

Nibbling as non-verbal communication in dogs

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Summary

The aim of the paper was to answer the question of what message is conveyed by dogs exhibiting behaviour referred to as “nibbling” and what emotions are associated with this behaviour.

The data for the analysis were obtained from owners who observed this type of behaviour in their dogs. In total 14 groups of animals were examined. Information was collected in the form of film recordings, which proved that the behaviour observed corresponded to that analyzed in the study. Additionally, information from the owners was used.

It was observed that the ethology of nibbling in its primary, autochthonic form is related to maternal behaviour. However, since behaviour becomes detached from its biological roots in the process of ritualization, it has gained information-affiliation-consolation functions. Nibbling is not related to status in the social group or a dominant or submissive personality. It reflects highly positive emotions of one animal towards another, including humans, and constitutes a special form of communication that strengthens and creates emotional bonds regardless of animals' place in the social group.

Keywords: dog communication; nibbling; not-verbal communication

Instinct behaviours are accompanied by emotions, which become secondary motivators of behaviour. Like other mammals, dogs are able to use emotional expression for social communication. Depending on the breed, signalling emotions or intention is to a greater or smaller extent complex and expressive (16). Correct interpretation of emotions will be possible only when the recipient decodes transmitted signals properly. The very definition of intentional communication assumes ability to receive signals sent out by an individual and sensitivity to these signals (23); hence, this issue has been widely discussed in scientific literature for many years (e.g. 9, 17, 18, 20, 24, 25). Given close human-dog interactions, it is particularly important that the communication is effective. Individual signals convey a message of emotions experienced by the animal at a particular time. Therefore, the ability to read and interpret them is vital (1).

While watching dogs, one can frequently observe a behaviour that is on the borderline between grooming and playing, i.e. specific, delicate “nibbling”. Importantly, this behaviour is not commonly found in canine social groups. It appears in various contexts and situations, and it is difficult to predict the exact moment at which nibbling will be observed, unlike in the case of delicate play-biting displayed before or

during playtime (11). Nibbling is also directed at other animal species or the dog keeper. Information provided by animal keepers frequently shows substantial discrepancy in their assessment of this phenomenon. Since proper relationships between man and dog can only be established upon proper recognition and interpretation of transmitted signals, the paper is an attempt at analyzing this behaviour.

The aim of the paper was to answer the question of what message is conveyed by dogs exhibiting the behaviour referred to as “nibbling” and what emotions are associated with this behaviour.

Material and methods

Description of the behaviour. Delicate nibbling of another dog resembles grooming and removing parasites on the head, neck, ears, and chest. Nibbling is frequently interrupted by intensive licking around the eyes, ears, and forehead. When displayed towards man, nibbling is usually limited to the hand or arm. Nibbling dogs do not produce sounds and usually lie, sit, or stand next to each other.

Material. The data for the analysis were obtained from owners who observed this type of behaviour in their dogs. The information was collected in the form of film recordings, which proved that the behaviour observed corresponded to that analyzed in the study. Subsequently, observations

Tab. 1. Characteristics of the dog groups

Group	Number of dogs in a group	Sex	Breed	Age (years)	Behaviour towards:	Number of nibbling dogs	Sex and breed*
1	2	male, female	mixed	3; 8	another dog	1	m, mixed
2	3	2 males, female	Miniature Schnauzer, mixed	11; 3; 3	another dog, owner	1	m, mixed
3	2	male, female	mixed	1,5; 9	another dog	1	m, mixed
4	2	females	mixed	4; 3	another dog	1	f, mixed
5	3	2 males, female	mixed	5; 1; 7	another dog	1	m, mixed
6	1	male	mixed	2	owner	1	m, mixed
7	3	2 males, female	mixed	9; 3 months; 6	another dog	1	m, mixed
8	2	male	mixed	3; 3	owner	1	m, mixed
9	5	females	mixed	14; 13; 7; 5; 4	another dog	4	4f, mixed
10	3	2 females, male	German Shepherd	3; 5,5; 3	another dog, owner	2	2f, German Shepherd
11	1	male	mixed	10	another dog	1	f, mixed
12	2	females	mixed	3; 4	another dog	1	m, mixed
13	1	male	Labrador Retriever	1,5	owner	1	m, Labrador Retriever
14	2	female, male	mixed	12; 1	another dog, owner	2	f, m, mixed

Explanations: * sex and breed of the nibbling dog

of the dogs were carried out, taking into account the information provided by the owners. The characteristics of particular groups are presented in Tab. 1. The analysis involved 14 groups of dogs, each composed of 2 or more dogs living together, or one dog when the behaviour was displayed towards the owner. In one case (group 11), the dogs did not live together, but had very frequent close contact. The behaviour was assessed in 19 “nibbling” dogs.

The following information was taken into account in the analyses:

- age of the dog displaying the nibbling behaviour towards another dog
- sex
- body size
- personality in terms of domination-submission. In this case, the information was provided by the owners, who described their dogs’ behaviour during playtime, walks, and access to resources. In this context, the dogs were classified as animals with a tendency to dominate, those displaying greater submission, and the third group: dogs that did not differ in terms of personality, and their dominant behaviour depended solely on the dog’s motivation at a given time and was therefore highly variable.

Additionally, situations in which the owners observed “nibbling” were analyzed.

Results and discussion

The behaviour referred to as “nibbling” in the present study was displayed by younger and older dogs towards another, “nibbled” individual (Tab. 2). In 3 of the analyzed groups, the age of the dog was unimportant, as the behaviour was directed at the owner. It is noteworthy that in three groups (7, 9, and 11), nibbling was displayed by adult dogs towards puppies. Not only females (group 9) but also males (group 7 and

Tab. 2. Structure*of nibbling dogs vs. nibbled dogs

Age		Sex		Body size		Personality	
older	37.5	males	52.6	bigger	50.0	submission	31.3
younger	56.3	females	47.4	smaller	37.5	dominance	43.7
the same age	6.2			no differences	12.5	no tendencies	25.0

Explanations: * % values

11) exhibited this type of behaviour. Interestingly, the puppies either belonged to the group (group 7), were strangers to the group (group 9), or were acquainted through irregular encounters during walks (group 11). It should be emphasized that only the female dog nibbled the puppy, whereas male dogs knew the puppies that they nibbled.

Nibbling was observed in both male and female dogs (Tab. 2). The relationship between nibbling and body size was verified as well. Nibbling was reported in dogs that were both bigger and smaller than the nibbled ones, whereas no differences in size were observed in 12% of the dogs.

In this study, we also analyzed the question of which dog – the nibbled or the nibbling one – dominated in the group. It was found that the behaviour analyzed was unrelated to the dog’s personality. Both dominant and submissive dogs exhibited nibbling.

An essential aspect of the study was the analysis of the context in which nibbling was observed. The data collected were divided into groups, and the following situations in which nibbling took place were defined:

1. Rest in the company of other dogs
2. Greeting after a period of separation
3. When the nibbling dog sent out signals through vocalization, e.g. signals of pain or fear
4. Running during the walk (the nibbling dog ran up to the nibbled one)

5. Period between playing

6. Period before a walk

Nibbling the owner:

1. Rest in the company of the owner

2. After waking up

3. After separation

Nibbling was most frequently a unidirectional phenomenon, although in 3 cases mutual nibbling was observed. Two female dogs (13 and 5 years old) from group 9 were described by the owner as linked by strong emotional bonds. These two individuals spent most of their time together; they slept and played together. In this case, nibbling was observed when one of the female dogs signalled pain or fear. Bidirectional behaviour was also observed in group 10 between two female dogs, although one of the females nibbled a male dog, and the other one exhibited this behaviour towards the owner. Bidirectional behaviour characterized group 14, as well. In this case, however, the group was composed of closely related dogs (mother and son), and the male dog nibbled some family members.

The dog's behaviour analysed in this study is analogous in its character to that observed autochthonically in female dogs taking care of their offspring, which is a typical form of grooming puppies by the female. Grooming is probably one of the most popular subjects of research on social behaviour in a variety of animal species (5, 10, 17, 18, 20, 24, 25). The role and importance of this behaviour varies greatly, from practical grooming and hygiene practices to more complex functions, such as the establishment of contact and social relations, development of ties between individuals, maintenance of group coherence, or reduction of emotional tension. These types of behaviour are common for all social animal species (2, 3, 5, 12, 13, 21, 22). However, such behaviour may take a different course and have slightly different functions or emotional background in different species. Depending on the species, grooming either is offered by low-ranked individuals in the hierarchy or can be mutual, with partners swapping the roles; it can have a different course depending on the animal's sex (15). However, typical grooming is widespread in social groups of many species. In dogs, the behaviour analysed is an uncommon, rarely reported phenomenon, which indicates that this type of behaviour is ritualized in some animal groups only. Data for the present study was collected through interviews with ca. 80 people having two or more dogs. It was possible to select only 14 groups, since in most cases the owners wrongly interpreted short, rapid play-bites, which are signals to play, as nibbling (11). Hence, the questions arose about the information conveyed by nibbling, the reasons why it can be observed in some dogs only, and the emotional message associated with this behaviour. Given its pattern, the behaviour might represent a considerably reduced grooming treatment provided by the mother to pups, since it is most frequently associated

with thorough licking of the head, eyes, and ears of the other individual. It should be emphasized that this is not identical to showing submissiveness by licking the other individual's muzzle. The element of offspring care is highlighted by the fact that nibbling was displayed towards puppies, even strange ones. Grooming is regarded as a good indicator of affiliation relationships among primates (14). It seems that in dogs this is the basic function of nibbling. Notably, this behaviour was not related to status in the social group, as it was exhibited by dogs with dominance tendencies as well as by submissive individuals. Therefore, it cannot serve to establish hierarchy or indicate the dog's social status, as is the case with primates (8, 18). Nibbling may be an allochthonic displacement activity characterised by a ritualized, simplified form, with an informative rather than biological function, unlike the primary grooming practice. It is directed at a particularly close individual, which is confirmed by two facts: the nibbling dog does not exhibit this behaviour towards all individuals in the group, and, by analogy, all owners, i.e. not all family members, are the objects of nibbling. Five among the analysed groups were composed of 3 or more dogs, but only in group 10 one of the female dogs nibbled all other dogs. In the other cases, this behaviour was directed at selected individuals. The information obtained showed that nibbling dogs spent a considerable time in the others' company. It should also be borne in mind that allochthonic nibbling positively stimulates the recipient, irrespective of the species (4), including dogs (7). Another fact indicating that this behaviour serves information, consolation, and affiliation functions is the context in which it occurs. It was observed in moments pleasant to dogs (walks, rest in the company of other dogs, break between playing, which was confirmed by other non-verbal communication signals (information function), and in situations in which one of the animals displayed fear or pain (consolation function). The third context in which nibbling was observed was the moment of greeting after a period of separation. In this case, the behaviour reflects particularly positive emotions towards another individual (affiliation function). Each time, however, it seems to proceed in a stereotypic and simplified way, typical of ritualized behaviours, which are triggered by motivating stimuli different from the primary ones, involved in autochthonic nibbling, i.e. grooming.

Positive touch and stroking plays an important role and creates bonds between man and dog (6). This analogy can be transferred to the relationships between dogs. Hence, nibbling can reflect positive emotions of one individual towards another, as it was shown to have no connection with the sex, hierarchy, or age of the individual that exhibited this behaviour and its recipient. It was shown in primates that the amount of aggressive behaviour increased in groups where there was no mutual grooming (15). The authors suggest that grooming can serve as a consoling gesture and

a means of reducing aggression. In the case of dogs, it can be suggested that nibbling, besides its consolation function, plays an affiliation role by strengthening bonds among members of the group and constitutes a message conveying highly positive emotions towards another individual. This behaviour may represent a form of mutual altruism, similarly to grooming, as suggested by some authors (19, 26). It is important that dogs can show positive emotions to other individuals irrespective of their social status in the group. It is particularly important that also individuals with a dominance tendency may have strong emotional ties with submissive individuals and are able to show their emotions and maintain bonds through this kind of affiliation behaviour, while retaining their authority in the group. Emotional ties rather than social status seem to be the most vital. It is possible that this behaviour is displayed by individuals that yield readily to emotions and are reactive. This may explain why nibbling is not always a mutual phenomenon.

In conclusion, it can be claimed that the ethology of nibbling in its primary, autochthonic form is related to maternal behaviour. However, since behaviour becomes detached from its biological roots in the process of ritualization, it has gained information–affiliation–consolation functions. Nibbling is not related to status in the social group or a dominant or submissive personality. It reflects highly positive emotions of one animal towards another, including humans, and constitutes a special form of communication that creates and strengthens emotional bonds regardless of animals' place in the social group. Further studies should verify the thesis that this behaviour is displayed by highly reactive and emotionally sensitive dogs.

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