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# Dog's size affects owners' behavior and attitude during dog walking

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*Abstract*: The aim of this study was to evaluate if dog's size affects owners' behavior and attitude during dog walking. Owners completed a questionnaire on personal information about dogs, and owners' behavior and attitude towards the intraspecific socialisation of their own dog. Two hundred and forty adult dogs of different breeds, balanced for sex, got involved in this study. Dogs were assigned to one of three groups depending on the size of animal: first group, small dogs = less than 10 kg, second group and medium dogs = between 10 and 20 kg, third group, large dogs = over 20 kg. Chi-square test was used to identify whether owners of dogs belonging to different size groups (small, medium and large) had a different attitude or behavior towards their own dogs. The owners of the three groups of dogs, while walking their own dog, behaved differently when meeting a small unfamiliar dog ($p=0.022$) or a large unfamiliar dog ($p=0.049$). In owners' opinion, small dogs represented the size group who was more fearful of both smaller ($p=0.062$) and larger dogs ($p<0.001$). Owners of small dogs were those who less frequently allowed their dogs to play unleashed with other dogs ($p=0.002$) and more frequently believed that their dogs did not need to socialise with other dogs ($p=0.002$).

In summary, when meeting another dog, dog owners behaved very differently one from the other according to the size of the owned dog. According to these results, behaviorists should emphasize the importance of intraspecific socialisation to people who own or are going to acquire a small dog.

*Key Words*: behavior; dog; owner; size; socialisation; walking.

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## Introduction

Dogs are the most popular pets and they are present in human societies all over the world (Řezáč et al., 2011). Social contact are essential for a good human-dog relationship (Blecker et al., 2013), that can be so close that owners can act as a secure base for their dogs (Mariti et al., 2013). However, despite this old relationship between man and dog, problems may arise (Clark & Boyer, 1993; Hiby et al., 2004). Behavioral problems may be associated to dog's stress or owner's discomfort (Beerda et al., 1997; Casey, 2002), causing a possible failure of the relationship (Salman et al., 1998; Overall, 2013).

During domestication, dogs have been subjected to a huge range of selection pressures that have resulted in a considerable diversity in morphology, genetics and behavior (Svartberg & Forkman, 2002) and there are over 350 dog breeds recognised worldwide (Spady & Ostrander, 2008). Despite the great differences in size and conformation, all breeds share a behavioral repertoire based on being sociable, gregarious, and cooperative animals (Notari & Goodwin, 2007). Dogs' features are known to affect people feelings and behaviour towards them and even towards their handlers (Gazzano et al., 2013). For instance, several studies have shown that small and medium size dogs are adopted more frequently than those of larger size, probably because they are deemed easier to manage (Posage et al., 1998; Patronek et al., 1995). Moreover, DeLeeuw (2010) has shown that the prevision of adoption from dog shelters is lower for large and dark dogs, conveying the impression of

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being dangerous, threatening and uncontrollable; whereas small white dogs are mentioned as being peaceful and harmless (Posage et al., 1998; Duffy et al., 2008; DeLeeuw, 2010).

The aim of this study was to evaluate if dog's size affects owners' behavior and attitude during dog walking.

## Materials and methods

### *Questionnaire*

Behavioral data was collected by a questionnaire, specifically prepared for this study. This questionnaire has been administered to dog owners by email or hand-delivered without editor's assistance. Owners were recruited by personal contact, among dog owners known by the researchers, or in areas frequented by dogs in two Italian cities (Milan and Naples).

The questionnaire was divided into three sections (see tab. 1). The first section was about owners' personal information: sex and age range (18-30 years old, 31-40 years old, 41-50 years ols, 51-60 years old, and over 60 years old). The second section concerned dogs' characteristics: current age (1-3 years old, 4-8 years old, and over 8 years old), sex status, breed, and size (small = less than 10 kg; medium = between 10 and 20 kg; large = over 20 kg). The third section investigated owners' behavior and attitude towards the intraspecific socialisation of their own dog. Items consisted in: owners' behavior while walking their dog and while meeting a leashed small and a large unfamiliar dog; owners' perception of their dog's fear of smaller and larger dogs; dogs' possibility to play unleashed with other dogs; owners' opinion on their dog's need to socialise with conspecifics.

Table 1. Items and possible answers of the questionnaire.

| | **Items** | **Possible answers** |
|---|---|---|
| **Owner's data** | Gender | ☐ female ☐ male |
| | Age | ☐ 18-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ > 60 years old |
| **Dog's data** | Size | ☐ small (<10kg) ☐ medium (10-20kg) ☐ large (>20kg) |
| | Age | ☐ 1-3 ☐ 4-8 ☐ > 8 years old |
| | Sex | ☐ entire female ☐ neutered female ☐ entire male ☐ neutered male |
| | Breed | ☐ mixed-breed ☐ ..... |
| **Owner's attitude and behavior** | What do you usually do when, while walking your dog, you meet a smaller, leashed unfamiliar dog? | ☐ I avoid the encounter<br>☐ I approach at ease<br>☐ I approach only if the other dog is of the opposite sex of my dog |
| | What do you usually do when, while walking your dog, you meet a larger, leashed unfamiliar dog? | ☐ I avoid the encounter<br>☐ I approach at ease<br>☐ I approach only if the other dog is of the opposite sex of my dog |
| | Do you believe that your dog is fearful of smaller dogs? | ☐ Yes ☐ No |
| | Do you believe that your dog is fearful of larger dogs? | ☐ Yes ☐ No |
| | Do you believe that your dog needs to socialise with other dogs? | ☐ Yes ☐ No |
| | Has your dog the opportunity to play unleashed with other dogs? | ☐ Yes ☐ No ☐ Only with dogs of the opposite sex |

### *Subjects*

The questionnaire was completed by 240 dog owners: 75.4% were women and 24.6% were men; 52.2% was between 18 and 40 years old, and 47.8% was over 40 years old.

The canine sample was formed by 240 dogs balanced for size and sex. In fact, according to the dog's size (small, medium, and large), three groups of 80 dogs each were formed. Within each size group, dogs were equally distributed for sex, giving six sub-groups of 40 subjects each: small male dogs, small female dogs, medium male dogs, medium female dogs, large male dogs and large female dogs. As for the breed, 38.7% of dogs were mixed-breeds and the rest belonged to 49 different breeds of the Fédération Cynologique Internationale. Concerning the age, dogs were divided into three ranges: 1 to 3 years old (42.3%), 4 to 8 years old (35.1%), and over 8 years old (22.6%).

### *Statistical analysis*

The Chi-square test ($p<0.05$) was used to assess whether owners of dogs belonging to different size groups (small, medium and large) had a different attitude or behavior towards their own dogs. The statistical analysis was performed using SPSS® 17.0.

## Results

The statistical analysis revealed that the owners of the three groups of dogs behaved differently, while walking their own dog, in case they met a small unfamiliar dog ($\chi^2 = 11.468$; $p = 0.022$; see fig. 1). In detail, owners of small dogs, compared to the owners of larger dogs, were less likely to be at ease (tot = 124; small = 31; medium = 50; large = 43) and more likely to approach only dogs of opposite sex when approaching a small unfamiliar dog (tot = 62; small = 28; medium = 18; large = 16). Owners behaved differently also when meeting a large unfamiliar dog ($\chi^2 = 9.561$; $p = 0.049$; see fig. 1). More specifically, owners of small dogs were less likely to be at ease (tot = 87; small = 22; medium = 33; large = 32) and were more likely to avoid the encounter of dogs of either sex (tot = 83; small = 38; medium = 24; large = 31).

Figure 1 also shows that owners of large dogs were more likely to avoid the encounter when meeting a small rather than a large dog, whilst they were more likely to approach only dogs of the opposite sex in case they met a large than a small dog. In addition, owners of medium-sized dogs displayed a similar behavior when meeting a small or a large dog, and they were in general more at ease than other owners (of large and small dogs) when meeting an unfamiliar dog.

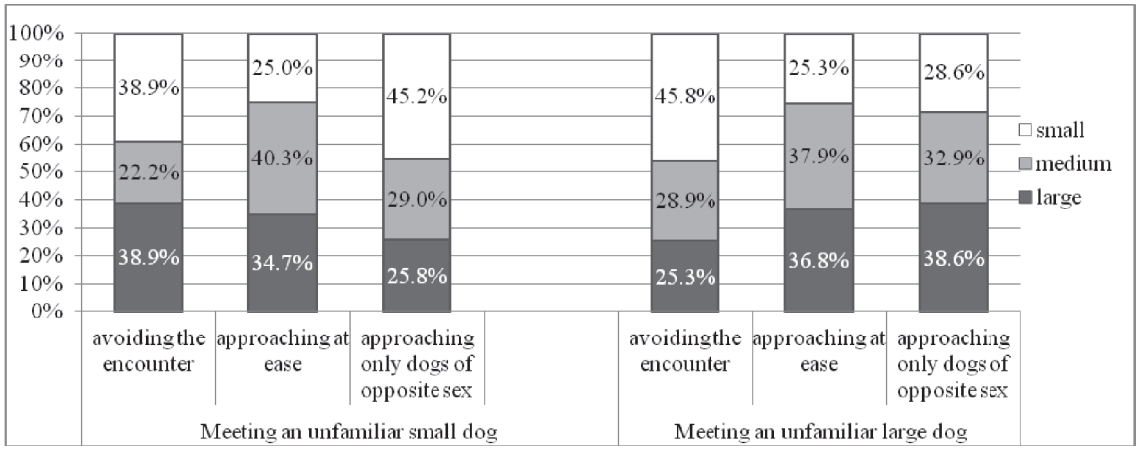


Figure 1. Proportion of owners (%) displaying different behaviors when meeting a small or a large unfamiliar dog while walking their own dog.

In owners' opinion, small dogs represented the size groups who was more fearful of both smaller (tot = 15; small: 15; medium: 4; large: 2; $\chi^2 = 5.547$; p = 0.062; see fig. 2) and larger dogs (tot = 74; small: n = 38; medium: n = 27; large: n = 9; $\chi^2 = 25.125$; p<0.001; see fig. 2).

Owners of small dogs were those who less frequently allowed their dogs to play unleashed with other dogs (tot = 171; small: n= 46; medium: n = 66; large: n = 59; $\chi^2 = 16.786$; p = 0.002; see fig. 3). Owners of small dogs also more frequently believed that their dogs did not need to socialise with other dogs (tot = 47; small: n = 23; medium: n = 8; large: n = 16; $\chi^2 = 16.786$; p = 0.002; see fig. 3).

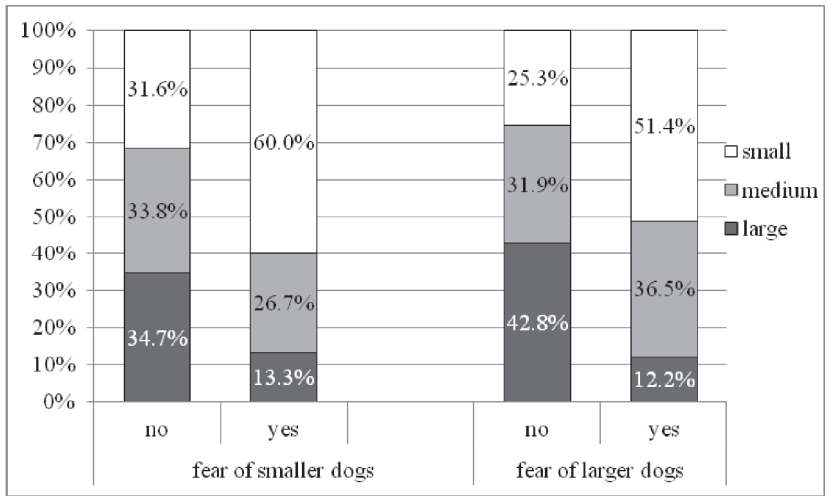


Figure 2. Proportion of dogs (%) that, in owners' opinion, showed fear of unfamiliar smaller and larger dogs; do not have the opportunity to play unleashed with other dogs; do not need to socialise with other dogs.

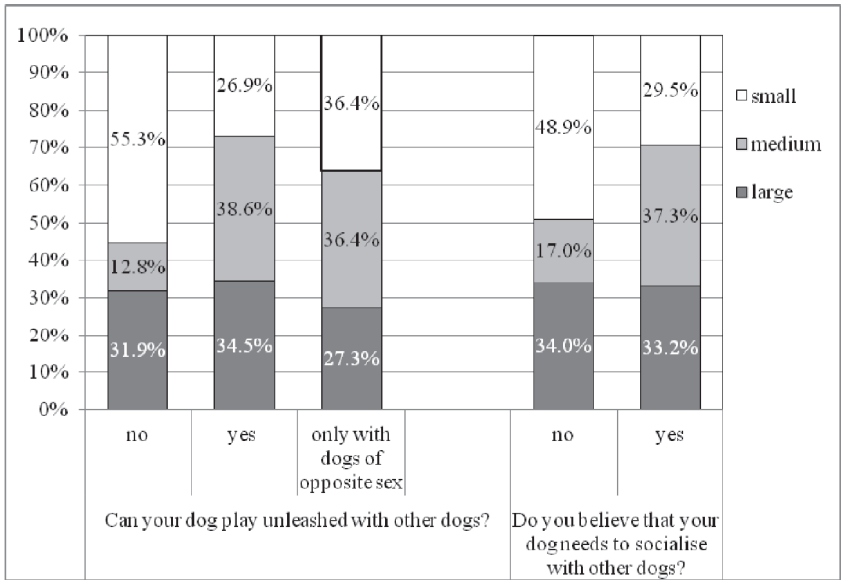


Figure 3. Proportion of dogs (%) who do not have the opportunity to play unleashed with other dogs and proportion of owners (%) who believed that their dogs do not need to socialise with other dogs.

## Discussion

The findings of the current study suggest that dogs' and owners' behavior during a walk are influenced by the size of the animal, similarly to what previously found by Bassi et al. (2010). It is likely that it is partially due to dogs' features, that are known to affect passerby feelings and behavior (Gazzano et al., 2013), and partially due to owners' believes, attitude and behavior towards their own dogs.

Overall, small dogs had less opportunity to socialise with other dogs. For instance, many owners of small dogs when meeting dogs of the same size approached them only if the other dog was of the opposite sex. In addition, only one small dog out of four approached other dogs, both smaller and larger, at ease. The majority of small dogs' owners believed that their dogs were afraid of dogs of the same size. About half of small dog's owners report their dogs are afraid of big dogs. This percentage seems similar the number of large dogs owners avoiding meetings with small dogs. Westgarth et al. (2015) in his work about dogs' daily walking suggests that small dogs were negatively associated with daily dog walking due to barriers or disincentives to dog walking.

Dogs are highly social animals and the social isolation can be very harmful (Hetts et al., 1992). Unfortunately half of small dogs' owners stated that their own dogs did not need to socialise with other dogs and did not play off the leash, thus reducing the number of interactions between dogs (Westgarth et al., 2010). It is possible that owners of small dogs were worried about the possibility that their dogs could get injured by other dogs. However, the fear of such owners seems to be unjustified. In fact, a study about the so-called dog parks, areas where the dogs can be let loose and run freely together with other dogs, showed that aggression between unfamiliar dogs in neutral ground is rare, and mainly depends on very few aggressive individuals (Shyan et al., 2003). It is not clear if having less opportunity to socialise is a cause or a consequence that smaller dogs are rated by their owners as more disobedient, more excitable (Bennett & Rohlf, 2007) and more nervous than large dogs (Kobelt et al., 2003). Small dogs are often bought in pet shops and at an early age, at 30-50 days old (Pirrone et al., 2015), and higher proportion of these dogs show behaviors like fear and anxiety in the adulthood (Pierantoni et al., 2011). According to Appleby and colleagues (2002) and Podberscek & Serpell (1997), fear and aggressive behaviors displayed by small dogs are often due to insufficient socialisation during first life months. Furthermore McGreevy and colleagues (2013) suggest a correlation between small size and some behavior problems probably increased through genetics in the process of breeding for smaller size.

Small dogs are often kept "under protection", picked up or carried in bags, probably because small dog owners may perceive their dogs as a baby and may have a less objective view of their behavior (Arhant et al., 2010). There is a high percentage of large dogs' owners who did not allow their dogs to get close to small ones, although maintaining that their animals did not show fear of small size dogs. This may be due to the possible consequences of a potentially dangerous interaction between dogs of very different sizes. Both owners of small and large dogs may be worried by such consequences and therefore avoid the meeting.

According to the results of the current study about meeting, several owners of large dogs approach without problem other dogs and their own dogs rarely showed fear. This may suggest that large dogs were more socialised than smaller ones, as confirmed by owners' belief of the need of intraspecific socialisation. Kobelt and colleagues (2003) report that larger dogs are more likely than small dogs to attend formal obedience training, perhaps because behavioral problems are considered to be more serious in larger dogs; this experience is likely to be responsible for a better socialisation. However, it is remarkable that also for large dogs a high percentage of owners did not consider intraspecific socialisation necessary for their dogs.

Medium size dogs' owners approached more easily other dogs, as they report their own dogs don't show fear in meeting neither large dogs nor small ones. In addition, the vast majority of medium size dogs had the opportunity to play off the leash with conspecifics.

Women and men distribution in this sample was unbalanced, with women being over-represented in all the three size group. Although the statistical analysis in the current study did not reveal any significant difference between the answers provided by women and men, it is likely that owners' gender may affect dogs' behavior. For instance, even assuming that men and women behave similarly, dogs tend to be more apprehensive towards males than towards females, suggesting that the physical appearance of males in itself is more threatening than that of females (Wells & Hepper, 1999). In addition, it must be taken into account that owners' personality affects dogs' behavior and temperament, with anxious, shiny and wavering owners having more aggressive dogs (Podberscek & Serpell, 1997).

## Conclusions

The findings of this study suggest that, depending on the size of the owned dog, owners behave in a statistically different way when meeting another dog. In detail, most owners of small dogs believe that their dogs do not need intraspecific socialisation, so they do not leave their dogs to play with other dogs of any sizes, especially for off-leash interactions. Also owners of large dogs often avoid meeting other dogs, whilst owners of medium size dogs more often allowed their pets to interact with conspecifics. The lack of social stimulation may have a strong impact on dog welfare and behavior. According to these findings, behaviorists should emphasize the importance of intraspecific socialisation to people who own or are going to acquire a small dog.

### *Code of ethics policy statement*

This survey study involved anonymous data collection and did not require approval.

### *Conflict of interest*

The authors declare no conflicts of interest.

## References

Appleby D.L., Bradshaw J.W.S., Casey R.A. Relationship between aggressive and avoidance behavior by dogs and their experience in the first six months of life. Vet. Rec. 2002; 150 (14): 434-438.

Arhant C., Bubna-Littitz H., Bartels A., Futschik A., Troxler J. Behavior of smaller and larger dogs: effects of training methods, inconsistency of owner behaviour and level of engagement in activities with the dog. Appl. Anim. Behav. Sci. 2010; 123: 131-142.

Bassi A., Alnot-Perronin M., Pierantoni L., Marelli S.P., Michelazzi M., Cannas S. Possible difference on dogs' and owners' behaviour related to the size of the animal. In: Proceedings of the 2010 European Veterinary Behavior Meeting (Ed.), 24-26 September 2010, Hamburg, D, pp. 159-160.

Beerda B., Shilder M.B.H., van Hooff J.A.R.A.M., de Vries H.W. Manifestation of chronic and acute stress in dogs. Appl. Anim. Behav. Sci. 1997; 52: 307-319.

Bennett P.C., Rohlf V.I. Owner-companion dog interactions: relationships between demographic variables, potentially problematic behaviors, training engagement and shared activities. Appl. Anim. Behav. Sci. 2007; 102: 65-84.

Blecker D., Hieber N., Kuhne F. Preliminary study of the impact of different dog features on human in public. J. Vet. Behav. 2013; 8: 170-174.

Casey R., 2002. Fear and stress. In: Horowitz D.F., Mills S.D. (Eds.), BSAVA Manual of Canine and feline Behavioural Medicine. BSVA, Gloucester, UK, pp. 144-153.

Clark G.I., Boyer W.N. The effects of dog obedience training and behaviour counseling upon the human-canine relationship. Appl. Anim. Behav. Sci. 1993; 37: 147-159.

DeLeeuw J.L. 2010. Animal shelter dogs: factors predicting adoption versus euthanasia. Department of Psychology at Wichita State University, Wichita, KS.

Duffy D.L., Hsu Y., Serpell J.A. Breed differences in canine aggression. Appl. Anim. Behav. Sci. 2008; 114: 441-460.

Gazzano A., Zilocchi M., Massoni E., Mariti, C. Dogs' features strongly affect people's feelings and behavior toward them. J. Vet. Behav. 2013; 8: 213-220.

Hetts S., Clark J.D., Calpin J.P., Arnold C.E., Mateo J.M. Influence of housing conditions on beagle behaviour. Appl. Anim. Behav. Sci. 1992; 34: 137-155.

Hiby E.F., Rooney N.J., Bradshaw J.W.S. Dog training methods: their use, effectiveness and interaction with behaviour and welfare. Anim. Welfare. 2004; 13: 63-69.

Kobelt A.J., Hemsworth P.H., Barnett J.L., Coleman G.J. A survey of dog ownership in suburban Australia-conditions and behaviour problems. Appl. Anim. Behav. Sci. 2003; 82: 137-148.

Mariti C., Ricci E., Zilocchi M., Gazzano A. Owners as a secure base for their dogs. Behaviour. 2013; 150: 1275-1294.

McGreevy P.D., Georgevsky D., Carrasco J., Valenzuela M., Duffy D.L., Serpell J.A. Dog Behavior Covaries with Height, Bodyweight and Skull Shape. PLoS ONE. 2013; 8 (12): e80529.

Notari L., Goodwin D. A survey of behavioural characteristics of pure-bred dogs in Italy. Appl. Anim. Behav. Sci. 2007; 103: 118-130.

Overall K.L. 2013. Manual of Clinical Behavioural Medicine for Dogs and Cats. Elsevier Mosby Publishing, St. Louis, MO.

Patronek G.J., Glickman L.T., Moyer M.R. 1995. Population dynamics and the risk of euthanasia for dogs in an animal shelter. Anthrozoos. 1995; 8 (1): 31-43.

Pierantoni L., Albertini M., Pirrone F. Prevalence of owner-reported behaviors in dogs separated from the litter at two different ages. Vet. Rec. 2011; 169 (18): 468-473.

Pirrone F., Albertini M., Mazzola S.M., Pierantoni L., Bavagnoli F., Vigo D. Correlation between the size of companion dogs and the profile of the owner: a cross-sectional study in Italy. Dog Behavior. 2015; 1: 23-33.

Podberscek A.L., Serpell J.A. Aggressive behaviour of English cocker spaniels and the personality of the owner. Vet Rec. 1997; 141(3): 73-76.

Posage J.M., Bartlett P.C., Thomas D.K. Determining factors for successful adoption of dogs from an animal shelter. J. Am. Vet. Med. Assoc. 1998; 213 (4): 478-482.

Řezáč P., Viziová P., Dobešová M., Havlíček Z., Pospíšilvá D. Factors affecting dog-dog interactions on walks with their owners. Appl. Anim. Behav. Sci. 2011; 134: 170-174.

Salman M.D., New J.G., Scarlett J.M., Kass P.H., Ruch-Gallie R., Hefts S. Human and animal factors related to relinquishment of dogs and cats in 12 selected animal shelters in the United States. J. Appl. Anim. Welf. Sci. 1998; 1: 207-226.

Shyan M.R., Fortune K.A., King C. Bark Parks – A study on Interdog Aggression in a limited-control environment. J. Appl. Anim. Welf. Sci. 2003; 6 (1): 25-32.

Spady T.C., Ostrander E.A. Canine behavioral genetics: pointing out the phenotypes and herding up the genes. Am. J. Hum. Genet. 2008; 82: 10-18.

Svartberg K., Forkman B. Personality traits in the domestic dog (Canis familiaris). Appl. Anim. Behav. Sci. 2002; 79: 133-135

Wells D.L., Hepper P.G. Male and female dogs respond differently to men and women Appl. Anim. Behav. Sci. 1999; 61: 341-349.

Westgarth C., Christley R.M., Pinchbeck G.L., Gaskell R.M., Dawson S., Bradshaw J.W.S. Dog behavior on walks and the effect on use the leash. Appl. Anim. Behav. Sci. 2010; 125: 38-46.

Westgarth C., Hayley E.C., Christley R.M. Factors associated with daily walking of dogs. BMC Vet. Res. 2015; 11:116.

# La taglia del cane influenza il comportamento e l'attitudine del proprietario durante le uscite col cane

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*Sintesi*

Questa ricerca ha avuto lo scopo di valutare possibili differenze nel comportamento dei cani e dei loro proprietari correlate alla taglia del cane durante le uscite quotidiane.

I proprietari compilarono un questionario contente domande personali e relative alle caratteristiche del cane (sesso, età, razza, taglia). Vi erano inoltre domande relative alla socializzazione intraspecifica del cane ed al comportamento del proprietario.

Nella presente ricerca sono stati coinvolti 240 cani di diverse razze, bilanciati per quanto riguarda il sesso e con un'età compresa tra 1 e 8 anni.

In base alla taglia dell'animale, i cani furono suddivisi in 3 gruppi: taglia piccola che comprendeva animali di peso inferiore a 10 Kg; taglia media, con cani di peso compreso tra 10 e 20 kg e taglia grande per animali con peso superiore ai 20 kg.

L'analisi statistica, condotta con il test $\chi^2$ ha evidenziato differenze significative nel comportamento dei proprietari dei cani appartenenti ai 3 gruppi, mentre camminano col proprio cane, qualora incontrino un cane di piccola taglia non conosciuto dal proprio ($p=0,022$) o un cane sconosciuto di grossa taglia ($p=0,049$).

I proprietari di cani ritengono che quelli di piccola taglia dimostrino più paura degli altri nei confronti di cani della stessa taglia ($p=0,062$) o di cani di grossa taglia ($p<0,001$).

I proprietari dei cani di piccola taglia permettevano, meno frequentemente degli altri, ai propri cani di giocare senza guinzaglio con altri cani ($p=0,002$) ed erano più frequentemente dell'opinione che i propri cani non avessero necessità di socializzazione con altri cani ($p=0,002$).

In base a questi risultati i comportamentalisti dovrebbero enfatizzare l'importanza della socializzazione intraspecifica, soprattutto per quanto riguarda i cani di piccola taglia.

# Effects of physical activity on dog behavior

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*Abstract*: In order to investigate the effects of physical activity on dog behavior, a questionnaire divided into 4 sections was used. Based on the 234 questionnaires collected, it was possible to create two groups: active dogs group (AD) made up of 94 subjects who performed a sport and a group of 140 sedentary dogs (SD). Compared to the SD group, dogs in the AD group showed significantly more behaviors like: "Chasing vehicles and persons" and "Staring an object" but fewer behaviors like: "Turning on itself" and "Mounting". These behaviors are sometimes indicators of a state of stress that can be caused by frustration. Physical activity, especially if carried out through sports, requires that the animal develops a remarkable ability to cope with frustration and to maintain the self-control. This could be the reason why these behaviors are less expressed by dogs belonging to the AD group. This effect is even greater in dogs that practice agility compared to other subjects of the sample, probably also because of the use of positive reinforcement during training for this sport. Dogs that practice agility show, with a statistically significant frequency, a lower tendency to be aggressive towards other dogs. A possible explanation may lie in the better intra-specific socialization to which these animals are subjected, having frequent contact with other dogs during sporting events.

A difference between the AD and SD group also exists for the other two behaviors: "Chasing vehicles/bicycles/persons" and "Staring an object" which are expressed more in the AD group. We cannot exclude that these results may be caused by the high number of Border Collies that are present in the sample. In conclusion, these preliminary data seem to suggest a possible influence of physical activity on dog behavior, with positive effect about some undesirable behaviors that are less expressed. Special attention should be paid to those behaviors that the selection often magnified for utilitarian purposes, because the dog was used for particular tasks.

*Key Words*: physical activity; dog; behavioral problems.

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## Introduction

The most common reason for owning a dog in the Western world is companionship (Bennett et al., 2007; Staats et al., 2008). This intense relationship is sometimes put at risk by the onset of unwanted behaviors in dogs. Behaviors that owners find problematic are widespread in the domestic dog population (Wells & Hepper, 2000; Bradshaw et al., 2002; Kobelt et al., 2003; Hiby et al., 2004) and can become a common cause of dogs being abandoned and sent to the shelters (Miller et al., 1996; Serpell, 1996; Marston & Bennett, 2003; Shore et al., 2003; Shore, 2005). It has been estimated that up to 90% of dogs may exhibit behaviors that their owners find unacceptable (Vacalopoulos & Anderson, 1993). So-called 'behavior problems' can be a huge source of distress for owners and for many the only solution seems to lie in handing the animal over to the care of a rescue shelter (e.g. Patronek et al., 1995; Salman et al., 1998). Over 30% of dogs relinquished by their owners to rescue shelters are abandoned because of behavior problems (Wells, 1992).

Although genetic factors clearly predispose individual dogs to develop particular behavioral phenotypes (Overall et al., 2006), environmental factors also can have a profound effect (Appleby et al., 2002).

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Previous studies have reported an association between reduced prevalence of undesirable behaviors in pet dogs and attendance at obedience training classes (Clark & Boyer, 1993; Jagoe & Serpell, 1996) or engagement with any form of training (Kobelt et al., 2003; Bennett & Rohlf, 2007).

In addition, Hiby et al. (2004) found significantly fewer behavior problems in dogs that had been trained using rewards only, as compared with dogs that had been trained using some form of punishment only, or a combination of both.

Following on from the results of these previous studies, sport activity could have a positive effect in reducing the occurrence of undesirable behaviors in dogs. Thus, the aim of this research was to evaluate the effect of physical activity on dog behavior.

## Material and methods

In order to investigate the effects of physical activity on dog behavior, a questionnaire divided into 4 sections was used. The first section of the questionnaire regarded the dog (sex, age, reproductive status, origin), the second the owner (sex, age, level of education, profession), a third section concerned the dog management (time spent outside, type of physical activity etc.) and in a final part, 44 multiple-choice questions about dog behavior and their frequency of display (often, sometimes or never) were asked.

The questionnaires were collected between the months of May 2014 and January 2015; all animals were, at the time of the survey, older than a year. Statistical analysis of the data was performed with the $\chi^2$ test.

Based on the 234 questionnaires collected, it was possible to create two groups: active dogs group (AD) made up of 94 subjects who performed a sport such as agility (22.6%), the mobility (5.6%), the dog dance (2.1%), the obedience (10.1%), search and rescue (5.1%) or other activities and a group of 140 sedentary dogs (SD). In AD groups, 39 dogs were Border Collies, while in the SD group 14.

Table 1 shows characteristics of the subjects in both groups.

The statistical analysis did not reveal significant differences as regards the characteristics of the two groups which may constitute interfering factors for the research.

Table 1. Characteristics of the dogs belonging to the groups examined.

| | **Active dogs N = 94** | **Sedentary dogs N = 140** |
|---|---|---|
| **Dog mean age ± S.D. (months)** | 46.11 ± 33.86 | 62.57 ± 44.31 |
| **Male /female dogs (n)** | 41/53 | 74/66 |
| | $\chi^2 = 1.569$; $p = 0.21$ | |
| **Male dogs castrated (%)** | 8.5 | 8.6 |
| **Female dogs neutered (%)** | 31.9 | 28.6 |
| **Daily walks in working days (n)** | Owner percentage | |
| **Up to 3** | 57.4 | 52.9 |
| **More than 3** | 36 | 39.3 |
| **Never** | 6.4 | 7.1 |
| | $\chi^2 = 0.344$; $p = 0.84$ | |
| **Lenght of daily walks** | Owner percentage | |
| **More than 1hour** | 57.4 | 45 |
| **Less than 1 hour** | 42.6 | 55 |
| | $\chi^2 = 3.005$; $p = 0.08$ | |
| **Time devolved to play with the dog** | Owner percentage | |
| **Never** | 2.12 | 3.57 |
| **Up to 1 hour** | 79.78 | 80 |
| **More than 1 hour** | 18.08 | 16.43 |
| | $\chi^2 = 0.482$; $p = 0.79$ | |

## Results

The percentages of dogs of two groups showing undesiderable behaviors are reported in table 2. Compared to the SD group, dogs in the AD group showed significantly more behaviors like: "Chasing vehicles and persons" and "Staring an object" but fewer behaviors like: "Turning on itself" and "Mimicking sexual intercourse".

Table 2. Percentages of dogs of two groups showing undesirable behaviors.

| **Questions** | **Often/ Sometimes** | | |
|---|---|---|---|
| | Active dogs | Sedentary dogs | $\chi^2$; $p$ |
| Urinating indoors in large quantities | 11,7% | 17.1% | n.s. |
| Urinating in the house in small quantities | 9.6% | 15.7% | n.s. |
| Defecating in the house | 8.5% | 12.1% | n.s. |
| Making too many greetings to the owners when they return | 75.5% | 82.1% | n.s. |
| Jumping up to the owners (not on their return) | 56.4% | 58.6% | n.s. |
| Jumping up to other persons | 48.9 | 49.3% | n.s. |
| Digging | 50.0% | 48.6% | n.s. |
| Escaping from home | 10.6% | 9.3% | n.s. |
| Not obeying the commands (sit, down, etc.) | 51.1% | 62.9% | n.s. |
| Not coming back when it is called | 53.2% | 57.9% | n.s. |
| Chewing objects | 46.8% | 51,4% | n.s. |
| Licking parts of people's bodies | 29.8% | 20,7% | n.s. |
| Insistently licking the mouth of the owner | 31.9% | 34,3% | n.s. |
| Persistently licking other body parts of the owners | 53.2% | 50.0% | n.s. |
| Chasing vehicles / bicycles / persons | 29.8% | 18.6% | 3.98; 0.046 |
| Scavenging | 40.4% | 43.6% | n.s. |
| Eating their own feces | 6.4% | 10.7% | n.s. |
| Eating feces of other dogs | 18.1% | 22.9% | n.s. |
| Barking if left alone | 33.0% | 43-6% | n.s. |
| Destroying items if left alone | 26.6% | 31.4% | n.s. |
| Insistently barking (not alone) | 38.3% | 40.7% | n.s. |
| Destroying (not alone) | 10.6% | 15.0% | n.s. |
| Pulling on a leash | 70.2% | 72.1% | n.s. |
| Insistently licking him/herself | 34.0% | 42.9% | n.s. |
| Staring an object | 37.2% | 19.3% | 9.30; 0.002 |
| Shadow chasing | 6.4% | 12.9% | n.s. |
| Turning on itself | 12.8% | 27,9% | 7.51; 0.006 |
| Chasing his/her tail | 16.0% | 15.7% | n.s. |
| Repeating some action insistently | 24.5% | 20.7% | n.s. |
| Mounting | 25.5% | 40.7% | 5.73; 0.017 |
| Being very agitated and excitable | 66.0% | 64.3% | n.s. |
| Chasing cats | 70.2% | 57.9% | n.s. |
| Barking at other dogs | 61.7% | 70.0% | n.s. |
| Attempting to bite other dogs | 21.3% | 27.1% | n.s. |
| Piloerection when he meets other dogs | 47.9% | 49.3% | n.s. |

| Questions | Often/ Sometimes | | |
|---|---|---|---|
| | Active dogs | Sedentary dogs | $\chi^2$; $p$ |
| Growling at other dogs | 54.3% | 51.4% | n.s. |
| Reacting aggressively when touched on the head | 3.2% | 6.4% | n.s. |
| Reacting aggressively when forced to do something he/she does not want | 5.3% | 6.4% | n.s. |
| Aggressive behavior when scolded | 5.3% | 11.4% | n.s. |
| Disliking to be stroked | 18.1% | 18.6% | n.s. |
| Showing fear of the veterinarian/veterinary clinic | 54.3% | 61.4% | n.s. |
| Defending his territory | 33.0% | 39.3% | n.s. |
| Defending one or more objects (e. g. toys, food bowl) | 31.9% | 40.7% | n.s. |

The dogs of the AD group practicing agility show behavioral differences compared to the other subjects of the sample and the data are reported in Table 3. These animals have a greater tendency to exhibit "Staring an object" behavior but they show few behaviors such as "Turning on itself", "Mounting" and "Attempting to bite other dogs".

Table 3. Undesirable behaviors showed, with statistical significant difference, by dogs performing agility.

| Questions | Often/ Sometimes | | |
|---|---|---|---|
| | Agility dogs | Other dogs | $\chi^2$; $p$ |
| Staring an object | 39.6% | 22.6% | 6.06; 0.04 |
| Turning on itself | 7.55% | 25.97% | 8.16; 0.04 |
| Mimicking sexual intercourse | 22.64% | 38.12% | 4.34; 0.037 |
| Attempting to bite other dogs | 13.2% | 28.2% | 4.93; 0.026 |

## Discussion

Many companion dogs occupy a privileged position in our society, living closely with human caretakers while others are relinquished to shelters or abandoned, often because they exhibit undesirable behaviors. Potentially problematic behaviors fall into five factors: disobedience, unfriendliness/aggression, nervousness, anxiety/destructiveness and excitability. (Bennet & Rohlf, 2007).

The results of this research show that dogs performing physical activity exhibited, with a statistically lower frequency, undesirable behaviors like: "Turning on itself" and "Mounting". These behaviors are sometimes indicators of a state of stress that can be caused by frustration (Mariti et al., 2012). Physical activity, especially if carried out through sports, requires that the animal develops a remarkable ability to cope with frustration and to maintain the self-control. This could be the reason why these behaviors are less expressed by dogs belonging to the AD group. This effect is even greater in dogs that practice agility compared to other subjects of the sample, probably also because of the use of positive reinforcement during training for this sport (Blackwell et al., 2008).

Moreover, dogs that practice agility show, with a statistically significant frequency, a lower tendency to be aggressive towards other dogs. A possible explanation may lie in the better intra-specific socialization to which these animals are subjected, having frequent contact with other dogs during sporting events.

A difference between the AD and SD group also exists for the other two behaviors: "Chasing vehicles/bicycles/persons" and "Staring an object" which are expressed more in the AD group. We cannot exclude that these results may be caused by the high number of Border Collies that are present in the sample. The Border Collie is in fact a breed that is typically selected to lead the flocks

and bring them to the desired location by the shepherd. This genetically selected behavior proves very useful in sporting disciplines because it allows the dog to maintain a great attention on the handler and it is intensely reinforced.

Also the behavior of chasing vehicles/ bicycles and persons is part of the special ethogram of the Border collie that, chasing the sheep must lead, proposes a behavior similar to the predatory behavior of the wolf. Probably this behavior has been not showed by dogs performing agility because this sport discipline requires an elevated level of training which allows controlling undesirable or even dangerous behavior such as chasing vehicles or people.

In conclusion, these preliminary data seem to suggest a possible influence of physical activity on dog behavior, with positive effect about some undesirable behaviors that are less expressed. Special attention should be paid to those behaviors that the selection often magnified for utilitarian purposes, because the dog was used for particular tasks.

A careful animal management, beginning in the puppyhood (Gazzano et al., 2008), should limit the expression of these behaviors that are considered undesirable by many owners.

## References


Appleby D., Bradshaw J.W.S., Casey R.A. Relationship between aggressive and avoidance behavior by dogs and their experience in the first six months of life. Vet. Rec. 2002; 150: 434-438.

Bailey G. Parting with a pet survey. Blue Cross Publication, BlueCross, Burford, Oxon, U.K. 1992.

Bennett P.C., Cooper N., Rohlf V.I., Mornement K. Factors influencing satisfaction with companion-dog-training facilities. J. Appl. Anim. Welf. Sci. 2007; 10: 217-241.

Bennett P.C., Rohlf, V.I. Owner-companion dog interactions: relationships between demographic variables and potentially problematic behaviors, training engagement and shared activities. Appl. Anim. Behav. Sci. 2007; 102: 65-84.

Blackwell E.J., Twells Caroline, Seawright A., Casey R.A. The relationship between training methods and the occurrence of behavior problems, as reported by owners, in a population of domestic dogs. J. Vet. Behav. Clin. Appl. Res. 2008; 3: 207-217.

Bradshaw J.W.S., McPherson J.A., Casey R.A., Larter I.S. Aetiology of separation-related behavior in domestic dogs. Vet. Rec. 2002; 151: 43-46.

Clark G.I., Boyer M.N. The effects of dog obedience training and behavioral councelling upon the human-canine relationship. Appl. Anim. Behav. Sci. 1993; 37: 147-159.

Gazzano A., Mariti C., Alvares S., Cozzi A., Tognetti R., Sighieri C. The prevention of undesirable behaviors in dogs: effectiveness of veterinary behaviorists' advice given to puppy owners. J. Vet. Behav. Clin. Appl. Res. 2008; 3: 125-133.

Hiby E.F., Rooney N.J., Bradshaw J.W.S. Dog training methods: their use, effectiveness and interaction with behavior and welfare. Anim. Welf. 2004; 13: 63-69.

Jagoe A., Serpell J. Owner characteristics and interactions and the prevalence of canine behavior problems. Appl. Anim. Behav. Sci. 1996; 47: 31-42.

Kobelt A.J., Hemsworth P. H., Barnett J.L., Coleman G.J. A survey of dog ownership in suburban Australia: conditions and behavior problems. Appl. Anim. Behav. Sci. 2003; 82: 137-148.

Mariti C., Gazzano A., Lansdown Moore J., Baragli P., Chelli L., Sighieri C. Perception of dogs' stress by their owners. J. Vet. Behav. Clin. Appl. Res. 2012; 7: 213-219.

Mariti C., Ricci E., Carlone B., Moore J.L., Sighieri C., Gazzano A. Dog attachment to man: A comparison between pet and working dogs. J. Vet. Behav. Clin. Appl. Res. 2013; 8: 135-145.

Marston L.C., Bennett P.C. Reforging the bond towards successful canine adoption. Appl. Anim. Behav. Sci. 2003; 83: 227-245.

Miller D.D., Staats S.R., Partlo C., Rada K. Factors associated with the decision to surrender a pet to an animal shelter. J. Am. Vet. Med. Assoc. 1996; 209: 738-742.

Overall K.L., Hamilton S.P., Chang M.L. Understanding the genetic basis of canine anxiety: phenotyping dogs for behavioral, neurochemical and genetic assessment. J. Vet. Behav. Clin. Appl. Res. 2006; 1: 124-141.

Patronek G.J., Glickman L.T., Moyer M.R. Population dynamics and the risk of euthanasia for dogs in an animal shelter. Anthrozoos 1995; 8: 31-43.
Salman M.D., New J.G., Scarlett J.M., Kass P.H., Ruch-Gallie R., Hetts S. Human and animal factors related to the relinquishment of dogs and cats in 12 selected animal shelters in the United States. J. Appl. Anim. Welf. Sci. 1998; 1: 207–226.
Serpell J.A. Evidence for an association between pet behavior and owner attachment levels. Appl. Anim. Behav. Sci. 1996; 47: 49-60.
Shore E. R., Petersen C.L., Douglas D.K. Moving as a reason for pet relinquishment: a closer look. J. Appl. Anim. Welf. Sci. 2003; 6: 39-52.
Shore E.R., Returning a recently adopted companion animal: adopters' reasons for and reactions to the failed adoption experience. J. Appl. Anim. Welf. Sci. 2005; 8: 187-198.
Staats S., Wallace H., Anderson T. Reasons for companion animal guardianship (pet ownership) from two populations. Soc. Anim. 2008; 16: 279-291.
Vacalopoulos A., Anderson R.K. Canine behaviour problems reported by clients in a study of veterinary hospitals. Appl. Anim. Behav. Sci. 1993; 37: 84.
Wells D.L., Hepper P.G. The behaviour of dogs in a rescue shelter. Anim. Welf. 1992; 1: 171-186.
Wells D.L., Hepper P.G. Prevalence of behaviour problems reported by owners of dogs purchased from an animal rescue shelter. Appl. Anim. Behav. Sci. 2000; 69: 55-65.

## Effetto dell'attività fisica sul comportamento del cane

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*Sintesi*

Per valutare l'effetto dell'attività fisica sul comportamento del cane, è stato utilizzato un questionario suddiviso in 4 sezioni. Sulla base dei 234 questionari compilati, è stato possibile creare due gruppi: il gruppo dei cani fisicamente attivi (AD), costituito da 94 soggetti che praticavano un'attività sportiva ed un gruppo di cani sedentari (SD) comprendente 140 soggetti.

I cani del gruppo AD esibivano maggiormente, in modo statisticamente significativo, comportamenti come "Inseguire veicoli e persone" e "Fissare un oggetto". Erano invece meno espressi comportamenti come "Girare su se stesso" e "Mimare l'atto sessuale". Questi comportamenti possono essere, talvolta, indicatori di uno stato di stress causato dalla frustrazione. L'attività fisica, specialmente se effettuata attraverso lo sport, richiede che l'animale sviluppi una notevole abilità a gestire la frustrazione e a mantenere l'autocontrollo. Potrebbe essere questo il motivo per cui questi comportamenti sono meno espressi dai cani del gruppo AD. Questo effetto si manifesta in modo ancora più evidente nei cani che praticano agility, rispetto agli altri soggetti del campione, probabilmente anche a causa dell'utilizzo di rinforzi positivi durante il training per questo sport.

Inoltre i cani che praticano agility mostrano, in modo statisticamente significativo, una minor tendenza ad essere aggressivi verso altri cani. Una possibile spiegazione potrebbe risiedere nella miglior socializzazione intraspecifica a cui questi animali sono sottoposti, avendo frequenti contatti con altri cani durante gli eventi sportivi.

Per quanto riguarda i comportamenti: "Inseguire veicoli e persone" e "Fissare un oggetto", che sono maggiormente espressi dal gruppo AD, non possiamo escludere che questi risultati possano essere dovuti all'alto numero di Border Collie presenti nel campione.

In conclusione, questi risultati preliminari sembrano suggerire l'esistenza di una possibile influenza dell'attività fisica sul comportamento del cane, con un positivo effetto su alcuni comportamenti indesiderabili che sono meno espressi negli animali che praticano sport.

Un'attenzione particolare andrà posta nella gestione di quei comportamenti che la selezione ha ingigantito per ragioni di utilità, legate al particolare compito lavorativo che il cane svolgeva.

# Behavioral differences among Belgian Shepherd Dogs varieties

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*Abstracts*: The aim of the current research was to assess whether Groenendael (G), Tervueren (T) and Malinois (M) varieties of Belgian Shepherd behave differently one from another. The survey was carried out by using a questionnaire filled in by 88 Belgian Shepherd dog owners recruited by personal contacts.

Groenendal dogs seem to show a lower arousal, as they were reported to exhibit the following behaviors less than other varieties: exaggerated greeting to owners returning home (G 57.6%, M 88.0%, T 73.3%; $\chi^2$=6.542; p=0.038), digging (G 15.2%, M 48.0%, T 30.0%; $\chi^2$=7.378; p=0.025) and raising hair when meeting other dogs (G 24.2%, M 60.0%, T 46.7%; $\chi^2$=7.863; p=0.020). Malinois dogs instead displayed the following behavior more: scavenging (G 12.1%, M 36.0%, T 13.3%; $\chi^2$=6.250; p=0.044), coprophagia (G 6.1%, M 24.0%, T 3.3%; $\chi^2$=7.342; p=0.025), raising hair when meeting other dogs and defending the territory (G 36.4%, M 64.0%, T 30.0%; $\chi^2$=7.169; p=0.028). Moreover Malinois dogs showed less fear of thunderstorms ($\chi^2$=5.317; p=0.070) and loud noises ($\chi^2$=6.403; p=0.041) than other two varieties. Potentially new owners should be advised by breeders, veterinarians and animal behaviorists about behavioral characteristics of different canine breeds and even varieties within breeds, as a correct match between dog and owner features reduces the risk of unsuccessful adoptions.

*Key Words*: behavior; Belgian Shepherd; breed; dog.

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## Introduction

Dogs are animals living a long time in contact with the human being and they are able to develop a strong attachment bond (Mariti et al., 2013). Despite some canine morphologies are present for many centuries, only recently dog breeds have been clearly identified. In Belgium, at the end of the 1800s, there were many herding dogs, whose type was varied and whose coats were extremely dissimilar. In order to rationalize this state of affairs, some enthusiastic dog fanciers formed a group and sought guidance from Prof. A. Reul of the Cureghem Veterinary Medical School, whom one must consider to have been the real pioneer and founder of the Belgian Shepherd Dog. On September 29th, 1891, the Belgian Shepherd Dog Club (Club du Chien de Berger Belge) was founded in Brussels. By April 3rd, 1892, a first detailed breed standard had already been drawn up, but the type and temperament had been established by 1910 (F.C.I.-Standard No 15/ 19.04.2002 /GB). Although it had been selected as a shepherd dog, nowadays this breed is employed in many activities such as guarding, police dogs for patrol, drug and explosive detection and sport (e.g. agility, obedience and mondioring). However the number of Belgian Shepherd Dogs as pets is growing (Aubry, 1977; Bossi, 1977; De Wailly & Varlet, 1994; Surget, 2002). Within the breed 4 varieties are recognized: Groenendael, Lakenois, Tervueren and Malinois.

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## Aim

The aim of the current research was to assess whether Groenendael, Tervueren and Malinois varieties of Belgian Shepherd behave differently one from another.

## Subjects, materials and methods

The survey was carried out by using a questionnaire filled in by 88 Belgian Shepherd dog owners recruited by personal contacts. They owned the following varieties: 33 Groenendael (G: 66.7% females and 33.3% males), 30 Tervueren (T: 72.0% females and 28.0% males), and 25 Malinois (M: 66.7% females and 33.3% males).

Forty-three multiple-choice items about dog behavior and their frequency of display (often, sometimes or never; see table 1) were asked, plus 3 questions concerning dogs' fear (see Fig. 1). Data obtained for the three groups were compared through the $\chi^2$ test ($p<0.05$).

## Results

Results are showed in Table1 and Figure 1.

Tab. 1. Percentages of BS dogs showing the investigated undesirable behaviors.

| **Questions** | **Groenendal %** | | **Malinois %** | | **Tervueren %** | |
|---|---|---|---|---|---|---|
| | Often | Sometimes | Often | Sometimes | Often | Sometimes |
| Urinating in the house in big amount | 3.0 | 12.1 | 0.0 | 4.0 | 0.0 | 10.0 |
| Urinating in the house in small sprays | 0.0 | 3.0 | 0.0 | 8.0 | 0.0 | 10.0 |
| Defecating in the house | 3.0 | 18.2 | 0.0 | 12.0 | 0.0 | 0.0 |
| Jumping over owners when they come back home | 24.2 | 33.3 | 16.0 | 72.0 | 43.3 | 30.0 |
| Jumping over owners (not when just home) | 12.1 | 42.4 | 12.0 | 32.0 | 23.3 | 33.3 |
| Jumping over other people | 12.1 | 39.4 | 8.0 | 28.0 | 6.7 | 43.3 |
| Digging | 6.1 | 9.1 | 4.0 | 44.0 | 3.3 | 26.7 |
| Escaping from home | 3.0 | 18.2 | 4.0 | 4.0 | 0.0 | 3.3 |
| Not obeying basic commands (sit, down etc.) | 3.0 | 42. | 0.0 | 32.0 | 3.3 | 26.7 |
| Not answering to the recall | 6.1 | 36.4 | 0.0 | 32.0 | 3.3 | 26.7 |
| Chewing objects | 9.1 | 36.4 | 12.0 | 52.0 | 6.7 | 20.0 |
| Chewing on owners' body parts | 0.0 | 27.3 | 0.0 | 28.0 | 0.0 | 20.0 |
| Insistently licking owner's mouth | 6.1 | 12.1 | 8.0 | 28.0 | 16.7 | 16.7 |
| Insistently licking owner's other body parts | 12.1 | 15.2 | 4.0 | 20.0 | 3.3 | 30.0 |
| Chasing vehicles/bikes/people | 6.1 | 21.2 | 4.0 | 28.0 | 10.0 | 20.0 |
| Scavenging | 6.1 | 6.1 | 8.0 | 28.0 | 3.3 | 10.0 |
| Eating his/her own faeces | 0.0 | 6.1 | 0.0 | 8.0 | 0.0 | 6.7 |
| Eating faeces of other dogs | 0.0 | 6.1 | 4.0 | 20.0 | 0.0 | 3.3 |
| Barking when left alone | 3.0 | 45.5 | 4.0 | 40.0 | 0.0 | 43.3 |
| Destroying when left alone | 9.1 | 18.2 | 4.0 | 16.0 | 0.0 | 20.0 |
| Insistently barking (not when left alone) | 6.1 | 12.1 | 8.0 | 24.0 | 0.0 | 26.7 |
| Destroying (not when left alone) | 0.0 | 9.1 | 0.0 | 12.0 | 0.0 | 3.3 |

| Questions | Groenendal % | | Malinois % | | Tervueren % | |
|---|---|---|---|---|---|---|
| | Often | Sometimes | Often | Sometimes | Often | Sometimes |
| Pulling on the leash | 18.2 | 27.3 | 16.0 | 40.0 | 10.0 | 40.0 |
| Insistently licking him/herself | 3.0 | 18.2 | 8.0 | 20.0 | 0.0 | 23.3 |
| Having a fixed idea on something | 0.0 | 9.1 | 0.0 | 16.0 | 0.0 | 16.7 |
| Shadow chasing | 0.0 | 0.0 | 0.0 | 4.0 | 0.0 | 3.3 |
| Circling | 0.0 | 15.2 | 4.0 | 8.0 | 0.0 | 6.7 |
| Chasing his/her tail | 0.0 | 6.1 | 0.0 | 4.0 | 0.0 | 0.0 |
| Insistently repeating an action | 0.0 | 9.1 | 0.0 | 20.0 | 0.0 | 6.7 |
| Mounting | 0.0 | 39.4 | 4.0 | 20.0 | 3.3 | 26.7 |
| Being very excitable and restless | 6.1 | 60.6 | 28.0 | 44.0 | 23.3 | 46.7 |
| Chasing cats | 12.1 | 48.5 | 40.0 | 20.0 | 16.7 | 50.0 |
| Barking at other dogs | 15.2 | 51.5 | 16.0 | 52.0 | 20.0 | 50.0 |
| Attempting to bite other dogs | 6.1 | 15.2 | 4.0 | 28.0 | 3.3 | 40.0 |
| Raising hair when meeting other dogs | 3.0 | 21.2 | 16.0 | 44.0 | 10.0 | 36.7 |
| Growling at other dogs | 3.0 | 33.3 | 8.0 | 44.0 | 6.7 | 46.7 |
| Reacting aggressively when touched on the head | 6.1 | 3.0 | 0.0 | 4.0 | 0.0 | 3.3 |
| Reacting aggressively when forced to do something he/she does not want | 3.0 | 6.1 | 0.0 | 12.0 | 0.0 | 3.3 |
| Reacting aggressively when scolded | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Disliking to be stroked | 3.0 | 12.1 | 4.0 | 0.0 | 3.3 | 3.3 |
| Showing fear of veterinarian/clinic | 6.1 | 18.2 | 4.0 | 20.0 | 6.7 | 40.0 |
| Disliking people, especially strangers, entering his/her territory | 3.0 | 33.3 | 16.0 | 48.0 | 0.0 | 30.0 |
| Defending an object | 3.0 | 21.2 | 4.0 | 40.0 | 6.7 | 26.7 |

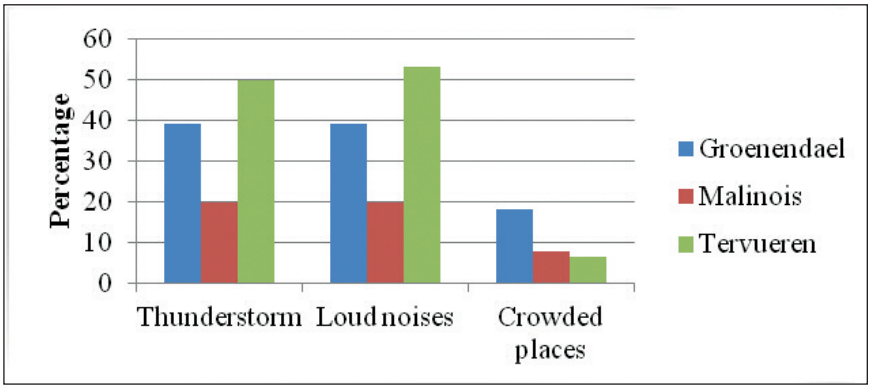


Fig. 1. Percentages of BS dog varieties showing fear of thunderstorms, loud noises and crowded places.

In detail, Groenendal dogs seem to show a lower arousal, as they were reported to exhibit the following behaviors less than other varieties: exaggerated greeting to owners returning home (G 57.6%, M 88.0%, T 73.3%; $\chi^2$=6.542; p=0.038), digging (G 15.2%, M 48.0%, T 30.0%; $\chi^2$=7.378; p=0.025) and raising hair when meeting other dogs (G 24.2%, M 60.0%, T 46.7%; $\chi^2$=7.863; p=0.020). Malinois dogs instead displayed the following behavior more: scavenging (G 12.1%, M 36.0%, T 13.3%; $\chi^2$=6.250; p=0.044), coprophagia (G 6.1%, M 24.0%, T 3.3%; $\chi^2$=7.342; p=0.025), raising hair when meeting other dogs and defending the territory (G 36.4%, M 64.0%, T 30.0%; $\chi^2$=7.169; p=0.028). Moreover Malinois dogs showed less fear of thunderstorms ($\chi^2$=5.317; p=0.070) and loud noises ($\chi^2$=6.403; p=0.041) than other two varieties.

## Discussion

These preliminary results suggest that the varieties of Belgian Shepherd Dogs differ both morphologically and behaviorally, especially for Malinois versus other varieties (as already suggested by Svartberg, 2006). The Belgian Shepherd dog has been selected since the beginning to be both a guardian and a herding dog. According to Ortega (1993), for the varieties with long hair (Tervueren and Groenendael) more attention has been paid to morphology and to maintain original attitude for shepherding; while for Malinois the goal of selection has been to obtain dogs prone to detection and defense. This difference could explain why Malinois dogs are very energetic, quick and vigilant; these characteristics are appreciated qualities for working dogs, but they may be excessive and difficult to be managed in an urban environment, where such dogs can become very sensitive and reactive (Ortega, 1993). Genetics appears to play a role in noise sensitivities (Levine, 2009), that could explain why varieties have a great difference in showing fear of loud noises and thunderstorms.

However, differences observed may be also related to dog management (Gazzano et al., 2008) Further research should be carried out to clarify this point and investigate other possible affecting factors such as dog sex and bloodlines.

## Conclusions

Potentially new owners should be advised by breeders, veterinarians and animal behaviorists about behavioral characteristics of different canine breeds and even varieties within breeds, as a correct match between dog and owner features reduces the risk of unsuccessful adoptions.

## References

Aubry J., 1977, Le Berger Belge, Vol. I, Ed. Crepin-Leblond Et Cie.

Bossi E., 1977, Histoire Et Standard Des Bergers Belges, Ed. Ouest-france s.d.

De Wailly P., Varlet M.A., 1994, Les Bergers Belges, Ed. Solar.

Gazzano A., Mariti C., Alvares S., Cozzi A., Tognetti R., Sighieri C. The prevention of undesirable behaviors in dogs: effectiveness of veterinary behaviorists' advice given to puppy owners. J.V.B. Clin. Appl. Res. 2008; 3: 125-133.

Levine E.D., 2009, Sound sentivities. In D.F. Horwitx and D.S. Mills eds.: BSAVA Manual of Canine and Feline Behavioural Medicine 2nd Ed., British Small Animal Veterinary Association.

Mariti C., Ricci E., Carlone B., Moore J. L., Sighieri C., Gazzano A. Dog attachment to man: A comparison between pet and working dogs. J. Vet. Behav. Clin Appl. Res. 2013; 8: 135-145.

Ortega J., 1993, Le Malinois Berger Belge, Ed. Atout Chien.

Surget Y., 2002, Le Chien De Berger Belge, Ed. Robert THENLOT.

Svartberg K. Breed-typical behavior in dogs: historical remnants or recent constructs? Appl. Anim. Behav. Sci. 2006; 96: 293-313.

# Differenze comportamentali tra le varietà della razza Pastore Belga

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Lo scopo della presente ricerca è stato quello di valutare se esistano differenze nel comportamento tra le tre varietà della razza Pastore Belga: Groenendael (G), Tervueren (T) e Malinois (M). L'indagine è stata svolta attraverso un questionario, appositamente preparato e compilato da 88 proprietari di Pastore Belga, reclutati attraverso un contatto diretto.

I cani della varietà Groenendal sembrano mostrare un livello di arousal inferiore poiché risultano esibire meno frequentemente i seguenti comportamenti: feste esagerate al ritorno a casa dei proprietari (G 57,6%, M 88,0%, T 73,3%; $\chi^2$=6,542; p=0,038), scavare buche (G 15,2%, M 48,0%, T 30,0%; $\chi^2$=7,378; p=0,025) e sollevare il pelo quando incontrano altri cani (G 24,2%, M 60,0%, T 46,7%; $\chi^2$=7,863; p=0,020).

I Pastori Belga Malinois mostravano più frequentemente i seguenti comportamenti: mangiare rifiuti (G 12,1%, M 36,0%, T 13,3%; $\chi^2$=6,25; p=0,044), coprofagia (G 6,1%, M 24,0%, T 3,3%; $\chi^2$=7,342; p=0,025), sollevare il pelo quando incontrano un altro cane e difesa del territorio (G 36,4%, M 64,0%, T 30,0%; $\chi^2$=7,169; p=0,028).

Inoltre i Pastori Belga Malinois mostravano in misura minore, rispetto alla altre due varietà, paura dei temporali ($\chi^2$=5,317; p=0,070) e dei rumori forti ($\chi^2$=6,40; p=0,041).

Le persone che hanno intenzione di diventare proprietari di un cane di questa razza dovrebbero ricevere adeguate informazioni relative al comportamento delle diverse varietà dagli allevatori, veterinari e comportamentalisti; ciò potrebbe contribuire alla realizzazione di una miglior relazione tra cane e proprietario e ridurre il rischio di abbandono.

# Clinical applications of pheromones in dogs

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*Abstract*: In dogs, six major sources of pheromones exist: the facial area, the pedal complex, the perianal complex, the genital complex and the mammary complex. In the prevention and treatment of canine behavioral disorders the synthetic analogue of dog appeasine, the Dog Appeasing Pheromone (DAP®) is frequently utilized. Many studies have demonstrated the utility of DAP® in the treatment of the separation related problems, sound sensitivity, adaptation to a new environment, transport-related behavior problems and in the protection of dog welfare in the shelter. Some criticisms have been made about method and procedures used, recognized as not appropriate to provide evidence of the effectiveness of DAP®. These criticisms were later countered but it is clear that the study of these particular substances requires careful methodological rigor, as many interfering factors may be present. Since DAP® is not systemically absorbed, there is no toxicity or side effects which allows for its safe use alone or combination with psychotropic drugs.

*Key Words*: dog appeasing pheromone; separation related problems, sound sensitivity.

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## Introduction

The term pheromones was coined in 1959 by Peter Karlson and Martin Luscher, who defined them as "substances which are secreted to the outside by an individual and received by a second individual of the same species, in which they release a specific reaction, for example a definite behavior or a developmental process" to define a substance secreted by an individual and received by a second subject of the same species in which it induces a behavioral or physiological change (Karlson & Lüscher, 1959).

In dogs, six major sources of pheromones exist (Pageat & Gaultier, 2003): the facial area, the pedal complex, the perianal complex, the genital complex and the mammary complex.

The area of the cheek and perioral glands brings together a whole set of secreting structures spread throughout the chin, lips, vibrissae, cheeks and ceruminous glands of the ear duct and of the external ear.

The pedal complex consists of the pedal glands of the four legs, structures present both in the plantar pads and in the skin of the interdigital region.

The perianal complex is formed by the supracaudal glands, the circumanal glands and the anal sacs. The genital complex includes sebaceous glands of the prepuce or the vulva and urethral or genital mucous glands together.

The mammary complex has been discovered in recent years. The first pheromone isolated in this area was in the sow and shortly thereafter the same kind of pheromones in bitches, mares, cows, ewes, queens and does was isolated. These pheromones, called appeasines for their appeasing action, are secreted by the sebaceous glands of the sulcus between the two mammary chains. The ap-

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peasines of the bitch have the same chemical structure as those of the other species; three fatty acids could be considered as the "mammal appeasing message": oleic acid, palmitic acid and linoleic acid, always associated in the same ratio. The other components could be considered as the species-specific message, which, in the bitch, are in the following order: myristic acid, lauric acid, pentadecanoic acid and stearic acid. The secretion appears 3 to 4 days after parturition and persists 2 to 5 days after the weaning of the puppies (about 4 months of age).

In the prevention and treatment of canine behavioral disorders the synthetic analogue of dog appeasine, the Dog Appeasing Pheromone (DAP®) is frequently utilized. Numerous researches have been carried out but some criticisms have been made about method and procedures used, recognized as not appropriate to provide evidence of the effectiveness of DAP® (Frank et al., 2010). These criticisms were later countered (Pageat et al., 2010) but it is clear that the study of pheromones requires careful methodological rigor, as many interfering factors may be present.

## DAP® and separation related problems

Among the behavioral disorders, the separation related problems are the ones that probably derive more benefit from the use of the pheromone. These disorders are quite common and account for approximately 40% of cases submitted to behavioral counseling. Pheromones have been proven effective in the treatment of separation related problems compared with Clomipramine: in a 2005 study (Gaultier et al., 2005), fifty-seven dogs that showed signs of distress when separated from their owners (destructiveness, excessive vocalization and house soiling) and hyperattachment were used in a randomized, blind trial to assess the potential value of DAP® in reducing those behaviors. For ethical reasons, there was no placebo group and the effects of the pheromone were compared with the effects of Clomipramine. The undesirable behaviors decreased in both groups but the overall assessment by the owners indicated that there was no significant difference between the two treatments, although there were fewer undesirable events in the dogs treated with DAP® and the administration of the pheromone appeared to be more convenient (Tab. 1).

Tab 1. Percentages of dogs reporting specific behavioral signs after 28 days treatment with DAP or Clomipramine (*significant difference p<0.05).

| Behavioral Signs | Clomipramine Dogs % | DAP Dogs % |
|---|---|---|
| Destruction | 70 | 73 |
| Vocalization | 67 | 67 |
| Defecation/urination | 67 | 40* |
| Sleeping problems | 22 | 23 |
| Excessive licking | 37 | 43 |
| Feeding problems | 33 | 57 |
| Hypersalivating/vomiting | 22 | 13 |
| Lack of adaption to change | 41 | 30 |

Another critical situation in which the dog can manifest separation problems is the hospitalization; even in this case the use of pheromones can have positive effects as shown by a research of Kim et al. (2010). The study assessed the effect of DAP® on 10 typical separation-related behavioral signs in hospitalized dogs. A DAP® treated group was compared with a placebo control group. There was overall amelioration of the signs, without 'vigilance' and 'anorexia' in the DAP-treated dogs; marked decreases were noted in elimination ($p = 0.038$), excessive licking ($p = 0.005$), and pacing ($p = 0.017$).

Hospitalization is often associated with the perioperative stress response, a physiologic reaction to surgery and various associated conditions (e.g. pain, analgesia and anesthesia-induced dysphoria, human handling and confinement to a hospital cage) that may be perceived as threatening by an animal. DAP® appears to affect behavioral and neuroendocrine perioperative stress responses by modification of lactotropic axis activity. A study (Siracusa et al., 2010) was performed on 46 dogs housed in animal shelters and undergoing elective orchiectomy or ovariohysterectomy. Intensive care unit cages were sprayed with DAP® solution or sham treated, with the carrier used in the solution, 20 minutes prior to use. Dogs (n = 24 and 22 in the DAP® and sham treatment exposure groups, respectively) were placed in treated cages for 30 minutes before and after surgery. Indicators of stress (i.e. alterations in behavioral, neuroendocrine, immune, and acute-phase responses) were evaluated perioperatively. Behavioral response variables, salivary cortisol concentration, WBC count, and serum concentrations of glucose, prolactin, haptoglobin, and C-reactive protein were analyzed. Behavioral response variables and serum prolactin concentration were influenced by DAP® exposure. Dogs exposed to DAP® were more likely to have alertness and visual exploration behaviors after surgery than dogs exposed to sham treatment. Decreases in serum prolactin concentrations in response to perioperative stress were significantly smaller in dogs exposed to DAP®, compared with findings in dogs exposed to the sham treatment. Variables examined to evaluate the hypothalamic-pituitary-adrenal axis, immune system, and acute-phase responses were unaffected by treatment.

DAP® can improve dog welfare also in the veterinary clinic as demonstrated by a research performed on 15 dogs (Mills et al., 2005). The behavior and emotional state of these dogs, known to be fearful of the veterinary clinic was evaluated during a standardized 5 min waiting room procedure and standardized 2 min consultation room procedure prior to a sham clinical examination, in the presence of DAP® and placebo. Subjects acted as their own controls and were semi-randomly allocated into treatment groups to control for order effects. A triple blinding procedure was used in order to remove bias from the assessment of video recordings of the dogs, with two independent raters used to analyze the video recordings of the behavior of dogs during the test procedures. The raters showed good, and similar, agreement in their evaluation of both the specific behavior of the dogs and their putative emotional state (relaxed, aroused and anxious). The results suggest that the use of DAP® in the clinic was associated with greater relaxation of the dogs but there was no effect on aggressive behavior during the clinical examination.

## DAP® and sound sensitivity

Some studies have shown the effectiveness of pheromones in the treatment of sensitivity to sound: many dogs are sensitive to loud noises such as fireworks or thunderstorms. Often the cases of sensitivity to noise are not referred, unless the symptomatology is not clear and the pathology does not entail big problems to the quality of life of the dog or of the owner. The most frequently reported symptoms are: tachypnea, tremors, restlessness and tendency to hide; more rarely episodes of destruction or inappropriate elimination are described. In a 2007 study (Levine et al., 2007) the efficacy of two self-help CD based desensitization and counter-conditioning programmes with the use of DAP®, the training progress and owner compliance were evaluated. Fifty-four dogs were recruited for an 8-week period of training and were separated into two treatment groups, each using a different CD based programme. After implementing the CD programme for the 8-week period without any personalized instruction, two telephone follow-up interviews were completed after periods during which fireworks are commonly used. Assessment of efficacy was measured using both owner reports of its natural response (i.e. the dog's behavior in the home) and video footage of behavior in response to a novel recording of the problem sound (i.e. the dog's behavior in the behavior clinic) pre- and post-treatment.

The majority of change with respect to the dogs' response to the CD occurred during the first month of training with no significant change during the second month of training. With respect to real exposures, there was a significant reported improvement at both follow-up interviews in both the total severity scores and the global fear scores. There was significant improvement in the mean severity score of all individual behaviors at the first follow-up with the exception of "vigilance" behavior. Inappropriate elimination was the only behavior to be completely resolved by the second follow-up. No difference was found in the video recordings of fear behaviors occurring in response to a novel CD recording pre-treatment versus post-treatment.

Sound-induced fear and anxiety can be ameliorated by using a DAP® collar. In a research of Landsberg et al. (2015), twenty-four beagle dogs, divided into two treatment groups (DAP® and placebo) balanced on their fear score in response to a thunderstorm recording, were exposed to two additional thunderstorm simulation tests on consecutive days. Dogs were video-assessed by a trained observer on a 6-point scale for active, passive and global fear and anxiety (combined). Both global and active fear and anxiety scores were significantly improved during and following thunder compared with placebo on both test days. DAP® significantly decreased global fear and anxiety across 'during' and 'post' thunder times when compared with baseline. There was no significant improvement in the placebo group from baseline on the test days (Landsberg et al., 2015).

## DAP® and new environment adaptation

Another situation potentially stressful for the dog is the adaptation to a new environment following the adoption, widely recognized as being stressful for a puppy, because it involves major changes. The puppy's maternal bond is broken and it is moved to a new social and physical environment with new rules (Elliot & Scott, 1961; Pettijohn et al., 1977; Serpell & Jagoe, 1995). The potential value of DAP® in reducing stress in puppies newly adopted from a pet shop was assessed in a research of Gautier et al. (2008). The trial was triple-blinded and placebo-controlled. After their arrival at the pet shop, 32 puppies were fitted with a DAP collar and 34 were fitted with a control collar, according to a randomisation protocol. Adopting owners were contacted by telephone, three and 15 days after they had adopted a puppy, to obtain information about the puppy's integration into the family, and particularly about any signs of distress shown by the puppy when it was socially isolated. All the isolated puppies from the control group vocalised during the first night. Signs of distress, particularly vocalization (Fig. 1), were significantly lower in the DAP® group on day 3 and throughout the rest of the study and vocalization during the night ceased significantly sooner in this group.

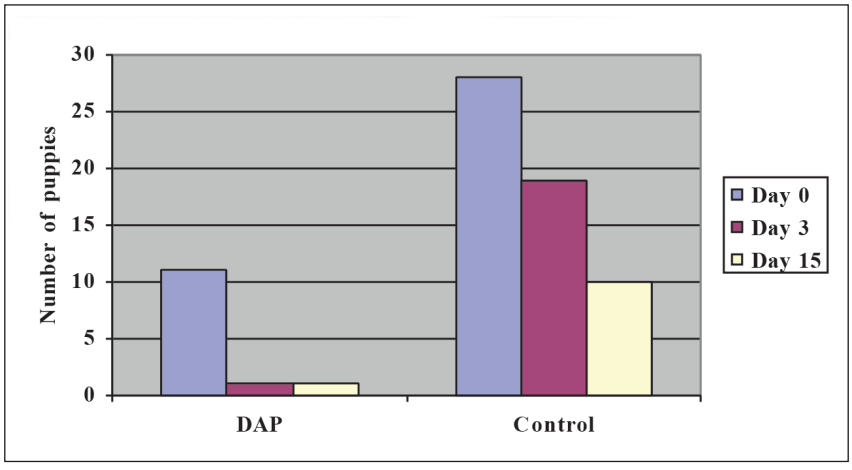


Fig. 1. Number of puppies showing vocalization in the control and DAP® group.

These differences were observed in puppies of small, medium and large breeds. The DAP® collars had no effect on the incidence of house soiling (Gaultier et al., 2008).

Adopting a puppy is successful only if its arrival enriches family life, but difficulties in coping with life in the new family setting may severely affect the development of the puppy's human-animal bond. Unexpected fear reactions towards new people and dogs will impair the puppy's social skills and may often compel owners to further restrict its social life. It therefore appears to be important to control any signs of fear displayed by puppies after their adoption. DAP® has been revealed useful for this purpose, as shown by a study realized in 2009 by Gaultier and colleagues. The study was triple-blinded, randomized and placebo-controlled. It used 66 puppies (32 fitted with a DAP® collar and 34 control) and the adoptive owners were contacted by phone three days and 15 days after they had adopted the puppy to question them about its reactions to specific situations eliciting fear. Fifteen days after the treatments significantly fewer of the puppies with the DAP® collars showed signs of fear when facing unfamiliar people at home and/or during outings. This difference was irrespective of breed size (Gautier et al., 2009).

Adaptation to a new socio-environment might represent a very hard step for sheltered dogs, because of a higher level of difficulty in coping with unfamiliar conditions. A study, performed by Osella and colleagues (Osella et al., 2015) investigated the effects of DAP® in dogs, adult and puppies, re-homed from rescue shelters. The study was designed as a prospective open-label clinical trial. Significant decreases were observed in adult dogs for wandering in the house restlessly ($p=0.022$) and hiding fearfully in protected corners ($p=0.033$), whereas in puppies treatment with DAP® significantly ($p<0.05$) improved the reaction towards unfamiliar dogs ($p=0.048$) and wandering in the house restlessly ($p=0.022$). In both adults and puppies a significant improvement in interaction with owners was observed. In particular, "looking continuously for the owners" and "following the owners everywhere like a shadow" were significantly improved ($p=0.0012$ and $0.0016$ respectively) in adult dogs. Separation reactions revealed a significant decrease ($p<0.05$) and in puppies the tendency to vocalize in absence of the owner was also significantly reduced ($p=0.0029$). Both adults and puppies showed a decreased tendency to wake suddenly in the night ($p=0.024$ and $p=0.026$ respectively) and wander around the home ($p=0.012$ and $p=0.026$ respectively). In contrast, for house-training no significant difference was reported in adults, whereas for puppies there was a significant decrease ($p<0.05$) in the mean scores for urination and/or defecation wherever in the house and after coming home. Data regarding the overall assessment suggested a significant improvement in all the efficacy variables considered in the study. The analysis of owners' degree of satisfaction at the final visit showed that DAP® treatment was considered successful by 84.4% of owners.

## DAP® and transport-related behavior problems

Transport-related behavior problems might be improved by spraying DAP® in the car, about 10 minutes prior to travel as shown by a double blinded study performed on 32 dogs. The effect of DAP® in comparison to a placebo spray over 5 trips of at least 15 minutes in length, was evaluated. There was a significantly improvement in the DAP® group. In the control group, no further improvement was seen after the second trip while the DAP® group improved throughout the 5 trips. There was a greater effect on physical signs (e.g. salivation, vomiting, urination and defecation) rather than behavioral signs (e.g. barking, motor activity) (Gaultier et al., 2003).

## DAP® in the shelter

DAP® might also be used to reduce stress of dogs in a shelter. Its behavioral effects were evaluated in adult dogs housed in a public animal shelter (Tod et al., 2005). Barking amplitude (dB) and

the frequency of discrete behavioral responses to two temperament tests associated with fear, separation and excitable behavior were recorded in 37 treatment and 17 control dogs. Mean barking amplitude and barking frequency were significantly reduced in dogs subject to DAP® exposure for 7 days ($p < 0.001$ and $p < 0.04$, respectively), though peak values were not significantly altered. There was also some reduction in the barking amplitude of dogs during the 1 min recovery period, following a distraction. Following 7 days of DAP® exposure, there were significant differences in resting ($p = 0.03$), barking ($p < 0.04$) and sniffing frequency ($p = 0.01$) (Fig. 2) in response to a friendly stranger. There were no highly significant differences in response to a neutral stranger.

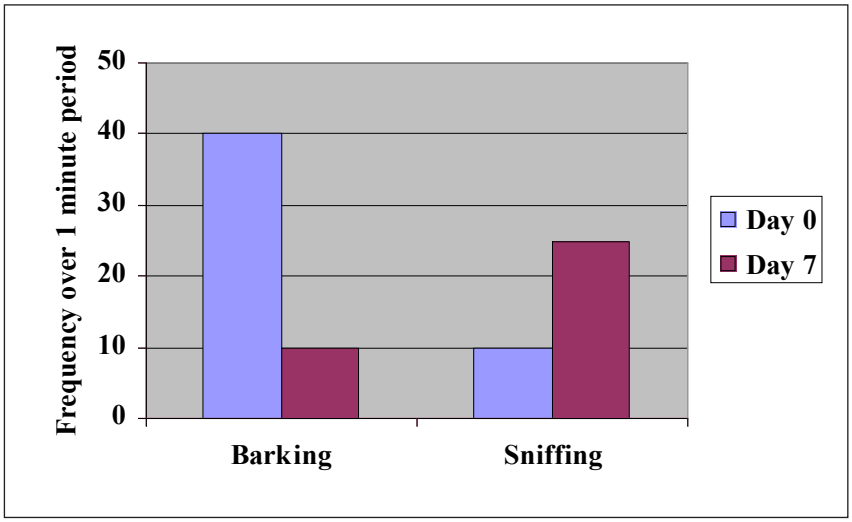


Fig. 2. Barking and sniffing frequency in dogs at day 0, before exposure to DAP®, and at day 7, following continuous exposure to DAP®, in response to friendly stranger test.

## Conclusion

Many studies confirm the utility of pheromones in the treatment and prevention of behavioral problems. Since they are not systemically absorbed, there is no toxicity or side effects, which allows for their safe use alone or combination with psychotropic drugs (Landsberg 2006).

## References

Elliot O., Scott J.P. The development of emotional distress reactions to separation in puppies. J. Genetic Psychol. 1961; 99: 3-22.

Frank D., Beauchamp G., Palestrini C. Systematic review of the use of pheromones for treatment of undesiderable behavior in cats and dogs. J.A.V.M.A. 2010; 236: 1308-16.

Gaultier E., Pageat P. Effects of a synthetic dog appeasing pheromone (DAP) on behavior problems during transport. In Seksel K., Perry G., Mills D. ed. Proceedings of the 4th International Behavior Meeting. Caloundra, Australia, Posta Graduate Foundation in Veterinary Sciences, Sidney. 2003; 33-35.

Gaultier E., Bonnafous L., Bougrat L., Lafont C, Pageat P. Comparison of the efficacy of a synthetic dog-appeasing pheromone with clomipramine for the treatment of separation-related disorders in dogs. Vet. Rec. 2005; 156: 533-538.

Gaultier E., Bonnafous L., Vienet-Legué D., Bougrat L., Lafont-Lecuelle C., Pageat P., Efficacy of dog-appeasing pheromone in reducing stress associated with social isolation in newly adopted puppies. Vet. Rec. 2008; 163: 73-80.

Gaultier E., Bonnafous L., Vienet-Legué D., Falewee C., Bougrat L., Lafont C., Pageat P. Efficacy of dog-appeasing pheromone in reducing behaviours associated with fear of unfamiliar people and new surroundings in newly adopted puppies. Vet. Rec. 2009; 164: 708-714.

Landsberg G. Why practioners should feel comfortable with pheromones: the evidence to support pheromone use. Proceedings of the North American Veterinary Conference. 2006; 20: 145-148.

Mills D., Ramos D., Estelles M., Hargrave C. A triple blind placebo-controlled investigation into the assessment of the effect of Dog Appeasing Pheromone (DAP) on anxiety related behavior of problem dogs in the veterinary clinic. Appl. Anim. Behav. Sci. 2006; 98: 114-126.

Osella M.C., Bergamasco L., Odore R., Beck A., Gazzano A. Adaptive mechanisms in dogs adopted from shelters: a behavioral assessment of the use of a synthetic analogue of the canine appeasing pheromone. Dog Behavior 2015; 2: 1-12.

Pageat P., Gaultier E. Current research in canine and feline pheromones. Vet. Clin. Small Anim. Pract. 2003; 33: 187-21.

Pageat P., Cozzi A., Lecuelle C. Questions methods used in review of pheromone treatments (Letter). J.A.V.M.A. 2010; 237: 624-625.

Pettijohn T.F., Wong T.W., Ebert P.D., Scott J. P. Alleviation of separation distress in 3 breeds of young dogs. Develop. Psychobiol. 1977; 10: 373-381.

Serpell J., Jagoe J.A. Early experience and the development of behaviour. In The Domestic Dog: its Evolution, Behaviour, and Interactions with People. Ed J. Serpell. Cambridge, Cambridge University Press. 1995; pp 79-102.

Siracusa C., Manteca X. Cuenca R., Del Mar Alcala M., Alba A., Lavin S., Pastor J. Effect of a synthetic appeasing pheromone on behavioral, neuroendocrine, immune, and acute-phase perioperative stress responses in dogs. J.A.V.M.A. 2010; 237: 673-681.

Tod E., Brander D., Waran N. Efficacy of dog appeasing pheromone in reducing stress and fear related behavior r in shelter dogs. Appl. Anim. Behav. Sci. 2005; 93: 295-308.

Karlson P., Lüscher M. 'Pheromones': a New Term for a Class of Biologically Active Substances. Nature 1959; 183: 55-56.

Kim Y., Lee J., Abd el-aty A.M., Hwang S., Lee J., Lee S. Efficacy of dog-appeasing pheromone (DAP) for ameliorating separation-related behavioral signs in hospitalized dogs. Can. Vet. J. 2010; 51: 380-384.

## Applicazioni cliniche dei feromoni nel cane

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Nel corpo del cane esistono sei maggiori zone di produzione di feromoni: l'area facciale, il complesso podale, quello perianale, il complesso genitale e quello mammario.

Nella prevenzione e nel trattamento dei disordini comportamentali del cane è frequentemente utilizzato l'analogo sintetico del feromone di appagamento canino (DAP®) prodotto da particolari ghiandole situate nel solco intermammario.

Molti studi hanno dimostrato l'utilità del DAP® nel trattamento dei problemi da separazione, della sensibilità ai rumori, dell'adattamento ad un nuovo ambiente, dei problemi legati al trasporto e nella tutela del benessere in canile.

Alcune critiche sono state avanzate per quanto riguarda i metodi e le procedure utilizzate in alcune ricerche in quanto ritenute non appropriate a fornire evidenze scientifiche dell'efficacia del DAP®.

Queste critiche hanno in seguito avuto risposta da parte di altri ricercatori. È comunque evidente che lo studio di queste sostanze molto particolari richiede un estremo rigore metodologico poiché possono esservi molti fattori interferenti.

Dal momento che il DAP® non è assorbito per via sistemica, non esistono effetti tossici o collaterali e ciò permette un suo utilizzo sicuro, da solo o in associazione con farmaci psicotropi.

# Psychogenic polydipsia in a Poodle

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*Abstract*: Medium size Poodle, 6 years old, entire male, was brought to the consult for polyuria-polydipsia and inappropriate urination. Anamnesis, health and behavioural evaluation have shown anxiety and aggressive behaviours towards the owners. Clinical and laboratory examinations were necessary to rule out possible underlying medical pathologies.

Presumptive diagnosis was psychogenic polydipsia and inappropriate urination, chronic anxiety, irritable aggression.

Behavioral therapy aimed at improving events predictability for the dog during the day, avoiding conflict situations and punishments, reinforcing calm states, getting the dog used to the kennel, taking him out in quiet places without encountering people or other dogs, doing short exercises of scent discrimination and nosework in order to relax the dog and improve his self-esteem.

Medical treatment consisted in antibiotics and anti-inflammatory for cystitis, hepatoprotectors for chronic hepatitis, nutraceuticals as an aid for anxiety.

After about one month, the dog had improved but the owners communicated that they could not do what was suggested and that they renounced the adoption. The real improvement has occurred with the successive adoption by an old couple.

*Key Words*: Behavioral problems; polyuria-polydipsia and inappropriate urination; anxiety; aggressive behavior.

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## Presentation

A medium size Poodle, 6 years old, entire male, was brought to the consult for inappropriate urination. The dog was adopted the month before and the behavioral problem was getting worse.

## History and presenting signs

The dog was adopted through an Animalist Association and the history of his previous life is unknown. When the first consultation was held, he was living in a very small apartment in the city with a tiny balcony, with two middle-aged women, a 5-year-old neutered female poodle and 2 adult neutered male cats.

Since the first day, the dog has been urinating inside the house, marking chairs, sofas and furniture. At night, he could not sleep more than a few hours and for the rest of the time he wandered around the house marking. During the day, the owners took both dogs in their office until the evening; at the beginning, the poodle did not urinate there but after a while he started doing it too. At night the owner, who seemed to be preferred by the dog, tried to tie the dog close to her bed with a long leash, avoiding the unwanted behaviour. This solution worked just for a few days.

Both dogs were taken out for short walks 3 times a day, near the house. Sometimes the owners

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left the dog for a few hours to the old grandmother who lived alone. At the beginning, the dog was urinating also in grandmother's home, but he ceased the behavior after some days.

About 10 days after the adoption, the behavioral problem worsened and the dog started to urinate even while he was climbing the stairs and while he was eating. During the food consumption sometimes the dog defecated. Furthermore, he started growling when he was scolded and when he was urinating if someone was watching him. Once he bit one of the owners and the bite was withheld.

Concerning social interaction, the dog tried to avoid contact and interactions with strangers but he did not show aggression and, if approached with kindness, he was open to interaction. No particular problems were reported with the two cats living with him. The play behavior, both interspecific and intraspecific, was completely absent. The owners also reported that the dog showed fear signs, displayed through an avoidance behavior, towards hands coming from above, fast hand movements and loud voices.

In regards to the sleep, its duration was normal also if the body position of the dog was always curled and he often urinated on his bed.

## Examination

The first visit was held in the vet's office and both owners were present with the two dogs. During the examination the dog was constantly searching for the owners, both on leash and off leash. He showed a limited explorative behavior once he was free in the room. When he was called, he showed a fairly good level of attention and obedience. During the visit he did not urinate nor drink.

The second visit was held at the owner's house, at first indoor and then outdoor on a walk. At the beginning the dog was much focused on one of the two owners. When the female dog attempted to push him away twice, he quickly drank a whole bowl of water of about half liter. Outdoor he marked a lot, even in front of 2 threatening dogs and he drank a lot at a fountain. During a short training session, he showed some signs of stress but he was able to cope and succeed in following the instructions he was given.

## Physical and laboratory evaluation

Urine test showed a clinical panel of cystitis with rare struvite crystals and a density of 1010. The full blood count resulted normal while the biochemical profile showed an increase of AST and ALP values and a mild hyponatraemia.

Ultrasound examination of the abdomen showed:

- Liver: slight increased echogenicity, regular margins, acalculous gallbladder.
- Spleen: normal echostructure.
- Kidneys: corticomedullary differentiation maintained.
- Adrenal glands: left 6.4 mm, right 5.8 mm. Both of normal dimensions and morphology.
- Testes: normoechoic.
- Prostate: length 25.1 mm, width 23.6 mm, normal in echogenicity and dimensions.

At this point, a series of diagnostic investigations were carried out for the differential diagnosis of polyuria-polydipsia:

- ACTH stimulation test for Cushing syndrome was negative;
- water deprivation test for diabetes insipidus was negative.

## Diagnosis

In view of these symptoms: polyuria-polydipsia, emotional urination, excessive attention requests and the lacking organic pathologies, the diagnosis was: psychogenic polydipsia (PPD) and inappropriate urination; chronic (or permanent) anxiety due to communication mistakes and repeated punishments by the previous owners; irritable aggression.

## Differential diagnosis

Organic urogenital pathologies, diabetes insipidus and Cushing disease were ruled out by the results of the tests carried out.

Separation anxiety was also ruled out because inappropriate urination occurred both in the absence of the owners and in their presence. In fact, the most distinguishing factor of separation-induced elimination is that the problem occurs only when the dog is isolated and never when the owner is present (Case, 2010).

## Treatment

### *Medical treatment*

Medical treatment consisted in a therapy with antibiotics and anti-inflammatory for treating the cystitis that was resolved in 10 days, hepatoprotectors and appropriate diet for the chronic hepatitis: an evident improvement was present after 2 weeks. Moreover, nutraceuticals (Anxitane) and pheromones (Adaptil collar) were prescribed for anxiety.

### *Behavioral therapy*

Behavioral therapy focused on improving events predictability for the dog during the day. The suggestion was to have regular walks outside, food administration and sleep.

The owners were advised:

- to take walks with the dog on a leash in quiet and open places, allowing him to smell and mark;
- to decrease the encounters with other dogs and people;
- to do short and simple nosework exercises in order to relax him and improve his self-esteem;
- to clean urine and faeces without scolding or punishing him;
- to reward the calm behavior of the dog.

In order to safeguard the emotional state of the female dog living with him, it was suggested to manage the 2 dogs separately for what concerned walks, spaces and rituals.

It was also suggested to get the dog gradually used to the kennel.

Regarding the management of the dog in the absence of the owners, they were advised to habituate the dog to stay on the balcony, providing a comfortable kennel and leave him some toys. In this way also the interactions with the other dog could be simpler to control.

Because the clinical case requires a complicated behavioral management, it was recommended to the owners to be accompanied by a dog trainer who could support them during the walks with the dog.

## Follow up

After about twenty days since the first visit, the dog had a mild improvement: the frequency of urination decreased and aggression was no longer present.

During the consultation the owners reported that the dog, in the following weeks and only for a few days, would have to live with a male Golden Retriever, owned by the father of one of the two owners.

Because this event could alter the situation, the owners were advised to pay attention to the meetings between the two dogs and Alprazolam (0.025 mg PRN) was prescribed for precaution. The cohabitation with the Golden Retriever did not cause any relevant problem but symptomatology shown by the poodle worsened the days after the departure of the Golden Retriever. The dog presented newly urination while he was eating and he bit the favorite owner. The aggression caused only an excoriation because the bite was withheld but inhibited. The attack took place while the owner was trying to keep the dog away from the bowl to clean urine on the floor. Two months after the first visit, the owners report that they were unable to continue the behavioral modification therapy and that they intended to renounce to dog ownership. Despite these claims the owners maintain the property of the dog for another month, during which the animal exibithed two new aggressive episodes.

Three months after the first consult, the owners decided to avoid any kind of treatment

During the summer holidays, the dog spent one month at the parents' house of one of the two owners and he got so attached to the elderly couple (who had lost their dog a few months earlier) that the two owners decided to leave him with them. During the three following months there were just two episodes of inappropriate urination while the biting episodes disappeared and the dog's motivation to play increased.

## Summary and discussion

In all cases in which there is an alteration of behavior it is necessary to exclude a possible cause of medical nature. In this clinical case, polyuria-polydipsia (PU/PD) can be a common sign of different pathologies, therefore many possible clinical factors must be ruled out.

In general, PU and PD are referred together and, except for dogs with psychogenic polydipsia, polydipsia usually occurs in response to polyuria.

In human pathology "there are some instances of abnormally high fluid intake that are not secondary to fluid loss or hipertonicity of body fluids and compulsive water drinking has been described in human beings with psychologic disturbances: these are classified as primary polydipsia or psychogenic polydipsia. Affected patients have a normal ADH release mechanism and renal function, and their polyuria is solely the result of polydipsia" (Mulnixet al.,1976).

"When excessive and inadequately excreted by the kidneys, polydipsic water intake may result in dangerous level of overhydratation that lead to severe hyponatremia, water intoxication, seizures and, sometimes death. Many of these primary polydipsia have been associated with various types of psychosis and is probable that some polydipsic individuals do not experience an excessive thirst. A more common occurrence of polydipsia is that seen in schizophrenia and the neural mechanisms causing polydipsia in schizophrenia are unknown" (McKinley et al., 2004).

Although lesions in the thirst center of the hypotalamus have been described as a cause of severe polydipsia in humans, these lesions have not yet been seen in dogs. Usually affected animals are hyperactive dogs that are placed in exercise-restrictive environments or had significant changes to their environment, resulting in unusual stress (Feldman, 1989).

In dogs, the compulsive consumption of water is generally linked to specific stimuli, while stress-induced (psychogenic) polydipsia is more often associated to more general stressors and agitation. (Horwitz et al., 2004).

Psychogenic polydipsia (PPD) in dogs is a rare disease that usually occurs in big-sized dogs. The owners of the most affected subjects report that their dogs have a nervous disposition or have experienced a stressful event prior to the onset of polydipsia (Nelson & Couto, 2015).

Landsberg reports that some dogs are unable to control urine voluntarily when fearful or responding submissively to social stimuli. Many cases are conflict-induced in that the dog is in a situation of uncertainty or competing motivation as to how to greet effectively (approach/withdrawal). Attempts to punish will aggravate fear and conflict. Owners that are upset or show their displeasure add to the dog's anxiety and conflict since the pet has little or no control over the behavior (Landsberg et al., 2013).

According to Fenner, psychogenic polydipsia is a not-well-described disorder of water balance and the medical and clinical history is similar to that of diabetes insipidus. It can start after an unusual or stressful event and its physiopathology in unknown. Probably, it starts with voluntary polydipsia as the result of stress or boredom but once polydipsia has caused a prolonged polyuria, the loss of renal medullary solute and the altered attention span can contribute to the perpetration of the problem. We cannot exclude that some of these dogs may have a subconsciously acquired defect of thirst regulation, as described for humans (Fenner, 1996).

In the dog, although thirst is mainly regulated by osmotic stimuli and circulatory volume, it can be, in part, a conditioned response. Impulses of cortical (voluntary) origin can cause the sensation of thirst and condition a thirst appetite (Olenick, 1999).

In a study on 58 dogs, most of the confirmed cases of psychogenic polydipsia had a behavioral basis, such as gaining attention from the owner, being exercise restricted or after experiencing a stressful event. Other cases are idiopathic (Mulnix et al., 1976).

Moreover the owners of affected dogs may report that the animal has a nervous disposition or experienced some stressful event before the onset of polydipsia. In some cases, the owner has unknowingly reinforced the water drinking behavior in some way. Some dogs with PPD dramatically decrease their water consumption during hospitalization and this fact facilitates diagnosis.

Concerning the laboratory data, it is important to point up that dogs with PPD typically have extremely hyposthenuric urine (Nelson & Couto, 2014). The production of hyposthenuric urine is caused by the attempt of the kidneys to dilute urine or by an insufficient response of renal collecting tubules to ADH: this occurs in primary psychogenic polydipsia, where the patient introduces water in excess and suppresses ADH production in order to eliminate water but not solutes in the kidneys. In order to differentiate psychogenic polydipsia from diabetes insipidus it is used the water deprivation test, based on serial measurements of urine specific gravity after the gradual deprivation of drinking water (Zatelli, 2014). Although not consistently present, mild hyponatremia in a dog with marked hyposthenuria is suggestive of PPD.

Dogs with PPD of recent onset often have a normal response to abrupt water deprivation testing, but those with long-standing PPD develop renal medullary washout of solute because the release of vasopressin from the pituitary gland is suppressed by plasma hypo-osmolality. Vasopressin normally facilitates urea reabsorption in the inner medulla of the kidney and helps maintain medullary hypertonicity (Nelson & Couto, 2014).

Care must be taken to differentiate psychogenic polydipsia from the polydipsia secondary to polyuria of pathogenic origin. Water intake may be restricted in the case of psychogenic polydipsia but would be dangerous in the case of pathogenic polydipsia (Houpt, 1991).

Gradual water deprivation testing allows time for restoration of the renal medullary solute gradient and is the preferred diagnostic test in dogs with PPD (Nelson & Couto, 2014) and the water deprivation test is the time-honored test commonly used for differential central diabetes insipidus (DI), primary nephrogenic DI, and psychogenic polydipsia. This test is designed to determine if endogenous ADH is released in response to dehydration and whether the kidney can respond normally to circulating ADH (Nichols, 2001). In this reported case, the results of the gradual water deprivation test were clearly positive and this confirms the diagnostic hypothesis of psychogenic polydipsia.

As already reported by several authors, in the genesis of this pathology an important role is played by anxiety, that is to say, a reactive state caused by an increased probability of emotional reactions similar to those of fear, in response to any variation in the internal and external environment, so that the result is an incapability of adapting to any environmental variation.

PD and PU can be, as in this case, symptoms of permanent anxiety, that is to say, a continuous anxious state that causes a serious inadaptability. Permanent anxiety represents the evolution of 70% of the cases with intermittent anxiety and, within it, potomania represents about 5% (Pageat, 1999).

Permanent anxiety translates into a serotonergic hyperactivity and in a decrease of dopaminergic activity and in general it does not cause neurovegetative signs. It is characterised by behavioral inhibition signs like a clear decrease of explorative and aggressive behaviors and alternative behaviors like bulimia, licking, potomania (Mège et al., 2006).

As has been said earlier, in this case there is also polyuria that can be related to inappropriate urination, which means that the release of important quantities of urine in different places of the house, deposited in big puddles on an absorbent and modifiable horizontal layer (i.e. fabric) so that it is possible to perform the typical sequence of the behaviour. This sequence is usually complete (Colangeli et al., 2015).

Concerning irritable aggression: in this case, irritable aggression always occurred in a context that caused a lot of anxiety to the dog: in the presence of food, urine smell, other animals and when the owner bent over the dog in order to pick him up and remove him from where he was. The behavioral sequence was complete. In the past, irritable aggression was considered a classic symptom of sociopathy, always present in dominant subjects and most of the times caused by any attempt to permanently maintain a physical contact started by a submisseve one (Pageat, 1999). Today irritable aggression is a fairly frequent kind of aggression, caused by various factors and often linked to frustration. It can be aggravated by pain, by deprivations such as thirst or hunger, by dysendocrinism, by sensory alterations (hearing, sight), by stress, by frustration and by the persistency of an interaction after the animal clearly communicated that he wanted to interrupt it (Colangeli et al., 2015; Horwitz et al., 2004). It occurs when the animal limit of tolerance. This can happen when he shows he wants to stop the interaction or when he is not able to cope with stress, (e.g. he is incapable of waiting). There might be an elargment of the critical distance with negative reinforcement given by the going away of the stranger that can evolve in a very rigid sequence and in a possible instrumentalisation (Colangeli, 2007). It is not specific to the stimulus nor to the target, it is not directly applicable to the aggression exhibited in a social context (Horwitz et al., 2004), and it can be instrumentalised more rapidly (Mège et al., 2006): the appetitive and the fulfilment phase become shorter while only the consummatory phase remains (Colangeli et al., 2015)

Finally, we would like to emphasise the great difficulties we had with the owners. We think that the initial negative result of this case was also determined by the lack of therapeutic alliance or compliance that would have allowed us to find new operating modalities and different strategic approaches to the problem. Thanks to this, it was clear that the veterinary behaviorist needs to acquire relational and communication skills, as already suggested by several authors. In fact, the behavioral therapy can be defined, in part, as a complex intervention with a systemic character based on the alliance with the owner, on the investigating ability, on the understanding of the symptoms and of the relationship between the person and his animal, on the support offered for the changes that occur during the therapy (Alessio, 2005).

## References

Alessio B. Setting e dintorni: il significato del primo colloquio nella terapia comportamentale, Veterinaria. 2005; 19: 4-10.

Case L.P. 2010. Canine and Feline Behavior and Training. DELMAR.

Colangeli R., Aggressività e aggressioni, 56th International Congress SCIVAC, Rimini, 1st-3rd June 2007.
Colangeli R., Fassola F., Giussani S., Merola I., Possenti M. 2015. Medicina Comportamentale del cane, del gatto e di nuovi animali da compagnia. Poletto Editore, pp. 168-169-327.
Feldman E.C., Nelson R.W. Diagnostic Approach to Polydipsia and Polyuria. Vet. Clin. North Am. Small Anim. Pract. 1989; 19: 327-341.
Fenner W.R. 1996. Manuale pratico di Medicina Veterinaria. UTET S.p.a.
Horwitz D.F., Mills D.S., Heath S. 2004. Terapia comportamentale del cane e del gatto. UTET Spa, pp. 227.
Houpt K.A. Feeding and drinking behavior problem Vet. Clin. North Am. Small Anim. Pract. 1991; 21: 281-98.
Landsberg G., Hunthausen W., Ackerman L. 2013. Behavior Problems of the Dog and cat, Third Edition, Saunders Elsevier.
McKinley M.J., Cairns M.J., Denton D.A., Egan G., Mathai M.L., Uschakov A., Wade J.D., Weisinger R.S., Oldfield B.J. Physiological and pathophysiological influences on thirst. Physiol. Behav. 2004; 81: 795-803.
Mège C., Beaumont-Graff E., Béata C., Diaz C., Habran T., Marlois N., Muller G. 2006 Patologia comportamentale del cane. EDRA LSWR, pp: 26-101.
Mulnix J.A., Rijnberk A, Hendricks H.J. Evaluation of a modified water-deprivation test for diagnosis of polyuric disorders in dogs. J.A.V.M.A. 1976; 169: 1327-1330.
Nelson R.W., Couto C.G. 2014. Small Animal Internal Medicine Fifth Edition, ELSEVIER.
Nelson R.W., Couto C.G. 2015. Medicina interna del cane e del gatto. EDRA Spa Milano.
Nichols R. Polyuria and Polydipsia: Diagnostic Approach and Problems Associated with Patient Evaluation. Vet. Clin. North Am. Small Anim. Pract. 2001; 31: 833-844.
Olenick C.L. Congenital renal dysplasia and psychogenic polydipsia in a Bernese mountain dog. Can. Vet. J. 1999; 40: 425-426.
Pageat P. 1999. Patologia comportamentale del cane. Point Veterinaire Italie, pp. 141-150.
Zatelli A. 2014. Malattie renali del cane e del gatto. EDRA LSWR Spa Milano.

## Polidipsia psicogena in un cane di razza Barbone

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Un cane di razza Barbone, di taglia media e di 6 anni di età fu presentato alla visita per sintomi di poliuria-polidipsia ed urinazione inappropriata.

L'anamnesi, la visita comportamentale e clinica rilevarono uno stato di ansia e comportamenti aggressivi verso i proprietari. Furono effettuati esami clinici e di laboratorio per escludere patologie organiche

La diagnosi presunta fu di polidipsia psicogena e urinazione inappropriata, ansia cronica ed aggressività da irritazione.

La terapia comportamentale fu improntata a:

- aumentare la prevedibilità, per il cane, degli eventi quotidiani,
- evitare situazioni di conflitto e punizioni,
- rinforzare gli stati di calma,
- abituare il cane ad utilizzare il kennel,
- effettuare uscite fuori in luoghi tranquilli,
- evitare di incontrare altri cani o persone,
- effettuare brevi esercizi di discriminazione olfattiva e di ricerca per rilassare il cane ed aumentare la sua autostima.

La terapia medica consistette nella somministrazione di antibiotici ed antiinfiammatori per la cura della cistite, di epatoprotettori per l'epatite cronica e di nutraceutici come ausilio nella gestione dell'ansia.

Dopo circa un mese, il comportamento del cane migliorò notevolmente ma i proprietari manifestarono l'intenzione di rinunciare alla proprietà del cane poiché non erano in grado di seguire il programma di modificazione comportamentale che era stato loro suggerito.

Un definitivo miglioramento del quadro clinico si ebbe quando il cane fu in seguito adottato dai genitori di una delle due proprietarie.

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