



Research

Differences in stress and happiness between owners who perceive their dogs as well behaved or poorly behaved when they are left alone



Mónica Teresa González-Ramírez^{a,*}, Minerva Vanegas-Farfano^b,
René Landero-Hernández^a

^a Universidad Autónoma de Nuevo León, UANL, Fac. de Psicología, México

^b Universidad Autónoma de Nuevo León, UANL, Fac. de Organización Deportiva, México

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ABSTRACT

This study was performed to identify differences between a group of 36 dog owners who reported separation-related behavioral problems in their dogs and a group of 40 dog owners who perceived their dogs as well behaved in their absence. The variables compared between these groups were attachment, trainability, human-dog relationship, owner-dog compatibility, happiness, and stress. Dogs whose owners perceived that they were well behaved when left alone had more years within the household and higher scores in trainability; these owners also reported a better relationship with the dog and lower attachment scores than the group that perceived separation-related problems in their dogs. In addition, those owners who saw their dogs as well behaved when left alone showed higher perceived happiness and lower perceived stress. The equivalence in compatibility and the differences found in the mentioned variables suggest that owners and their dogs are compatible in activity preferences and in emotional variables such as anxiety or stress. It is possible that humans with higher levels of stress do not have a relaxed relationship with their dogs, which may contribute to their annoyance about their dogs' behavior, and they spend less time with them. This could explain why they perceived their dogs as having separation-related behavioral problems. A dog's behavior could be a source of stress for the owner affecting the owner's perceived happiness.

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Introduction

The way dogs react to anxiety-provoking circumstances has garnered attention due to its relationship with behavioral problems, canine relinquishment, and more recently to a proper diagnosis and help for both the animal and the human partner (Flannigan & Dodman, 2001). When behavioral problems surface, their physical and emotional origins are now investigated because such problems endanger the welfare, the human-animal bond, and the lifespan of the animal if not treated (Dreschel, 2010; Kurachi et al., 2017).

* Address for reprint requests and correspondence: Dra. Mónica Teresa González-Ramírez, Universidad Autónoma de Nuevo León, UANL, Fac. de Psicología, Av. Universidad S/N Ciudad Universitaria San Nicolás de los Garza Nuevo León, C.P. 66451, México. Tel.: +52 81 83294050; Fax: +52 81 83338233.

E-mail addresses: monygzz77@yahoo.com, monica.gonzalezrz@uanl.edu.mx (M.T. González-Ramírez).

Anxiety is an emotion of apprehension to an anticipated danger or threat, and often to an unidentified stimulus (Ogata, 2016). One approach argues that if the stimulus is identifiable and present, the emotional response to it should be defined as fear as in humans (Ogata, 2016). In dogs, while both anxiety and fear are associated with behaviors such as lip licking, yawning, and grooming (Palestrini et al., 2017), some authors consider a heightened arousal that diminish the dog's adaptive behaviors as the primary difference between humans and dogs (Overall, 2014): an anxious dog has difficulties observing and accurately assimilating information from the environment, leading to poor choices and reactions.

Lack of attention and undesirable behaviors related to environmental anxiety has also been linked to age (in an age range between 1 and 4.5 years old) and sex (being male) as a more likely reason for withdrawal from work in service dogs due to fear/aggression-related behavior (Caron-Lormier et al., 2016). Anxious

behavior and impulsivity have recently been associated with premature graying in young dogs' muzzles, as a possible body reaction to factors such as stress and chronic pain, as also happens in humans and mice (King et al., 2016). High plasma levels of 5-HIAA, the primary metabolite of serotonin, may be elevated in anxious and stressed dogs as they attempt—and fail—to calm themselves through licking (Part et al., 2014).

We focus on separation anxiety, a term reserved to those behavioral signs related to distress in the dog, but only in the absence of or lack of access to the human partner (Overall, 1997, 2013; Scaglia et al., 2013). Separation anxiety and separation-related problems are often used interchangeably in the literature (Scaglia et al., 2013).

Excessive motor activity can be a sign of separation anxiety, and vocalization is the one among the most common behaviors reported by owners of the dogs diagnosed with separation anxiety (Storengen et al., 2014). Research shows that other signs, such as extensive destruction, elimination, and salivation, may also coexist with vocalization when a dog is left alone (Overall et al., 2001; Scaglia et al., 2013). Possible risk factors for separation anxiety include the dog's sex, breed, acquired resources, and the family's structure or owner's lifestyle (Ogata, 2016). Tiira and Lohi (2015) found that, in a survey of 1,737 female and 1,525 male dogs, the amount of daily exercise was one of the biggest environmental factors associated with separation anxiety: dogs with separation-related problems exercised less.

Separation anxiety is commonly related to attachment in different species of mammals (Konok et al. 2015; Moreno et al., 2009). González-Ramírez et al., (2017a) found a positive correlation between attachment- and separation-related problems. Parthasarathy and Crowell-Davis (2006) consider separation anxiety a result of an inappropriate attachment style, and this style could be present in dogs with and without separation anxiety.

The identification of separation anxiety should be done by a clinician. Owners detect an undesirable behavior and may report it

to the clinician, but videotaping the dog in the provocative contexts may be needed to confirm that behavior is related to anxiety and not to a poor training, normal behaviors, et cetera. Even when dog behaviors are normal, they can turn into a problem when the owner perceives the behavior as annoying. Hence, we focus on the owners' perceptions about dog behavior when left alone and the pet effect on stress and happiness. We made no distinction between dogs with a true diagnosis of separation anxiety and those with other separation-related behaviors.

The objective of this study was to evaluate differences between dog owners who reported separation-related behavioral problems in their dogs and owners who perceived their dogs were well behaved in their absence. We also compared variables possibly related to separation-related behavior, such as attachment, trainability, owner-dog relationship, owner-dog compatibility, happiness, and stress.

Materials and methods

Participants

Dog owners were recruited among Mexican residents using a snowball sampling method of an online-survey system (Survey-Monkey.com) and via promotion on social media. No demographic data related to the dogs were used as inclusion or exclusion criteria. Incomplete surveys were discarded. The survey was answered by 350 people. In this study, we included people who could be part of one of the two following groups: one group with scoring values equal to or above 2 on the Canine Behavioral Assessment and Research Questionnaire (C-BARQ) separation-related problem subscale and the second including score values equal to 0. The C-BARQ separation-related problem subscale is described in the following.

The final sample consisted of 76 dog owners, 18 to 43 years. Thirty-six dog owners perceived their dogs as having separation-related behavioral problems (group 1) and 40 dog owners perceived their dogs as well behaved in their absence (group 2). Dogs in this study were not assessed by veterinarians or behavioral specialists.

No significant differences were found in the sociodemographic variables, as listed in Table 1.

Instruments

For this research, we used the C-BARQ®, developed in English by Hsu and Serpell (2003) and adapted for Mexico by González-Ramírez et al., (2017a). This questionnaire includes 14 subscales related to observable and specific behaviors on a five-point Likert scale: zero indicates absence of behavior, and four is the highest intensity or frequency. This is not a diagnostic tool for the categorization of behavioral problems; it evaluates the intensity and frequency of behaviors potentially related to aggression, fear, and excitability from owner perspective.

Because of the aim of this study, we only used the following subscales:

1. Separation-related behavior: the dog vocalizes and/or destroys things when they are separated from their owner, often accompanied or preceded by behaviors and signs of anxiety, such as restlessness, loss of appetite, tremors, or excessive salivation.
2. Attachment or attention-seeking: the dog keeps a close proximity to their owner or other family members, seeks affection or attention, and shows signs of agitation when the owner pays attention to others.
3. Trainability: the dog shows a willingness to comply and obey simple instructions from the owner. The dog is not easily distracted, tends to learn fast, and responds positively to correction and recovery of objects.

Table 1
Demographic information for owners

Characteristic	Group 1 (n=36)	Group 2 (n=40)	Statistical analysis
Age (in y)			
Median	26.5	28.5	$Z = -1.569; P = 0.117$
Mean	27.6	30.2	
Standard deviation	6.4	6.3	
Education			$\chi^2 = 3.333; P = 0.504$
High school (n, %)	9, 25.0%	5, 12.5%	
Bachelor degree (n, %)	20, 55.6%	26, 65.0%	
Postgraduate degree	7, 19.5%	9, 22.5%	
Sex			
Female (n, %)	28, 77.8%	34, 85.0%	$\chi^2 = 0.658; P = 0.417$
Male (n, %)	8, 22.2%	6, 15.0%	
Marital status			
Single (n, %)	19, 52.8%	19, 47.5%	$\chi^2 = 1.757; P = 0.415$
Married (n, %)	13, 36.1%	12, 30.0%	
With partner (n, %)	4, 11.1%	9, 22.5%	$\chi^2 = 0.650; P = 0.420$
Employed (n, %)			
Yes	23, 63.9%	29, 72.5%	$\chi^2 = 0.737; P = 0.391$
Children (n, %)			
No	30, 83.3%	36, 90%	
First's children age			
Median	6.5	11.8	$Z = -0.168; P = 0.867$
Mean	7.7	11.8	
Standard deviation	7.2	13.0	
Dogs owned			
Median	1.0	2.0	$Z = -1.070; P = 0.285$
Mean	1.6	1.8	
Standard deviation	0.8	0.8	

Group 1 is dog owners who perceived their dogs had separation-related behavioral problems; group 2 is owners who perceived their dogs were well behaved when left alone.

The Monash Dog-Owner Relationship Scale (MDORS; Dwyer et al., 2006) in its Mexican adaptation (MDORS-M; González-Ramírez et al., 2017b) is a scale based on the social interchange theory, which explains that a human relationship is only held when both costs and benefits seem to balance or when the perception of the benefits exceeds those of the costs. This instrument is considered as the more robust for the evaluation of the human-dog relationship from the human's perspective (Payne et al., 2015). This is a 28-item five-point Likert scale arranged in three subscales: (1) dog-owner interaction, (2) perceived emotional closeness, and (3) perceived costs. For scoring, the perceived costs items are reversed and summed with items of the other two subscales. The resultant score indicates the strength of the relationship according to the perception of the owner. In its Mexican adaptation, the MDORS-M scale presented a reliability of $\alpha = 0.82$ in the dog-owner interaction subscale, $\alpha = 0.91$ in the emotional closeness subscale, and $\alpha = 0.81$ in the perceived costs subscale. This scale has an adequate general reliability of $\alpha = 0.88$ (González-Ramírez et al., 2017b).

To evaluate the owner's preferences regarding his or her freely chosen activities and the perceived behavior of the dog in relation to them, we used the dog-owner compatibility index of activity preferences by González-Ramírez et al. (2017c). This instrument evaluates six activities correlated to the actions performed by the owner and their dogs' responses (e.g., section for the owner: on the weekend or on a nonworking day, you would like to walk or run in the park; section for the dog: your dog enjoys long walks in the park). This questionnaire was designed as a four-point Likert scale, with response options ranging from completely disagree to completely agree. For scoring purposes, it was first determined the degree of the dog-owner compatibility for each of the six situations presented. Compatibility is considered when the answer for both, the dog and the owner, ranges from 0–1 (response options completely disagree or disagree), or 2–3 (response options completely agree or agree). If the answer for an activity is 0 or 1 for owner and 2 or 3 for dog, no compatibility is determined. In addition, if the answer for an activity is 2 or 3 for owner and 0 or 1 for dog, they are considered noncompatible. Afterward, the number of compatibilities is divided by 6 and multiplied by 100. Cronbach's alpha was reported as 0.82.

To measure happiness, we used the subjective happiness scale (SHS; Lyubomirsky & Lepper, 1999) in its validated version for the Mexican population (Quezada et al., 2016). The SHS is a four-item Likert-type scale that measures global subjective happiness by means of statements in which the participants either self-rate themselves or compare themselves to others. The scale showed an adequate level of internal consistency with a Cronbach's alpha coefficient of 0.77 (Quezada et al., 2016).

Finally, we also measured the perception of stress through the perceived stress scale (PSS; Cohen et al., 1983) in its Mexican version (González-Ramírez and Landero-Hernández, 2007). This scale contains 14 Likert-type items with scores ranging from 0 = never to 4 = very often. Within it, seven items are reverse coded. Total score ranges from 0 to 56 points; also, for interpretation purposes, a higher score corresponds to higher levels of stress. In its validation, the scale exhibited a Cronbach's alpha of 0.83 (González-Ramírez and Landero-Hernández, 2007).

Statistical analysis

All statistical analyses were performed with IBM® SPSS® Statistics 20. We began with the descriptive analysis of the variables and its contrast with the normal distribution using the Kolmogorov-Smirnov test. Owing to not normal distribution ($P < 0.05$), the Mann-Whitney U test was used for continuous variables, and a chi-square test was used for categorical ones.

Results

Characteristics of the dogs from both groups were analyzed. Table 2 shows the data for the participating dogs with respect to age, sex, size, neutering, and obedience training. Dogs without separation-related problems had lived longer with their owners, than did dogs with separation-related problems.

Table 3 shows the number of dogs by breed. Mixed-breed dogs represent the largest percentage of dogs in both groups. In the group 1, dogs perceived by owners to have separation-related behavioral problems; mixed-breeds and schnauzers comprised 16.7% of the sample.

There were significant differences between several variables, as seen in Table 4. Dog owners who perceived that their dogs had separation-related behavioral problems had higher scores in the attachment subscale (C-BARQ), lower trainability scores (C-BARQ), and worse owner-dog relationship (MDORS-M) than owners who perceived that their dogs were well behaved when left alone.

The MDORS-M subscales revealed a significant association with "perceived costs" for dogs with separation-related behavioral problems. Dog owners who reported that their dogs were well behaved when left alone perceived themselves as happier and less stressed. No differences related to the human-dog compatibility were found between the two groups.

Discussion

It is widely known that human-animal interaction is associated with positive health effects for humans, and for many years, its investigations had focused on this aspect (Fine, 2010). Nevertheless, dogs' unwanted behaviors could also have affect humans. This

Table 2
Demographic information for dogs

Characteristic	Group 1 (n = 36)	Group 2 (n = 40)	Statistical analysis
Age in years	(0.17 a 11)	(0.67 a 11)	
Median	2.8	3.5	$Z = -1.070$; $P = 0.285$
Mean	3.1	4.4	
Standard deviation	2.5	2.8	
Sex			
Female (n, %)	13, 36.1%	21, 52.5%	$\chi^2 = 2.058$; $P = 0.151$
Male (n, %)	23, 63.9%	19, 47.5%	
Size			
Mini (3 to 5 kg)	7, 19.4%	5, 12.5%	$\chi^2 = 7.171$; $P = 0.127$
Small (5 to 12 Kg)	13, 36.1%	7, 17.5%	
Medium (12 to 25 Kg)	9, 25.0%	12, 30.0%	
Large (25 to 40 Kg)	7, 19.4%	13, 32.5%	
Giant (over 40 Kg)	0, 0.0%	3, 7.5%	$\chi^2 = 3.712$; $P = 0.054$
Obedience classes with a dog trainer			
Yes (n, %)	3, 8.3%	10, 25.0%	$Z = -0.511$; $P = 0.609$
Time of training (months)	(3 a 5)	(0.25 a 36)	
Median	4.0	6.0	
Mean	4.0	10.7	
Standard deviation	1.0	13.7	$\chi^2 = 1.162$; $P = 0.281$
Not neutered (n, %)	25, 69.4%	23, 57.5%	
Years within the household			
Median	2.0	3.2	$Z = -2.718$; $P = 0.026$
Mean	2.6	4.3	
Standard deviation	2.0	2.9	
Age when neutered (%)			
Median	2.0	1.0	$Z = -0.023$; $P = 0.982$
Mean	1.7	2.2	
Standard deviation	0.5	2.3	

Group 1 is dogs whose owners who perceived their dogs had separation-related behavioral problems; group 2 is dogs whose owners who perceived their dogs were well behaved when left alone.

Table 3
Breed distribution

Breed	Group 1 (n = 36)		Group 2 (n = 40)	
	n	%	n	%
American pitbull terrier	5	13.9	2	5.0
Australian cattle dog	1	2.8	0	0
Basset hound	1	2.8	0	0
Beagle	0	0	4	10.0
Belgian malinois	1	2.8	1	2.5
Border collie	0	0	1	2.5
Bulldog	0	0	2	5.0
Bullterrier	0	0	1	2.5
Chihuahua	3	8.3	4	10.0
Cocker spaniel	1	2.8	2	5.0
Dachshund or Teckel	1	2.8	0	0
Doberman pinscher	1	2.8	0	0
German shepherd	0	0	1	2.5
Golden retriever	1	2.8	0	0
Labrador retriever	1	2.8	5	12.5
Lhasa apso	1	2.8	0	0
Maltese	0	0	1	2.5
Mixed	6	16.7	9	22.5
Poodle	2	5.6	3	7.5
Pomeranian	1	2.8	0	0
Pug	1	2.8	1	2.5
Schnauzer	6	16.7	0	0
Saint Bernard	0	0	2	5.0
Shiba inu	0	0	1	2.5
Staffordshire bull terrier	1	2.8	0	0
Yorkshire terrier	2	5.6	0	0

Group 1 is dogs whose owners who perceived their dogs had separation-related behavioral problems; group 2 is dogs whose owners who perceived their dogs were well behaved when left alone.

research focuses on owners' perception about dog behavior when left alone and its association with their perceived stress and happiness.

We evaluated owners who believed that their dogs had separation-related problems and owners who perceived that their dogs were well behaved in their absence. After comparing the characteristics of both groups, as in McGreevy and Masters (2008) study, we did not detect a tendency related to breeds or an association related to their size. We found a significant difference between the groups according to the dog's time living with their actual owner: those owners who perceived that their dogs were well behaved when left alone had lived with their dogs longer.

Owners perceived that those dogs that did not present separation-related problems also had higher scores in trainability. This relationship may be explained by Tiira and Lohi (2015) findings that anxious dogs could be exercised less because these dogs may be less obedient or more prone to running away when walking.

Hyper- or over-attachment are typical descriptions in the literature regarding dogs with separation anxiety (Ogata, 2016). We found higher attachment scores within the group of owners who reported that their dogs had separation-related behavioral problems; however, attachment style should be considered (Parthasarathy and Crowell-Davis, 2006).

Results suggest that owners and dogs that share the same preferences in activities also share symptoms associated with stress. Dogs share many of the same environmental factors that contribute to anxiety in other species, such as humans (Tiira and Lohi, 2015).

Owners with higher levels of stress may not have a relaxed relationship with their dogs, which can contribute to their annoyance about their dogs' behavior, so they spend less time with them, increasing the anxiety in the dogs. In turn, a dog's behaviors may annoy the owner and may be a source of stress for him or her, which affects his or her perceived happiness.

Table 4
Group comparisons of variables

Variable	Group 1 (n = 36)	Group 2 (n = 40)	Mann Whitney U test
Attachment subscale (C-BARQ)			
Median	2.3	1.8	Z = −3.331; P = 0.001
Mean	2.6	1.8	
Standard deviation	0.8	0.9	
Trainability subscale (C-BARQ)			
Median	1.9	2.6	Z = −3.073; P = 0.002
Mean	1.9	2.4	
Standard deviation	0.7	0.9	
Relationship with the dog (MDORS-M scale mean)			
Median	3.8	4.2	Z = −2.092; P = 0.036
Mean	3.8	3.9	
Standard deviation	0.5	0.6	
Dog-owner interaction subscale			
Median	3.1	3.7	Z = −1.385; P = 0.166
Mean	3.2	3.4	
Standard deviation	0.9	0.9	
Perceived emotional closeness subscale			
Median	4.2	4.6	Z = −1.482; P = 0.138
Mean	4.1	4.3	
Standard deviation	0.7	0.9	
Perceived cost subscale			
Median	2.0	1.6	Z = −2.294; P = 0.022
Mean	2.0	1.8	
Standard deviation	0.6	0.6	
Dog-owner compatibility			
Median	83.3	83.3	Z = −0.038; P = 0.970
Mean	76.8	73.7	
Standard deviation	16.6	25.3	
Happiness (SHS scale mean)			
Median	5.0	5.5	Z = −2.207; P = 0.027
Mean	5.0	5.4	
Standard deviation	0.8	0.9	
Stress (PSS)			
Median	20.5	16.5	Z = −2.323; P = 0.020
Mean	22.0	17.2	
Standard deviation	8.9	7.4	

Group 1 is dogs whose owners who perceived their dogs had separation-related behavioral problems; group 2 is dogs whose owners who perceived their dogs were well behaved when left alone.

Conclusion

The findings of this study suggest that if owners do something to improve behaviors that they consider annoying in their dogs, their perceived happiness and dog-owner relationship could improve. Owners who perceive themselves as stressed also perceive separation-related problems in their dogs.

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