

## Aggressive behaviors in domestic cats (*Felis catus*)

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**Abstract:** *Aggressive behaviors in domestic cats (Felis catus).* Behavioral issues of cats include: furniture scratching, aggression, anxiety, over-stimulation, exaggerated vocalizations and excreting outside the litter box. Among these, aggression – both passive and active – is the most commonly encountered problem. Aggressive behavior is a complex phenomenon, dependent on both genetic and environmental factors. Among the factors leading to agonistic behavior two categories are distinguished: psychobiological factors (which include biochemical and physiological processes, disposition and mood, emotional reactions, motor actions and vegetative reactions) and environmental factors (such as incorrect socialization, unfriendly surroundings or irresponsible animal owners). The most widespread type of aggression in cats reared in groups is linked to the desire to gain and maintain their territory. Another type of agonistic behavior is one born out of fear, exhibited by cats in a crisis situation once there is no escape route, and the animal is certain it has to fight to survive. This behavior differs from others in that aggression is here the last resort and not the first response to a disturbing situation. Another source of aggression may be anxiety caused by a sudden change in the environment, the presence of people and other animals. An interesting type of aggression linked to the natural hunting sequence of cats is aggression during play, which especially affects cats during adolescence. While working with an aggressive animal, a caregiver has a range of different mitigating and calming measures at hand, but their proper selection requires experience and cooperation with a veterinarian and a behaviorist).

*Key words:* domestic cats, aggression, behavior

## INTRODUCTION

Aggressive behavior is a complex phenomenon, dependent on both genetic and environmental factors. Among the factors conducive to aggression two main categories are distinguished. The first group are psychobiological factors which include biochemical and physiological processes, disposition and mood, emotional reactions, motor actions and vegetative reactions. The second category are environmental factors, such as incorrect socialization, unfriendly surroundings or irresponsible animal owners (Petrynka et al. 2004). All behaviors that result in any other individual being forced to maintain their distance in psychological, physical or social sense can be considered aggressive (Eibl-Eibesfeld 1990). O’Hearem (2009) defines aggression as “attacks, attempted attacks or threats to attack”. This definition emphasizes that aggression is the behavior of one living creature towards another, and that this behavior does not necessarily have to involve the desire to do harm.

Research on the evolution of mammals shows that cats – despite being the most popular domestic animals in the world (Turner and Bateson 2000) – still remain wild in nature and full of secrets. Domestic cats, despite thousands of

years of living together with humans, continue to be great hunters, have not become dependent on food supplied by people and are famous for their love of freedom.

The results of multiple studies conducted show that cats, in contrast to dogs, have been only partially domesticated (Overall et al. 2005, Warren 2014). The DNA comparison of domesticated and wild cats (*Felis silvestris lybica*) shows that the only differences exist in the genes responsible for coat color, submission instinct and attachment to humans (Warren 2014). Slight changes were noted also in some anatomic features – e.g. decrease in size of both the pituitary gland and the adrenal gland (Fogle 2008). Incomplete domestication of cats, their independence and self-sufficiency historically gave rise to suspicion, lack of understanding and sometimes even hatred among the human population (Turner and Bateson 2000). Each feline kept at home needs an individual approach, empathy and for their needs to be met by the caregiver. Lack of opportunity to express natural instinct and behaviors can lead to anxiety and aggravation of behavioral problems (Da Graca Pereira et al. 2014).

Behavioral issues of cats include: furniture scratching, aggression, anxiety, over-stimulation, exaggerated vocalizations and excretion outside the litter box (Jongman 2007). Among these, aggression – both passive and active – is the most commonly encountered problem (Strickler and Shull 2014). The objectives of this study were to identify different type of aggression, and to obtain descriptive information on methods used to prevent the occurrence of aggression.

## TYPES OF AGGRESSION

Instances of active aggression are difficult to overlook. Aggressive cats hiss, spit, growl, and ultimately attack. Openly agonistic behavior is very often planned – the aggressor is capable of waiting patiently and attacking the other cat when the animal is least prepared to defend itself. Unfortunately, passive forms of agonistic behavior are often dismissed and ignored. These behaviors consist in one animal observing the other cat with a look that prevents the latter from approaching the food bowl, litter box or its bed. A cat that is a victim of passive aggression will increasingly withdraw from active life. Subjected to continuous state of tension and stress, the feline may eventually fall into apathy. The most common diseases caused by stress are diseases of the urinary tract and diabetes. Furthermore, such a frustrated cat may begin to manifest different stereotypes or compulsive behaviors: excessive licking of fur, often even to topical baldness (McCobb et al. 2005).

Threats and aggression can be either offensive or defensive. Offensive aggression occurs when a subject is feeling the need to be assertive in a certain situation – e.g. when facing another cat or guarding an object. Cat who is feeling assertive will likely have ears facing forward, fur standing and tail stiffing towards the ground. Animal being offensive will stare directly at its target with constricted pupils, possibly moving it, most likely growling or yowling. Defensive aggression occurs when an animal is attempting to protect itself from an attack it believes it cannot escape. Defensive postures include crouching with the legs pulled

in under the body, laying the ears back, tucking the tail, and possibly rolling slightly to the side (Case 2009).

Levine (2005) points out that the domestic cat (*Felis catus*) belongs to the most aggressive species in the world. Aggressive behaviors increase the chance of survival of a given individual, and ensure safe upbringing of the young. All felines are, through their genetic makeup conditioned to aggressive behaviors. This characteristic sometimes does not find sufficient understanding among owners, and the cats end up on the streets, are relinquished to shelters, temporary homes and in the worst case are subjected to euthanasia. However, with correct identification of the source of aggression by a good behaviorist/animal psychologist the undesirable behaviors of the felines can in fact be mastered, and specific preventive actions can be taken for the future (Crowell-Davis et al. 2011, Moesta et al. 2011).

The most widespread type of aggression in cats kept in groups is aggression linked to their desire to gain and maintain territory (Houpt 1998). Such agonistic behavior may be more pronounced if another animal is introduced into the home (Hart and Hart 2014). It is a priority for every cat to have their own territory. The territory of a free-roaming cat consists of several zones (or fields) that overlap each other. One section of the territory is known as the cat's home range – this is where the cat hunts for food and explores. The cat's home range (sometimes called family range) can be shared with other individuals, although its central part belongs only to the single animal. The other parts of the territory are in fact “no man's land”, i.e. their area

is occupied by other species of animals, including dogs (Ellis 2009). In cats kept in homes, following this division of the territory is not so simple, thus cats have to settle for a substitute that is effectively confined by the home's four walls. There is a linear correlation between the number of cats living in a given space and the frequency of instances of aggressive behavior (Hart and Hart 2014).

A special type of **territorial aggression** is aggression directed at an individual that has been away from home for a long time. It is a set of agonistic behaviors when a cat is facing a familiar member of the social group, and sometimes even a well-liked one, but for some reason that animal is “unrecognizable”. Such practice is often observed between cats after one returns from a veterinarian, from an exhibition or after being used as a stud cat (Kmecová et al. 2003). Behaviors associated with territorial aggression begin with mutual evaluation of opponents, exchange of scents, establishing eye contact and assumption of appropriate body posture. If none of the individuals retreats after such show, this leads to aggression and a fight occurs. Cats generally avoid fighting. Instead, they will rely on vocal and postural threats to challenge foes and appeasement to back down from stronger opponents. This safety mechanism is common among predatory species. Not only because it is dangerous to fight, but it is also time and energy consuming (Crowell-Davis et al. 2003).

When fights between cats are frequent, and are associated with serious bodily injury, the agonistic cats should be isolated from one another. In such a situation, an artificial barrier should be

created that would separate the cats, or the animals should be kept in separate enclosures or rooms equipped with a litter box, access to water and food (Bradshaw 2014). Similarly as in the case of introducing a new individual to a feline social group, caretakers should allow the cats to get acquainted once again and let them build a new model for their relationship. It is important to ensure the cats can still indirectly exchange scents during the period of isolation (Levine et al. 2005). It is recommended to release the felines alternately for a longer time. After some time, one should start letting the animals out at the same time, preferably during the feeding time. This will allow them to associate the presence of the other individual with a positive signal. However, it should be remembered that the distance between the cats at the first meetings after being separated should be large enough that they cannot communicate with each other (Moesta et al. 2011). In case of any symptoms of aggression emerging once more, re-isolation is necessary (Bradshaw 2014).

In the case of just incidental, short conflicts, it is better to abstain from intervention. Cats living in one place must establish a hierarchy for themselves. It is also worth remembering that social groups formed by cats are based around dynamically developing relationships, which means that small clashes or conflicts within them are normal (Biegańska-Hendryk 2017). It may happen that aggression between two animals intensifies at a specific time of the day (Bradshaw 2014), or takes place only in a very specific location. In such situations, the best solution is to separate the cats in question during this most

turbulent time of day, and not to allow them into places that trigger unwanted behaviors.

In some cases, a cat with highly developed territorial tendencies will attack people who came to visit the owner. If a cat exhibits such behavior, the only method to deal with the issue is to isolate the cat whenever guests are present, and to not allow it to behave aggressively. It is recommended that the cat be slowly accustomed to unknown people visiting the house. The animal should be on a leash or in a transporter during such initial visits. The guest can also offer the animal a treat to consolidate a positive association with the visit in the feline mind (Bradshaw 2014). Subtype of aggressive behavior connected with territoriality is **maternal aggression**. Aggressive behaviour directed at other animals is common and expected from female cat because she has to protect their young at all times.

Another type of aggression, often confused with territorial aggression, is **aggression stemming from fear**. This type of behavior is exhibited by cats in a crisis situation once there is no escape route, and the animal is certain it has to fight to survive. This behavior differs from other types of aggression listed in that the combative behavior is here the last resort and not the first response to a disturbing situation. The source of aggression may be anxiety caused by some sudden change in the environment (Levine et al. 2005), the presence of people (Crowell-Davis et al. 2011) and other animals. Recognition of this type of aggression is possible due to close observation of the animal's body language. A frightened cat hisses and spits, sits in

a crouched position, puffs up its fur and lays down its ears flat against the head (Mertens 1991, Schwartz 2005). Working with such a cat, one should never discipline it for anxiety behavior. During an attack of fear, it is recommended to stay at a safe distance from the feline in question. Ignoring the animal and leaving it alone will allow it to quickly calm down and make a less panicked, more realistic threat assessment (Schwartz 2005). It is worth trying to get the animal used to the stimulus causing fear. Such desensitization occurs when a cat is exposed to a fear-inciting stimulus, but at such intensity that the reaction does not occur (Crowell-Davis et al. 1997). When the animal is calm and relaxed when exposed to a given intensity of the aversive stimulus, its intensity can be gradually increased – step by step, with care not to introduce too strong a stimulus that would cause fear and make the animal retreat. With this approach, both the processes of habituation and instrumental (operant) extinguishing – jointly responsible for reducing the intensity of the reaction – run in parallel (O’Heare 2009). If a cat is very stressed, after consultation with a veterinarian it is recommended to use anxiolytic and sedative drugs (Hart and Hart 2014).

The next category of aggressive behavior encountered by cat owners is **redirected aggression**. It often occurs when a cat cannot turn its anger, excitement or fear at the real source of its arousal, for example a strange cat passing by the window outside. Because the “real” enemy is unobtainable, the cat will redirect the attack at another cat that is within reach. Cats unload their frustration in a similar manner – a situation in which

cat A, scolded by cat B, turns instead on cat C, an individual that is submissive and withdrawn (the lowest in the hierarchy) is quite common (Bradshaw 2014). Importantly, the object of such redirected aggression caused by frustration may be another cat, another animal (e.g. a dog) or even a human.

Yet another type of aggression is **play-associated aggression**, often exhibiting elements that normally form part of the cat’s hunting sequence. It may happen that cats deliberately attack human feet and hands like they would a mouse. The most agonistic, predatory play is observed in young cats between the onset of sexual maturation and the age of two years, in the so-called period of psychological adolescence (Curtis et al. 2003). Such behavior may be influenced by various factors, including too early separation from the dam and siblings. Young kittens should stay together with their dam in a family unit until about 12 weeks of age (Senczi et al. 2016). Living in a group, kittens are able to acquire skills useful in the future during hunting and social interactions (Crowell-Davis 2007). As they play together under the watchful eye of their mother, young cats learn how to use teeth and claws so as not to harm their siblings (Curtis et al. 2003). Another reason for aggressive play may be inappropriate behavior of the caregiver. Sudden, violent movements are not advisable, as they can provoke a cat to attack (Mertens 1991). It should be remembered that poorly designed session of play that does not end with completion of the hunting sequence can increase the cat’s frustration, and thus lead to aggressive behavior. It is best to use appropriate toys when playing with

cats, ones attached to strings or poles, known as rods, to keep the animal away from the owner's hands (Crowell-Davis 2007). If the cat has already learned to (play) hunt the caretakers, their task will be to create unpleasant associations with the act of aggression using a loud sound, a spray-bottle or a diffuser. In difficult cases, consultation with a behaviorist and a veterinarian is recommended to establish a treatment program for the animal (Amat et al. 2009).

Aggressive behaviors may also occur as a reaction to disease or pain (Camps et al. 2015). If a cat suffers from pain, even the normal, casual touch of the owner might be very unpleasant – and the animal will instinctively respond with aggression. If the diagnosis of the underlying cause is quick and the disease is curable, aggression disappears together with the disease symptoms. When diagnosing aggressive behaviors, it should be remembered that health issues may also exacerbate aggression the primary cause of which is not related to health. Accurate veterinary examination is an important element in developing the treatment optimal for a given animal.

## SUMMARY

Aggressive behaviors of felines are a complex issue, as they may be caused by a number of factors occurring simultaneously and overlapping. An important role in preventing the development of a habit of aggression in cats is played by cat-human communication and mutual understanding. It is advisable to use specific, unchanging signals and to use stimuli that engage all senses of the animal (Hart and Hart 2014). Im-

portantly, all caregivers should acquire and broaden their knowledge about function and significance of different feline sensory organs, as well as body language and behavior of the domestic cat. With this foundation, they should be able to understand the needs of a given animal and create a stronger relationship (Salman et al. 2000). When working with an aggressive animal, a caregiver has a range of different mitigating and calming measures, but their proper selection requires experience and cooperation with a veterinarian and a behaviorist (Biegańska-Hendryk 2017). Lack of sufficient knowledge about the causes of aggression in animals may lead to the problem getting worse.

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**Streszczenie:** *Zachowania agresywne u kota domowego (Felis catus).* Wśród problemów behawioralnych kotów wymienia się: drapanie mebli, agresję, stany lękowe, nadmierne pobudzenie, przesadną wokalizację i wydalanie poza kuwetą, z których to właśnie agresja, zarówno bierna, jak i czynna są spotykane najczęściej. Zachowania agresywne są zjawiskiem złożonym, uzależnionym zarówno od czynników genetycznych, jak i środowiskowych. Wśród czynników prowadzących do agresji można wyróżnić czynniki psychobiologiczne, do których zaliczyć można: przebieg procesów fizjologicznych, usposobienie i nastrój, reakcje emocjonalne, akty motoryczne oraz reakcje wegetatywne, oraz czynniki środowiskowe, takie jak: błędna socjalizacja, nieprzyjazne otoczenie czy nieodpowiedzialni właściciele zwierząt. Najczęstszym typem agresji u kotów utrzymywanych w grupach, jest chęć zdobycia i utrzymania swojego terytorium. Innym typem agresji, jest agresja ze strachu którą przejawia kot „przyparty do muru”, gdy nie widzi już możliwości ucieczki, i w swoim mniemaniu walczy o życie. Ten sposób zachowania różni się od innych tym, że jest on ostatnim, a nie pierwszym elementem odpowiedzi na niepokojącą sytuację. Źródłem agresji może być lęk

spowodowany nagłą zmianą w otoczeniu, obecnością ludzi i innych zwierząt. Ciekawym typem agresji, powiązanej z łańcuchem łowieckim, jest agresja podczas zabawy, która dotyczy zwłaszcza kotów w okresie dorastania. W przypadku pracy ze zwierzęciem agresywnym opiekun ma do dyspozycji wiele różnych środków łagodzących i uspakajających, jednak ich prawidłowy dobór wymaga doświadczenia i współpracy z lekarzem weterynarii i behawiorystą.

*Słowa kluczowe:* kot domowy, agresja, behavior

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