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## Personality Traits of Brazilian Pet Owners and Nonowners and Their Association with Attachment to Pets

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### ABSTRACT


Research shows that pet ownership is associated with different personality traits. In addition, the personality of pet owners is related to their level of attachment to their animals. Although there are already studies in the literature on this topic, few have examined these associations in the Brazilian population. The aim of this study, therefore, was to compare the personality traits of a sample ( $n = 2,463$ ) of pet owners and nonowners from Brazil. We also studied if the level of attachment to their animals was related to the personality traits of the pet owners. The majority (75.3%) of those surveyed had dogs, cats, or both. When we compared pet owners with nonowners, we found that extraversion was higher in pet owners, albeit the effect size was small. In pet owners, the level of attachment was positively correlated with neuroticism. These results suggest that personality traits and attachment should be considered when researching human–animal interaction.

### KEYWORDS

Attachment; human–animal interaction; personality

According to figures from the Pet Institute of Brazil (IPB), published in 2019, there are approximately 1.6 billion pets worldwide, including dogs, cats, fish, birds, and other animals (IPB, 2019). In 2013, the estimated number of pets in Brazil was 132.4 million, while in 2019, there were around 139.3 million; this includes around 54.2 million dogs and 23.9 million cats, among other animals. Hence, the animal population has increased significantly over the past six years, with people increasingly interested in adopting an animal as a companion (IPB, 2019).

Owing to the increasing popularity of pets, research has attempted to understand how the relationship with animals affects humans. Some studies have suggested that living with an animal is linked to better physical health (Allen et al., 2001; Friedmann et al., 1980) and better mental health. There is also evidence that people with animals have better self-esteem and general wellbeing, and they are happier and better buffered

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against depression and loneliness than nonowners (Carr et al., 2019a; Gan et al., 2019; Janssens et al., 2020; McConnell et al., 2011). However, other studies have suggested that living with animals does not have any psychological benefits (Cui et al., 2019; Fraser et al., 2020; Teo & Thomas, 2019), and they can even be harmful to people's mental health (Joseph et al., 2019; Toohey et al., 2018).

A possible explanation for this inconsistency is that many studies only examine whether people have a pet or not. They do not examine the individual differences in the relationships between humans and animals (Fraser et al., 2020), such as the personality of the owner or their degree of attachment to the animal (Bao & Schreer, 2016; Puskey & Coy, 2020; Teo & Thomas, 2019). Personality, for example, seems to be connected to an individual's wellbeing and to owning a pet (Bao & Schreer, 2016; Fraser et al., 2020).

Personality is defined as the pattern of behaviors, feelings, and thoughts that distinguish one individual from others (Roberts & Mroczek, 2008). The best-known theory on personality is the Big Five model: extraversion, agreeableness, conscientiousness, neuroticism, and openness (John et al., 1991). Research suggests that people with high extraversion, agreeableness, conscientiousness, and openness scores and a low neuroticism score tend to have a good level of wellbeing (Costa & McCrae, 1980; McConnell et al., 2009). Therefore, personality traits are one way that research can examine the relationship between people and pets, which would help us to understand the inconsistencies in previous studies (Puskey & Coy, 2020).

The degree of attachment to the animal is also an important variable when we examine the relationship between humans and animals (Peacock et al., 2012). Research shows that the degree of attachment can be linked to aspects of the owner's psychology; however, the influence of attachment is still a controversial issue in research on mental health. While some research suggests that the degree of attachment to pets is related to psychological problems (Luhmann & Kalitzki, 2016; Peacock et al., 2012; Ratschen et al., 2020; Teo & Thomas, 2019), others have demonstrated that when owners are more attached, they get more benefits (Krause-Parello, 2012; Wu et al., 2018). One hypothesis is that an individual's personality traits can also affect this relationship. Some studies suggest that neuroticism is linked to owners being more attached to their pets (Kotrschal et al., 2009; Reevy & Delgado, 2014) or to pet attachment anxiety (Zilcha-Mano et al., 2011).

Another possible reason for the inconsistencies in research into the relationships between humans and animals is that different criteria were used to select the group of pet owners. While some studies examined owners of various animal species, others only used dog or cat owners. The different species of animal companions could have different psychological effects on the owners they live with (Carr et al., 2019b). It should also be mentioned that most of the surveys that compared pet owners and nonowners were answered by dog and cat owners.

Although there are several studies that have compared the personality traits of pet owners and nonowners, very few have done so in Brazil. As Brazil has the second largest pet population in the world (IPB, 2019), it is important to examine whether personality traits are related to pet ownership and attachment to pets among Brazilians. It is also important to obtain further information on the relationship between personality traits and pet ownership or attachment to the animals and whether personality is a variable

that should be considered in future studies on human–animal interaction/relationships. Therefore, the aim of this study was to compare the personality traits of dog owners only (DO), cat owners only (CO) and dog and cat owners (DCO) with nonowners (NO) in the Brazilian population. Furthermore, we also examined whether the level of attachment of the owners to their pets was related to their personality traits.

## Methods

This study was approved by the Research Ethics Committee of the Pontifical Catholic University of Rio Grande do Sul (case number: 36641120.3.0000.5336). All the participants voluntarily agreed to take part in the survey and signed a Free and Informed Consent Form (TCLE).

### Participants

The final sample consisted of 2,463 Brazilians, both pet owners and nonowners. Of the participants, 960 (39.0%) were DO, 446 (18.1%) were CO, 449 (18.2%) were DCO, and 608 (24.7%) were NO.

The average age of the sample was 33.19 years old ( $SD = 12.65$ ), ranging from 18 to 76 years old. Of the participants, 1,932 (78.44%) were women, 830 (33.7%) did not complete higher education, and 1,434 (58.22%) were single. The average age of the DO group was 33 years ( $SD = 12.2$ ), for the CO group, it was 35.3 years ( $SD = 12.8$ ), for the DCO group, it was 34.6 years ( $SD = 13.4$  years old) and for those in the NO group, it was 30.9 years ( $SD = 12.4$ ). The demographic characteristics of the participants are presented in [Table 1](#).

### Measures

We used a questionnaire to collect data on the demographic characteristics of the participants. It included questions for the pet-owning group on living with their animals. All participants filled in the Big 5 Inventory (BFI), and pet owners also filled in the Lexington Attachment to Pets Scale (LAPS).

### LAPS

The LAPS includes 23 items (Johnson et al., 1992), such as “My pet means more to me than any of my friends,” “My pet knows when I am feeling bad,” and “Pets deserve as much respect as humans do.” It is used to measure an owner’s level of attachment to their favorite pet. Responses are given on a 4-point Likert scale, ranging from 0 (totally disagree) to 3 (totally agree). The LAPS consists of three separate factors, which are classified as general attachment ( $\alpha = 0.90$ ), people substituting ( $\alpha = 0.85$ ), and animal rights/animal welfare ( $\alpha = 0.80$ ). Johnson et al. (1992) reported a Cronbach’s alpha of 0.93 for the complete scale. In the Brazilian version, the Cronbach’s alpha was 0.80 for general attachment, 0.86 for people substituting, and 0.89 for animal rights/animal welfare (Albuquerque et al., 2021).

**Table 1.** Demographic characteristics of the participants.

Variables	Total n (%)	Dog owner n (%)	Dog and cat owner n (%)	Cat owner n (%)	Nonowner n (%)
<i>Gender</i>					
Women	1,932 (78.44)	786 (81.88)	375 (83.52)	369 (82.74)	402 (66.12)
Male	531 (21.56)	174 (18.12)	74 (16.48)	77 (17.26)	206 (33.88)
<i>Region of the Country</i>					
Midwest	83 (3.37)	34 (3.54%)	21 (4.68)	8 (1.79)	20 (3.29)
Federal District (DF)	55 (2.23)	14 (1.46)	6 (1.34)	5 (1.12%)	30 (4.93)
Northeast	280 (11.37)	69 (7.19)	38 (8.46)	60 (13.45)	113 (18.59)
North	84 (3.41)	34 (3.54)	14 (3.12)	13 (2.91)	23 (3.78)
Southeast	700 (28.42)	254 (26.46)	138 (30.73)	134 (30.04)	174 (28.62)
South	1,261 (51.20)	555 (57.81)	232 (51.67)	226 (50.67)	248 (40.79)
<i>Level of education</i>					
Completed elementary school	25 (1.02)	8 (0.83)	4 (0.89)	7 (1.57)	6 (0.99)
Did not complete elementary school	11 (0.45)	4 (0.42)	3 (0.67)	2 (0.45)	2 (0.33)
Finished high school education	245 (9.95)	82 (8.54)	55 (12.25)	51 (11.43)	57 (9.38)
Did not complete high school	36 (1.46)	9 (0.94)	14 (3.12)	5 (1.12)	8 (1.32)
Completed higher education	515 (20.91)	218 (22.71)	99 (22.05)	99 (22.20%)	99 (16.28)
Did Not complete higher education	830 (33.70)	285 (29.69)	160 (35.63)	129 (28.92)	256 (42.11)
Postgraduate	801 (32.52)	354 (36.88)	114 (25.39)	153 (34.30)	180 (29.61)
<i>Marital status</i>					
Married/common-law partnership	859 (34.88)	369 (38.44)	162 (36.08)	159 (35.65)	169 (27.80)
Divorced/separated	146 (5.93)	49 (5.10)	37 (8.24)	38 (8.52)	22 (3.62)
Single	1,434 (58.22)	534 (55.62)	242 (53.90)	245 (54.93)	413 (67.93)
Widow(er)	24 (0.97)	8 (0.83)	8 (1.78)	4 (0.90)	4 (0.66)
<i>Employment</i>					
Retired	103 (4.18)	38 (3.96)	24 (5.35)	31 (6.95)	10 (1.64)
Self-employed	357 (14.49)	174 (18.12)	66 (14.70)	66 (14.80)	51 (8.39)
Unemployed	203 (8.24)	62 (6.46)	45 (10.02)	41 (9.19)	55 (9.05)
Employed	999 (40.56)	400 (41.67)	182 (40.53)	188 (42.15)	229 (37.66)
Student	718 (29.15)	255 (26.56)	111 (24.72)	106 (23.77)	246 (40.46)
Other	83 (3.37)	31 (3.23)	21 (4.68)	14 (3.14)	17 (2.80)

## BFI

The BFI is a 44-item measure (John et al., 1991) that assesses the Big Five personality traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism). Participants are asked to rate the degree to which they see themselves as someone who, for example, “is talkative” and “is reserved,” using a 5-point Likert scale, which ranged from 1 (totally disagree) to 5 (totally agree). The BFI was adapted for use in Brazil, and the Cronbach’s alphas were 0.64 for agreeableness, 0.75 for conscientiousness, 0.75 for extraversion, 0.65 for openness, and 0.69 for neuroticism (Andrade, 2008).

## Procedure

A total of 3,879 individuals initially took part in the survey, recruited through advertisements on social media (Facebook, Instagram, and others) and e-mails sent to various universities across Brazil. The inclusion criteria for this study were that they had to be 18 years old or over, pet owners had to be dog and/or cat owners, and nonowners could not have a pet. Of the participants, 1001 were excluded because they failed to complete the entire questionnaire, 18 were excluded because they lived abroad, and 397 were excluded because their pet was a species other than a cat or dog.

The data were collected online using the Qualtrics platform. The link to the survey was available from the beginning of September to the end of November 2020. All the participants answered the sociodemographic questions and those measuring personality traits. The pet owners also completed the LAPS.

## Data Analysis

The data were analyzed using the R Language statistical program (R Core Team, 2020). The univariate distribution of the variables under investigation was estimated using the Shapiro-Wilk test and a significance level of 0.05. None of the variables in this study met the assumption of normality; therefore, only nonparametric statistical tests were used.

The Kruskal-Wallis test was used to compare the characteristics of the groups and the Dunn post-hoc test was used to identify how the groups differed. Next, the differences were interpreted using a strong version of Cohen's  $d$  to assess their effect size (ES) – the statistic  $\delta_t$  (Algina et al., 2005). The cutoff points were  $|\delta_t| = 0.2, 0.5, \text{ and } 0.8$ : small effect (0.2–0.5), medium effect (between 0.5 and 0.8), and large effect (0.8 and over). A one-way analysis of covariance (ANCOVA) was conducted to identify significant differences between the groups, controlling for gender and age. Next, the Games-Howell post-hoc test was used to compare combinations of groups. We used this because it can adjust for heterogeneous variances and unbalanced groups. Eta-squared ( $\eta^2$ ) was used to evaluate the ES of the differences identified. The cutoff points were 0.01 (small effect), 0.06 (medium effect), and 0.14 (large effect). Finally, Spearman's rho was calculated to investigate the relationship between the level of pet attachment and the personality traits of the DO, CO, and DCO groups. Correlation scores of 0.10 were considered low, scores of 0.30 were considered average, and scores greater than 0.50 were considered high (Cohen, 1988).

## Results

### *What is the Relationship Between Pet Ownership and Personality Traits?*

The Kruskal-Wallis test identified significant differences between the groups in relation to openness ( $H_{(3)} = 9.07, p = 0.028$ ), extraversion ( $H_{(2)} = 34.10, p < 0.001$ ), and conscientiousness ( $H_{(3)} = 11.50, p = 0.009$ ). We identified differences between the groups (see Table 2).

Most variables had an ES less than 0.2, which is less than a small effect. However, extraversion had an ES of more than 0.2 when we compared the DO and NO groups ( $d = 0.32$ ), the DCO and NO groups ( $d = 0.22$ ), and the CO and NO groups ( $d = 0.23$ ). This indicates a small effect.

There was a significant difference in extraversion between the groups ( $F_{(3,2454)} = 7.272, p < 0.001$ ) after controlling for gender ( $F_{(3, 2454)} = 1.361, p < 0.244$ ) and age ( $F_{(3,2454)} = 62.617, p < 0.001$ ). The Games-Howell post-hoc test showed there was a significant difference between the DO and NO groups ( $p < 0.001$ ), the DCO and NO groups ( $p = 0.007$ ), and the CO and NO groups ( $p = 0.011$ ). The effect size was small ( $\eta^2 = 0.01$ ).

**Table 2.** Statistical differences for attachment and personality traits between dog owners, dog and cat owners, cat owners, and nonowners.

Variable	Total M (SD)	Dog owners M (SD)	Dog and cat owners M (SD)	Cat owners M (SD)	Nonowners M (SD)	p
LAPS Total	41.94 (25.38)	55.58 (9.13) <sup>a</sup>	56.58 (9.34) <sup>b</sup>	55.04 (10.19) <sup>ab</sup>	–	0.025
Animal Rights/Animal Welfare	9.10 (5.65)	11.99 (2.48) <sup>a</sup>	12.26 (2.53) <sup>a</sup>	12.10 (2.63) <sup>a</sup>	–	0.055
People Substituting	10.89 (7.19)	14.44 (4.01) <sup>a</sup>	14.87 (4.12) <sup>b</sup>	14.05 (4.40) <sup>ab</sup>	–	0.021
General Attachment	21.96 (13.10)	29.15 (4.09) <sup>a</sup>	29.45 (3.95) <sup>a</sup>	28.88 (4.69) <sup>a</sup>	–	0.219
<i>BFI</i>						
Openness	36.84 (6.44)	36.73 (6.16) <sup>ab</sup>	36.87 (6.66) <sup>ab</sup>	37.61 (6.45) <sup>a</sup>	36.45 (6.64) <sup>b</sup>	0.028
Neuroticism	24.61 (7.05)	24.49 (6.89) <sup>a</sup>	25.13 (7.47) <sup>a</sup>	24.49 (6.99) <sup>a</sup>	24.52 (7.01) <sup>a</sup>	0.438
Extraversion	25.61 (6.97)	26.39 (6.77) <sup>a</sup>	25.68 (6.79) <sup>a</sup>	25.67 (7.13) <sup>a</sup>	24.29 (7.12) <sup>b</sup>	< 0.001
Conscientiousness	31.63 (6.45)	32.20 (6.26) <sup>ab</sup>	31.42 (6.49) <sup>ab</sup>	31.37 (6.39) <sup>a</sup>	31.06 (6.71) <sup>b</sup>	0.009
Agreeableness	33.78 (5.10)	34.07 (5.02) <sup>a</sup>	33.67 (4.81) <sup>a</sup>	33.63 (5.11) <sup>a</sup>	33.51 (5.40) <sup>a</sup>	0.188

Notes: LAPS = Lexington Attachment to Pets Scale; BFI = Big Five Inventory. The statistical differences between the groups were identified using the Kruskal-Wallis test and Dunn’s post-hoc test. The differences are identified in each column using the following letters in superscript: (b) differs from (a), and (ab) does not differ from (a) and (b). This test used a level of significance of  $p < 0.05$ .

**What is the Relationship Between Attachment and Personality Traits?**

There was a positive correlation between the LAPS total scores and the subscales with neuroticism; however, the correlations were weak. The correlations are presented in Table 3.

**Discussion**

The results of this study show that pet owners, regardless of species (dog or cat), are more extraverted than nonowners. This result remains even after taking into account gender and age. The results also showed that there was a positive correlation between the LAPS scores and neuroticism. Parslow et al. (2005) had similar findings regarding pet

**Table 3.** Spearman correlations between attachment to pets and the personality traits of the owners.

Variables	1	2	3	4	5	6	7	8
1. LAPS Total	1							
2. LAPS Animal Rights/Animal Welfare	0.77***	1						
3. LAPS People Substituting	0.90***	0.58**	1					
4. LAPS General Attachment	0.83***	0.53**	0.62***	1				
5. Openness	0.03	-0.01	0.00	0.09***	1			
6. Neuroticism	0.14***	0.11**	0.18***	0.05*	-0.14***	1		
7. Extraversion	0.03	0.03	-0.02	0.07**	0.26***	-0.24***	1	
8. Conscientiousness	0.02	-0.01	-0.04	0.10***	0.13***	-0.29***	0.24***	1
9. Agreeableness	-0.01	0.00	-0.06**	0.06*	0.11***	-0.42***	0.25***	0.26***

Note: LAPS = Lexington Attachment to Pets Scale. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

owners' personality traits. They pointed out that elderly men who were responsible for looking after their pets tended to be more extroverted. On the other hand, other research has produced different findings. For example, the research by Fraser et al. (2020) indicates that owning a pet is linked to more openness and less conscientiousness, while another study suggests that owning a pet is linked to greater conscientiousness (McConnell et al., 2011).

Other research that involved older people produced different results. In a study by Carr et al. (2019b), pet owners tended to have higher levels of neuroticism and lower extraversion; however, the study by Bao and Schreer (2016) found no differences between the personality traits of pet owners and nonowners. One reason for these inconsistent findings may be owing to the different tools used to measure personality, such as the 24-item Mini-IPIP6 (Sibley et al., 2011) and the NEO Personality Inventory-Revised (Costa & McCrae, 1992). These scales are based on other theories, and they assess personality aspects that are different from those that are the basis for the scales used in this study. It is also important, if you wish to be able to replicate the results, to be able to use the same parameters when comparing the results of different surveys. It should be noted, for example, that some studies do not mention the ES (McConnell et al., 2011; Parslow et al., 2005), which could affect the interpretation of the results.

In this study, we can see that, although the ES is small, pet owners scored higher on extraversion. Extraversion deals with the way an individual relates to other people. People who score higher on this trait tend to be more active, communicative, sociable, optimistic, and affectionate (Costa & Widiger, 2002). A possible explanation for this is that pets can be a means to help people to communicate. As an example of this, Wood et al. (2015) showed that dog owners are often more likely to meet new people in their neighborhood. In addition, this positive effect is not limited to dog owners: other research shows that pet ownership, regardless of the species, makes it easier for neighbors to interact (Wood et al., 2017). One possible reason for this is that pets can act as a catalyst for social interaction: they give people a reason to communicate with each other (Wood et al., 2015).

If we only consider the owners, there were no differences between the personality traits of the DO, CO, and DCO groups. This is not consistent with the literature on the subject. According to the study by Bao and Schreer (2016), dog owners score higher on agreeableness and lower on neuroticism, compared with cat owners. Other studies that have investigated animal preferences show that participants who prefer cats score lower on extraversion, agreeableness, and conscientiousness and higher on neuroticism (Reevy & Delgado, 2014). Another study shows that individuals who prefer dogs are more extroverted and that this preference is in line with the animal they owned (Puskey & Coy, 2020).

Despite the research mentioned above, the findings here suggest that a person's choice of pet is not related to their personality. The difference between this finding and the literature could be owing to the limitations of the methods used in other studies. For example, Bao and Schreer (2016), who compared dog and cat owners, only asked participants to choose one pet without considering whether they had other animals (including other dogs or cats). Another reason for the differences in the literature could be that the species of animal that people most identify with could be more



significant than the species of animal they own. Research suggests that people who identify more with dogs have different personality traits from those who identify with cats. If we accept this, then people who identify more with cats would tend to score higher on openness and neuroticism, and those who identify more with dogs would tend to score higher on extraversion and agreeableness (Gosling et al., 2010; Reevy & Delgado, 2014).

Among the pet owners, there were significant correlations between the level of attachment and the personality traits: in particular, a positive correlation with neuroticism. Other studies corroborate this result; they have also demonstrated that a high degree of conscientiousness and neuroticism is linked to higher attachment scores (Reevy & Delgado, 2014, 2020). According to our findings, neuroticism, out of all the personality traits, correlated most with the LAPS scores.

Neuroticism refers to a chronic level of adjustment and emotional instability (McCrae & John, 1992), and individuals with a high neuroticism score are more likely to experience intense emotional distress and are generally more anxious, depressed, and impulsive (Costa & Widiger, 2002). Previous research links a high degree of attachment to greater stress, a poorer quality of life, psychological distress, loneliness, and negative thoughts directed toward their pet. This may indicate that pet owners are psychologically vulnerable (Krause-Parello, 2008; Luhmann & Kalitzki, 2016; Peacock et al., 2012; Ratschen et al., 2020). One possible explanation for this is that their strong attachment to their pet could be compensating for the lack of meaningful relationships with other people. On the other hand, when a person has a strong attachment to a pet, it could also mean that they do not try to develop other relationships: they prefer to spend time with their pet because of the strong emotional attachment they have (Luhmann & Kalitzki, 2016).

### **Limitations**

One limitation of this study is that most participants came from the southern region of Brazil. This means that the results cannot be extended to the whole population. In addition, the sample for this study was not representative of the entire population of Brazilian pet owners and non-owners: therefore, the results cannot be generally applied to the entire population of owners and non-owners in Brazil.

Another limitation is that the personality traits and attachment levels were only calculated for the DO, CO, and DCO groups; anyone who owned a pet species other than these was excluded from the sample. There are many other species in Brazil that are kept as pets. Around 39.8 million birds, 19.1 million fish, and 2.3 million reptiles and small mammals were recorded in 2018 (IPB, 2019). For this reason, it would be worthwhile for future studies to examine the personality traits of owners of other species of pet and to measure the level of attachment owners have with them.

### **Conclusion**

In conclusion, among Brazilians, owning a pet is linked to a higher degree of extraversion. We also found that owners who have a higher degree of attachment to their pet have a

higher degree of neuroticism. These results show that personality is a variable that should be considered in research on the relationships between humans and pets.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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