

# 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 pre-visibility of adoption from dog shelters is lower for large and dark dogs, conveying the impression of

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 old, 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
<b>Owner's data</b>	Gender	<input type="checkbox"/> female <input type="checkbox"/> male
	Age	<input type="checkbox"/> 18-30 <input type="checkbox"/> 31-40 <input type="checkbox"/> 41-50 <input type="checkbox"/> 51-60 <input type="checkbox"/> > 60 years old
<b>Dog's data</b>	Size	<input type="checkbox"/> small (<10kg) <input type="checkbox"/> medium (10-20kg) <input type="checkbox"/> large (>20kg)
	Age	<input type="checkbox"/> 1-3 <input type="checkbox"/> 4-8 <input type="checkbox"/> > 8 years old
	Sex	<input type="checkbox"/> entire female <input type="checkbox"/> neutered female <input type="checkbox"/> entire male <input type="checkbox"/> neutered male
	Breed	<input type="checkbox"/> mixed-breed <input type="checkbox"/> .....
<b>Owner's attitude and behavior</b>	What do you usually do when, while walking your dog, you meet a smaller, leashed unfamiliar dog?	<input type="checkbox"/> I avoid the encounter <input type="checkbox"/> I approach at ease <input type="checkbox"/> 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?	<input type="checkbox"/> I avoid the encounter <input type="checkbox"/> I approach at ease <input type="checkbox"/> 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Do you believe that your dog is fearful of larger dogs?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Do you believe that your dog needs to socialise with other dogs?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Has your dog the opportunity to play unleashed with other dogs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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<sup>®</sup> 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.

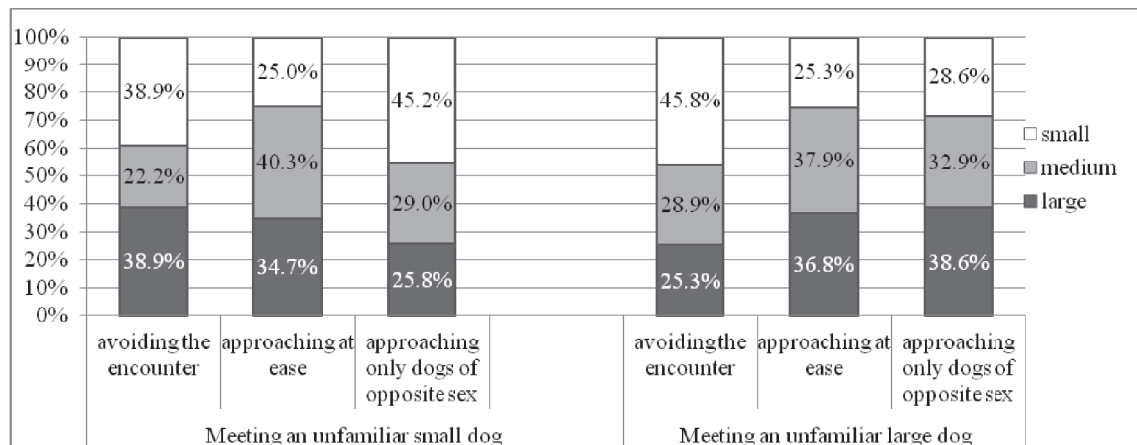


Figure 1. Proportion of owners (%) displaying different behaviors when meeting a small or a large unfamiliar dog while walking their own dog.

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).

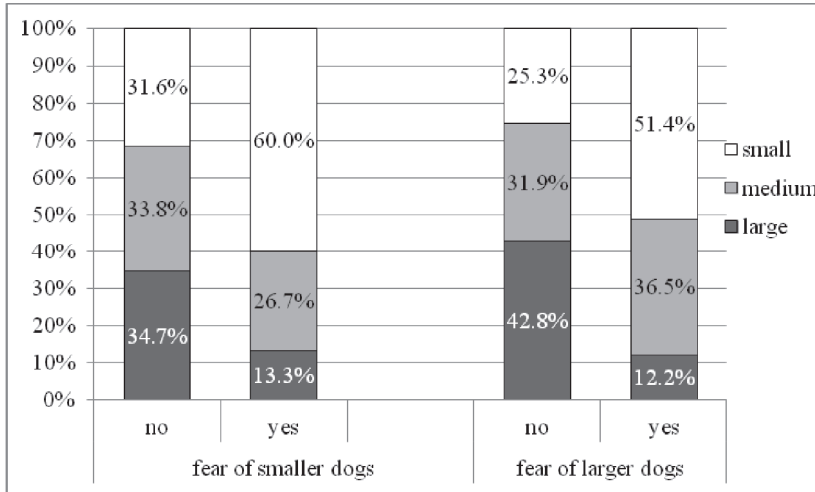


Figure 2. Proportion of dogs (%) that, in owners' opinion, showed fear of unfamiliar smaller and larger dogs; do not have the opportunity to play unleashed with other dogs; do not need to socialise with other dogs.

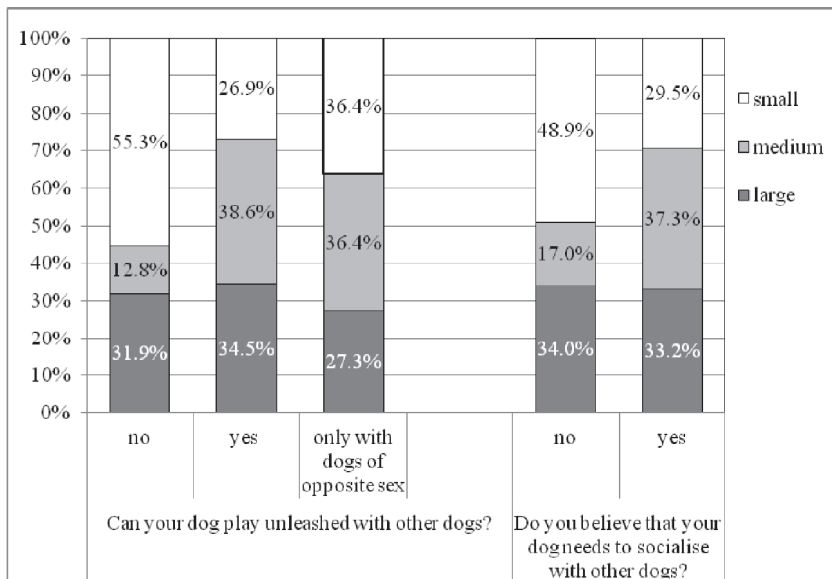


Figure 3. Proportion of dogs (%) who do not have the opportunity to play unleashed with other dogs and proportion of owners (%) who believed that their dogs do not need to socialise with other dogs.

## 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' beliefs, 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 dogs' owners report their dogs are afraid of big dogs. This percentage seems similar to 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.

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## 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 contenente 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.