

## Attitudes of Turkish Veterinary Students and Educators towards the Moral Status of Animals and Species Rating

Abdullah ÖZEN \*   
Sadık BAYRAK \*\*\*\*

Rahşan ÖZEN \*  
Ahmet GEZMAN \*\*\*\*\*

Aşkın YAŞAR \*\*  
İbrahim ŞEKER \*\*\*\*\*

Altan ARMUTAK \*\*\*

\* Fırat Üniversitesi Veteriner Fakültesi Veteriner Hekimliği Tarihi ve Deontoloji Anabilim Dalı, 23119, Elazığ - TÜRKİYE

\*\* Selçuk Üniversitesi Veteriner Fakültesi Veteriner Hekimliği Tarihi ve Deontoloji Anabilim Dalı, 23119, Konya - TÜRKİYE

\*\*\* İstanbul Üniversitesi Veteriner Fakültesi Veteriner Hekimliği Tarihi ve Deontoloji Anabilim Dalı, Avcılar, İstanbul - TÜRKİYE

\*\*\*\* Osmancık Veteriner Kliniği, Osmancık - Çorum, TÜRKİYE

\*\*\*\*\* Kars İl Tarım Müdürlüğü, Hayvan Sağlığı Şube Müdürlüğü, Kars - TÜRKİYE

\*\*\*\*\* Fırat Üniversitesi Veteriner Fakültesi Zootekni Anabilim Dalı, 23119, Elazığ - TÜRKİYE

Yayın Kodu (Article Code): 2008/88-A

### Summary

The objective of this study was to determine the attitude of veterinary students and educators about moral status of animals and species rating and to examine the parameters that might have effects on these matters. In this study, veterinary students and veterinary educators from Fırat, İstanbul and Selçuk Veterinary Faculties were surveyed. Data were collected from 330 students and 204 educators by a paper questionnaire. Most of the participants showed a positive attitude for moral status of animals (>4). Species rating of the participants were as follows: mammals, birds, fish, reptiles and insects. As a result; it can be said that veterinary educators and students are generally sensitive on moral status of animals but differences in the factors such as academic status, gender, pet keeping and industrialization affected the level of sensitivity significantly ( $P<0.05$ ). In addition to this, advanced education and increased experience are the factors that may overcome species rating ( $P<0.05$ ).

**Keywords:** *Animal ethics, Moral status of animal, Species ratings, Veterinarian*

## Türk Veteriner Hekimliği Öğrencilerinin ve Eğitimcilerin Hayvanların Ahlaki Konuları ve Türlerin Derecelendirilmesine İlişkin Tutumları

### Özet

Bu çalışmada, Veteriner fakültesi öğrencileri ve öğretim elemanlarının, hayvanların ahlaki konuları ve türlerin derecelendirilmesi konularındaki tutumlarının ve bu tutumlar üzerinde etkili faktörlerin araştırılması amaçlandı. Bu amaçla, Fırat Üniversitesi, İstanbul Üniversitesi ve Selçuk Üniversitesi Veteriner Fakültelerinden toplam 330 öğrenci ve 204 öğretim elamanına anket uygulanarak veri toplandı. Katılımcıların büyük bölümü "hayvanların ahlaki konumu" konusunda pozitif tutum sergiledi (>4). Hayvan türlerinin önem derecesine göre sıralanması konusundaki katılımcı görüşleri sırasıyla; memeliler, kuşlar, balıklar, sürüngenler ve insektler oldu. Sonuç olarak; öğretim elemanlarının ve öğrencilerin genelde hayvanların ahlaki konularıyla ilgili olarak duyarlı davrandıkları; akademik konum, cinsiyet, pet sahipliği ve endüstrileşme gibi faktörlerin, duyarlıklar düzeylerini anlamlı ( $P<0.05$ ) düzeyde etkileyen faktörler oldukları belirlendi. Ayrıca, eğitim ve deneyim artışının, türlerin önem sırasına göre derecelendirilmesine ilişkin tutum üzerinde etkili olduğu gözlemlendi ( $P<0.05$ ).

**Anahtar sözcükler:** *Hayvan etiği, Hayvanların ahlaki konumu, Türlerin derecelendirilmesi, Veteriner hekim*



İletişim (Correspondence)



+90 424 236 83 71



aozen1@firat.edu.tr, abduhalhozen@hotmail.com

## INTRODUCTION

We, human beings, changed our attitude toward animals many times during history. Our attitude has changed from time to time as being paternalist, fearful, tolerant, compassionate, insolent, bad or protective. With our different identities like hunter, animal raiser or veterinarian, we have always felt ourselves superior to other creatures<sup>1</sup>. Superiority assumption has especially become the most important character that supports speciesism<sup>2,3</sup>. Since the first eras of human-animal relations, we started to separate some animals from others because of their certain characteristics and properties like biological and cognitive differences<sup>4,7</sup>.

Starting from end of 1970s when the discussion of moral status and rights of animals started, many studies<sup>7-15</sup> have been conducted in order to determine the attitude of humans towards animals used for different purposes. However, in spite of all these studies, it is very difficult to determine moral position and the boundaries of classification of animals<sup>7</sup>. Although public concern toward moral status and rights of animals has been increasing in recent years, these subjects continue causing considerable disquiet and discomfort among veterinarians. Many veterinarians find animal rights so antithetical to the aims and values of the profession that they prefer not to speak about animal "rights" at all<sup>16,17</sup>. In Turkey, there are several numbers of studies<sup>15,18-23</sup> on moral status and rights of animals. In addition, to our knowledge, there is no study on species rating towards moral parameters.

The objective of this study was to determine the attitude of veterinary students and educators about moral status of animals and species rating and to examine the parameters that might have effects on these matters.

## MATERIAL and METHODS

The study was applied on the students and educators at three veterinary faculties which were located east, centre, and west of Turkey. Fırat Veterinary Faculty (FVF) (the east of Turkey), Selçuk Veterinary Faculty (SVF) (the centre of Turkey) and İstanbul Veterinary Faculty (IVF) (the west of Turkey) were selected according to its' representative power by non-probability sample technique. Also,

the technique described by Krejcie and Morgan<sup>24</sup> was used in the selection of the participant samples. Within the frame of this technique, 330 students among the total number of 2233 and 204 educators among the total number of 418 were determined as the sample sizes for this study. Proportional stratum sampling was used to determine the number of samples needed for each faculty. Then, two different lists were formed in line with the student identification numbers and the years of service of the educators. Taking into consideration the numbers of total students and educators from each faculty in the lists, the individuals to be included in the sample were determined using systemized random sampling. Data were collected from 534 participants by a paper questionnaire.

A questionnaire<sup>a</sup> was designed to determine the attitudes about moral status of animals and the attitudes toward various uses of animals of the participants. The questionnaire was composed of three sections. Demographic information was collected in the first section. Three items that contain independent variables (gender, upbringing place, and pet keeping) were asked to all participants in the first section. Also, faculties and academic status (educator/student) of the participants were accepted as independent variables.

An attitude set of moral status of animals (SMSA) which included 24 items in total was represented in the second section. Items representing this set were generally developed on the basis of discussions in history of philosophy, discussions with scientists as well as evaluation of the literature<sup>2,5,25,26</sup>. A 7-Point Likert scale was used for the second section. Cronbach's alpha ( $\alpha = 0.77$ ) of the scale items revealed a high degree of internal consistency.

In the third section of the survey, species were divided into five groups (mammals, reptiles, fish, birds and insects) and the participants were asked whether they agree with (yes, no, not sure) the following remarks related to the animals in these groups; "they feel pain", "they have emotions", "they may be killed for consumption (fish, cattle, deer, partridge)", "for sports (fish, deer)" and "for experiments (cattle, dogs, rats)". These questions were modified from a previous survey conducted in the Netherlands<sup>27</sup>.

The survey was pre-tested by ten veterinary

students and ten educators. The survey was administered to all groups between November 2002 and June 2003.

Frequencies were used for demographic analyses. A mean score was calculated for moral status of animals from all the 24 items. Positive items were scored from 7 for “strongly agree” through 1 for “strongly disagree” with “neutral” in the middle of the scale scored as 4. The scoring for the negative subjects was applied completely on the contrary<sup>28</sup>. When comparisons were made between groups for SMSA, a score <4 was classified as disagreement with this set and was interpreted as showing negative attitude about moral status of animals. A score  $\geq 4$  was interpreted as showing positive attitude about moral status of animals. Independent student's t-test was used to measure differences between gender, pet keeping, upbringing place, and academic status groups. A variance analysis was used to determine the differences between the faculties. Following these analyses, Duncan's test was applied to compare the groups for the significant parameters<sup>29</sup>.

For the third section, a chi-square test was used to determine whether there was a significant difference between responses of the participants related to “existence of pain feeling” and “emotions”, and to “acceptance of animals killing for different purposes” in animals<sup>29</sup>.

SPSS Version 11.0 for Windows<sup>b</sup> was used for all statistical analyses. P values (<0.05 were considered significant) were calculated for all statistical analyses.

## RESULTS

### Moral status of animals

The average values obtained from the items showed that all the groups had positive attitudes (>4) for the moral status of animals. According to the results obtained from the SMSA, educators when compared to students ( $P<0.01$ ), students grown up in urban when compared to the other students ( $P<0.05$ ), participants who keep a pet when compared to the other participants (student:  $P<0.01$ ; educator:  $P<0.05$ ), participants in IVF (student:  $P<0.001$ ; educator:  $P<0.001$ ) when compared to the participants in FVF and SVF displayed more positive attitudes (Table 1).

**Table 1.** Attitude levels of the participants on moral status of animals according to the independent variables (Frequency, mean score,  $\pm$  standard error and significance level)

**Tablo 1.** Katılımcıların bağımsız değişken gruplarına göre hayvanların ahlaki konumuyla ilgili tutum düzeyleri (Sıklık, ortalama puan, standart hata ve anlamlılık düzeyi)

Independent variables	SMSA				
	Student		Educator		
	n	$\bar{X}\pm Sx$	n	$\bar{X}\pm Sx$	
Gender	Male	238	4.56 $\pm$ 0.04	142	4.80 $\pm$ 0.06
	Female	92	4.82 $\pm$ 0.07	59	4.94 $\pm$ 0.10
	P		<b>0.001</b>		<b>0.218</b>
Upbringing place	Rural	104	4.51 $\pm$ 0.06	58	4.91 $\pm$ 0.09
	Urban	226	4.69 $\pm$ 0.04	144	4.81 $\pm$ 0.06
	P		<b>0.023*</b>		<b>0.355</b>
Pet keeping	Yes	234	4.70 $\pm$ 0.04	119	4.93 $\pm$ 0.06
	No	96	4.48 $\pm$ 0.06	85	4.71 $\pm$ 0.08
	P		<b>0.003</b>		<b>0.034</b>
Faculty	FVF	103	4.47 $\pm$ 0.06 <sup>a</sup>	56	4.46 $\pm$ 0.08 <sup>a</sup>
	IVF	131	4.81 $\pm$ 0.06 <sup>b</sup>	88	5.07 $\pm$ 0.07 <sup>b</sup>
	SVF	96	4.57 $\pm$ 0.06 <sup>a</sup>	60	4.85 $\pm$ 0.10 <sup>b</sup>
	P		<b>0.000</b>		<b>0.000</b>
Academic status	Student		n		$\bar{X}\pm Sx$
	Educator		330		4.63 $\pm$ 0.04
	P		204		4.84 $\pm$ 0.05
					<b>0.001</b>

**SMSA:** Set of Moral Status of Animals; **n:** frequency; **X:** mean; **Sx:** P: Probability; **a,b:** Different letters in the same column are statistically significant ( $P<0.05$ )

### Do animals feel pain?

Answers given by the participants related to “existence of pain feeling” in animals were significantly different for animal groups ( $P<0.001$ ). It was observed that the participants who accepted that animals feel pain, evaluated mammals and fish as classes close to birds and reptiles, respectively (Table 2). In the answers for this question, differences were observed for only mammals for gender ( $P<0.01$ ) and pet keeping ( $P<0.01$ ) variables. Percentage of female participants, who thought that mammals feel pain, was higher than that of males. Also, percentage of the participants who keep a pet and thought that mammals feel pain, was higher than that of who do not keep a pet (Table 3).

### Do animals have emotions?

Answers to this question were different for animal groups ( $P<0.001$ ). The groups which were accepted to “have emotions” with the highest percentage were mammals and birds (Table 2). In terms of academic status groups, there were differences for reptiles and birds. Percentage of the educators who answered “yes” to this question

**Table 2.** Distribution of the participants according to their opinion about "existence of emotion in animals", "feeling pain in animals" and "killing animals"

**Tablo 2.** Katılımcıların hayvanlarda "duyguların varlığı", "acı hissi" ve "hayvanların öldürülmesi" konularına ilişkin görüşlerine göre dağılımı

Dependent variables		Yes % (n)	No % (n)	Not sure % (n)
Do animals feel pain?	Mammal	98.9 <sup>c</sup> (527)	0.8 <sup>a</sup> (4)	0.4 <sup>a</sup> (2)
	Reptile	80 <sup>b</sup> (420)	4.2 <sup>ab</sup> (22)	15.8 <sup>b</sup> (83)
	Fish	75.4 <sup>b</sup> (393)	7.3 <sup>b</sup> (38)	17.3 <sup>b</sup> (90)
	Bird	97.9 <sup>c</sup> (516)	1.1 <sup>a</sup> (6)	0.9 <sup>a</sup> (5)
	Insect	48.5 <sup>a</sup> (251)	10.6 <sup>b</sup> (55)	40.8 <sup>c</sup> (211)
	<i>P</i>	0.000	0.003	0.000
Do animals have emotions?	Mammal	94.2 <sup>c</sup> (501)	2.6 <sup>a</sup> (14)	3.2 <sup>a</sup> (17)
	Reptile	53 <sup>b</sup> (273)	17.1 <sup>b</sup> (88)	29.9 <sup>b</sup> (154)
	Fish	53.7 <sup>b</sup> (278)	18.5 <sup>b</sup> (96)	27.8 <sup>b</sup> (144)
	Bird	87 <sup>c</sup> (457)	4.2 <sup>a</sup> (22)	8.8 <sup>a</sup> (46)
	Insect	27 <sup>a</sup> (139)	30.4 <sup>c</sup> (156)	42.6 <sup>c</sup> (219)
	<i>P</i>	0.000	0.000	0.000
Are animals allowed to be killed?	Mammal	3.8 <sup>a</sup> (20)	92.3 <sup>c</sup> (489)	4.0 <sup>a</sup> (21)
	Reptile	14.4 <sup>b</sup> (76)	73.7 <sup>b</sup> (389)	11.9 <sup>b</sup> (63)
	Fish	14.4 <sup>b</sup> (76)	74.4 <sup>b</sup> (392)	11.2 <sup>ab</sup> (59)
	Bird	2.7 <sup>a</sup> (14)	93.6 <sup>c</sup> (494)	3.8 <sup>a</sup> (20)
	Insect	39.2 <sup>c</sup> (207)	44.5 <sup>a</sup> (235)	16.3 <sup>b</sup> (86)
	<i>P</i>	0.000	0.000	0.011
Are animals allowed to be killed... for consumption?	Fish	95.7 <sup>b</sup> (510)	2.1 <sup>a</sup> (11)	2.3 <sup>a</sup> (12)
	Cattle	95.1 <sup>b</sup> (506)	3.0 <sup>a</sup> (16)	1.9 <sup>a</sup> (10)
	Deer	29.3 <sup>a</sup> (154)	63.6 <sup>b</sup> (334)	7.0 <sup>ab</sup> (37)
	Partridge	36.4 <sup>a</sup> (192)	52.5 <sup>b</sup> (277)	11.2 <sup>b</sup> (59)
	<i>P</i>	0.000	0.000	0.012
	Are animals allowed to be killed... for sports?	Fish	41 (216)	55.2 (291)
Deer		6.1 (32)	90.9 (477)	3.0 (16)
<i>P</i>		0.000	0.000	-
Are animals allowed to be killed... for experiments?	Cattle	45.3 <sup>a</sup> (237)	44.2 <sup>b</sup> (231)	10.5 (55)
	Dog	51.6 <sup>a</sup> (271)	37.7 <sup>b</sup> (198)	10.7 (56)
	Rat	83.9 <sup>b</sup> (444)	7.9 <sup>a</sup> (42)	8.1 (43)
	<i>P</i>	0.000	0.000	-

**a, b, c:** Different letters in the same column are statistically significant ( $P < 0.05$ ); - :  $P > 0.05$

**Table 3.** According to independent variables percentage distribution of the participants who responded "yes" related to "existence of emotion in animals", "feeling pain in animals" and "killing animals"

**Tablo 3.** Hayvanlarda "duyguların varlığını", "acı hissini" ve "hayvanların öldürülmesini" kabul etme oranlarının katılımcıların bağımsız değişken gruplarına göre oransal dağılımı

Independent variables			Do animals feel pain?					Do animals have emotions?					Are animals allowed to be killed?				
			M	R	F	B	I	M	R	F	B	I	M	R	F	B	I
Academic status	Educator	%	98	83.4	78.6	97.5	50.3	97.5	63	64.4	91.9	28.8	3.5	11.5	11	3	32
	Student	%	99.4	77.9	73.5	98.2	47.5	92.1	47.1	47.2	84.1	26	4	16.2	16.5	2.4	43.6
	<i>P</i>	-	-	-	-	-	-	0.023	0.016	-	-	-	-	-	-	-	-
Faculty	FVF	%	98.1	82.6	75.5	98.1	51.9	92.5	48	55.2	83.3	28.3	4.4	21 <sup>b</sup>	18.5 <sup>b</sup>	3.2	46.5 <sup>b</sup>
	IVF	%	99.1	81.9	78.4	98.1	46.2	96.3	53.5	50.2	88.4	25.4	0.9	5.1 <sup>a</sup>	5.6 <sup>a</sup>	0.5	25.5 <sup>a</sup>
	SVF	%	99.4	74.8	71.2	97.4	48.4	92.9	57.3	57.0	89.0	28.2	7.1	20.6 <sup>b</sup>	22.6 <sup>b</sup>	5.2	51 <sup>b</sup>
	<i>P</i>	-	-	-	-	-	-	-	-	-	-	-	-	0.002	0.003	-	0.001
Gender	Male	%	91.4	80.7	74.2	97.3	46.8	92.6	52.7	51.8	84.1	26.3	4.8	15.2	16.9	3.2	40.6
	Female	%	100.0	77.9	78.2	99.3	52.4	98.0	53.1	57.7	94.0	27.9	1.3	12.6	8.6	1.3	35.8
	<i>P</i>	0.002	-	-	-	-	-	-	-	-	0.024	-	-	-	-	-	-
Pet keeping	Yes	%	98.9	81.0	78.6	97.7	50.0	94.0	55.2	54.4	87.9	26.8	3.4	12.0	11.7	2.6	36.6
	No	%	89.9	78.0	69.3	98.3	45.7	94.5	48.9	52.3	85.4	27.4	4.4	19.1	19.7	2.8	44.4
	<i>P</i>	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upbringing place	Rural	%	98.1	79.0	78.0	95.7	46.8	92.0	48.7	51.6	82.6	27.6	3.1	18.6	15.6	3.7	43.5
	Urban	%	99.2	80.3	74.2	98.9	49.3	95.1	54.9	54.6	89.0	27.0	4.1	12.6	14.0	2.2	37.3
	<i>P</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**a, b:** Different letters in the same column are statistically significant ( $P < 0.05$ ); **M:** Mammals; **R:** Reptiles; **F:** Fish; **B:** Birds; **I:** Insects; **FVF:** Firat Veterinary Faculty; **IVF:** Istanbul Veterinary Faculty; **SVF:** Selçuk Veterinary Faculty; - :  $P > 0.05$  (*P* values reported are based in Chi-Square)

was higher than that of students (Reptiles:  $P < 0.05$ , Fish:  $P < 0.05$ ). Percentage of the female participants who thought that birds feel pain, was higher than that of males (Birds:  $P < 0.05$ ) (Table 3).

### Are animals allowed to be killed?

When the rates for "accept to kill an animal" parameter were evaluated in general, it was observed that the birds and mammals were considered in a group with the lowest participation rate, and insects in a separate group with the highest participation rate and reptiles and fish in between the highest and the lowest as another group ( $P < 0.001$ ) (Table 2). In terms of faculty variable, there were differences for reptiles ( $P < 0.01$ ), fish ( $P < 0.01$ ) and insects ( $P < 0.01$ ). Percentage of the participants from IVF who thought that "animals are allowed to be killed", was lower than that of participants from FVF and SVF (Table 3).

### Are animals allowed to be killed? ...for consumption?

While the participants evaluated the fish and cattle in one category, they evaluated the deer and partridge in another categorical group. The deer had the lowest acceptance rate of being killed for consumption (Table 2). Acceptance rate of "killing the animals for consumption" had differences in

variables of faculty, gender and pet keeping. The acceptance rate of killing for consumption was lower for IVF when compared to FVF and SVF (Fish:  $P<0.05$ ; Cattle:  $P<0.05$ ; Deer:  $P<0.01$ ; Partridge:  $P<0.001$ ). Likewise, the female acceptance was lower than that of the males (Cattle:  $P<0.05$ ; Deer:

animal species was lower in the females than the males for experimental purposes (Cattle:  $P<0.01$ ; Dogs:  $P<0.001$ ; Rats:  $P<0.01$ ). The acceptance rate to kill dogs was lower for the participants who keep a pet than those who do not keep a pet ( $P<0.05$ ) (Table 4).

**Table 4.** Percentage distribution of the participants who responded "yes" related to "killing animals for consumption, sports, and experiments"  
**Tablo 4.** Katılımcıların "hayvanların tüketim, spor ve deneysel amaçlarla öldürülmelerini" kabul etme oranlarına göre oransal dağılımı

Independent variables			Are animals allowed to be killed?								
			for consumption?				for sports?		for experiments?		
			Fish	Cattle	Deer	Partridge	Fish	Deer	Cattle	Dog	Rat
Academic status	Educator	%	96.1	95.1	33.3	37.1	44.0	7.1	46.7	52.7	82.3
	Student	%	95.5	95.1	26.9	35.9	39.1	5.5	44.4	50.9	85
	<i>P</i>		-	-	-	-	-	-	-	-	-
Faculty	FVF	%	98.7 <sup>b</sup>	98.7 <sup>b</sup>	37.6 <sup>b</sup>	38.9 <sup>b</sup>	41.0 <sup>a</sup>	4.5 <sup>a</sup>	48.7	63.9 <sup>b</sup>	91.8 <sup>b</sup>
	IVF	%	91.8 <sup>a</sup>	90.8 <sup>a</sup>	19.0 <sup>a</sup>	24.0 <sup>a</sup>	28.4 <sup>a</sup>	1.9 <sup>a</sup>	46	41.9 <sup>a</sup>	77.7 <sup>a</sup>
	SVF	%	98.1 <sup>b</sup>	97.4 <sup>b</sup>	35.5 <sup>b</sup>	51.3 <sup>b</sup>	58.3 <sup>b</sup>	13.6 <sup>b</sup>	40.9	52.9 <sup>ab</sup>	84.6 <sup>ab</sup>
	<i>P</i>		0.017	0.015	0.007	0.000	0.000	0.004	-	0.008	0.021
Gender	Male	%	97.1	97.1	34.8	41.2	47.7	8.0	50.8	59.4	88.0
	Female	%	92.1	90.1	15.5	24.2	24.2	1.3	30.4	31.1	73.3
	<i>P</i>		-	0.045	0.002	0.010	0.000	0.017	0.002	0.000	0.007
Pet keeping	Yes	%	94.0	92.9	29.1	37.2	41.1	6.0	44.7	46.8	81.3
	No	%	98.9	99.4	29.8	34.6	40.8	6.2	46.6	61.0	89.0
	<i>P</i>		-	0.003	-	-	-	-	-	0.047	-
Upbringing place	Rural	%	97.5	96.9	29.4	35.8	46.9	8.1	49.7	58.4	88.2
	Urban	%	94.9	94.3	29.2	36.5	38.6	5.2	43.3	48.6	82.0
	<i>P</i>		-	-	-	-	-	-	-	-	-

*a, b:* Different letters in the same column are statistically significant ( $P<0.05$ ; *P* values reported are based in Chi-Square), **FVF:** Fırat Veterinary Faculty; **IVF:** İstanbul Veterinary Faculty; **SVF:** Selçuk Veterinary Faculty; - :  $P>0.05$

$P<0.01$ ; Partridge:  $P<0.05$ ). The participants who keep a pet, agreed with killing of cattle ( $P<0.01$ ) at a lower rate when compared to the participants who do not keep a pet (Table 4).

### ...for sports?

Answers given to hunting of deer and fish for sports were significantly different ( $P<0.001$ ) (Table 2). There were significant differences in terms of the independent variables of faculty (Fish:  $P<0.001$ ; Deer:  $p<0.01$ ), gender (Fish:  $P<0.001$ ; Deer:  $P<0.05$ ) and pet keeping (Cattle:  $P<0.01$ ). Acceptance of hunting of these animals was lower in IVF than SVF and FVF, females than the males and participants who keep a pet than those do not keep a pet (Table 4).

### ...for experiments?

Acceptance of killing animals for experiments was lower for cattle and dog than rat ( $P<0.001$ ) (Table 2). Acceptance rate to kill the dog ( $P<0.01$ ) and rat ( $P<0.05$ ) was lower in IVF than FVF and SVF. The acceptance rate to kill all these three

## DISCUSSION

The results of this study supported that veterinary students and educators showed positive attitudes about moral status of animals. Participants also –generally- showed emotional reaction about “existence of emotion” and “feeling pain in animals” and “killing animals for different purposes”. From these points, it can be argued that Turkish veterinary students and educators showed sensitive and protective attitudes towards moral status of animals.

In studies on animal rights, animal welfare and using animals for experimental purposes<sup>10,13,30-35</sup>, the gender has been reported to be the primary reason to show a definite trend, and females represent a more sensitive trend than males. The findings of this study also proved that the female participants showed more positive attitude than males about “moral status of animals”, “existence of emotion”, and “killing animals”.

Self et al.<sup>36</sup> suggested that veterinary medical education and educational experience inhibited veterinary students’ moral reasoning ability rather

than facilitated it. However, the results of this study showed that SMSA was scored higher by educators when compared to the students. Academic status of the participants also caused different attitudes related to the "existence of emotion" in animals. The percentage of educators agreed with the idea that reptiles and fish have emotion, was higher than the students. From this point, it can be said that the increase in education level and professional experience affects attitudes towards animals, positively. This situation may be explained by increase of knowledge level.

In studies aiming to define human-animal relation, it is reported that pet keeping is a factor that positively affects the attitude towards animals <sup>9,12,23,32,37-41</sup>. In addition, pet keeping has a crucial role in classification of animals <sup>7</sup>. The results obtained in this study were in agreement with the results of the above researches and it was observed that participants who keep a pet scored SMSA higher and displayed a more positive attitude when compared to the rest of the groups. Our results also showed that participants who keep a pet showed more sensitive opinion than those who do not keep a pet about "existence of feeling pain in mammals", "killing cattle for consumption" and "killing dogs for experimental purposes".

New city organization does not take animals and their needs into consideration <sup>42</sup>. However, even though urbanization is a process that makes keeping pets difficult, the popularity of owning cat and dog does not decrease and it even increases everyday <sup>4</sup>. Some studies conducted in recent years indicated a relation between urbanization and industrialization and the increased interest to animals <sup>15,23,43</sup>. In the current study, it was concluded that the participants grown up in urban areas and industry-intensive regions and from the universities located in highly urbanized regions (IVF) had a more positive attitude toward moral status of animals when compared to the individuals grown up in rural areas and from the universities in rural areas (FVF and SVF). The more positive attitude displayed by the participants from urban regions even though urbanization has negative effects on pet keeping, may be interpreted as a condition related to increasing isolation of modern urban people or an attitude arising from alienation of society to the nature as a result of urbanization. On the other hand, as reported by Morris <sup>4</sup>, lively

but calming existence of pets may be a stress-decreasing factor for the people living in cities. The differences that occurred between the participants in IVF and that of FVF and SVF may be due to the fact that Istanbul has the highest ratio in Turkey of companion animals' (pets) per capita than any other city <sup>44,45</sup>.

In the studies conducted in the USA and the Netherlands, mammals were reported to be the most popular, protected and interesting animals <sup>7,27,46,47</sup>. In our study, the participants believed that the mammals followed by birds were considered having the highest amount of pain feeling and emotions and the less approved species for killing. Insects were the less interesting animal group in the USA and the Netherlands <sup>7,27,46,47</sup> which is similar to our findings. In a study conducted in the Netherlands <sup>27</sup>, while the percentages of acceptance for consumption of fish, cattle and deer were 98%, 89% and 40%, the percentages were 9% and 14% on hunting fish and deer, respectively. We also found similar attitudes for consumption of fish and cattle. However, the participants of this study had more sensitive attitude on killing deer for both consumption and sports. This difference might be due to the fact that deer is under protection in Turkey or could be the results of instinctive attitude along with a homogenous structure of the participants which only included veterinary educators and students. Fox <sup>48</sup> reported that historical point of view of a society is one of the factors which are effective on classification of animals. Being all deer types especially reindeer are sacred animals in Turkish mythology <sup>49</sup> and the response of the participants of our study supports the views of Fox <sup>48</sup>. Fox <sup>48</sup> and Driscoll <sup>7</sup> also reported that usefulness of relevant animals is another factor that is effective on classification of animals. In the present study, our data shows that mammal, birds and fishes more considering groups than reptiles and insects groups. This classification might be linked by Driscoll <sup>7</sup> and Fox's <sup>48</sup> findings which are about effective of usefulness on classification of animals. The approaches by the participants in all aspects of the survey for all animal groups related to mammals, birds, fish, reptiles and insects were remarkably close to each other in the present and anonymous <sup>27</sup> studies. From the point of results of the present and other studies <sup>7,27,48</sup>, it might be said that the factors which affect classification of animal groups are similar in different cultures.

In conclusion, it could be said that Turkish veterinary educators and students are generally sensitive on moral status of animals but differences in the parameters like academic status, gender, pet keeping and industrialization might affect the level of sensitivity significantly. In addition to this, advanced education and increased experience are the factors that may overcome species rating.

## NOTES

<sup>a</sup>: Survey available from corresponding author upon request.

<sup>b</sup>: SPSS Inc., Chicago, IL 60606 USA <<http://www.spss.com>>.

## REFERENCES

- Manguel A:** Simgesel hayvanlar. Charum P (Çeviren). *Cogito*, 32, 188-190, 2002.
- Singer P:** Hayvan Özgürleşmesi. Doğan H (Çeviren). 1. Baskı. Ayrıntı, İstanbul, 2005.
- Ryder RD:** Speciesism. In, Bekoff M, Meaney CA (Eds): *Encyclopaedia of Animal Rights and Animal Welfare*. 1st ed. 320, Greenwood Press, Westport, 1998.
- Morris D:** Hayvan-İnsan Sözleşmesi. Harmancı M (Çeviren). 1. Baskı. İnkilap, İstanbul, 1991.
- LaFollette H, Shanks N:** The origin of speciesism. *Philosophy*, 71, 41-61, 1996.
- Gould JL, Gould CG:** Hayvan Zihni. Yurtören D (Çeviren). 2. Baskı. TÜBİTAK, Ankara, 2001.
- Driscoll JW:** Attitudes toward animals: Species ratings. *Soc Anim*, 3 (2): 139-150, 1995.
- Bart WM:** A hierarchy among attitudes towards animals. *J Environ Educ*, 3 (4): 4-6, 1972.
- Bowd AD:** Fears and understanding of animals in middle childhood. *J Genet Psychol*, 145, 143-144, 1984.
- Gallup GG, Beckstead JW:** Attitudes toward animal research. *Am Psychol*, 43, 474-476, 1988.
- Bowd AD, Bowd AC:** Attitudes toward the treatment of animals: A study of Christian groups in Australia. *Anthrozoös*, 3 (1): 20-24, 1989.
- Driscoll JW:** Attitudes toward animal use. *Anthrozoös*, 5 (1): 32-39, 1992.
- Eldridge JJ, Gluck JP:** Gender differences in attitudes toward animal research. *Ethics Behav*, 6 (3): 239-256, 1996.
- Mathews S, Herzog HA:** Personality and attitudes toward the treatment of animals. *Soc Anim*, 5 (2): 169-175, 1997.
- Yerlikaya H, Ozen A, Yasar A, Armutak A, Ozturk R, Bayrak S, Gezman A, Seker I:** A survey on attitude of Turkish veterinary students and educators about animal use in research. *Vet Med-Czech*, 49 (11): 413-420, 2004.
- Tannenbaum J:** *Veterinary Ethics: Animal Welfare, Client Relations, Competition and Collegiality*. 2nd ed. Mosby-Year Book, Missouri, 1997.
- Rollin BE:** *An Introduction to Veterinary Medical Ethics: Theory and Cases*. 1st ed. Iowa State University, Ames, 1999.
- Dinçer F, Menteş A:** Veteriner hekimliği ve hayvan hakları açısından etik kurullar. *Türkiye Klinikleri J Med Ethics*, 2 (3): 148-150, 1994.
- Başağaç T:** Dinlerde insan-hayvan ilişkisinin etik açıdan değerlendirilmesi. In, Şahioğlu-Pelin S, Arda B, Özçelikay G, Özgür A, Çay Şenler F (Eds): *III. Tıbbi Etik Sempozyumu Bildirileri*. 161-165, YÖK, Ankara, 1998.
- Başağaç Gül T:** Bilimsel araştırmalar ve hayvan deneyleri. In, Arda B, Kahya E, Başağaç Gül T (Eds): *Bilim Etiği ve Bilim Tarihi*. 1. Baskı. 141-160, Ankara Üniversitesi, Ankara, 2004.
- Özgür A:** Bilimsel araştırmalarda hayvan kullanımı ve seçenekler. In, Demirhan-Erdemir A, Uzel İ, Öncel Ö, Oğuz Y (Eds): *III. Ulusal Tıp Etiği Kongresi Kongre Kitabı (Cilt I)*. 366-372, Özhan, Bursa, 2003.
- Yaşar A:** Hayvan hakları ve etik kurullar. In, Ünal A, Okur H, Çetin M (Eds): *IV. Deneysel ve Klinik Araştırmalar Kongresi Kongre Kitabı*. 33-41, Erciyes Üniversitesi, Kayseri, 2003.
- Ozen A, Ozturk R, Yasar A, Armutak A, Başağaç T, Ozturk A, Seker I, Yerlikaya H:** An attitude of veterinary practitioners towards animal rights in Turkey. *Vet Med-Czech*, 49 (8): 298-304, 2004.
- Krejcie RV, Morgan DW:** Determining sample size for research activities. *Educ Psychol Meas*, 30 (3): 607-610, 1970.
- Anonymous:** *Universal Declaration of Animal Rights*. UNESCO Headquarters- Paris, 1978.
- Regan T, Singer P:** *Animal Rights and Human Obligations*. 2nd ed., Prentice Hall, Englewood Cliffs, New Jersey, 1989.
- Anonymous:** "How do Dutch people think about animal rights, animal consumption and testing?" <http://www.animalfreedom.org/english/opinion/survey.html> Accessed: 20.01.2002.
- Tavşancıl E:** Tutumların Ölçülmesi ve SPSS ile Veri Analizi. 1. Baskı. Nobel, Ankara, 2002.
- Akgül A:** *Tıbbi Araştırmalarda İstatistiksel Analiz Teknikleri*. 1. Baskı. YÖK, Ankara, 1997.
- Herzog HA, Bethart NS, Pittman RB:** Gender, sex-role orientation, and attitudes toward animals. *Anthrozoös*, 4 (3): 184-191, 1991.
- Broida J, Tingley L, Kimball R, Miele J:** Personality differences between pro-and anti-vivisectionists. *Soc Anim*, 1 (2): 129-144, 1993.
- Furnham A, Heyes C:** Psychology students' beliefs about animals and animal experimentation. *Pers Individ Differ*, 15 (1): 1-10, 1993.
- Pifer LK:** Exploring the gender gap in young adults' attitudes about animal research. *Soc Anim*, 4 (1): 37-52, 1996.
- Paul ES, Podberscek AL:** Veterinary education and students' attitudes towards animal welfare. *Vet Rec*, 146 (10): 269-272, 2000.
- Knight S, Vrij A, Cherryman J, Nunkoosing K:** Attitudes towards animal use and belief in animal mind. *Anthrozoös*, 17 (1): 43-62, 2004.
- Self DJ, Schrader DE, Baldwin DC, Root SK, Wolinsky FD:** Study of the influence of veterinary medical education on the moral development of veterinary students. *JAVMA*, 198 (5): 782-787, 1991.
- Furnham A, Pinder A:** Young people's attitudes to experimentation on animals. *The Psychologist*, 10, 444-448, 1990.

38. **Paul ES, Serpell JA:** Childhood pet keeping and humane attitudes in young adulthood. *Anim Welfare*, 2 (4): 321-337, 1993.
39. **Serpell JA, Paul E:** Pets and the development of positive attitudes to animals. **In**, Manning A, Serpell JA (Eds): *Animals and Human Society*. 1st ed. 127-144, Routledge, London, 1994,
40. **Wells DL, Hepper PG:** Pet ownership and adults' views on the use of animals. *Soc Anim*, 5 (1): 45-63, 1997.
41. **Ozen A, Onat N, Ozturk R, Yerlikaya H, Seker I:** A survey of expectations of pet owners from veterinarians. *Indian Vet J*, 81, 1371-1375, 2004.
42. **Atauz A:** Kent ve hayvan. *Cogito*, 32, 140-163, 2002.
43. **Pifer L, Shimizu K, Pifer R:** Public attitudes toward animal research: Some international comparisons. *Soc Anim*, 2 (2): 95-113, 1994.
44. **Hacislimoğlu B:** Pet hayvanları ve hayvanseverlerin sorunları. **In**, 8. *Türk Hayvancılık Kongresi Kitabı*, 40-57, Ankara, 2000.
45. **Kaygısız FH, Akdağ F:** İstanbul ilindeki veteriner klinik işletmelerinin teknik ve mali yapıları ile işletmecilik sorunları üzerine bir araştırma. *İstanbul Üniv Vet Fak Derg*, 30 (2): 63-78, 2004.
46. **Kellert SR, Berry JK:** Attitudes, knowledge, and behaviours toward wildlife as affected by gender. *Wildlife Soc B*, 15, 363-371, 1987.
47. **Herzog HA, Galvin S:** Common sense and the mental lives of animals: An empirical approach. **In**, Mitchell RW, Thompson, NS, Miles HL (Eds): *Anthropomorphism, Anecdotes and Animals*. 1st ed. 237-253. State University of New York Press, Albany, 1997.
48. **Fox MW:** *Inhumane Society: The American Way of Exploiting Animals*. 1st ed. St. Martin's Press, New York, 1992.
49. **Ögel B:** *Türk Mitolojisi (Cilt II)*. 2. Baskı. Türk Tarih Kurumu, Ankara, 1993.