

Do cats have internal mechanisms that help them calm down ?

Is the grunting and milky step really just a display of affection ?

Daniela Hypšová, kennel Síh, Re's Cat School, NCHK

As we well know, an animal's control over its environment is the most important behavioral reinforcer ever. The nervous system of living creatures uses the unconscious scanning of danger signals in the environment with the senses as an evolutionarily tested strategy for millions of years. It is our guardian angel - a control that is beyond the reach of reason and therefore very fast, holistic, though not entirely accurate and not enough to adapt to the current lifestyles of humans and the animals we keep as members of our households.

If an individual's nervous system evaluates environmental signals as dangerous or potentially dangerous - for example, noise, odours, temperature, light intensity, airflow, unfamiliar objects or situations - a physiological alarm is triggered. A cascade of stress hormones is released to mobilize or immobilize the organism so that it has a chance to survive. All this happens in fractions of a second.

The problem is that once the level of stress and arousal of basic stress reactions is reached, the animal completely loses conscious control over its environment and is controlled only by its unconscious.

There are mechanisms that help animals, including humans, to reduce stress so that they can at least partially control their environment despite high levels of stress.

In humans, there are many such techniques - deep breathing, meditation, autogenic training, physical activities, dance....

Animals that are stressed or deprived also try to gain control over their environment or parts of it.

Stress can be caused by many factors, but among the biggest are undoubtedly the loss of contact with the mother or a relational animal (cat, dog, other animal, human), exclusion from society, pain, cold or heat, unfamiliar environment without safety signals.

We are familiar with stress when we weaning kittens, when moving them to a new home, when another family member dies, when our cat or cats were related to us, in felinotherapy, when we enter strange environments, when we visit the vet. If we accompany the cat, we provide emotional support or use techniques based on scent signals, for example (for example, a blanket saturated with the smells of the mother and the litter box where the kitten or kittens lived with the mother), we can at least help the cat feel a little better.

But cats also have their own mechanisms to induce a more pleasant state of mind. For example, purring, milk-stepping, touching the body, or squeezing into small spaces that surround the cat tightly are all part of this calming function.

Some cats purr not only when they are content, but also when they are "emboldened" to explore an unfamiliar object, environment or activity. In others we can observe a milky step with a very intense rhythm of pawing. It is likely that the cat is subconsciously trying to stimulate the brain to produce natural opiates by these movements and perhaps even purring.

- natural versions of opium and heroin - endorphins - into the bloodstream. A regular, intense rhythm plays a role here. For even when a mother licks her kittens, we can detect the rhythm of this activity. In the same way, one should stroke a cat with the same rhythm and intensity as when a mother licks her kittens. This is because there is an endorphin release in both the giver and the receiver - in the kitten and its mother, and in the cat and its human.

If the stress or deprivation is prolonged, pathological manifestations such as

stereotypical behaviour - for example, constantly moving the animal back and forth in the cage without interest in the surroundings, swaying the body, stepping from foot to foot, licking or pulling out fur, self-mutilation. Here again, rhythm is an important component in stimulating endorphin secretion (rhythm, pacing, moving the head from side to side while licking). These are better reactions, from my point of view, than total freezing. They activate the ventral (ventral branch of the vagus nerve and signify activity), whereas freezing activates the older dorsal (dorsal) branch of the vagus nerve, the so-called "reptilian" deactivation response, which can represent a severe decline in vital functions for mammals and, in some cases, a risk of death.

By secreting endorphins into the bloodstream, the animal's body tries to partially alleviate the deprivation, and the stress the individual is experiencing is an attempt to survive. Animals that exhibit elements of stereotypic behaviour need to be modified in their environment and offered a different activity, redirecting their activity so that they receive the same benefit-endorphins-while slowly re-engaging with the real world around them. Stereotypical behavior is a similar escape to drug addiction or alcoholism. In contrast, with freezing, it is necessary to try to activate the individual and kick-start the endorphin secretion itself. Therefore, apathy in animals always represents a red exclamation point and action must be taken as quickly as possible.

In her book **Animals in Translation**, Dr. Temple Grandin, an American ethologist who is herself autistic, describes the calming effect of a firm grip, softness and warmth. For autistic people, human embrace is usually very uncomfortable, overwhelming them with stimuli and can lead to panic states and the need to break out of the embrace. Cats and other animals are very close to the autistic perception of the world.

However, if this hug is induced by an inanimate object, e.g. a fixation cage or - as in the case of a cat - by squeezing into the space that surrounds the cat - relaxation occurs. If this space is soft and warm, the same stimulation as social contact is physiologically produced. Under ideal circumstances, when the cat is not being stalked by a predator, it is in full control of how long it wants to stay in its "artificial embrace".

Despite the notion that cats are solitary animals, cats are social creatures that, given sufficient resources in their environment, form matriarchal groups consisting of mothers, sisters and daughters who care for their offspring together. Young cats also associate in groups. The two groups share sleeping areas, keep each other warm and groom each other's fur, which, in addition to keeping them warm, provides olfactory and tactile stimulation - and the secretion of endorphins. Separation from the group - in the event of the mother or caregiver moving away, dying, straying, or being forcibly separated, there is a sharp reduction in endorphins in the bloodstream and a strong sense of anxiety. Stress increases. Dr. Grandin(ova) in her book *Animals in Translation* states that social distress is evolutionarily linked to three ancient systems in the brain, They are:

1. **Pain response.**
2. **Place attachment, which can be** defined as the ability of an animal to form an attachment to the nest or territory where it raises its young for a home. Cubs that remain alone for a period of time or lose their mother or a relational individual are always stressed. However, they cope better if they are in their homes, not in an unfamiliar place.
3. **Thermoregulation, regulation of body temperature."**

Further, Dr. Grandin states that scientists hypothesize that social warmth in the brain evolved from the neuronal system that controls physical temperature, so social bonding is undoubtedly a survival tool that evolved in part from a mechanism for maintaining body temperature.

Fearful cats need calm and empathetic feline companions - they give them confidence and help them build up sufficient endorphins and oxytocin in their brains. As Dr. Grandin states,

Oxytocin is not only a hormone of relationships and bonds, it is also important for social memory, allowing animals to remember the likenesses of others.

Bottom line - it is worth paying attention to when the cat tries to squeeze into a tightly enclosing space, when it rhythmically paws at the spot and with what intensity, or when it growls. It is worth noting situations where the cat behaves in this way, comparing behaviour in a known safe environment with behaviour in an unfamiliar environment, and using the cat's behaviour as a measure of its level of stress, excitement and fear. We can respond more flexibly and more effectively to help her regain control of her environment, which is absolutely essential for the mental and physical health of all living creatures. It also pays to mentally "toughen up" your cat - play hide and seek, take her out for walks, travel with her. In this way we train her ability to react flexibly and to cope with her own stress, which naturally accompanies everyday life.

Literature used :

Czech translation

Grandin, T., Johnson, C. Animals in translation, Csy, 2015, ISBN - 978-80-971852-1-3

English original:

Grandin, T., Johnson, C., Animals in translation, Simon and Schuster, 2005, ISBN13: 9781439187104