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The social role of food and behavioral pathologies in the dog

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The social role of food and behavioral pathologies in the dog



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The feeding behavior of dogs often includes anecdotal evidence or haphazard interpretations. The management of resources, and specifically food, is fundamental in animal societies. Frequently, access to food is ritualized, requiring well developed communication, once the essential needs are covered.

In human societies, when food is abundant, meal access and eating have a social value. This ritualization causes the members of the group to consume the food (or at least to adopt the associated behaviors) for reasons other than hunger. Our domesticated dogs are placed in an identical situation as most of them have sufficient food. The management of their food is therefore more often guided by the needs of communication than by hunger. Humans and dogs share a number of common points when it comes to communication around food. However, the minor differences are the cause of serious misunderstandings that leads to education problems, dietary disorders and even pathological conditions. It is also conceivable that, beyond their specific characteristics, some diseases or pathological conditions will lead to disruptions in dietary behavior.

Practitioners who observe a dysregulation in food intake must evaluate the type of dysregulation and expect to encounter effects in both communication and behavior.



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A pack of wolves.

In canid societies, the dominant animals control access to the whole group's food supply. The other animals eat very quickly, because access to the food may be refused at any time.

1 - Social role of food in canine societies

Just like many social species that live in hierarchical groups, for dogs access to food resources is based on a precise chain that reflects the hierarchy. The alpha animals that control reproduction have primary access to food resources. This hierarchy means that the resources are reserved for the strongest animals and this results in the selection of the most influential genes (Goldberg, 1998).

The rules established in a given group are maintained and constantly reinforced by the application of rituals that replace and so prevent energy-sapping confrontations.

There is usually a shift between objective and symbolic, as privileges gradually become a symbol of power. In dogs, the control of the food is a symbol of a high hierarchical position, even when the supply is abundant.

It is therefore conceivable that the dog produces a certain number of behaviors aimed at controlling the food in the group without the involvement of appetite or hunger in the determination of these behaviors (Scott *et al*, 1965; Fox, 1978). So, a dog that begs at the table may be doing so not for taste or hunger reasons, but to show that it has access to the group's resources (in the representative sense).

Besides control of the food, which acquires a ritual function for hierarchization, the behaviors allowing one animal to eat before the others, while others wait and watch, also have a social significance. It is clear that the dominant (alpha) members not only take the best food first, but that they also oblige others to attend the meal and patiently wait their turn (Muller, 1998a).

Domesticated dogs exhibit many of the behaviors that are undoubtedly motivated by the need to impose periods of 'respectful' observation on the master when the dog eats. For example, difficult dogs often love to attract attention when they eat.

A ritual is a behavioral sequence that has lost its initial function, used as a means of communication in a social group. The use of a ritual binds and soothes the group (Heymer, 1977).



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Yorkshire Terrier

Small dogs live more easily in contact with their master (in laps and chairs, etc). As a result, they are more exposed to bad education and dietary errors.

2 - Social role of food in human societies

Managed in the same way as hierarchical animal societies, in highly industrial societies food is also used as a loaded symbol to express notions of equality. The principle is the same as above, but its expression is reversed. Inviting someone to your table is a sign of friendship. This perception should not be misconstrued, it is driven by the same fundamental characteristics as dietary hierarchization in the dog. In the soldiers mess for example, diners are separated according to their rank. At wedding banquets, the seating plan is very important. Placements at the table usually respect hierarchical precedence. Just witness the embarrassment when a group of people sit down to eat after a work meeting when there is no seating plan.

On the other hand, it is good manners for employers to share a drink or a bite to eat with their employees to make it clear that there is not a huge social barrier.

In humans as in dogs, feeding has been ritualized to become a symbol of power or social glue.

Gifts are also a means of power. The person that receives is in debt and the acceptance of a gift is a gesture that can have great social significance. What woman would accept flowers or jewelry from just anyone who offered it, without feeling embarrassed? The gift binds the person who accepts it. One of the ways to possess the animal is to offer it a gift. The gift of food is often the scourge of zoo keepers who are unable to dissuade visitors from trying to give food to the animals they like. For animals, the gift is inevitably food and the stakes are non-acceptance.

3 - Social role of food in the relationships between humans and dogs

Two factors are intertwined: the necessity of ritualizing the relationships (humans and dogs are social animals) and the need to control this relationship (principally through food). Ignorance of canine ethology and communication often leads owners to content themselves with anthropomorphical interpretations that result in serious aberrations.

The misunderstanding is often established in the first moments of the relationship (the first weeks after adoption), as the master looks to win the dog's affection with gifts of food. In this case the dog will gain the wrong impression of the new family if its development up until that time, has been normal. More seriously, if this attitude is adopted too early in the life of the puppy it may thwart harmonious development by stifling the essential social constraints of self-control in social species (Moorcroft, 1981).

Habits are formed quickly. The master tries to give pleasure to the dog by satisfying its various demands for food, while the dog tries to acquire the highest possible social status.

The social relationship is gradually reduced to these exchanges of food, which allow owners to exonerate themselves from their various breaches. Inviting the dog to the table is a mark of social esteem and a way to win the animal's heart. Gradually, habit will transform the gift of food into a ritual. Besides bad behavior in the relationship, these prac-



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**Young German shepherd
after weaning**
*Dietary ritualization starts at the end of
the suckling period and is achieved
around the 16th week.*

tices also lead to eating disorders. For these reasons the dog will become difficult and greedy. This is exacerbated when the dog's relationship with its master is based on the ritualized gift of food, which makes change more difficult for both the master and the dog. The notion of guilt plays a large part in this giving of food. The more a master thinks the dog is unhappy the more important he or she will find it to compensate with the gift of food (Muller, 1998b).

TABLE 1 - SEVEN HELPFUL TIPS FOR THE ARRIVAL OF THE PUPPY

1. Do not change the food the first day the puppy arrives, and only make food available to the puppy for brief intervals: five times a day for five minutes would appear sufficient. Do not linger while the puppy is eating. Subsequently, it is preferable to offer meals for a brief period (five minutes) at regular times. The ideal number of meals for a weaning puppy is five daily and for an adult dog it is two daily.
2. From day one, do not allow your dog to approach the table during your own mealtimes, whatever its age. This rule must never be broken, Remember that breakfast is also a meal.
3. Select kibbles in a rational way, without succumbing to impulse buying. Any changes should be transitional. Do not trust in the preferences of your dog or cat, which are based on flavor and are not always best for the animal's health.
4. Use small pieces of food as a reward after exercise, but ensure that these treats correspond to an effort made or a command learned.
5. Give the dog its meal after you have had your own or at completely different times.
6. Leave the room when the dog is eating. Do not try to take the bowl, as this will provoke a conflict and you cannot be sure that you will come out on top even if you do get the bowl.
7. Contrary to the popular belief, bones do not provide the dog with much in the way of nutrients. It is preferable to give the dog chewing bars. Leave the dog in peace when it is busy with its treat.



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You should only give food over and above meals as a reward to help the dog to learn. This means you should give the treat at the end of the sequence of commands you want to reinforce to the dog. Remember you can easily substitute a few kind words or a few pats instead of a treat.

A system of random rewards is recommended to attain a certain type of behavior through training. At first, the desired behavior should be encouraged and reinforced with systematic rewards. When the animal regularly starts to produce the required sequence, the reward may be alternated (once in every two then every three times). After a period of time, it is a good idea to progress to random rewards, which will attain the desired behavior and ensure that it does not disappear when it is no longer reinforced.

Owners inadvertently teach their dogs that they can beg at the table by employing the alternative reward, then stopping providing a reward almost totally, so adopting a random reward model. It is normal for the dog to beg in these circumstances, even when the owner practically never succumbs (Lorenz, 1978).

TABLE 2 - TEN ERRORS TO AVOID

1. Giving food from the table: by sharing food you destroy the dog's image of you. The dog admires and feels an attachment to masters that protect their food.
2. Imploring your dog to eat or encouraging it by feeding it with your hand. If you want your dog to respect you, you should not stay in its company when it is eating. By showing that you really want it to eat, you assume a subordinate position and invite the dog to refuse food in its desire to move up the hierarchy.
3. Confusing a good diet with being nice. This may hold for humans, but it does not hold for dogs. A happy dog is a healthy dog that can go for a walk and play with its master. Food should be used only to quell hunger, not as a way of gaining affection. Animals are not capable of managing dietary pleasure in any reasonable way.
4. Do not feed your dog just before you sit down to eat yourself to stop it begging. This will confuse the dog, which will certainly not beg because it is hungry but because it wants to take on the status of master by sharing your food.
5. Giving your puppy different foods to make it feel at ease when it first arrives. The first days in a new home are decisive. It is normal to try to reproduce an environment the puppy understands. You should not modify the image it has of adult humans. It is normal that it does not dare eat when it arrives and exhibits timid behavior. It is also important to impose rules from the beginning.
6. Using small treats to stimulate the dog's appetite for its kibble. There is no point in doing this. If the dog is hungry it will eat its kibble. Otherwise there is a risk of making it eat when it is not hungry, which will cause unwanted weight gain. In addition if you continue with this ritual you increase the risk of the dog not accepting its kibbles.
7. Making up for your absences and shortcomings with food treats. There is a risk you will reduce the dog-master relationship to an exchange of food.
8. Reducing the quantity of food and drink for reasons of cleanliness. This common technique puts the master's desires ahead of the dog's needs. Young puppies must be given at least four meals a day and they must have access to fresh water at all times. There is a risk that irregular distribution will lead to digestive disorders that adversely affect learning.
9. Not worrying about a puppy that eats a lot more than the manufacturer's recommendations. Over consumption can be a sign of satiation, behavioral (hypersensitivity-hyperactivity) or digestion problems. It would appear wise not to wait long before discussing it with the veterinarian.
10. Giving a homemade meal once a week. This expresses the master's lack of confidence in a prepared petfood. The master either fears some deficiency or is afraid that the dog will not be happy. Serious discussions with the owner must be used to show the dietary quality of manufactured food.

Practitioners must be aware of these points if they are to eliminate bad habits. A ritual cannot be eradicated without compensation. On the other hand, no guilt should be attributed, as this will involuntarily strengthen the attitude that triggers the gift of food (Tables 1 & 2).

4 - Behavioral pathology and food

► Relational problems

The concept of dietary behavior ritualization enables us to understand the development of relationships in relation to food for the domesticated dog. The ritual must be understood as an essential part of the dog's relationship with the master. To retain contact with our remote friends and acquaintances, at least once a year we succumb to the ritual of sending a greeting card.

The prevalence of rituals increases when the master-dog relationship is weakened and the dog will spontaneously initiate symbolic behavioral sequences. At a certain level, this increase becomes pathological attention-seeking behavior (Overall, 1997).

Dietary rituals are clearly involved and the animal may adopt dietary behavior that is contrary to its primary needs (hunger and satiation). The animal may eat even though it is satiated to show its position or to accomplish a ritual act. On the other hand, it may refuse to eat if the circumstances no longer correspond to a ritualized act (Houpt, 1991). These behaviors are governed by strong motivations and are not easy to change. Denouncing them will not be enough to eliminate them. They express the deep unease of the dog, the master and their relationship (Beaumont et al, 2003).

► Anxiety and displacement activity

The animal may become anxious due to relational problems or other reasons. The condition will lead the dog to want to be assuaged more than a normal animal and it will seek to maximize its contacts with its owners (it may be impossible to leave the dog alone). The need for contact (secondary hyper-attachment) may leave the animal unable to feed itself if its masters are no longer present (it will eventually die of starvation). Furthermore, an anxious animal will attempt to regain its emotional stability through repetitive rituals ad infinitum.

Unfortunately, such automatic excessive behaviors (stereotypes) lose their primary function and especially their comforting power. Only a considerable increase in number can compensate for the loss of this function. The ritualized sequence gradually becomes displacement activity.

If feeding is part of the behavior adopted by the dog to regain a calm attitude, disproportional ingestion and a spectacular weight gain can be expected.

Such behavior cannot be eliminated without specific etiological treatment (antidepressant and restoration of a socially-adapted environment).



Bulimic behavior in a dog may be an expression of anxiety. Eating may have become a displacement activity.



An active Golden Retriever
Recreational therapy is part of the treatment of dietary behavior problems. The goal is to increase exploration activity to create a positive emotional context.

► Sick animals

Owners often tend to wrongly interpret their animal's lack of appetite as a sign of developing illness and encourage the dog to eat even though it is in good health.

It is true that a sick animal – especially one with a fever – will typically lose its appetite. This behavior has been described as an adaptive response (*Hart, 1990 & 1991*). Interleukin will play a role in the sick animal's demotivated behavior (*Dantzer, 1999*). Conversely, it is not sufficient to explain a clear lack of motivation to eat without a visible organic cause by saying that the disease is behavioral. Such a default diagnostic often leads to unproductive treatments.

► Satiation problems

The dog's relationship with its owner is not the source of all behavioral diseases. Some dogs are abnormally adapted or may even be suffering from an illness. Some of these conditions are expressed through satiation problems.

> Two-phase hypersensitivity-hyperactivity syndrome (HSHA)

In the worst cases, hypersensitivity-hyperactivity or a lack of self-control is accompanied by a lack of satiation. The animal becomes unable to adapt its behavior to the internal messages it receives. The sight of food triggers feeding and the sight of water triggers drinking. The dog only stops when he is incapable of continuing or when a more inspiring event attracts its attention (*Pageat, 1995*).



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Knowing that such behavioral disorders exists can help the practitioner to show greater patience in helping to deal with the difficult issues.

These dogs are seldom obese, because they expend more energy than healthy dogs. They are often insomniacs and their hypersensitivity leads them to react to stimulation with great energy. Their dietary needs are generally not at all consistent with the recommendations of manufacturers of commercial foods, which are not geared to such energy expenditure.

This disorder rarely resolves without treatment. Anxiety ultimately develops, modifying the initial clinical presentation (*Dehasse, 1996*). These animals have difficulties learning. It is fairly uncommon for dietary rituals to be established in the master-dog relationship here.

> Primary and secondary dissocialization

Dissocialization is the result of bad developmental conditions (*Muller, 2000*). This disorder can be primary when it is the consequence of major initial deficiencies and it can be secondary when it is due to unfavorable early and late conditions (*Arpaillange, 2000*).

Patients present various symptoms, which boil down to a poor or even non-existent knowledge of canine social rules. For these dogs, of course, dietary rituals are absent or frustrating. The desired food is consumed and every obstacle against satisfying this craving is fought against. These dogs are sometimes capable of jumping on the table to steal their master's plate. This condition has a wide spectrum of severity, from very poor education to the most violent psychotic behavior.

> Depression

Emotional problems can sometimes bring about mood disorders. The best known is depression, which can be acute or chronic in dogs. The distinction between these two forms is centered on appetite and sleep. There would appear to be a correlation between the two.

In a chronic depression, sleep increases while feeding decreases (Habran, 1998). An irregular appetite may be the first sign of this chronic form.

The acute form is more alarming: the dog stops eating and sleeps excessively. In puppies it represents an emergency.

Conclusion

The study of dietary behavior goes well beyond the confines of nutrition. Conversely, you cannot hope to come to grips with canine nutrition without a good knowledge of the psychological value of food and meals, for both humans and dogs.

Clinicians that deal with problems of dietary behavior must consider the elements of behavior to be symptoms of disease. The consultation is used to identify the food-related symptoms and other components to arrive at a systematic description of the disease.

The prescription depends on the disease, and incorporates every etiological aspect of it. An exclusively symptomatic prescription will not have the same impact. If it is to be effective, nutrition alone can target only some of the problems of dietary behavior and the prescription must include all psychological and organic aspects.

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The palatability of a food depends on how the dog consumes it, as this translates its perception of the food's organoleptic qualities. A highly palatable food will be consumed with great pleasure, while an unpalatable food may be underconsumed or even refused.



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Key Points in the analysis of:

The dietary behavior sequence

Generally speaking, food intake follows the following sequence.

The search, identification and selection phases

The dog uses its sense of smell to capture the aromas emitted by the food and its sense of touch to judge the food's temperature.



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Smell is the most discriminating sense in this phase. The dog has 70-200 million olfactory

receptors, compared with a human's 5 to 20 million receptors (Vadurel & Gogny, 1997).

When a dog sniffs, the airflow is 1 l/sec, which is ten times faster than in normal respiration (Vadurel & Gogny, 1997). Olfactory acuity is at a

maximum when the dog is hungry and falls when the dog is satiated.

The sense of smell declines with age.

The oral phase

The dog now perceives the size, shape, texture and taste of the food.

The sense of taste is centered in the gustatory papilla on the tongue, palate and pharynx. Dogs have around 1700 tastebuds, compared with 9000 tastebuds in humans.

Dogs distinguish five distinct flavors: bitter, sweet, acidic, salty and umami, which is the recognition of an essential amino acid, glutamate. Dogs tend to reject bitter flavors and be attracted to sweet flavors. It should be remembered

that wild canids also eat fruits and berries.

Conditioning starts before birth, as the puppy's gustative system starts to function just before whelping (Ferrel, 1984). It is sensitive to certain molecules in the mother's food, which are conveyed through the placental circulation and the amniotic liquid (Thome, 1995). This intrauterine exposure influences the future preferences of the puppy (Doty, 1986).

Digestion phase

If the dog associates negative sensations with the ingestion of a food (e.g. if it is ill just after it has eaten), it may develop a process of aversion that will lead it to avoid this food the next time (Cheney & Miller, 1997).

COMPARISON OF OLFACTORY PERFORMANCE IN DOGS AND HUMANS

(from Vadurel & Gogny, 1997)

	Dog	Human
Surface of the olfactory mucosa (cm ²)	60 to 200	3 to 10
Number of receptor cells (millions)	70 to 200	5 to 20
Part of the olfactory brain/total brain	35 times greater	
Detection threshold for certain molecules	concentration 10 ⁶ -10 ⁸ times weaker	

Focus on:

FOOD FLAVORS

The dog is naturally attracted to food with a high fat content. Increasing the quantity of fat in the kibble's coating is the simplest way of increasing palatability, although this strategy may be counterproductive to the nutritional strategy. There is a danger that high fat food will encourage obesity if the owner fails to properly control the quantities given.

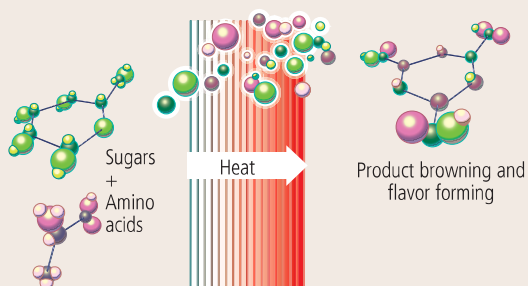
The more you try to limit the fat content, the more important flavor is to palatability. Flavors were limited until new ones started to be produced by traditional methods like enzyme hydrolysis and Maillard reactions, as used in the manufacture of cookies. A technological breakthrough has enabled the development of a third generation of flavors, with

even better results. The effect is much improved as it is the synergy of the two flavor types that were formerly used for dogs.

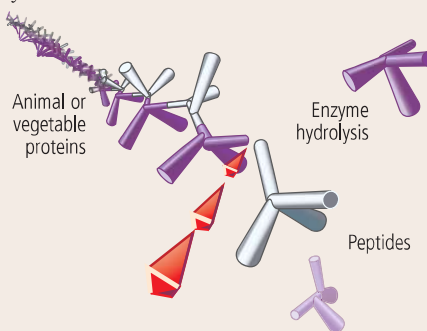
The work on flavors involves following their development in time. Palatability must remain satisfying until the final date of consumption stated on the packaging.

THE MAIN TECHNOLOGIES USED UN DEVELOPING FLAVORS

1. **Maillard reactions** are used to flavor various products (coffee, rusks, roasted meat, etc).



2. **Hydrolyzates** are often obtained from heated and acidified poultry proteins. Enzymes are used to produce protein autolysis.



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