



## Cat Communication

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As cat owners and carers, it can greatly enhance the relationship that we have with our pets if we are aware of how our cats communicate and if we also have some understanding of the messages and information that they are trying to convey. It is also important to appreciate that unlike human languages, that allow us to exchange a very wide range of highly complex information, most animal communication including that of the domestic cat is very limited. A cat's communication skills only enable it to relay and comprehend fairly basic information such as current emotional state, immediate intentions, needs and wants, and sexual status.

Cats have a variety of means of communicating with each other and with other species, including us. Some of these methods we are familiar with, e.g. vocalising, but others, such as olfactory (scent) communication are very different from how we communicate with each other.

## Vocalisations

### Defensive and Antagonistic Sounds

These are produced with the intention of sending a warning and/or to increase the cat's distance from another individual that it regards as a threat or as a rival.

- Hiss and spit – sounds of short duration designed to initially deter a close or immediate threat.
- Growl – a low pitched sound of long duration. If an adversary or threat does not withdraw growling and yowling (a similar, but higher pitched sound than the growl) can continue for some while.
- Shriek – during defensive and antagonistic encounters a sudden loud and high-pitched 'shriek' maybe emitted. This is possibly designed to startle the threat or opponent, allowing the cat a brief opportunity to escape or to attack (Brown & Bradshaw 2014).

### Sexual Vocalisations

During the receptive period of her reproductive cycle an entire female cat will emit a continuous repetitive cry, commonly referred to as 'calling'. Also throughout the breeding season, entire males, when aware of a female in oestrus will produce a distinctive long-duration 'mowl' sound.

### The Purr

A purr is produced by contraction of the laryngeal muscles closing the glottis and causing a build-up of pressure which then forces open the glottis and separates the vocal folds, resulting in the purr. Unlike other vocalisations this sound can be made not only when the cat is breathing out, but also when it is breathing in.

A kitten is able to purr within a few days of birth and will produce the sound when suckling. This is possibly a way of signalling to the queen that the kitten is getting sufficient milk and to encourage continued nursing. A nursing female will also purr when feeding and grooming her kittens (Deag et al 2000).

Two 'types' of purr have been identified in adult pet domestic cats:

- The 'unsolicitation' purr. A purr produced when the cat is calm and content, either when it is alone or when in relaxed social contact.
- The 'solicitation' purr. A purr produced when the cat 'wants something' such as food or attention and is primarily directed at human care givers. This purr contains a slight high-pitched 'cry' and can sound more 'insistent' than the relaxed unsolicitation purr (McComb et al 2009).

It is also commonly reported by vets and vet nurses that cats sometimes purr when in extreme pain and even when close to death. One popular hypothesis for this behaviour is that the low-frequency vibration produced by purring has a healing effect (Von Muggenthaler, 2006). But there is no real scientific evidence to support this idea. Other suggestions are that the act of purring could be self-



reassuring or that it is a form of care or comfort soliciting (Bradshaw 1992; Bradshaw *et al*, 2012). But, as yet the reason why this occurs remains unclear.

**The 'Chirrup'** A 'chirrup' or 'brrrrp' sound is commonly produced by nursing queens when approaching their kittens. The same sound is also often used as friendly greeting between socially bonded adults and by some pet cats when greeting their owners.

### **The 'Meow'**

Although this is the vocalisation that most people associate with domestic cats it is in fact, not a single distinct sound but one that can vary greatly between individuals. The sound produced can also differ with the context and according to the message that the cat wishes to convey. It is a vocalisation that is rarely used between wild or feral cats but is commonly used by pet cats in human-directed communication either as a greeting or as form of solicitation, for example when the cat desires food or attention.

### **'Chattering'**

A 'chattering' or 'chittering' sound is produced by some cats when stalking prey or when prey can be seen but is unattainable. Margays, South American wildcats, have been seen to apparently mimic the sounds made by one of their major prey species, the pied tamarin. A popular hypothesis therefore, is that domestic cats are also attempting to mimic their prey. However, domestic cats and margays are not related and there is no evidence of any other member of the cat family doing the same. Another suggestion is that this could be a displacement activity due to frustration or anticipation. But until there has been sufficient study producing validated evidence, the reason for this particular vocalisation is unknown.

## **Visual Signalling (Body language)**

When reading feline body language it is very important to observe the whole cat and to also be well aware of the circumstances that have caused the cat to present a particular body posture or facial expression. Using a snapshot to analyse a cat's emotional state with no back up information, can give some very misleading and incorrect results.

### **Facial Expressions**

Recent research has shown that some people are able to correctly identify negative and positive emotional states in cats from looking only at the cats' facial expressions shown to them in video clips. Even so, feline facial expressions can be very subtle and notoriously difficult to read. The same research also found that cat ownership had very little effect on an individual's ability to do this (Dawson *et al* 2019).

However, the more overt signals can be recognised by most people, if they know what they are looking for. For example:

**Ears:** Ears that are flattened to the side are generally an indicator of fear. The flatter the ears the more fearful the cat. Ears that are rotated backwards, especially if one ear is rotated more than the other, can be an indicator of frustration or irritability (Finka *et al* 2014). However, it is important to always keep in mind that a cat's ears also move and rotate to help the cat to locate sounds.

**Eyes:** Dilated pupils, unless as a reaction to reduced light, can signal increased arousal and can often be seen when a cat is frightened, but also if the cat is excited, e.g. during play. Fast blinking is another indicator of fear. Whereas a slow partial closing of the eyes can be a sign of relaxation or a 'non-threatening' signal if directed towards another individual, cat or human.

**Mouth:** A flick of the tongue upwards to touch the nose can be a sign of uncertainty or trepidation.

### **The Tail:**

A vertically raised tail, usually with the tip curled slightly, is a sign of a friendly greeting when approaching other cats, people and even other animals. A swishing tail is normally a sign of annoyance, frustration or feeling threatened. A 'twitching' tail, however, can be a far less specific



indicator of mood, as it usually indicates increased arousal or 'interest' rather than a specific emotional state.

## **Whole Body Signals:**

**Fear:** A cat will respond to a real or perceived threat by either attempting to make itself look bigger to deter the threat, or smaller to increase its ability to hide. If a cat is unable to escape or hide it may attempt to deter the threat by standing tall and raising its back. Contraction of very small muscles within the skin cause the hair along the back and over the tail to stand-on-end (piloerection), adding to the impression of increased size. In other situations, the cat will attempt to make itself look smaller by lowering itself as close to the ground as possible, often with the head positioned lower than the body.

A frightened cat is very likely to bite or scratch as a means of defence. Therefore, it is unwise to approach or attempt to handle any cat that appears fearful.

**Resting Positions:** The position that a cat adopts can also give some idea of how tense or relaxed it is. A cat that is sleeping or resting on its side or back is likely to be in a far more relaxed state than one that has all four feet in contact with the ground, so that it is ready for escape or defensive reaction.

**The 'Social Roll':** Rolling on the back can be a friendly signal, and especially if the claws are extended, an invitation to play. However, it is very important to be aware that this is not a request by the cat to have its 'tummy rubbed'. Attempting to do so can result in a predatory or defensive reaction and clawed and bitten fingers.

## **Olfactory (Scent) Communication**

The use of scent to influence the behaviour or to transfer messages to members of the same species, or even 'to self', is a communication tool used by many mammals, including the domestic cat. These scents used are known as 'pheromones' (from the Greek *pherin* – to carry, and *hormon* – to stimulate). Cats employ a variety of methods to deposit these scents from various areas of their body:

**The Skin Glands:** Cats produce pheromones from a number of skin glands, the majority of which are located on and around the face and head. Scent is deposited from these glands by rubbing on either inanimate objects or on other individuals that it considers to be part of its social group (including human owners and care givers).

**Scratching:** Scratching on vertical or horizontal surfaces is a means of leaving both visual and scent marks deposited from scent glands on the feet.

**Urine:** Urine 'spraying' is another form of scent communication. It differs primarily from normal urination by the position that the cat adopts. When a cat passes urine to relieve pressure on its bladder it squats with its tail extended horizontally behind it. But when it intends to leave a urine scent signal, it adopts a standing posture with tail held vertically. This allows urine to be passed backwards onto a vertical surface and at cat 'nose height'. The amount of urine voided can vary but it is usually less than is passed during normal, healthy micturition.

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## **Further Reading**

Atkinson T. (2018) *Practical Feline Behaviour Understanding Cat Behaviour and Improving Welfare*. CAB International, Wallingford, UK.