Predictors on mental health of owning cats and dogs

ÇAĞRI ÇAĞLAR SİNMEZ

AHMET METİN

EMRE TÜFEKÇİ

ALİ İLTERİŞ AYKUN

VEHBİ GÜNEŞ

Predictors on mental health of owning cats and dogs

Çağrı Çağlar SİNMEZ[1,*] [ID], Ahmet METİN[2] [ID], Emre TÜFEKÇİ[3] [ID], Ali İlteriş AYKUN[1] [ID], Vehbi GÜNEŞ[3] [ID]

[1]Department of History of Veterinary Medicine and Deontology, Faculty of Veterinary Medicine, Erciyes University, Kayseri, Turkiye
[2]Department of Guidance and Psychological Counseling, Faculty of Education, Erciyes University, Kayseri, Turkiye
[3]Department of Internal Medicine, Faculty of Veterinary Medicine, Erciyes University, Kayseri, Turkiye

Abstract: The common consensus is that owning pets affects human health positively. However, the effects of owning pets on mental health are still controversial. Therefore, the present study aimed to determine the possible association with anxiety (AN), depression (DE), stress (ST), and owning cats and dogs in Türkiye. Additionally, the potential impact of personality traits on this relationship was examined. This study included 636 participants, of whom 52% were female (M_{age} = 33.02, SD = 15.78). Data were obtained using a Depression Anxiety Stress Scale-21 and the Big Five Personality Inventory. The findings revealed that owning cats and dogs was a promotive factor against AN (p < 0.001), DE (p < 0.01), and ST (p < 0.01) in the Turkish population. Among sociodemographic variables, marital status was found to be a risk factor for AN (p < 0.05) and DE (p < 0.05). Moreover, among the five personality traits, agreeableness (AGR) was determined to be a promotive factor in opposition to AN, DE, and ST. At the same time, openness (OPE) and neuroticism (NEU) were detected as risk factors. The results suggest that owning cats and dogs can provide benefits to human psychology. This result particularly applies to single women with a strong bond with their pets.

Key words: Cat, dog, human-animal interaction, mental health, ownership

1. Introduction

Pets are owned for various purposes, such as protection, companionship, and enjoyment [1]. The majority of pet owners perceive their animals as members of the family, regardless of the culture of the household. People actively incorporate their pets into their daily lives [2]. Pets positively affect human health in the social, emotional, and physical domains [3]. Studies on human-animal relationships have primarily specified the impact of pets on individuals' physical and mental status. Studies have demonstrated that pet ownership can lead to positive mental health outcomes for humans and positively impact various aspects of mental well-being. This phenomenon is known as the "pet effect" and is related to physical, psychological, and social health [4–6]. There are numerous studies on the mental status of pet owners. According to these studies, pet owners report less loneliness [7,8] and lower rates of anxiety (AN), depression (DE), and stress (ST) than nonowners [9–15].

Contrary to these findings, some previous studies have also reported different results. For instance, it has been stated that pet owners experience higher levels of AN and DE compared to nonowners [16–19]. However, some studies on psychological health and well-being have not

found a statistically significant correlation between pet ownership and AN, DE, or ST [20–23].

The present study investigated the relationship between cat/dog ownership and human psychology from April to July 2022, when quarantine restrictions were minimized during the coronavirus disease 2019 (COVID-19) pandemic. However, the pandemic was not officially over. Hence, the effect of owning a cat/dog on mental health seems unclear. One of the aims herein was to clarify this. As stated in previous studies, although there are different universal reasons explaining the cause-effects of pet ownership on people, pet ownership may have other effects, especially on human psychology, depending on different countries and cultural and social influences. Therefore, the current research has a unique value as it is in the sample of Türkiye. In addition, people's well-being levels were negatively affected during the COVID-19 lockdown [24], and AN, DE, and ST levels increased [24,25]. Therefore, these situations during the COVID-19 pandemic may have led people to own cats and dogs.

Current studies examining the associations between pet ownership and symptoms of AN, DE, and ST with certain personality traits are limited nowadays [7,13,26]. For this reason, research on the relationship between

180

pet ownership and personality has been interesting. The Big Five Personality Inventory (BFPI) model, specifically designed to evaluate the variety of personality traits typically exhibited by individuals, is a widely used and well-established personality model with strong psychometric references [26]. Additionally, a widely recognized scale in the literature for measuring individuals' psychological moods is the Depression Anxiety Stress Scale-21 (DASS-21) [27]. To substantiate the hypothesis that pet owners would have lower AN, DE, and ST levels than nonowners, personality traits, and AN, DE, and ST symptoms among pet owners and nonowners were examined.

The aim of this study conducted on individuals living in Türkiye was to examine the effects of owning cats and dogs as well as other variables such as sex (S) and marital status (MS), and the BFPI traits on AN, DE, and ST. Therefore, the following hypotheses were tested:
1. Owning cats and dogs and sociodemographic variables significantly predict AN, DE, and ST.
2. BFPI traits strongly predict AN, DE, and ST.

2. Materials and methods

2.1. Research design
The model for this study was developed using relational design, one of the quantitative research methodologies [28]. Pet ownership was operationalized as owning only a cat or a dog, thereby excluding other types of pets, such as fish, chickens, or exotic animals, from the scope.

2.2. Participants
The study participants consisted of individuals aged 18 and over living in Türkiye. Surveys that included participants with no variation in blatantly identical responses regarding IP address and demographics were eliminated.

2.3. Screening tools

2.3.1. Personal information form
The researchers prepared this form to determine the participants' demographic information (S, age, owning a cat/dog, MS, parental status, and educational level).

2.3.2. DASS-21 and the BFPI
The DASS-21 comprises 21 items and three subscales (AN, DE, and ST). The reliability and validity of the scale were analyzed on normal and clinical samples. Sarıçam [29] conducted the reliability and validity study of the scale in Turkish. Based on the confirmatory factor analysis findings presented by Sarıçam [29], the fit indices of the scale are as follows: x^2 = 1760.94, p < 0.001; GFI = 0.90; CFI = 0.90; TLI = 0.89; RMSEA = 0.067; and SRMR = 0.067. The Cronbach's alpha coefficient is 0.80 for the AN subscale, 0.85 for the DE subscale, and 0.77 for the ST subscale. High scores on the scale indicate elevated levels of AN, DE, and ST.

The inventory, which measures extraversion (EXT), agreeableness (AGR), conscientiousness (CON), neuroticism (NEU), and openness (OPE), was invented by John et al. [30] and had 44 items divided into five subscales. A five-rating Likert scale, from "strongly disagree" to "strongly agree," is used to rate the inventory. The Turkish adaptation of the inventory was conducted by Karaman et al. [31]. In which four items were excluded from the original inventory during the adaptation process, resulting in a 40-item questionnaire for assessing personality. The calculated correlation coefficients for the language equivalence of the adapted inventory are as follows: r = 0.64 for (EXT), r = 0.50 for AGR, r = 0.72 for CON, r = 0.70 for NEU, and r = 0.56 for OPE. The Cronbach's alpha coefficient is 0.77 for EXT, 0.81 for AGR, 0.84 for CON, 0.75 for NEU, and 0.86 for OPE [31].

2.3.3. Data collection
First, approval for the study was granted by the Social and Human Sciences Ethics Committee of Erciyes University (application no: 360/31.08.2021). Informed consent, personal information forms, and survey instruments were uploaded to Google Forms for data collection. Subsequently, the research link was shared with individuals who volunteered to participate in this study through academic and third-sector networks such as animal welfare organizations and social media platforms. Before the main study, a preliminary study was conducted using 15 participants to identify online data collection issues. Additionally, based on the participants' feedback, the forms were finalized. The participants' responses took approximately 15 min.

2.3.4. Data analysis
The research data analysis was carried out using IBM SPSS Statistics for Windows 25.0 (IBM Corp., Armonk, NY, USA), and the normality of the distribution was performed on the same program. Kurtosis and skewness values between –1.5 and 1.5 indicated the normality of the distribution [32]. Upon examining the distribution, the data were distributed normally. Additionally, the relationships between the variables and the presence of multicollinearity were examined. Finally, hierarchical linear regression analyses (HLRA) were carried out to determine the status of potential predictors. In other words, the HLRA was used to test the questions "Does owning cats and dogs and sociodemographic variables significantly predict AN, DE, and ST?" and "Do the BFPI traits strongly predict AN, DE, and ST?"

3. Results
The study population comprised 636 individuals, of whom 331 were female (52%) (M_{age} = 33.02, SD = 15.78, range: 18–65 years). The proportion of participants who owned a cat or a dog was 53.6%. The demographic data of the participants are shown in Table 1.

Table 1. The demographic characterization of the participants.

Variables	N	%
Sex		
Female	331	52
Male	305	48
Owning cats/dogs		
Yes	341	53.6
No	295	46.4
Marital status		
Married	269	42.3
Not married	367	57.7
Having a child		
Yes	246	38.6
No	390	61.4
Educational level		
Primary school	7	0.8
High school	82	12.9
Pregraduate	78	12.3
Undergraduate	298	47
Graduate	171	27

The results of the HLRA conducted to determine the potential predictors of AN, DE, and ST (owning a cat/dog, S, MS, and personality traits) are given in Tables 2–4.

The hierarchical multiple regression (HMR) model of owning a cat/dog, S, MS (step 1), and BFPI (step 2) to predict DE are shown in Table 2. The results revealed that owning a cat/dog contributed significantly to the regression model in step 1 (F (3, 630) = 12.505, p < 0.001, ΔR² = 0.05). These variables explained 5% of the variance in DE in step

1. The addition of EXT, CON, NEU (p < 0.001), and OPE (p < 0.05) to the prediction of DE also caused a statistically significant increase in step 2 (F (8, 625) = 45.101, p < 0.001, ΔR² = 0.36). Including these variables explained 36% of the total variance in step 2. However, S and AGR (p > 0.05) did not contribute significantly to the regression model.

The HMR model of owning a cat/dog, S, MS (step 1), and BFPI (step 2) to predict AN are shown in Table 3. The results revealed that owning a cat/dog, S, and MS (p < 0.01)

Table 2. Hierarchical regression analyses predicting demographic variables and personality from depression.

Model		B	SE (B)	95% CI for B		β	R^2	ΔR^2
				LB	UB			
1	(Constant)	1.10	1.13	−1.12	3.34		0.06	0.05***
	Owning a cat/dog	1.19	0.42	1.02	2.66	0.17***		
	Sex	−0.30	0.42	−1.13	0.53	−0.03		
	Marital status	1.78	0.42	0.95	2.61	0.17***		
2	(Constant)	−0.66	2.32	−5.21	3.89		0.37	0.36***
	Owning a cat/dog	1.17	0.35	0.49	1.86	0.11**		
	Sex	0.54	0.36	−0.16	1.24	0.05		
	Marital status	0.82	0.36	0.11	1.52	0.08*		
	Extraversion	−0.09	0.04	−0.17	−0.02	−0.09*		
	Agreeableness	−0.05	0.05	−0.15	0.05	−0.04		
	Conscientiousness	−0.15	0.04	−0.22	- 0.07	−0.15***		
	Neuroticism	0.37	0.03	0.31	0.43	0.44***		
	Openness	0.07	0.03	0.00	0.13	0.08*		

N = 636, B = unstandardized regression coefficient, CI = confidence interval, LB = lower bound, UB = upper bound, SE (B) = standard error of the coefficient, β = standardized coefficient, R² = coefficient of determination, ΔR² = adjusted R². * p < 0.05, ** p < 0. 01, *** p < 0.001.

Table 3. Hierarchical regression analyses predicting demographic variables and personality from anxiety.

Model		B	SE (B)	95% CI for B		β	R²	ΔR²
				LB	UB			
1	(Constant)	1.71	0.95	−0.16	3.58		0.07	0.06***
	Owning a cat/dog	1.78	0.35	1.09	2.46	0.20***		
	Sex	−0.92	0.35	−1.62	-0.23	−0.10**		
	Marital status	1.26	0.35	0.57	1.96	0.14***		
2	(Constant)	−2.69	2.01	−6.64	1.27		0.33	0.32***
	Owning a cat/dog	1.34	0.30	0.75	1.93	0.15***		
	Sex	−0.38	0.31	−0.99	0.23	−0.04		
	Marital status	0.65	0.31	0.04	1.26	0.07*		
	Extraversion	0.00	0.03	−0.07	0.07	0.00		
	Agreeableness	−0.14	0.04	−0.23	-0.06	−0.13**		
	Conscientiousness	−0.04	0.03	−0.11	0.03	−0.05		
	Neuroticism	0.32	0.03	0.26	0.37	0.45***		
	Openness	0.08	0.03	0.03	0.13	0.12**		

N = 636, B = unstandardized regression coefficient, CI = confidence interval, LB = lower bound, UB = upper bound, SE (B) = standard error of the coefficient, β = standardized coefficient, R^2 = coefficient of determination, ΔR^2 = adjusted R^2. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

contributed significantly to the regression model in step 1 ($F (3, 630) = 14.911$, $p < 0.001$, $\Delta R^2 = 0.06$). These variables explained 6% of the variance in AN in step 1. The addition of EXT ($p > 0.05$), AGR ($p < 0.01$), CON ($p > 0.05$), NEU ($p < 0.001$), and OPE ($p < 0.01$) to the prediction of AN also led to a statistically significant increase in step 2 ($F (8, 625) = 37.812$, $p < 0.001$, $\Delta R^2 = 0.32$). Including these variables explained 32% of the total variance in step 2. However, S ($p > 0.05$) and CON ($p > 0.05$) did not significantly contribute to the regression model.

The HMR model of owning a cat/dog, S, MS (step 1), and BFPI (step 2) to predict ST are shown in Table 4. The results revealed that owning a cat/dog ($p < 0.001$), S ($p > 0.05$), and MS ($p < 0.05$) contributed significantly to the regression model in step 1 ($F (3, 630) = 8.935$, $p < 0.001$, $\Delta R^2 = 0.04$). These variables explained 4% of the variance in ST in step 1. The addition of EXT ($p > 0.05$), AGR ($p < 0.01$), CON ($p > 0.05$), NEU ($\beta = 0.57$, $p < 0.001$), and OPE ($p < 0.05$) to the prediction of ST also led to a statistically significant increase in step 2 ($F (8, 625) = 53.287$, $p < 0.001$, $\Delta R^2 = 0.40$). Including these variables explained 40% of the total variance in step 2. However, S ($p > 0.05$), MS ($p > 0.05$), EXT ($p > 0.05$), and CON ($p > 0.05$) did not significantly contribute to the regression model.

4. Discussion

This study of individuals living in Türkiye aimed to determine the impact of owning a cat or dog, together with other sociodemographic variables such as S, MS, and the BFPI traits on AN, DE, and ST. The findings herein indicated a relationship between owning a cat/dog and lower AN, DE, and ST (Tables 2–4). In other words, owning a cat or dog positively affects individuals' mental health. These findings are supported by previous related studies [7,9–15]. The protective factor contends that social and physical interactions with animals lower the rates of AN, DE, and ST and promote a sense of well-being, which can explain this situation [13].

As mentioned in the introduction section, studies examining the impact of owning cats and dogs on mental health have shown different results. These discrepancies might stem from assorted reasons. The fact that the current study was carried out during the recovery term of the COVID-19 pandemic may have been one factor contributing to this. Regarding the COVID-19 pandemic period, some researchers have recently published an array of studies that corroborate the results of the present study, thereby indicating that living with and having a bond with a pet during exceptional situations like quarantine can

Table 4. Hierarchical regression analyses predicting demographic variables and personality from stress.

Model		B	SE (B)	95% CI for B		β	R²	ΔR²
				LB	UB			
1	(Constant)	4.11	1.12	1.91	6.30		0.04	0.04***
	Owning a cat/dog	1.72	0.41	0.91	2.52	0.17***		
	Sex	−0.78	0.42	−1.60	0.03	−0.08		
	Marital status	1.06	0.42	0.24	1.88	0.10*		
2	(Constant)	−3.90	2.19	−8.20	0.40		0.41	0.40***
	Owning a cat/dog	1.08	0.33	0.43	1.73	0.10**		
	Sex	0.04	0.34	−0.63	0.70	0.00		
	Marital status	0.32	0.34	−0.35	0.98	0.03		
	Extraversion	0.01	0.04	−0.06	0.09	0.01		
	Agreeableness	-0.14	0.05	−0.24	−0.05	−0.11**		
	Conscientiousness	−0.03	0.04	−0.10	0.04	−0.03		
	Neuroticism	0.47	0.03	0.41	0.53	0.57***		
	Openness	0.07	0.03	0.02	0.13	0.08*		

N = 636, B = unstandardized regression coefficient, CI = confidence interval, LB = lower bound, UB = upper bound, SE *(B)* = standard error of the coefficient, β = standardized coefficient, R² = coefficient of determination, ΔR² = adjusted R². * p < 0.05, ** p < 0.01, *** p < 0.001.

help individuals cope with pandemic-related stressors [33–35]. Considering the negative relationships between fear experienced during COVID-19 and AN, DE, and ST [25,36], individuals may have found comfort in having pets to avoid loneliness. Therefore, cats or dogs serve as a protective factor for individuals who own them. Similarly, Jezierski et al. [37] found that the presence of cats provided mental support for owners and significantly contributed to reducing psychological ST during the COVID-19 pandemic.

Furthermore, Carr et al. [38] demonstrated the benefits of owning a pet in alleviating symptoms regarding DE and loneliness among older adults who experienced a social loss. Additionally, Kogan et al. [39] reported that pets were critical in reducing AN, DE, ST, isolation, and loneliness for most owners during the COVID-19 pandemic. Other studies conducted during the quarantine phase of COVID-19 stated that dogs and cats had a good effect on pet owners' physical and mental functioning, emphasizing the role of pets as social buffers [40]. These findings indicate that while pets cannot wholly prevent the decline in individuals' psychological well-being following a social loss, they minimize the adverse outcomes [38]. The findings of the present study (Tables 2–4), which was performed in the later phases of the pandemic, are consistent with those of earlier studies conducted in the initial months of the pandemic.

Different results have also been reported regarding the relationship between pet ownership and mental status during the COVID-19 pandemic [6,41–45]. For example, Phillipou et al. [46] found that having a cat or dog during the COVID-19 pandemic was related to lower life satisfaction, probably due to increased stressors during a quarantine duration. Moreover, Amiot et al. demonstrated that owning pets during a stressful event like the COVID-19 pandemic could bring more ST into an already challenging situation [47]. This might be related to the individuals' perceptions. For instance, people believed during the initial stages of the pandemic that severe acute respiratory syndrome coronavirus 2 could be transmitted by pets such as cats and dogs [39,48–50]. This might have led to people abandoning their pets and experiencing increased ST levels during the quarantine. Another perspective is that individuals' perceptions regarding pet ownership or nonownership can also influence their psychological well-being. For example, some individuals may have adopted pets because they were already happy, while others may have adopted pets to deal with unhappiness [51].

The current study also found that sex did not significantly affect AN, DE, or ST (Tables 2–4). Nonetheless, the literature also presents a few differing findings on the matter. For example, dog ownership has been connected with lower DE levels among women than men [39,52]. Similarly, single women who own a pet have shown the

most minor depressive symptoms, while single men who own a pet have shown the highest depressive symptoms [53]. Women tend to demonstrate higher rates of positive behavior and empathy toward animals than men [39], seek more social support than men [52], and place greater value on emotionally close relationships [52,54]. Women are also seen as individuals who value friendship and emotional relationships, while men value activity-based relationships [52]. A study by Amiot et al. [47] found that owning a pet was associated with lower rates of well-being (i.e. life satisfaction, presence of life meaning, lower vitality, and higher loneliness and ST) among women. This finding is similar to research demonstrating that the pandemic impacted women more due to increased childcare and household responsibilities [55]. However, the current research aligns differently with these results. When pet ownership, sex, MS, and personality traits were included in the model together, sex was not a statistically significant factor. Given that, the sex factor was crucial in Model 1. Although not important in Model 2, personality traits may have overshadowed the effect of sex (Tables 2–4).

The findings herein revealed that MS, the last sociodemographic variable, significantly predicted AN and DE and (Tables 2–4). In other words, being married was linked to a higher risk of AN and DE when included in the model and other variables. One explanation might be that the current research was conducted during the COVID-19 pandemic. During this time, people lost their lives due to COVID-19, and those who were married may have experienced more intense fears of losing their spouses. This could have increased their levels of AN and DE.

Additionally, owning a cat or dog may be a protective factor for singles because pets can alleviate the AN, DE, and ST associated with loneliness. Studies in the literature support this view [56,57]. Therefore, external factors or secondary stressors such as the pandemic and quarantine should not be overlooked when evaluating the effects of pet ownership on human psychology.

The different results regarding the effects of pets on human psychology may stem from methodological approaches [58–60] or differences in the scales used to measure mental health and well-being [61]. For example, studies often rely on small samples, limiting the generalizability of research findings as they focus on specific subgroups such as the elderly [8,19,21,62], individuals diagnosed with cancer [63], or those with human immunodeficiency virus/acquired immunodeficiency syndrome [22]. The reasons older individuals choose to own a pet (or not own a pet) may be related to how they respond to stressful life events, which may help to explain the different findings in the literature. For example, an individual with psychological problems may not be able

to care for a pet properly, and these deficiencies may also make the individual more vulnerable in stressful situations. These individuals might experience more psychological deficiencies following a social loss than pet owners.

Conversely, people may seek out a pet as a way to alleviate depressive symptoms following a social loss. Preexisting psychological issues like these may create the false impression that people who get a pet after going through a social loss fare more poorly [38]. As mentioned in previous studies, while different universal reasons explain the cause-effect relationship between pet ownership and humans, the effects of pet ownership on human psychology can vary across different countries and be influenced by diverse cultural and social factors. Additionally, during the COVID-19 pandemic, people's levels of well-being were negatively affected [24], and the levels of AN, DE, and ST increased [25,36]. Therefore, these circumstances during the COVID-19 pandemic may have led individuals to become cat and dog owners.

The present study also revealed that AGR, one of the 5-factor personality traits, acts as a buffer against AN, DE, and ST, while OPE and NEU act as risk factors (Tables 2–4). Specifically, the subdimension of NEU was a substantial predictor of AN, DE, and ST. In other words, as the scores on NEU increase, adverse mental health outcomes also increase. These findings are consistent with studies [64–66] conducted since the significant research of Costa and McCrae [67]. However, many studies [17–19] paradoxically have demonstrated that pet owners report more AN and DE than nonowners. The results of the present support the hypothesis that individuals prone to DE may find relief in the presence of cats and dogs. These results may be explained by pet owners staying home more often and being socially more isolated from nonfamily members during the pandemic, leading to a stronger attachment to their pets. The increased demand for adopting dogs and cats in the initial stages of the pandemic also supports these results [50,68–70].

4.1. Implication and future research

To truly understand the impact of pet ownership on human psychology and how this impact changes over time, it is necessary to follow pet owners longitudinally. As discussed earlier, pet owners may experience psychological improvements after adopting a pet, but they may gradually return to negative psychological states in the postadoption period. Studies focusing on pet adoption and measuring the psychological levels of pet owners over time can test whether such an effect exists. Do happier individuals adopt pets, or do pets enhance people's happiness? The causal direction of these relationships remains uncertain in cross-sectional studies. The psychological impact of owning cats and dogs should be examined in detail. Qualitative studies can be conducted with pet owners to explore what benefits

them and what contributes to their well-being. In addition, metaanalytical studies can shed light on the relationships between pet ownership and psychological well-being.

The current study focused on mental health issues rather than positive variables such as well-being. This may also be considered in other studies. Thus, data on mental health can be reviewed holistically. Research findings on the psychological effects of owning cats and dogs vary; therefore, the situation is unclear.

4.2. Limitations

The present study had several limitations. First, the data collection was based on a crosssectional survey method, which means that the study was limited to the timeframe in which the data were collected. The longitudinal aspects of the cat and dog owners' conditions were not examined. Second, no data were collected regarding how the participants were psychologically affected by the COVID-19 pandemic. Therefore, the psychological effects on pet owners during the early stages of the pandemic remain unknown. Third, the participants were only asked to report whether they owned a pet without explicitly asking if they owned a cat or a dog. Most participants reported owning only one type of pet, but how many dog owners also owned cats and vice versa was not assessed. Future research could separate and analyze the results for participants who own both types of pets. Finally, the mental health status was evaluated only in terms of AN, DE, and ST. There was no information regarding positive states.

5. Conclusion

It is possible to say that the methodology and results of this study are remarkable. First, the relationships among pet ownership, personality, AN, DE, and ST in a representative sample in Türkiye were investigated. The size and diversity of this sample provided various evidence regarding the relationships among pet ownership, personality, AN, DE, and ST in the general population. Despite the limitations, this should be considered a pilot study that paves the way for future research, shedding new light on the relationship between owning cats and dogs and individuals' mental health. Furthermore, the findings suggest that owning cats and dogs may significantly affect human psychology. Further longitudinal research is needed to clarify the impact of pet ownership on mental health.

Conflict of interest

There are no conflicts of interest among the authors.

Informed consent

The study was carried out within the scope of the ethics committee permissions obtained from the Ethics Committee of Erciyes University, Social and Human Sciences, dated August 31, 2021 and numbered 360.

References

1. Smith B. The 'pet effect': health related aspects of companion animal ownership. Aust Fam Physician 2012; 41: 439-442.

2. Risley-Curtiss C, Holley LC, Wolf S. The animal–human bond and ethnic diversity. Social Work 2006; 51 (3): 257-268. https://doi.org/10.1093/sw/51.3.257

3. Hodgson K, Darling M. Zooeyia: an essential component of One Health. The Canadian Veterinary Journal 2011; 52 (2): 189-191.

4. Hodgson K, Barton L, Darling M, Antao V, Kim FA et al. Pets' impact on your patients' health: leveraging benefits and mitigating risk. The Journal of the American Board of Family Medicine 2015; 28 (4): 526-534. https://doi.org/10.3122/jabfm.2015.04.140254

5. Hodgson K, Darling M, Freeman D, Monavvari A. Asking about pets enhances patient communication and care: a pilot study. Inquiry 2017; 54: 1-6. https://doi.org/10.1177/0046958017734030

6. Kretzler B, König HH, Hajek A. Pet ownership, loneliness, and social isolation: a systematic review. Social Psychiatry and Psychiatric Epidemiology 2022; 57 (10): 1935-1957. https://doi.org/10.1007/s00127-022-02332-9

7. McConnell AR, Brown CM, Shoda TM, Stayton LE, Martin CE. Friends with benefits: on the positive consequences of pet ownership. Journal of Personality and Social Psychology 2011; 101 (6): 1239-1252. https://doi.org/10.1037/a0024506

8. Stanley IH, Conwell Y, Bowen C, Van Orden KA. Pet ownership may attenuate loneliness among older adult primary care patients who live alone. Aging & Mental Health 2014; 18 (3): 394-399. https://doi.org/10.1080/13607863.2013.837147

9. Brooks HL, Rushton K, Lovell K, Bee P, Walker L et al. The power of support from companion animals for people living with mental health problems: a systematic review and narrative synthesis of the evidence. BMC Psychiatry 2018; 18 (1): 1-12. https://doi.org/10.1186/s12888-018-1613-2

10. Chakma SK, Islam TT, Shahjalal M, Mitra DK. Depression among pet owners and non-pet owners: a comparative cross-sectional study in Dhaka, Bangladesh. F1000Research 2022; 10: 574. https://doi.org/10.12688/f1000research.53276.2

11. Crossman MK, Kazdin AE, Matijczak A, Kitt ER, Santos LR. The influence of interactions with dogs on affect, anxiety, and arousal in children. Journal of Clinical Child & Adolescent Psychology 2020; 49 (4): 535-548. https://doi.org/10.1080/15374416.2018.1520119

12. Erdoğan A, Kahya Y. Comparison of pet owners and non-pet owners in terms of depression, anxiety and quality of life. Genel Tıp Dergisi 2022; 32 (5): 486-489. https://doi.org/10.54005/geneltip.1100778

13. Gonzatti V, de Oliveira CR, Alminhana LO, Hausen DO, Schütz DM et al. Personality factors, depression, anxiety, and stress in pet owners. Psico 2021; 52 (4): 1-8. https://doi.org/10.15448/1980-8623.2021.4.35289

14. Muldoon AL, Kuhns LM, Supple J, Jacobson KC, Garofalo R. A web-based study of dog ownership and depression among people living with HIV. JMIR Mental Health 2017; 4 (4): e53. https://doi.org/10.2196/mental.8180

15. Pereira JM, Fonte D. Pets enhance antidepressant pharmacotherapy effects in patients with treatment resistant major depressive disorder. Journal of Psychiatric Research 2018; 104: 108-113. https://doi.org/10.1016/j.jpsychires.2018.07.004

16. Barker SB, Schubert CM, Barker RT, Kuo SIC, Kendler KS et al. The relationship between pet ownership, social support, and internalizing symptoms in students from the first to fourth year of college. Applied Developmental Science 2020; 24 (3): 279-293. https://doi.org/10.1080/10888691.2018.1476148

17. Fraser G, Huang Y, Robinson K, Wilson MS, Bulbulia J et al. New Zealand pet owners' demographic characteristics, personality, and health and well-being: more than just a fluff piece. Anthrozoös 2020; 33 (4): 561-578. https://doi.org/10.1080/08927936.2020.1771060

18. Müllersdorf M, Granström F, Sahlqvist L, Tillgren P. Aspects of health, physical/leisure activities, work and socio-demographics associated with pet ownership in Sweden. Scandinavian Journal of Public Health 2010; 38 (1): 53-63. https://doi.org/10.1177/1403494809344358

19. Parslow RA, Jorm AF, Christensen H, Rodgers B, Jacomb P. Pet ownership and health in older adults: findings from a survey of 2,551 community-based Australians aged 60–64. Gerontology 2005; 51 (1): 40-47. https://doi.org/10.1159/000081433

20. Parslow RA, Jorm AF. The impact of pet ownership on health and health service use: results from a community sample of Australians aged 40 to 44 years. Anthrozoös 2003; 16 (1): 43-56. https://doi.org/10.2752/089279303786992305

21. Sharpley C, Veronese N, Smith L, López-Sánchez GF, Bitsika V et al. Pet ownership and symptoms of depression: a prospective study of older adults. Journal of Affective Disorders 2020; 264: 35-39. https://doi.org/10.1016/j.jad.2019.11.134

22. Siegel JM, Angulo FJ, Detels R, Wesch J, Mullen A. AIDS diagnosis and depression in the multicenter AIDS cohort study: the ameliorating impact of pet ownership. AIDS Care 1999; 11 (2): 157-170. https://doi.org/10.1080/09540129948054

23. Wells DL. Associations between pet ownership and self-reported health status in people suffering from chronic fatigue syndrome. The Journal of Alternative and Complementary Medicine 2009; 15 (4): 407-413. https://doi.org/10.1089/acm.2008.0496

24. Metin A, Çetinkaya A, Erbiçer ES. Subjective well-being and resilience during COVID-19 pandemic in Turkey. European Journal of Health Psychology 2021; 28 (4): 152-160. https://doi.org/10.1027/2512-8442/a000081

25. Erbiçer ES, Metin A, Çetinkaya A, Şen S. The relationship between fear of COVID-19 and depression, anxiety, and stress: a meta-analysis. European Psychologist 2021; 26 (4): 323-333. https://doi.org/10.1027/1016-9040/a000464

26. Gosling SD, Sandy CJ, Potter J. Personalities of self-identified "dog people" and "cat people". Anthrozoös 2010; 23 (3): 213-222. https://doi.org/10.2752/175303710X12750451258850

27. Lovibond PF, Lovibond SH. The structure of negative emotional states: comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. Behaviour Research and Therapy 1995; 33 (3): 335-343. https://doi.org/10.1016/0005-7967(94)00075-u

28. Fraenkel JR, Wallen NE, Hyun HH. How to Design and Evaluate Research in Education. 8th ed. New York, NY, USA: McGraw-Hill; 2012.

29. Sarıçam H. The psychometric properties of Turkish version of Depression Anxiety Stress Scale-21 (DASS-21) in health control and clinical samples. Journal of Cognitive Behavioral Psychotherapy and Research 2018; 7 (1): 19-30. https://doi.org/10.5455/JCBPR.274847

30. John OP, Donahue EM, Kentle RL. The Big Five Inventory-Versions 4a and 54. Berkeley, CA, USA: University of California, Berkeley, Institute of Personality and Social Research; 1991.

31. Karaman NG, Dogan T, Coban AE. A study to adapt the big five inventory to Turkish. Procedia-Social and Behavioral Sciences 2010; 2 (2): 2357-2359. https://doi.org/10.1016/j.sbspro.2010.03.336

32. Tabachnick BG, Fidell LS. Using Multivariate Statistics. 6th ed. Boston, MA, USA: Pearson; 2013.

33. Geppert CM. The dog days of COVID-19. Federal Practitioner 2020; 37 (7): 300-301.

34. Hunjan UG, Reddy J. Why companion animals are beneficial during COVID-19 pandemic. Journal of Patient Experience 2020; 7 (4): 430-432. https://doi.org/10.1177/2374373520938904

35. Mayers R. Dogs unleashed: the positive role dogs play during COVID-19. Leisure Sciences 2021; 43 (1-2): 252-259. https://doi.org/10.1080/01490400.2020.1774010

36. Şimşir Z, Koç H, Seki T, Griffiths MD. The relationship between fear of COVID-19 and mental health problems: a meta-analysis. Death Studies 2021; 46 (3): 515-523. https://doi.org/10.1080/07481187.2021.1889097

37. Jezierski T, Camerlink I, Peden RSE, Chou J-Y, Sztandarski P et al. Cat owners' perception on having a pet cat during the COVID-19 pandemic. PLoS ONE 2021; 16 (10): e0257671. https://doi.org/10.1371/journal.pone.0257671

38. Carr DC, Taylor MG, Gee NR, Sachs-Ericsson N. Psychological health benefits of companion animals following a social loss. The Gerontologist 2020; 60 (3): 428-438. https://doi.org/10.1093/geront/gnz109

39. Kogan LR, Currin-McCulloch J, Bussolari C, Packman W, Erdman P. The psychosocial influence of companion animals on positive and negative affect during the COVID-19 pandemic. Animals 2021; 11 (7): 2084. https://doi.org/10.3390/ani11072084

40. Shoesmith E, Shahab L, Kale D, Mills DS, Reeve C et al. The influence of human–animal interactions on mental and physical health during the first COVID-19 lockdown phase in the U.K.: a qualitative exploration. International Journal of Environmental Research and Public Health 2021; 18 (3): 976. https://doi.org/10.3390/ijerph18030976

41. Bolstad CJ, Edwards GE, Gardner A, Nadorff MR. Pets and a pandemic: an exploratory mixed method analysis of how the COVID-19 pandemic affected dogs, cats, and owners. Human-Animal Interaction Bulletin 2021; 11 (2): 65-78. https://doi.org/10.1079/hai.2021.0012

42. Krouzecky C, Aden J, Hametner K, Klaps A, Kovacovsky Z et al. Fantastic beasts and why it is necessary to understand our relationship-animal companionship under challenging circumstances using the example of long-covid. Animals 2022; 12 (15): 1892. https://doi.org/10.3390/ani12151892

43. Lima M, Mateus TL, Silva K. With or without you: beneficial and detrimental associations between companion dogs and human psychological adjustment during a COVID-19 lockdown phase. Anthrozoös 2022; 35 (5): 713-732. https://doi.org/10.1080/08927936.2022.2042081

44. Ogata N, Weng H-Y, Messam LLMcV. Temporal patterns of owner-pet relationship, stress, and loneliness during the COVID-19 pandemic, and the effect of pet ownership on mental health: a longitudinal survey. PLoS ONE 2023; 18 (4): e0284101. https://doi.org/10.1371/journal.pone.0284101

45. Wells DL, Clements MA, Elliott LJ, Meehan ES, Montgomery CJ et al. Quality of the human–animal bond and mental well-being during a COVID-19 lockdown. Anthrozoös 2022; 35 (6): 847-866. https://doi.org/10.1080/08927936.2022.2051935

46. Phillipou A, Tan EJ, Toh WL, Van Rheenen TE, Meyer D et al. Pet ownership and mental health during COVID-19 lockdown. Australian Veterinary Journal 2021; 99 (10): 423-426. https://doi.org/10.1111/avj.13102

47. Amiot CE, Gagné C, Bastian B. Pet ownership and psychological well-being during the COVID-19 pandemic. Scientific Reports 2022; 12 (1): 6091. https://doi.org/10.1038/s41598-022-10019-z

48. Applebaum JW, Tomlinson CA, Matijczak A, McDonald SE, Zsembik BA. The concerns, difficulties, and stressors of caring for pets during COVID-19: results from a large survey of US pet owners. Animals 2020; 10 (10): 1882. https://doi.org/10.3390/ani10101882

49. Dróżdż M, Krzyżek P, Dudek B, Makuch S, Janczura A et al. Current state of knowledge about role of pets in zoonotic transmission of SARS-CoV-2. Viruses 2021; 13 (6): 1149. https://doi.org/10.3390/v13061149

50. Morgan L, Protopopova A, Birkler RID, Itin-Shwartz B, Sutton GA et al. Human–dog relationships during the COVID-19 pandemic: booming dog adoption during social isolation. Humanities and Social Sciences Communications 2020; 7(1): 1-11. https://doi.org/10.1057/s41599-020-00649-x

51. Clark Cline KM. Psychological effects of dog ownership: role strain, role enhancement, and depression. The Journal of Social Psychology 2010; 150 (2): 117-131. https://doi.org/10.1080/00224540903368533

52. Risman BJ. Gender Vertigo: American Families in Transition. New Haven, CT, USA: Yale University Press; 1998.

53. Tower RB, Nokota M. Pet companionship and depression: results from a United States Internet sample. Anthrozoös 2006; 19 (1): 50-64. https://doi.org/10.2752/089279306785593874

54. Williams CL. Psychoanalytic theory and the sociology of gender. In: England P (editor). Theory on Gender/Feminism on Theory. New York, NA, USA: Aldine De Gruyter; 1993. pp. 131-151.

55. Del Boca D, Oggero N, Profeta P, Rossi M. Women's and men's work, housework and childcare, before and during COVID-19. Review of Economics of the Household 2020; 18: 1001-1017. https://doi.org/10.1007/s11150-020-09502-1

56. Barrett AE. Social support and life satisfaction among the never married: examining the effects of age. Research on Aging 1999; 21 (1): 46-72. https://doi.org/10.1177/0164027599211003

57. Zasloff RL, Kidd AH. Loneliness and pet ownership among single women. Psychological Reports 1994; 75 (2): 747-752. https://doi.org/10.2466/pr0.1994.75.2.747

58. Friedmann E, Gee NR. Critical review of research methods used to consider the impact of human–animal interaction on older adults' health. The Gerontologist 2019; 59 (5): 964-972. https://doi.org/10.1093/geront/gnx150

59. Gee NR, Mueller MK, Curl AL. Human–animal interaction and older adults: an overview. Frontiers in Psychology 2017; 8: 1416. https://doi.org/10.3389/fpsyg.2017.01416

60. Saunders J, Parast L, Babey SH, Miles JV. Exploring the differences between pet and non-pet owners: implications for human-animal interaction research and policy. PLoS ONE 2017; 12 (6): e0179494. https://doi.org/10.1371/journal.pone.0179494

61. Oliva JL, Johnston KL. Development of the Pet Owner Connectedness Scale (POCS). Anthrozoös 2022; 35 (4): 545-557. https://doi.org/10.1080/08927936.2022.2027095

62. Simons LA, Simons J, McCallum J, Friedlander Y. Pet ownership is not associated with future health: A nine year prospective study in older Australians. Australasian Journal on Ageing 2000; 19 (3): 139-142. https://doi.org/10.1111/j.1741-6612.2000.tb00166.x

63. Johnson RA, Meadows RL, Haubner JS, Sevedge K. Animal-assisted activity among patients with cancer: effects on mood, fatigue, self-perceived health, and sense of coherence. Oncology Nursing Forum 2008; 35 (2): 225-232. https://doi.org/10.1188/08.ONF.225-232

64. Allen TA, Carey BE, Mcbride C, Bagby RM, DeYoung CG et al. Big five aspects of personality interact to predict depression. Journal of Personality 2018; 86 (4): 714-725. https://doi.org/10.1111/jopy.12352

65. Jourdy R, Petot J-M. Relationships between personality traits and depression in the light of the "Big Five" and their different facets. Ľévolution Psychiatrique 2017; 82 (4): e27-e37. https://doi.org/10.1016/j.evopsy.2017.08.002

66. Karsten J, Penninx BWJH, Riese H, Ormel J, Nolen WA et al. The state effect of depressive and anxiety disorders on big five personality traits. Journal of Psychiatric Research 2012; 46 (5): 644-650. https://doi.org/10.1016/j.jpsychires.2012.01.024

67. Costa PT, McCrae RR. Influence of extraversion and neuroticism on subjective well-being: happy and unhappy people. Journal of Personality and Social Psychology 1980; 38 (4): 668. https://doi.org/10.1037//0022-3514.38.4.668

68. Gray A. Pandemic pet boom not as it seems. VetRecord 2021; 189 (3): 91. https://doi.org/10.1002/vetr.786

69. Halbreich ED, Mueller MK. Profiles of family pet ownership during the COVID-19 pandemic. Current Psychology 2022; 1-5. https://doi.org/10.1007/s12144-021-02574-x

70. Ho J, Hussain S, Sparagano O. Did the COVID-19 pandemic spark a public interest in pet adoption? Frontiers in Veterinary Science 2021; 8: 647308. https://doi.org//10.3389/fvets.2021.647308