

## Attitudes of Erciyes University Students to the Use of Animals in Research

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### Summary

This study was conducted to determine attitudes to the use of animals in research of Erciyes University students attending Faculties of Biology, Civil Engineering, Fine Arts and Veterinary Medicine in the 2005-2006 academic year. Seven hundred and thirty nine (82.2%) of the 899 students enrolled in these faculties were reached by a survey. Several results were found: (a) Of all survey participants 59.1% displayed a zoocentric attitude (4>). (b) Male students ( $P<0.001$ ), civil engineering students ( $P<0.001$ ) and survey participants brought up in a town or district ( $P<0.01$ ) displayed a more anthropocentric attitude and were in support of animal experiments. (c) The majority of the survey participants expressed their agreement with the opinion that compared to alternative (non-animal) methods, animal experiments are easier, more scientific, more common, less costly, and more reliable, whereas they also stated that they disagreed with the opinion that animal experiments are more humane.

**Keywords:** *Animal experimentation, Animal use in researches, Animal ethics, Erciyes University*

## Erciyes Üniversitesi Öğrencilerinin Araştırmalarda Hayvan Kullanımına Yaklaşımları

### Özet

Bu çalışma, araştırmalarda hayvan kullanımı konusundaki tutumların belirlenmesi amacıyla, 2005-2006 öğretim yılında, Erciyes Üniversitesinin Biyoloji, İnşaat Mühendisliği, Güzel Sanatlar ve Veteriner Hekimliği bölümlerinde öğrenim gören öğrencilere anket uygulanarak gerçekleştirildi. Anket uygulaması kapsamında bu bölümlere kayıtlı 899 öğrenciden 739'una (% 82.2) ulaşıldı. Bulunan bazı sonuçlar: (a) Tüm katılımcıların %59.1'i hayvan merkezli bir tutum (4>) sergiledi. (b) Erkek öğrenciler ( $P<0.001$ ), İnşaat mühendisliği öğrencileri ( $P<0.001$ ) ve kasaba/ilçe kökenli katılımcılar ( $P<0.01$ ) diğer gruplara oranla daha insan merkezci tutum sergileyerek hayvan deneylerini desteklediler. (c) Katılımcıların daha büyük bölümü, hayvan deneylerinin alternatif yöntemlere oranla daha kolay, daha bilimsel, daha yaygın, daha ekonomik ve daha güvenilir olduğu yönündeki yargılara katıldıklarını, daha vicdani olduğu şeklindeki yargıya ise katılmadıklarını bildirdi.

**Anahtar sözcükler:** *Hayvan deneyleri, Araştırmalarda hayvan kullanımı, Hayvan etiği, Erciyes Üniversitesi*

### INTRODUCTION

The use of animals in education and research has been a long-standing tradition for centuries <sup>1</sup>. However, this tradition has resulted in the abuse of animals in research. Particularly after World War II, exploding technological developments in biomedical sciences led to an increase in the number of experimental studies conducted and the number of animals used in these studies, with experimental animals reaching a peak in

the early 1970s <sup>2</sup>. The 1970s were, at the same time, a period in which animal rights were highly debated and in which the animal rights movement grew stronger by attracting the support of masses <sup>3</sup>. As a result, in particular, problems related to animal experiments became a major agenda item and law in many countries regulated the use of animals in research. Due to several reasons, including the impact of these developments, the increased use of



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alternative methods and major advances in the field of genetic engineering, the number of animals used in research in the last 30 years has reduced significantly<sup>2,4-7</sup>.

Since the 1990s, a wealth of studies has been conducted in various countries across the world to determine the attitude of different segments of the society to animal experimentation<sup>4,8-13</sup>. In recent years, similar studies have also been carried out in Turkey to determine attitudes to animal experiments<sup>6,14</sup>; however, to the knowledge of the authors, no previous study exists on the determination of discrepancy in attitudes to animal experimentation between university students attending different faculties.

This study was aimed at the determination of the attitudes of Erciyes University students enrolled in the Faculties of Biology (B), Civil Engineering (CE), Fine Arts (FA) and Veterinary Medicine (VM) to the use of animals in research.

## MATERIAL and METHODS

In the present study, the survey of a total of 899 students at Erciyes University, enrolled in all classes of the Faculties of Biology (206 students), Civil Engineering (213 students), Fine Arts (186 students) and Veterinary Medicine (294 students), was aimed in the 2005-2006 academic year. The numbers of students were obtained from the Deanship of each Faculty.

The survey was presented to all groups at the end of the 2005-2006 academic year. The data were collected by a paper questionnaire.

The questionnaires were distributed to the students at the beginning of lectures and were filled in anonymously immediately after being distributed. The population was defined as all students who were part of the group present when the questionnaires were distributed.

The questionnaire was composed of three sections. Demographic information was collected in the first section. In this section, all participants were asked about five parameters that contained independent variables (faculty/department, class, gender, upbringing and pet ownership). The second section of the questionnaire included the "Set of Animal Use in Researches" (SAUR), comprising 15 items developed by Yerlikaya et al.<sup>6</sup> using a 7-point Likert scale. Eight of the items of the SAUR were based on the zoocentric opinion, and seven of them were based on the anthropocentric opinion. In the third section of the questionnaire, the participants were asked six closed questions to compare the reasons of their preference between alternative methods and use of animals in research.

SPSS Version 13.0 for Windows was used for all statistical analyses. Frequencies were used for demographic analyses. When evaluating the second section, a mean rating was calculated for attitudes to the SAUR for each participant. The scoring of the items based on the zoocentric opinion was such that the response "strongly agree" was seven points and the response "strongly disagree" was one point. Furthermore, items based on the anthropocentric opinion were scored the direct contrary. The response "not sure" was scored four points for both opinions. When comparisons were made between groups for the SAUR, a score <4 was classified as disagreement with this set and interpreted as showing anthropocentric attitude toward animal use in researches. A score  $\geq 4$  was interpreted as showing zoocentric attitude toward animal use in researches.

P values were calculated for the parametric tests among groups. Independent Student's t-test was used to measure differences between groups for gender and pet ownership. Analysis of variance was used to determine differences for faculty/department, class and upbringing. Following these analyses, Duncan's test was applied for the group comparisons for the significant parameters. A chi-square test was used to determine differences between the groups in the responses given to the third section. P values <0.05 were considered significant<sup>15,16</sup>.

## RESULTS

The overall response rate was 82.2% (n=739). The distribution of the response rates of the participants for the variables faculty/department, gender, class, upbringing and pet ownership, is given in [Table 1](#). According to the mean values obtained upon the scoring of the SAUR, 59.1% of the survey participants displayed a zoocentric attitude (4>).

Based on the scoring of the SAUR, students of FA, B and VM displayed a positive attitude (4>), and the attitude levels of these students were significantly higher than those of CE students ( $P < 0.001$ ) ([Table 1](#)). Among students of FA, B, VM and CE, the rates of those displaying a zoocentric attitude were 81.5%, 60.5%, 54%, and 46.2%, respectively.

With respect to the gender variable, all students displayed a zoocentric attitude (4>). However, it was observed that the attitude level of female participants (4.36) was higher than that of male participants (4.02) ( $P < 0.001$ ) ([Table 1](#)).

Participants brought up in a metropolis, city or town displayed a zoocentric attitude (4>), while those brought

**Table 1.** General characteristics of the survey participants, mean SAUR scores and differences in these means for independent variable groups

**Tablo 1.** Katılımcıların genel karakteristikleri, SAUR ortalamaları ve bu ortalamaların bağımsız değişken gruplarına göre farklılıkları

Independent Variables		n	%	Mean	P
Faculty/ Department	B	185	25	4.15 <sup>b</sup>	0.000
	CE	145	19.6	3.91 <sup>c</sup>	
	FA	135	18.3	4.54 <sup>a</sup>	
	VM	274	37.1	4.04 <sup>bc</sup>	
Gender	Male	504	68.2	4.02	0.000
	Female	235	31.8	4.36	
Class	1	175	23.7	4.18	0.134
	2	169	22.9	4.22	
	3	162	21.9	4.08	
	4	180	24.4	4.04	
	5	53	7.2	4.10	
Upbringing Place	Village	46	6.2	4.01 <sup>b</sup>	0.003
	Town	194	26.3	3.99 <sup>b</sup>	
	City	283	38.3	4.23 <sup>a</sup>	
	Metropolis	216	29.2	4.16 <sup>ab</sup>	
Pet Ownership	Yes	470	63.6	4.13	0.696
	No	269	36.4	4.11	

**n:** Number; **%:** Percent; **P:** Probability; **B:** Biology; **CE:** Civil Engineering; **FA:** Fine Arts; **VM:** Veterinary Medicine

up in a village displayed an anthropocentric attitude (<4). Significant discrepancy was determined to exist in the attitudes of the participants with different upbringing (P<0.01). Accordingly, students brought up in a city scored the SAUR higher than students brought up in a town or village (Table 1).

Differences determined in the attitudes of the participants for the variables pet ownership and class were statistically insignificant (P>0.05).

In the last section of the questionnaire, the participants compared animal experiments and alternative methods for parameters of ease, technicality, cost, reliability, commonness and humaneness. Based on these responses, the majority of the participants agreed that compared to alternative methods, animal experiments were easier, more scientific, less costly, more reliable and more common but less humane (Table 2).

While no difference existed between students attending different faculties for the parameters of ease, cost, commonness and humaneness (P>0.05); differences were determined between the opinions of students enrolled in different faculties for the parameters of technicality and reliability (P<0.05). The highest rate of agreement with the opinion that animal experiments are more scientific and more reliable than alternative methods was determined among B students, while the lowest rate of agreement with the same opinion was determined among CE students (Table 3).

**Table 2.** Comparison of animal experiments with alternative methods

**Tablo 2.** Hayvan deneyleriyle alternatif yöntemlerin karşılaştırılması

Faculty/ Department		Criteria											
		E		MS		LC		MH		MR		MC	
		n	%	n	%	n	%	n	%	n	%	n	%
B	Agree	87	50.3	121	68.0	67	39.4	29	11.7	104	57.5	124	71.3
	Not sure	48	27.7	46	25.8	69	35.3	45	26.3	65	35.9	42	24.1
	Disagree	38	22	11	6.2	43	25.3	106	62.0	12	6.6	8	4.6
CE	Agree	52	44.1	56	45.2	51	45.1	19	16.7	49	40.2	82	71.9
	Not sure	42	35.6	41	33.1	34	30.1	31	27.2	54	44.3	22	19.3
	Disagree	24	20.3	27	21.8	28	24.8	64	56.1	19	15.6	10	8.8
FA	Agree	79	56.0	72	51.4	79	56.8	19	13.7	71	50.7	92	65.7
	Not sure	36	25.5	50	35.7	36	25.9	28	20.1	54	38.6	39	27.9
	Disagree	26	18.4	18	12.9	24	17.3	92	66.2	15	10.7	9	6.4
VM	Agree	158	58.7	143	53.0	132	49.6	42	15.8	149	55.4	171	63.3
	Not sure	55	20.4	90	33.3	67	25.2	56	21.1	90	33.5	65	24.1
	Disagree	56	20.8	37	13.7	67	25.2	168	63.2	30	11.2	34	12.6
Total	Agree	376	53.6	392	55.1	329	47.8	100	14.5	373	52.4	469	67.2
	Not sure	181	25.8	227	31.9	197	28.6	160	23.2	263	36.9	168	24.1
	Disagree	144	20.5	93	13.1	162	23.5	430	62.3	76	10.7	61	8.7

**E:** Easier; **MS:** More scientific; **LC:** Less costly; **MC:** More humane; **MR:** More reliable; **MC:** More common; **B:** Biology; **CE:** Civil Engineering; **FA:** Fine Arts; **VM:** Veterinary Medicine

**Table 3.** Chi-square analysis results of opinions on the comparison of animal experiments with alternative methods**Tablo 3.** Hayvan deneyleriyle alternatif yöntemlerin karşılaştırılması konusundaki görüşlerin ki-kare analizi sonuçları

Faculty/ Department	More Scientific						Total		More Reliable						Total	
	Agree		Not Sure		Disagree				Agree		Not Sure		Disagree			
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Total	121	68	46	25.8	11	6.2	178	100	104	57.5	65	35.9	12	6.6	181	100
	56	45.2	41	33.1	27	21.8	124	100	49	40.2	54	44.3	19	15.6	122	100
	72	51.4	50	35.7	18	12.9	140	100	71	50.7	54	38.6	15	10.7	140	100
	143	53.0	90	33.3	37	13.7	270	100	149	55.4	90	33.5	30	11.2	269	100
	$\chi^2 = 24.817, P < 0.001$								$\chi^2 = 13.288, P = 0.039$							

**B:** Biology; **CE:** Civil Engineering; **FA:** Fine Arts; **VM:** Veterinary Medicine

## DISCUSSION

In the majority of studies investigating attitudes to animal experiments and moral status of animals, it is seen that females display a higher rate of zoocentric attitude, compared to males <sup>4,6,8,9,11,12,17</sup>. This is also the case in the present study.

In several studies conducted on animal experiments <sup>6,9,12</sup>, it has been suggested that urbanization is related to the establishment of awareness to animal experiments. The results of this study are also in agreement with those of the aforementioned previous studies in that participants of urban origin displayed a more zoocentric attitude in comparison to participants of town or village origin.

In a study aimed at the determination of the opinion of university students on the use of animals in research, the majority of participants have displayed an attitude in favour of the use of animals in biomedical research <sup>6</sup>. According to the results of the present study, only two-fifths of the participants displayed a positive attitude to the use of animals in biomedical research. This difference may be related to the enforcement of the Law on Animal Protection in 2004 and the influence of discussions brought up by the media on students. According to this law, in order to promote the protection and welfare of animals, programs aimed at general and formal education should be made and broadcasting time should be reserved for these issues on radio and television programmes.

Bowd and Boylan <sup>18</sup> and Gallup and Beckstead <sup>19</sup> suggest that university students with biology education, who are aware of the values of biomedical research, support animal experiments at higher rates, compared to other students. On the contrary, the results of the present study have demonstrated the number of the participants with zoocentric attitude to the use of animals

in biomedical research to be greater among biology and veterinary students, compared to engineering students. These results, which disagree with those, reported by Bowd and Boylan <sup>18</sup> and Gallup and Beckstead <sup>19</sup>, are attributed to the higher possibility of students with biology education and thereby with better knowledge of animals being aware of the sentient character of animals. According to the results of the present study, the highest rate of zoocentric attitude being determined in students of Fine Arts compared to the other groups may be related to the compassionate nature of artists <sup>20</sup>; and in particular their radical-protective approach to the protection of the environment and living beings <sup>21</sup>.

Based on the results of a study conducted among students of veterinary, Yerlikaya et al. <sup>6</sup> have reported that the majority of the participants share the opinion that in comparison to alternative methods, animal experiments are more reliable, less costly, easier, more common and less humane. The results of the present study are in agreement with those reported by Yerlikaya et al. <sup>6</sup>. Although, in general, alternative methods are considered to be easier and less costly than animal experiments <sup>22</sup>, and despite no consensus having been reached by researchers on the superiority of any of the two methods to the other with respect to parameters of "reliability" and "technicality" <sup>23</sup>, the majority of the participants of the present study being in favour of animal experiments with respect to the parameters of ease, cost, reliability and technicality can be accepted as an indicator of their inadequate level of information related to the issue. Both the results reported by Yerlikaya et al. <sup>6</sup> and those obtained in the present study demonstrating the opinion that animal experiments are less humane than alternative methods, can be accepted as an indicator of the participants being in an ethical dilemma as regards animal experiments.

In conclusion, it can be suggested that students of Erciyes University, in general, displayed a zoocentric

attitude to the use of animals in biomedical research, and that differences in gender, origin and faculty influence significantly the attitude of participants. Furthermore, it can be stated that the participants did not have adequate information on animal experiments and alternative methods, and that they were in an ethical dilemma as regards animal experiments.

## REFERENCES

1. **Stanisstreet M, Spofforth N, Williams T:** Attitudes of undergraduate students to the uses of animals. *Stud High Educ*, 18 (2): 177-196, 1993.
2. **Singer P:** Animal Liberation. 1st ed., Paladin Granada Publishing, London, 1977.
3. **Menteş Gürler A, Osmanağaoğlu Ş:** Türkiye’de Hayvanları Koruma Kanununun tarihsel gelişimi. *Kafkas Univ Vet Fak Derg*, 15 (3): 325-330, 2009.
4. **Navarro JF, Maldonado E, Pedreza C, Cavas M:** Attitudes toward animal research among psychology students in Spain. *Psychol Rep*, 89, 227-236, 2001.
5. **Başağaç Gül T:** Bilimsel araştırmalar ve hayvan deneyleri. **In**, Arda B, Kahya E, Başağaç Gül T (Eds): Bilim Etiği ve Bilim Tarihi. 141-160. Ankara Üniv Basımevi, Ankara, 2004.
6. **Yerlikaya H, Ozen A, Yasar A, Armutak A, Ozturk R, Bayrak S, Gezman A Seker I:** A survey of attitudes of Turkish veterinary students and educators about animal use in research. *Vet Med-Czech*, 49 (11): 413-420, 2004.
7. **Özen A:** Hayvanlara yönelik tutum analizi: Hiç değilse... **In**, Türkiye’de Birinci Hayvan Refahı ve Veteriner Hekimliği Eğitimi Konferansı. 75-82. Pozitif Matbaacılık, Ankara, 2005.
8. **Herzog HA, Bethart NS, Pittman RB:** Gender, sex-role orientation, and attitudes toward animals. *Anthrozoos*, 4, 184-191, 1991.
9. **Pifer L, Shimizu K, Pifer R:** Public attitudes toward animal research: Some international comparisons. *Soc Anim*, 2, 95-113, 1994.
10. **Baluch B, Kaur B:** Attitude change toward animal experimentation in an academic setting. *J Psychol*, 129 (4): 477-479, 1995.
11. **Eldridge JJ, Gluck JP:** Gender differences in attitudes toward animal research. *Ethics Behav*, 6, 239-256, 1996.
12. **Hagelin J, Hau J, Carlsson HE:** Attitude of Swedish veterinary and medical students to animal experimentation. *Vet Rec*, 146 (26): 757-760, 2000.
13. **Hagelin J, Carlsson HE, Suleman MA, Hau J:** Swedish and Kenyan medical and veterinary students accept nonhuman primate use in medical research. *J Med Primatol*, 29, 431-432, 2000.
14. **Özen R, Özen A:** Erciyes Üniversitesi Veteriner Fakültesi öğretim elemanlarının bilimsel araştırmalarda hayvan kullanımı konusundaki yaklaşımları. **In**, Yaşar A, Yiğit T, İzmirli S (Eds): *Ulusal Veteriner Hekimliği Tarihi ve Mesleki Etik Sempozyumu*. s. 383-387, Mesa, Konya, 2008.
15. **Akgül A:** Tıbbi Araştırmalarda İstatistik Analiz Teknikleri. YÖK Matbaası, Ankara, 1997.
16. **Snedecor GW, Cochran WG:** Statistical Method. The Iowa State University Press, USA, 1980.
17. **Özen A, Özen R, Yaşar A, Armutak A, Bayrak S, Gezman A, Şeker İ:** Attitudes of Turkish veterinary students and educators towards the moral status of animals and species rating. *Kafkas Univ Vet Fak Derg*, 15 (1): 111-118, 2009.
18. **Bowd AD, Boylan CR:** High school biology and attitudes towards the treatment of animals. *Psychol Rep*, 5, 890, 1986.
19. **Gallup GG, Beckstead JW:** Attitudes toward animal research. *Am Psychol*, 4, 474-476, 1988.
20. **Kapan Ezici A:** Sanatçının kişiliği ve yaratma psikolojisi. *Anadolu Psikiyatr Derg*, 6, 122-127, 1995.
21. **Anonim:** Sanat ve sanatçının tarihsel diyalektiği. Erişim adresi: [http://www.genbilim.com/index.php?option=com\\_content&task=view&id=6818&Itemid=199](http://www.genbilim.com/index.php?option=com_content&task=view&id=6818&Itemid=199). *Erişim Tarihi:* 10.04.2009.
22. **DeGrazia D:** Hayvan Hakları. (Çeviren: Hakan Gür). Dost Kitabevi Yayınları, Ankara, 2000.
23. **Nab J, Balls M, Hendriksen CFM:** Alternatives to animal experimentation. **In**, Van Zutphen LFM, Baumans V, Beynen AC (Eds): Principles of Laboratory Animal Science. pp. 319-335, Elsevier, Amsterdam, 1993.