any benefit. Children can love animals without any interest (Utkugün, 2022).

Animal love is very important for children. According to Yılmaz (2019), animals cannot speak like humans, but sometimes they can be better listeners than humans and express their feelings through body language. The love for animals has positive, lifelong effects on the child's spiritual development and imagination. In a house full of cats and dogs, it has been observed that the children learn to share, become problem solvers, and are interested in other people. Furman (1989) stated that having a pet increases children's social and communication skills, reduces the feeling of loneliness and isolation, and is effective in reducing aggressive behaviors by increasing their self-confidence and, thus, contributing to the development of children.

Animals have a special place in children's lives, and children begin to understand the value of love towards animals once they get to know their environment. Therefore, the earlier the children are introduced to the love of animals, the more harmonious life with animals and nature they will establish, which will affect their development positively (Otmar & Erdem, 2019).

The history of human interaction with animals is as old as human history. Animals that are the most important source of food, the most critical workforce, and the closest friend of people have a place in people's lives. Today, it is seen that the interaction between animals and humans continues similarly. However, most of the time, news about the negative interactions between animals and humans can be found in written and visual media. The news includes animals being kept in unsuitable conditions, being away from adequate nutrition and appropriate health conditions and, most importantly, being subjected to torture.



Method

The research is a methodological study conducted to develop a measurement tool to determine the levels of animal love in children aged 4-6.

Research Group

Study group: It consists of 244 children attending preschool in the city center of Isparta. The characteristics of the study group are given in Table 1.

		f	%
Gender	Female	188	76,9
	Male	56	23,1
Total		244	100,0

Table 1. Features of the Study Group

Table 1 shows that the study group consisted of 244 children. 188 of 244 children were girls (76.9%), and 56 of them (23.1%) were boys.



BULGULAR

Findings on the Content Validity of the Attitude Scale towards Animals

First of all, a measurement tool should measure the target feature completely and accurately without blending it with another feature: this feature of the scale is called validity (Ergin, 1995). In order to prepare a valid scale, the characteristics that could be the subject of the scale were first determined by scanning the literature. Within the framework of the determined features, a pool of 75 items on different dimensions of attitude (knowledge, emotion, behavior) was prepared by three expert lecturers from the fields of preschool teaching, primary school teaching and guidance and psychological counseling. After examining the clarity and comprehensibility of the prepared items, the draft of the scale was submitted for expert opinion to increase content validity. In order to get an expert opinion, it was presented to seven expert faculty members consisting of preschool, primary school teaching, measurement and evaluation, guidance and psychological counseling, and veterinary medicine. According to the feedback we got from the experts, we decided to remove the items from the scale or correct them based on the agreement percentages. As a result, the scale was reduced to 47 items.

Findings on the Construct Validity of the Attitude towards Animals Scale

47-item form that was prepared was applied to 174 preschool students and data's suitability for factor analysis was checked. As a result of this analysis, the scale was reduced to 32 items and the results of the KMO and Bartlett's test are given in Table 2.

Kaiser-Meyer-Olkin KMO sampling proficiency		.871
	Chi-square Value	3769.308
Bartlett's Test of Sphericity	Degrees of Freedom	496
	meaningfulness	.000

Table 2. KMO and Bartlett's Test Results

The results of the KMO and Bartlett's tests in Table 2 show that the correlations between the variables are suitable for factor analysis. Any value above .50 for the KMO sampling adequacy is considered acceptable. (Sharma, 1996; Karagöz & Kösterelioğlu, 2008). The KMO value of the data obtained from the application of the questionnaire to a sample of 174 people is .871. KMO values above .8 can be considered excellent (Büyüköztürk, 2002).

Exploratory Factor Analysis (EFA) was carried out by applying the 32-item questionnaire to a sample of 174 children. According to the results of EFA, 32 items in the scale were grouped under three dimensions. The eigenvalue of the cognitive dimension factor was 10,338, and the explained variance rate was 32,306%; the eigenvalue of the behavioral dimension factor was 4.277, the explained variance rate was 13,367%; the eigenvalue of the affective dimension factor was 2.780, and the explained variance rate was 8.688%. These three dimensions explain 54,361% of the total variance. Furthermore, the scree plot of eigenvalues that was obtained as a result of the factor analysis was examined and three factors were retained for further investigation (Figure 1).

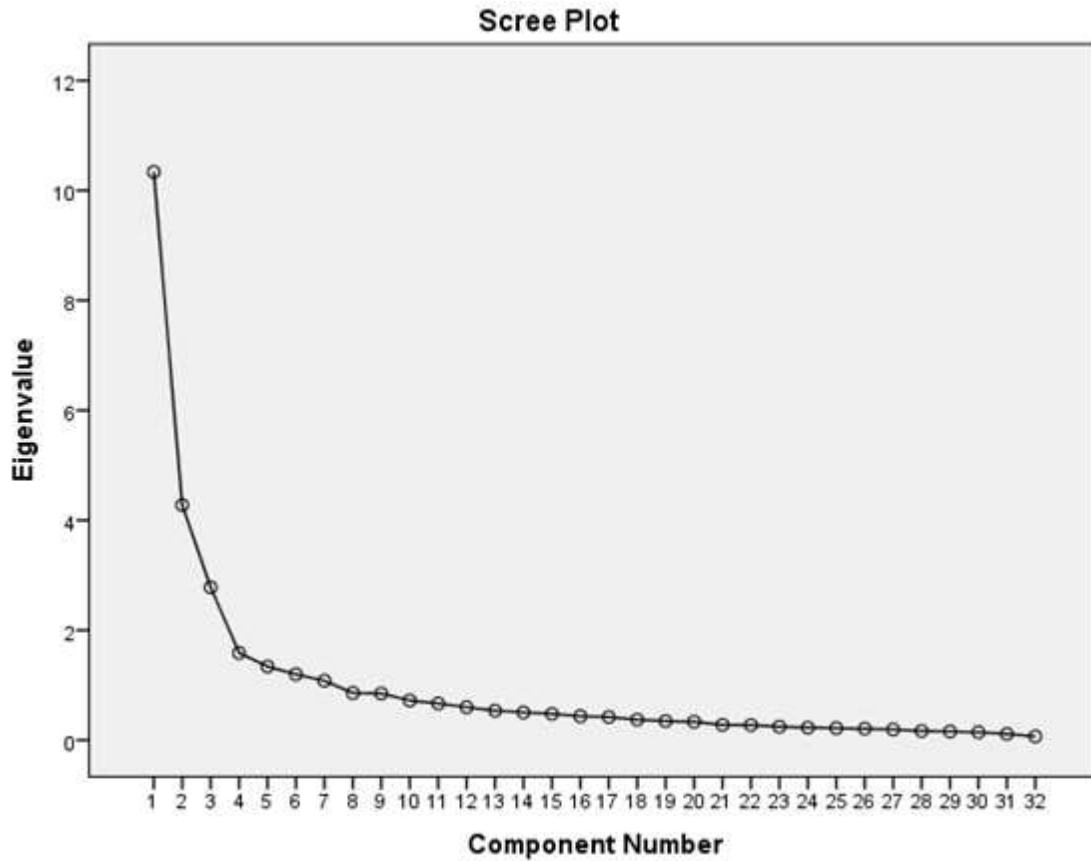


Figure 1. Exploratory factor analysis eigenvalue plot (ScreePlot)

Internal consistency reliability and split-half reliability were examined for each dimension in the scale and the results we obtained are provided in Table 3.

Items	Factor 1	Factor 2	Factor 3
She/He knows that animals should be vaccinated.	,747		
She/He knows that there are drugs developed for animals.	,738		
She/He knows what behaviors make animals angry.	,732		
She/He knows the habitats of animals.	,716		
She/He knows that injured animals need to be treated.	,706		
She/He knows that veterinarians treat animal diseases.	,684		
She/He provides information about animals.	,681		
She/He knows which animals can be kept at home.	,678		
She/He knows how to feed animals.	,637		
She/He knows how to stroke animals.	,631		
She/He knows that those who harm animals should be punished.	,627		
She/He knows the characteristics of animals.	,618		
She/He distinguishes which animals she/he can be friends with.	,610		
She/He knows that animals have rights too.	,558		



She/He knows that animals can get sick too.	,557		
She/He knows the average life span of animals.	,541		
She/He knows the names of animals.	,534		
She/He prefers to watch TV programs about animals.	,486		
She/He enjoys spending time with animals.		,846	
She/He likes to play with animals.		,834	
She/He is willing to take care of animals.		,808	
She/He enjoys feeding animals.		,788	
She/He likes to be friends with animals.		,785	
She/He likes to talk to animals.		,746	
She/He gets nervous when she sees animals.		,706	
She/He gets scared when she sees animals.		,700	
She/He does not want to meet animals.		,656	
She/He is happy to see the animals.		,445	
She/He harms animals.			,848
When she/he sees the animals, she/he throws stones at them.			,792
She/He speaks bad words to animals.			,783
She/He angers animals.			,770
KMO=0,871 Bartlett's			
Explained Variance	%32.306	%13.7	%8.688
Total Variance	%54.361		

Table 3. Factor Loads of Scale Items

Items	Item Total r
She/He knows that animals should be vaccinated.	,453
She/He knows that there are drugs developed for animals.	,485
She/He knows what behaviors make animals angry.	,570
She/He knows the habitats of animals.	,616
She/He knows that injured animals need to be treated.	,606
She/He knows that veterinarians treat animal diseases.	,517
She/He provides information about animals.	,611
She/He knows which animals can be kept at home.	,558
She/He knows how to feed animals.	,606
She/He knows how to stroke animals.	,660
She/He knows that those who harm animals should be punished.	,492
She/He knows the characteristics of animals.	,591
She/He distinguishes which animals she/he can be friends with.	,517
She/He knows that animals have rights too.	,533
She/He knows that animals can get sick too.	,550
She/He knows the average life span of animals.	,346
She/He knows the names of animals.	,486
She/He prefers to watch TV programs about animals.	,501
She/He enjoys spending time with animals.	,685
She/He likes to play with animals.	,735
She/He is willing to take care of animals.	,664
She/He enjoys feeding animals.	,668



She/He likes to be friends with animals.	,638
She/He likes to talk to animals.	,683
She/He gets nervous when she sees animals.	,259
She/He gets scared when she sees animals.	,323
She/He does not want to meet animals.	,348
She/He is happy to see the animals.	,543
She/He harms animals.	,189
When she/he sees the animals, she/he throws stones at them.	,252
She/He speaks bad words to animals.	,251
She/He angers animals.	,178

Table 4. Item Total Correlations

The item-total correlations of the scale items are given in Table 4. When the data on the factor loadings of the scale items and the item-total correlations are examined, it has been observed that the factor loads of the items on the scale vary between .445 and .848, and the item-total correlations of the scale vary between .18 and .74. As it can be seen in Table 3 and Table 4, the first dimension has 18 items, the second dimension has 10 items, and the third dimension has 4 items. Then, the sample size to which the scale was applied was increased to 244, and Confirmatory Factor Analysis (CFA) was conducted to determine to what extent observed variables explain latent variables and if the model obtained as a result of EFA is suitable. As a result of CFA, the number of items was reduced to 13 (3 items from the cognitive dimension, six items from the affective dimension, and four items from the behavioral dimension). The data obtained as a result of DFA are given in Figure 2.

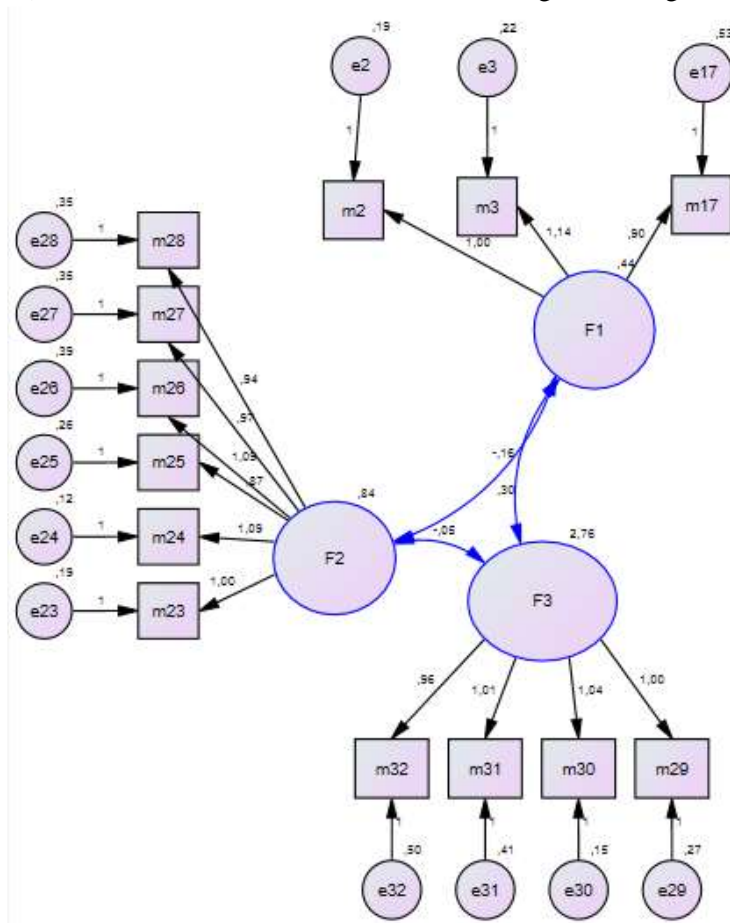


Figure 2. The rates of latent variables explaining observed variables and model fit of the Attitudes Towards Animals Scale.



According to the results of the confirmatory factor analysis given in Figure 2, it is seen that the fit index data of the Attitude towards Animals Scale are significant ($\chi^2=98.614$, $sd=62$, $p=.00$, $\chi^2/sd=1.591$). Other fit index data were found as $RMSEA=.049$, $RMR=.047$, $NFI=.97$, $CFI=.99$, $IFI=.99$, $RFI=.96$, $AGFI=.91$, $GFI=.94$. It has been observed that the model developed as a result of the EFA and, according to the index data, is appropriate. In addition, it can be said that the factors that emerge based on the data explain the model adequately (Erkorkmaz, Etikan, Demir, Özdamar & Sanisoğlu, 2013).

Findings related to the Research Question: What Are the Reliability Properties of the Attitudes Towards Animals Scale

The ability of a scale to give the same results when repeated under the same conditions is called reliability (Ergin, 1995). The Scale of Attitude towards Animals has been developed within the scope of the previous research, and it consists of 13 items and three sub-dimensions (cognitive, affective and behavioral dimensions). The Cronbach's alpha reliability coefficient of the whole scale was calculated as .819. Cronbach's alpha reliability coefficient is commonly used to determine the reliability of the scales that are used to measure psychological characteristics. The alpha coefficient method, developed by Cronbach in 1951, is an internal consistency estimation method that is suitable to use when the items are not scored as true-false (bistate dichotomous) and are scored ordinally, such as 1-3, 1-4, 1-5. The Cronbach's alpha coefficient is a weighted standard change average found by dividing the sum of the variances of the k items in the scale by the total variance. There may be a single α value determined for each item or an average α value for all items in the scale. The α value obtained for all items shows the total reliability of that questionnaire. When Cronbach's Alpha coefficient of a scale is .7 and higher, it is considered reliable (Kılıç, 2016). Therefore, it is concluded that the scale in this research is reliable.

	Cronbach's Alpha	Split-half Confidence
Cognitive Dimension	,916	,835
Affective Dimension	,921	,827
Behavioral Dimension	,846	,784

Table 5. Reliability of Sub-Dimensions of the Attitude towards Animals Scale

Table 5 shows that the internal consistency reliability values of the scale are .92 in the Cognitive Dimension, .92 in the Affective Dimension and .85 in the Behavioral Dimension. The split-half reliability values are .83 in the Cognitive and Affective Dimension and .78 in the Behavioral Dimension.

27% Group	n	Mean	Std. Deviation	Df	T	p
LOW	47	88,9574	10,18728	73,512	26,363	,000
HIGH	47	43,7447	5,86985			

Table 6. Difference between 27% Lower and 27% Upper Groups

In order to determine whether the scale can distinguish between the lower group and the upper group in terms of the attitude aimed to be measured, the total scores were ordered from highest to lowest, and 27% lower and 27% upper groups were identified. The total scores of the lower and upper groups were compared using the independent samples t-test. As a result of the analysis, it is seen in



Table 6 that there is a significant difference between the lower 27% and upper 27% group ($t(73,512)=p<.01$). Accordingly, the scale distinguishes the target groups' attitudes towards animals.



Conclusion

In order to determine the validity of the Attitude towards Animals Scale, which has been developed within the scope of the previous research, content and construct validity of the scale were checked. Expert opinion was sought for the content validity of the items of the scale. The opinions of seven experts were taken for the items of the scale. Content validity was ensured thanks to these experts from the fields of preschool teaching, primary school teaching, measurement and evaluation, guidance and psychological counseling, and veterinary medicine.

In order to determine the construct validity of the Attitude towards Animals Scale, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted. In order to develop attitude measurement tools, first of all, the appropriate attitude must be determined. It is not enough just to learn the attitude. Three other factors, cognitive, affective, and behavioral dimensions that affect attitude must also be realized (Özçiftçi, 2020). For this reason, the scale developed by the researcher was presented to the expert opinion during the scale development process, confirmatory and explanatory factor analyzes were made, and as a result, the items in the scale was gathered under these three dimensions. Within the cognitive dimension, it was desired to measure the children's knowledge about animals with the items "Knows the habitats of animals, knows the characteristics of animals and provides information about animals". Within the affective dimension, children's feelings about animals were measured via the items "likes to be friends with animals, likes to play with animals". Within the behavioral dimension, it was aimed to measure the behavior of children towards animals with the items such as "angers animals" and "when she sees the animals, she throws stones at them". As a result, it is seen that the content and construct validity of the developed scale was achieved as a result of expert opinions and factor analyses. It consisted of cognitive, affective and behavioral dimensions and thirteen items in total.

Considering the reliability data of the scale, the internal consistency reliability values are seen as .92 in the cognitive dimension, .92 in the affective dimension and .85 in the behavioral dimension. The split-half reliability values are .84 in the cognitive dimension, .83 in the affective dimension and .78 in the behavioral dimension. The Cronbach alpha reliability coefficient of the entire scale was calculated as .81. According to Kılıç (2016), the Cronbach alpha reliability coefficient should be greater than .7, and it is stated that the closer it is to 1, the higher the reliability will be. Therefore, it is concluded that the Attitude towards Animals Scale is reliable.



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EXTENDED ABSTRACT

Önceki araştırma kapsamında geliştirilen Hayvanlara Karşı Tutum Ölçeğinin geçerliliğini belirlemek amacıyla ölçeğin içerik ve yapı geçerliliği kontrol edilmiştir. Ölçek maddelerinin içerik geçerliliği için uzman görüşü aranmıştır. Ölçeğin maddeleri için yedi uzmanın görüşleri alınmıştır. Okul öncesi öğretmenliği, ilkokul öğretmenliği, ölçme ve değerlendirme, rehberlik ve psikolojik danışmanlık, veterinerlik alanlarındaki bu uzmanlar sayesinde içerik geçerliliği sağlanmıştır.

Hayvanlara Karşı Tutum Ölçeğinin yapı geçerliliğini belirlemek amacıyla açımlayıcı faktör analizi (EFA) ve doğrulayıcı faktör analizi (CFA) yapılmıştır. Tutum ölçüm araçlarının geliştirilebilmesi için öncelikle uygun tutumun belirlenmesi gerekmektedir. Sadece tavrı öğrenmek yeterli değildir. Tutumu etkileyen bilişsel, duyuşsal ve davranışsal boyutlar olmak üzere üç faktör daha gerçekleştirilmelidir (Özçiftçi, 2020). Bu nedenle araştırmacı tarafından geliştirilen ölçek, ölçek geliştirme sürecinde uzman görüşüne sunulmuş, doğrulayıcı ve açıklayıcı faktör analizleri yapılmış ve sonuç olarak ölçekteki maddeler bu üç boyut altında toplanmıştır. Bilişsel boyut içinde çocukların hayvanlar hakkındaki bilgilerinin "Hayvanların yaşam alanlarını bilir, hayvanların özelliklerini bilir ve hayvanlar hakkında bilgi verir" öğeleri ile ölçülmesi istenmiştir. Duyuşsal boyut içinde çocukların hayvanlarla ilgili duyguları "hayvanlarla arkadaş olmayı sever, hayvanlarla oynamayı sever" öğeleriyle ölçülmüştür. Davranış boyutu içinde çocukların hayvanlara karşı davranışlarını "hayvanları kızdırır", "hayvanları gördüğünde onlara taş atar" gibi öğelerle ölçmek amaçlanmıştır. Sonuç olarak geliştirilen ölçeğin içerik ve yapı geçerliliğine uzman görüşleri ve faktör analizleri sonucunda ulaşıldığı görülmektedir. Bilişsel, duyuşsal ve davranışsal boyutlardan ve toplamda on üç maddeden oluşuyordu. Ölçeğin güvenilirlik verileri dikkate alındığında iç tutarlılık güvenilirlik değerleri olarak görülmektedir. 92 bilişsel boyutta, .92 duyuşsal boyutta ve .davranışsal boyutta 85. Yarı yarıya güvenilirlik değerleridir. 84 bilişsel boyutta, .83 duyuşsal boyutta ve .davranışsal boyutta 78. Tüm ölçeğin Cronbach alfa güvenilirlik katsayısı olarak hesaplanmıştır. 81. Kılıç'a (2016) göre Cronbach alfa güvenilirlik katsayısının daha büyük olması gerekmektedir. 7 ve 1'e ne kadar yakın olursa güvenilirliğin o kadar yüksek olacağı belirtiliyor. Bu nedenle, Hayvanlara Karşı Tutumun güvenilir olduğu sonucuna varılmıştır.

Ek bilgiler

Çıkar çatışması bilgisi: Sorumlu yazarlar, çalışmada çıkar çatışması olmadığını kabul etmektedir.

Destek bilgisi: Çalışma yapılırken herhangi bir kurumdan veya kişiden destek alınmamıştır.

Etik onay bilgisi: Çalışma için etik onay gerekmemektedir.

Katkı oranı bilgisi: Çalışmanın katkı oranı tüm yazarlara eşit olarak dağıtılmıştır.