

The effect of duration of ownership and time spent together during the day on cat owners' level of understanding of cats' body language

El efecto de la duración de la propiedad y el tiempo que pasan juntos durante el día en el nivel de comprensión del lenguaje corporal de los gatos por parte de los dueños de gatos

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ABSTRACT

The study was conducted to determine the effect of the duration of ownership of cats (*Felis catus*) and the time spent by the owners with their cats during the day on understanding the body language of cats. Face-to-face survey data from 194 cat owners were used in the study. In the study, the ratios of females who spent 1-5 hours (h), 6-10 h and 11 h or more with their cats was 49.6, 69.4 and 62.5%, respectively; 41.9, 59.2 and 56.2%, respectively; 48.8, 55.1 and 50.0%, respectively; and 45.0, 55.1 and 43.7%, respectively, of those aged 20 years and younger. In this study, it was determined that cat owners understood 6 of the 20 images of cat body language with 55.2% or more accuracy and 14 of them with 42.8% or less accuracy. In the study, it was determined that those who understood cat body language at the highest rate were female, associate degree and bachelor's degree graduates, 21-40 years old, and those who spent 1-5 h a day with their cats. As a result, it was determined that it is not sufficient for cat owners to understand their cats' body language correctly only if they have owned their cats for a long time and spend long periods of time together during the day. This is due to the fact that there are many factors affecting the behavior of cats and individual differences. It is recommended that cat owners learn cat body language to better understand their cats.

Key words: Cat; cat behavior; cat body language; cat owner; consciousness

RESUMEN

El estudio se llevó a cabo con el objeto de determinar el efecto de la duración de la tenencia de gatos (*Felis catus*) y el tiempo que los dueños pasan con sus gatos durante el día, en la comprensión del lenguaje corporal de los gatos. En el estudio se utilizaron datos de encuestas directa de 194 dueños de gatos. En el estudio, la proporción de mujeres que pasaron de 1 a 5 horas (h), de 6 a 10 h y de 11 h o más con sus gatos fue del 49,6; 69,4 y 62,5%, respectivamente; 41,9; 59,2 y 56,2%, respectivamente; 48,8; 55,1 y 50,0%, respectivamente; y el 45,0; 55,1 y 43,7%, respectivamente, de los de 20 años y menos. En este estudio, se determinó que los dueños de gatos entendían 6 de las 20 imágenes del lenguaje corporal del gato con un 55,2% o más de precisión y 14 de ellas con un 42,8% o menos de precisión. En el estudio, se determinó que quienes entendían el lenguaje corporal de los gatos en mayor proporción eran mujeres, graduadas de grado asociado y licenciatura, de 21 a 40 años, y aquellas que pasaban de 1 a 5 h al día con sus gatos. Como resultado, se determinó que no es suficiente que los dueños de gatos comprendan correctamente el lenguaje corporal de sus gatos sólo si han tenido gatos durante mucho tiempo y pasan largos períodos de tiempo juntos durante el día. Esto se debe al hecho de que existen muchos factores que afectan el comportamiento de los gatos y diferencias individuales. Se recomienda que los dueños de gatos aprendan el lenguaje corporal de los gatos para comprender mejor a sus gatos.

Palabras clave: Gato; comportamiento del gato; lenguaje corporal del gato; dueño del gato; conciencia

INTRODUCTION

Domestic cats (*Felis catus*) are social animals that are in constant contact with the people they live with. This is why they are one of the most demanded pet species [1, 2, 3, 4]. However, increasing urbanization has also changed the environment of many cats, contributing to smaller living spaces, higher population density, completely enclosed spaces and more time spent alone [5]. This can cause serious problems for the behavioral needs of cats [6, 7]. Domestic cats in particular, who spend a large part of their lives with humans, become stressed when they are alone, and if they are exposed to too much of this, serious diseases can occur in the long term [8].

Cats send signals to their surroundings using body language, i.e. posture, changing the position of limbs such as eyes, tail and ears, and even some visual cues in their fur. Therefore, in order to understand cat body language well, it is necessary to evaluate the signals sent by each limb separately and to observe these clues well [9].

However, cats' emotions are not emotions per se, but motivational-emotional systems responsible for instinctive emotional arousal. Therefore, determining different emotional motivations and their associated arousal levels from observations of behavior and body language alone is a difficult task. This is because, as with any species, the behavioral repertoire of the domestic cat is limited and the same behavior may occur in other cats. Also, cats, like humans, can experience multiple emotions at the same time or switch rapidly between emotional motivations, further complicating identification [10]. For this reason, cat owners sometimes find it difficult to understand the signals their cats send through body language [11]. Many owners even lack the ability to accurately read their cat's body language [12].

The aim of this study is to investigate the effect of the duration of ownership of cats and the time spent with their owners during the day on the understanding of cats' body language.

MATERIAL AND METHODS

Material

The research material consisted of data obtained from a face-to-face survey conducted with a total of 194 cat owners who participated in the survey in different provinces of Türkiye (Adana, Ankara, Antalya, Bursa, Diyarbakır, Erzincan, İstanbul, İzmir and Ordu). The study was conducted between May and September 2021.

Methods

Within the scope of the research, veterinary clinics and animal hospitals to be surveyed and cat owners to be surveyed were randomly selected, and face-to-face surveys were conducted with cat owners who voluntarily agreed to be surveyed. In this study participants how long they have been with their cats, how much time they spend with their cats during the day and to what extent they understand cat body language correctly were determined. The questionnaire included a cat body language scale (FIG. 1) consisting of relevant visuals to determine the participants' level of understanding of cat body language [13]. The questions in the questionnaire were prepared by the research team by utilizing similar questions in other studies [11, 14, 15]. In the study, random sampling method was used since the total population size could not be determined.

CAT LANGUAGE



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FIGURE 1. Cat body language. Source: Lili Chin [13]

Statistical analysis

Firstly, descriptive statistics of the data obtained as a result of the questionnaire study were calculated. In this context, numerical and percentage (%) frequencies were determined for each parameter. Pearson's chi-square test was used to compare the parameters and Fisher's exact test was used when it was not appropriate to use this test. A value of $P < 0.05$ was accepted as the significance level in the analyses [16]. SPSS 22.0 program was used for both the calculation of descriptive statistics and statistical analysis [17].

RESULTS AND DISCUSSION

Cat owners' total length of time and daily time spent with their cats

In this study, the findings of the cat owners' total length of time spent with their cats in TABLE I and also daily time spent with their cats are presented in TABLE II.

In this study, it was found that females were 32.70 ± 0.98 and males were 34.14 ± 1.11 years old on average. Also who had been with

TABLE I

Total length of time cat owners has been with their cats (months)

			12 months and less	13-36 months	37 months or more	Total
Gender	Female	n	36	34	38	108
		%	56.3	53.1	57.8	55.7
	Male	n	28	30	28	86
		%	43.7	46.9	42.2	44.3
<i>P</i> =0.87						
Marital status	Married	n	30	33	39	102
		%	46.9	51.5	59.1	52.5
	Single	n	34	31	27	92
		%	53.1	48.5	40.9	47.5
<i>P</i> =0.37						
Child ownership	Yes	n	28	32	36	96
		%	43.8	50.0	54.5	49.5
	No	n	36	32	30	98
		%	56.2	50.0	45.5	50.5
<i>P</i> =0.77						
Age (years)	20 and less	n	37	34	21	92
		%	57.8	53.1	31.8	47.5
	21-40	n	17	14	27	58
		%	26.6	21.9	40.9	29.9
	41-50	n	7	11	11	29
		%	10.9	17.2	16.7	14.9
	51 and more	n	3	5	7	15
		%	4.7	7.8	10.6	7.7
<i>P</i> =0.06						
Total	n	64	64	66	194	
	%	32.99	32.99	34.02	100	

their cats for a longer period of time than females (55.7%), married people (52.2%), people without children (50.5%) and people aged 20 years and under (47.5%). However, none of the sociodemographic characteristics were found to have a statistically significant effect on the total association time of cat owners with their cats (TABLE I).

In addition it was determined that females spent an average of 6.38 ± 0.53 hours (h) a day, while males spent 4.57 ± 0.49 h. According to the findings, contrary to other time intervals, the ratio of men who spend 1-5 h with their cats during the day is higher than females, the ratio of married people is higher than single people, and the ratio of those who have children is higher than those who do not have children (TABLE II).

In the light of the findings, it is understood that in terms of total and daily time spent with their cats, females are more than males, married people are more than single people, people without children are more than those with children, and people aged 20 and over are more than other age groups.

Westgarth *et al.* [18], stated that households that consisted only of male adults were less likely to own a cat when compared with

TABLE II

Owners' daily time spent with their cats (hours)

Characteristics	Time spent together during the day				
		1-5 hours	6-10 hours	11 hours and more	
Gender	Female	n	64	34	10
		%	49.6	69.4	62.5
	Male	n	65	15	6
		%	50.4	30.6	37.5
<i>P</i> =0.04					
Marital status	Married	n	75	20	7
		%	58.1	40.8	43.8
	Single	n	54	29	9
		%	41.9	59.2	56.2
<i>P</i> =0.09					
Child ownership	Yes	n	66	22	8
		%	51.2	44.9	50.0
	No	n	63	27	8
		%	48.8	55.1	50.0
<i>P</i> =0.75					
Age (years)	20 and less	n	58	27	7
		%	45.0	55.1	43.7
	21-40	n	43	12	3
		%	33.3	24.5	18.8
	41-50	n	20	7	2
		%	15.5	14.3	12.5
	51 and more	n	8	3	4
		%	6.2	6.1	25.0
<i>P</i> =0.16					
Total	n	129 ^a	49 ^b	16 ^c	
	%	66.5	25.3	8.2	

a, b, c; Differences between values with different letters in the same line are significant (*P*<0.05)

mixed-sex households. Conversely, households consisting only of female adults were more likely to own a cat.

Grigg and Kogan [19] found that 1-2, 3-4, 5-8, 9-12, 9-12 and 12 or more hours that cats spent alone without their owners were 20.7, 24.0, 30.7, 9.3 and 4.2%, respectively.

Mariti *et al.* [12] reported that 28.4% of the owners played (spent hours) with their cats, while 7.7% did not play with their cats at all.

Galvan and Vonk [20] found that cats spent more time communicating with their owners when they displayed a happy posture instead of an angry posture and facial expression.

Eriksson *et al.* [21] reported that cats left alone for 30 min and 4 h showed no difference in behavior when reunited with their owners. However, cats purred more and tensed their bodies more and initiated more verbal contact after 4 h compared to 30 min.

In this study, most of the cat owners reported that they spent 1-5 h with their cats. The fact that the majority of cat owners spend longer time with their cats can be considered as an opportunity for owners to have more control over cat behavior and cat body language. On the other hand, the finding reported that no difference was observed in the behavior of cats left alone when they were reunited with their owners suggests that even if cat owners spend less time with their cats, this may not have a negative effect on their mastery of cat body language. However, it has been determined that scientific studies on the effects of cats' being alone on their behavior and body language are insufficient in our literature review.

Cat owners' correct evaluation of cat body language patterns and level of understanding cat body language

In this study, the findings of the cat owners' levels of correct understanding and evaluation of the visuals of cat body language are presented in TABLE III. In addition the levels of cat owners' understanding of cat body language according to various factors (gender, education level, age, time spent with their cats during the day and duration of their association with their cats) are presented in TABLE IV.

It was found that cat owners were able to identify 6 of the 20 images of cat body language with accuracy of 55.2% and above, and 14 of them with an accuracy of 42.8% and below. The images that were correctly identified by the participants at the highest rate were extremely terrified and disgusted, while the images that were correctly identified at the lowest rate were those expressing concern and anxiety (TABLE III).

TABLE III
Frequencies and rates of correct evaluation of cat body language patterns

Question No	Correct answers to the questions	Frequencies of correct answers		P
		n	%	
1	Interested	35	18.0	0.01
2	Friendly	135	69.6	0.01
3	Attentive	75	38.7	0.03
4	Relaxed	38	19.6	0.01
5	Trusting	63	32.5	0.01
6	Friendly, relaxed	58	29.9	0.01
7	Content	64	33.0	0.01
8	Conflicted, cautions	107	55.2	0.32
9	Playful	62	32.0	0.01
10	Excited	50	25.8	0.01
11	"This is mine"	59	30.4	0.01
12	Anxious	51	26.3	0.01
13	Predatory	83	42.8	0.16
14	Worried	35	18.0	0.01
15	Frightened	107	55.2	0.32
16	Threatened	114	58.8	0.07
17	Terrified	79	40.7	0.07
18	Super terrified	137	70.6	0.01
19	Irritated	59	30.4	0.01
20	Disgusted	137	70.6	0.01

In the study, it was determined that those who correctly evaluated the images of cat body language at the highest rate were females, associate's and bachelor's degree graduates, 21-40 years old, and those who spent 1-5 h with their cats during the day. The total time spent with their cats by those who evaluated the images of cat body language was similar. On the contrary, men, those with postgraduate education, those aged 20 and under and 51 and over, and those who spent 11 or more h with their cats during the day were able to make correct evaluations at lower rates (TABLE IV).

TABLE IV
The effect of various factors on cat owners' level of understanding cat body language

Characteristics	Correct answers (%)	
Gender	Female	58.19
	Male	41.81
<i>P</i> =0.11		
Education	Primary and Secondary Education	31.47 ^b
	Associate and Undergraduate	54.50 ^a
	Postgraduate	14.03 ^c
<i>P</i> = 0.01		
Age	20 and less	6.62 ^b
	21-40	71.74 ^a
	41-50	13.99 ^b
	51 and more	7.65 ^b
<i>P</i> = 0.01		
Time spent with a cat in one day (hours)	1-5	43.88 ^a
	6-10	27.99 ^a
	11 and more	9.92 ^b
<i>P</i> = 0.01		
Length of cat ownership	12 months and less	16.15
	13 - 36 month	16.44
	37 months and more	17.42
<i>P</i> =0.98		

^{a, b, c}: Differences between values with different letters in the same column are significant (*P*<0.05)

Bennett *et al.* [22] reported that there was little significant correlation between the personality dimensions and descriptive variables such as owner's age, cat age and owner's experience of cat ownership. This report is similar to the findings in our study. In the light of the findings and literature reports, it is thought that it is difficult to fully understand the body language of cats determined by visual communication tools such as pictures and figures. For understanding normal cat behavior and correcting misconceptions and also eliminate of risk of welfare and behavioral problems that may occur when cats' needs are not met educate of cat owners is useful.

CONCLUSION

In this study, the differences between genders and the duration of cat ownership were not found to be statistically significant in terms

of the rates of cat owners' correct understanding and evaluation of cat body language. But the differences between the categories of education, age and time spent with the cat during the day were found to be significant. The images that were correctly identified by the participants at the highest rate were extremely terrified and disgusted, while the images that were correctly identified at the lowest rate were those expressing concern and anxiety.

Because there are so many interactions that need to be assessed and monitored, it is not always possible to fully assess individual cat body language, even if cat owners have owned their cats for a long time and spend a lot of time together during the day. Nevertheless, it is important that non-standardized feline body language is learned by cat owners in order to describe a cat's behavior. By knowing their body language, it may be possible to recognize and assess their emotional motivations. In this way, their fear and pain can be prevented and their care can be improved.

In order to achieve this, it is recommended that organize courses on feline body language and that cat owners be encouraged to attend these courses and that they be implemented as a prerequisite for the adoption process.

Ethical statement

The study was approved by the Erzincan Binali Yıldırım University Human Research Ethics Committee (Decision no: 04/15-30.04.2020).

Conflict of interest statement

The authors declare there is no conflict of interest.

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