



# Collar or harness behavioral effects on the meeting of unfamiliar dogs

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**Abstract:** The dog, as a social animal, uses a wide variety of signals of different nature in order to communicate with conspecifics. Several studies have already shown that in intraspecific interactions, dogs elicit threatening behaviors more often when on a leash than when they can interact freely. In light of this, it is still very common to meet other dogs on a leash in urban areas, so it was considered useful to try to understand if among the tools most commonly used by the owners, the collar and the harness, there is one that has a better influence on canine communication than the other.

The purpose of this study is to evaluate the level of stress caused by the collar and harness during the interaction between couples of unfamiliar subjects, of different sex and race. The subjects observed were 6 males and 12 females with a mean age of 5.5 years. From the statistical analysis of the individual behaviors observed during the interactions, the stress signals that are highly significant are “licking the nose / lips” ( $p = 0.046$ ) and “lifting the paw” ( $p = 0.048$ ). The former is emitted more in harness encounters, while the latter is used more often in interactions where dogs wear the collar. Statistical significance was also noted with regard to the attention seeking signals ( $p = 0.02$ ), which are greater when the collar was used.

Considering the results obtained, we believe that neither of the two tools significantly influence communication between dogs, but it would be interesting to evaluate whether it is the management of the leash that interferes with intraspecific behavior.

*Key Words:* behavior, harness, collar, social behavior.

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## Introduction

The dogs use their whole body to communicate, conveying information intentionally or otherwise.

Dogs are engaged in visual communication by modifying different parts of their body, in tactile communication, and in auditory and olfactory communication, with vocalizations and body odours, respectively. (Siniscalchi et al., 2018).

In dogs' encounters with other conspecifics, body size and body posture are the first visual signals perceived, providing very first information about other individuals' intentions (Bradshaw & Rooney, 2016). Dogs can communicate confidence, alertness or threat by increasing their body size, pulling themselves up to their full height and increasing the tension of the body muscles. The tail helps to define posture display and its movements are used to convey different information about the individuals' emotional state and intentions.

Also, these intentions are shown with broad and sophisticated vocal repertoire (Yeon, 2007).

Another type of important communication is the sniffing behavior. The canine olfactory system is highly sensitive. Various body odors may permit individual identification during direct interactions between dogs (Simpson, 1997). Exchanges of olfactory information, in which one dog

sniffs the head and anogenital area of the other, represented the majority of interactions (Bradshaw & Lea, 1992).

Our domestic dogs often interact with other dogs whilst out walking on a leash, wearing various restraints, most commonly collars (head or neck) and harnesses. Although a leash attached to a neck collar is the most common form of restraint in most countries, concern has been raised over the potential for them to cause damage to the neck and trachea (Landsberg et al., 2013).

The type of restraint used is of potential importance as it may have a detrimental effect on canine welfare (Grainger et al., 2016) and intraspecific communication.

The aim this study was to determine whether being walked on neck collars or harness causes a different intraspecific communication in dogs.

## Subjects, materials, and methods

The subjects were 18 unfamiliar dogs, 12 females (9 spayed) and 6 males (4 neutered), ranging from 1.5 to 12 years ( $5.5 \pm 1.2$  year), belonging to various breeds and 10 mongrels. Dogs were considered unfamiliar when, according to owners, they had not met in the last twelve months and did not meet regularly in the past. Because all the dogs lived in the same town, we could not guarantee that dogs had no prior opportunities for visual, olfactory, or direct contact (Mariti et al., 2017).

During the tests, the same tools were used for all dogs in order to standardize the data as much as possible. The materials used were a 1.50-meter leash, a fixed nylon collar and a harness. The dogs had previously accustomed to wearing both tools.

The meetings were organized in such a way that each pair of dogs met inside an external fenced area of 5 x 5 m, both wearing the collar or the harness in the same meeting; the order of execution was randomly determined. The two dogs were then led by their owners into the enclosure and left free to move and interact, with the leash, for 1 minute.

The owner was also asked not to verbally or non-verbally communicate with the dog during the test.

All the meetings were videoed with two video cameras: one was handheld by an operator positioned in a corner of the fenced area, and one was fixed, located on the wall of another corner.

Videos were analyzed frame-by-frame. The analysis was carried out using the 1-minute videos of the handheld camera. The videos from the fixed camera were used to integrate those from the handheld camera if this was needed for a better evaluation (e.g., when one dog was not completely visible). The behaviors were observed are reported in Table 1.

The signals considered were also divided into four different ones macro categories: calming/stress behaviors, social behaviors, aggressive behaviors and attention-seeking behaviors.

**Table 1.** Behaviors analyzed in this study

Behavioral sign	Description	Bibliography
Licking lips	Dog's tongue protrudes and licks own lips or snout	Rugaas, 2005; Schilder & van der Borg, 2004
Yawning	Dog opens mouth wide and closes eyes without vocalizing	Beerda et al., 1998; Hennessy et al., 1998
Head turning	Turning the head either to the side and back, or holding the head to one side	Rugaas, 2005
Softening the eyes	Lowering the lids	Rugaas, 2005
Blinking	Fluttering eyelashes	Rugaas, 2005
Low body position; crouching, and cowering	Dog changes from normal walking position to one lower to the ground, crouches, or cowers behind owners' legs	Beerda et al., 1998

Sniffing ground	Dog orientates nose to within 5 cm of an object, wall, or ground and twitches nose	Rooney and Bradshaw, 2014
Turning away	Turning the body to the side or back of the other dog	Rugaas, 2005
Play bow	Flexing the forelimbs and remaining with the hind limbs high	Rugaas, 2005
Shaking off	Motions body and/or head back and forth repeatedly and rapidly	Beerda et al., 1998
Scratching	Paw makes repeated contact with body/face; head may be angled in direction of moving limb	Van der Borg et al., 2010.
Ears held low or pulled back	Dog's ears pulled back from normal position	Rooney and Bradshaw, 2014
Ears held straight	The ears are straight and carried forward, showing attention to someone or something	Overall, 2001
Attempt to escape	The dog tries to get away	Vas et al., 2005
Vocalizations	Barking, growling, howling... (excluding whining)	Modified from: PratoPrevide et al., 2003
Cowering behind the owner	cowers behind owners' legs	Vas et al., 2005
Growling	Throaty, rumbling vocalization; usually low in pitch	Horvath et al., 2007
Pilo-erection	Raising the hair on one or more upper parts of the body and/or tail base	Modificato da De Palma et al., 2005
Freez	General rigidity of the body	Rugaas, 2005
Low tail position	Dog's tail held in a position lower than the plane of the back	Protopopova et al., 2014
Tucking	tailTail held still and tightly between hind legs, may be curled under genital area or ventral side	Protopopova et al., 2014
Wagging tail	Tail moves perpendicular to the dog's body	Protopopova et al., 2014
Gazing	Eye contact with the eyes of the observer	Protopopova et al., 2014
Proximity	Dog in physical contact with target, (owner)	Mariti et al., 2013

The statistical analysis was carried out using Wilcoxon signed rank test. All statistical analysis was performed using Spss statistical software.

## Results

The statistical analysis revealed that the calming signals licking the nose ( $W = -1,994$ ;  $P < 0.05$ ) was displayed statistically more often while interacting with the harness, while paw lifting ( $W = -1,98$ ;  $P < 0.05$ ) with the collar.

The statistical results of the behaviors divided into categories show that the attention-seeking signals are highly significant ( $W = -2,334$ ;  $p < 0.05$ ) and were observed in the meeting between dogs wearing the collar instead of harness.

## Discussion

For many years, people have tried to control and restrain dogs with a leash attached to either a collar around the neck or a harness surrounding the chest and shoulders (Ogburn et al., 1998). Neck collars are widely used, but concerns have been raised about their use (Pauli et al., 2006; Landsberg et al., 2013, Grainger et al., 2016). The harnesses are often proposed as an alternative form of restraint, because they seem to be better for canine welfare, but, until now, there is not a scientific evidence of this.

In this preliminary study, no significant differences in behavior were found between meeting of unfamiliar dogs with either a neck collar or a harness.

This finding may be of relevance to owners concerned about using either form of restraint or to trainers advocating the use of a particular restraint type (Grainger et al., 2016).

While wearing the neck collar, the subjects showed significantly more attention-seeking signals than when dogs wore the harness. This could indicate that dogs, when wearing the collar, are more in difficulties in intraspecific communication and then they turn to the owner, their secure base (Mariti et al., 2013), for receiving help, but further studies will be needed to confirm these results.

It's probably that behaviors change for the management of the leash, because the leash may have some connection with the pack behavior of dogs (Rezáč et al., 2011).

In the study of Rezáč and collaborators (2011), domestic dogs display a different behavior when they are on a leash, because they possibly have a greater confidence for the close presence of the owner. Another reason may be that the owners are responding to the presence of the other dog and some of them, in an effort to maintain control of their own dogs, are tensing up and tightening the leash. In some cases, the dog on a leash may feel more vulnerable because it is unable to run away and may therefore show a threat when another dog gets too close.

The present study is a first attempt at investigating the collar or harness may affect behavior among unfamiliar dogs.

Further research is needed to assess the possible influence of the leash while in the use of different restraint types.

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## Effetti comportamentali di collare o pettorina sull'incontro tra cani non familiari

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### *Sintesi*

Il cane, in quanto animale sociale, utilizza un'ampia varietà di segnali di diversa natura al fine di comunicare con i conspecifici. Diversi studi hanno già dimostrato che nelle interazioni intraspecifiche i cani elicitano più spesso comportamenti minacciosi se sono al guinzaglio, rispetto a quando possono interagire liberamente. Alla luce di ciò, è comunque molto comune incontrare altri cani al guinzaglio in aree urbane, per questo è stato ritenuto utile cercare di capire se tra gli strumenti più comunemente utilizzati dai proprietari, il collare e la pettorina, ce ne sia uno che ha un'influenza migliore sulla comunicazione canina rispetto all'altro. Lo scopo di questo studio è quello di valutare il livello di stress provocato da collare e pettorina durante l'interazione tra coppie di soggetti non conoscenti, di sesso e razza differenti. I soggetti osservati sono stati 6 maschi e 12 femmine con età media di 5,5 anni. Dall'analisi statistica dei singoli comportamenti osservati durante le interazioni abbiamo riscontrato che i segnali di stress che risultano altamente significativi sono "leccarsi il naso/le labbra" ( $p=+0,046$ ) e "sollevare la zampa" ( $p=+0,048$ ). Il primo viene emesso maggiormente negli incontri con la pettorina, mentre il secondo è utilizzato più spesso nelle interazioni in cui i cani indossano il collare. È stata notata anche una significatività statistica per quanto riguarda i segnali di richiesta di attenzione ( $p=+0,02$ ), che risultano maggiori quando è stato utilizzato il collare.

Considerando i risultati ottenuti riteniamo che nessuno dei due strumenti vada ad influire in modo significativo nella comunicazione tra cani, ma sarebbe interessante valutare se sia la gestione del guinzaglio ad interferire sul comportamento intraspecifico.

