

Behaviour matters

Nicky Trevorrow tries to make sense of a cat's world

In order to really understand a cat from their perspective, it is essential to appreciate their senses and how they perceive the world around them. As we share the same core senses of sight, hearing, vision, taste and touch with cats, it can be very easy to assume that they must experience their surroundings in the same way as us. For example, sight is so second nature to us, that we often use it in speech without realising, eg "I see what you mean". However, while vision is the most important sense to humans, for cats it is their sense of smell.

Scratch and sniff

Most non-primate mammals rely on their acute sense of smell in order to take in information about their surroundings. Cats in particular have evolved to use olfactory (scent) communication as a way of distancing themselves from other cats and avoiding conflict. Using rub marks from scent glands on their cheeks and scratch marks from glands in between their toes to deposit pheromones (chemical signals) as well as scent marking with urine via spraying, cats can communicate in a way that we would struggle to imagine!

Cats also have an additional scent organ called the vomeronasal or Jacobson's organ, which is located between the roof of their mouth and the nostrils. People do not possess this organ, although many other mammals do. In cats, it can be used to detect

Scent marking by using scent glands on their cheeks



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both male and female urine by opening the mouth with the upper lip raised into a sort of grimace and drawing the scent into their mouth. This grimace expression is known as the 'Flehmen response' and is much more noticeable in horses!

The cat's sense of smell is highly developed at birth so that they can locate their mother's teats to suckle. It continues to play an important role throughout their lives. They identify their home environment, and whether other cats are in the same social group or not, by their scent. This is why, if an adopted cat goes home with something that already smells of themselves, like a blanket, it will help for a smoother transition into the new house. Scent continuity is everything! If a cat becomes ill and loses their sense of smell, it often has a huge negative impact on their appetite.



I'm all ears

Cats have remarkable hearing and the broadest range of any mammal, enabling them to hear the highest pitched squeak of a mouse but also low pitched sounds. The cat's large ears act like satellites and can rotate about 180 degrees. Sound

enters each ear at slightly different times allowing them to pinpoint the location of the sound accurately. White cats with blue eyes are more likely to be deaf, however cats that are deaf in one ear can learn to locate sounds by making exaggerated head movements.

Excellent hearing and eyesight makes cats perfect predators



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Purr-ipheral vision

Cats' eyes have evolved to make them efficient predators of small rodents, which are often more active in low light. It's a myth that cats can see in the dark if it is completely pitch black, but their eyesight is much more attuned to seeing detail in low light compared to ours. In fact, it is about three to eight times better as they have three times the number of rods (light sensitive cells in the eye) than we do. Cats have a special area at the back of the eye behind the retina called the tapetum, which contains a layer of reflective cells that reflect light back. This improves the cat's night vision by 40%, although our eyes adapt to the dark quicker. We are all familiar with the characteristic shine of cats' eyes at night if caught in strong light. Other mammals also have eye-shine, although they can appear to us as different colours depending on the species.

Another area where people outperform cats is colour vision. It is thought that cats can see blue and a greenish-yellow, which coincidentally is not dissimilar to the Cats Protection logo colours, ▶

▶ but they can't distinguish red tones and most other colours appear as shades of grey. Cats tend to be far sighted and struggle to focus their eyes on objects under 25cm from their face. Owners sometimes wonder why their cat seems unable to find a toy or food when it is right under their nose, but it's because they simply can't see it!

That's poor taste!

A cat's sense of taste is probably the least studied and while they can detect salt, bitter and sour, they barely respond to sweet. As obligate carnivores, meaning they must eat meat to gain all the nutrients they need, their palate has evolved accordingly and they will turn their noses up at any meat which has spoiled. If a cat sniffs their food bowl and then starts scraping at the bowl or nearby, it is possible that something is putting them off. However, if a cat eats some of the food quite happily and then starts to scrape at the bowl, this behaviour is thought to be a throwback to 'caching' behaviour in the

Close up, cats rely on their whiskers and sense of smell



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wild where they store excess food for later. If you see your cat doing this, try reducing their portion size for a single meal, but feed your cat more frequent, smaller meals. They respond best to food that is 30°C, which is the same temperature as a cat's tongue.

Touch – it's the cat's whiskers

Like their sense of smell, a cat's sense of touch is well developed at birth. Kittens are responsive to temperature and will huddle together or cry for their mother if they get cold. Cats have clever adaptations that improve their sense of touch, including 24 very sensitive whiskers, also known as vibrissae.

These are found not only on either side of the nose, but if you look closely they can also be found on

the cheeks, over the eyes (making them blink to protect their eyes), on the chin and on the back of each foreleg. These are used for stalking prey or measuring a location as the whiskers of a healthy, slim cat help to determine whether they can fit into narrow spaces. Whiskers are sensitive to touch as well as wind speed and air currents. It is even thought that cats may be able to detect earthquakes before they occur, possibly due to their whiskers. Diabetic cats can have even higher sensitivity in their whiskers, so it is important for them to have wide, shallow food and water bowls so that their whiskers do not touch the side. Cats use their whiskers in communication too, bringing them forwards, backwards or having them in a neutral position depending on the situation. Watch your cat to see when they move their whiskers and see if you can work out what they are trying to say.

● For more information about a cat's senses, check out *The world according to cats* series featuring Dr John Bradshaw on the Cats Protection YouTube channel.

Cats prefer their food bowls away from their water bowls

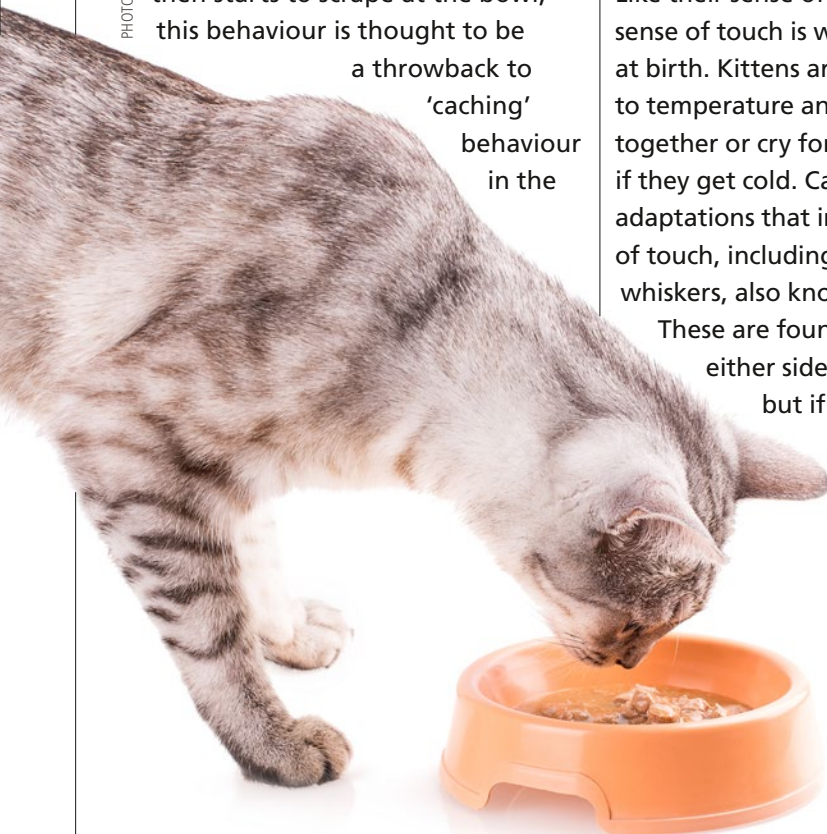


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