



The Process of Domestication and Socialisation of Cat

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Abstract

The domestic cat, scientifically known as *Felis catus*, is one of the most successful companion animals in human history. Unlike many domesticated species that were intentionally bred for agriculture or labour, cats appeared in human society gradually through a mutually beneficial relationship with people. Their domestication was strongly linked to the rise of early farming communities, where stored grains attracted rodents and, consequently, wildcats. Over thousands of years, behavioural adaptation, environmental selection, and human interaction transformed the African wildcat into the modern domestic cat. Despite domestication, cats have retained many characteristics of their wild ancestors, including territorial behaviour, hunting instincts, and complex communication systems. This article explores the evolutionary history of cats, the process of domestication, behavioural and reproductive changes associated with domestication, patterns of communication, social organisation, and territoriality. The discussion also highlights the unique balance between independence and sociability that makes cats distinct among domestic animals.

Keywords: Cat domestication, feline behaviour, communication, territoriality, socialisation, human- cat relationship.

Introduction

Cats occupy a special position among domestic animals because their relationship with humans developed differently from that of dogs, cattle, or horses. While many domestic species were selectively bred for specific economic purposes, cats were initially valued for their natural ability to control rodents in agricultural settlements. Over time, this practical association evolved into

companionship, leading to the widespread presence of cats in households around the world.

Today, the domestic cat is among the most popular companion animals globally. Their adaptability, intelligence, and behavioural flexibility have enabled them to thrive in diverse environments ranging from rural farms to densely populated urban centres. Yet, despite centuries of coexistence with humans,

domestic cats still preserve many behaviours of their wild ancestors. Understanding the domestication and socialisation of cats therefore provides important insight into the biological effects of domestication, their behaviour and relationships with human.

Evolutionary History of Cats

Cats belong to the order Carnivora, characterised by the presence of specialised carnassial teeth (upper fourth premolar and lower first molar on both sides of the jaw) adapted for tearing flesh. Evolutionary evidence suggests that ancient carnivorous mammals known as Miacids were the ancestors of modern carnivores. Around 30 million years ago, these ancestral forms, the Miacids, diverged into two separate evolutionary lines, eventually giving rise to Miacines (ancestor of dogs) and Viverines (the oldest ancestor of the domestic cat). Viverines branched into two primary lines—one produced several large prehistoric cats, including *Smilodon*, the sabertooth tiger, and the other line included *Dinictis*, a smaller cat.

The lineage associated with modern cats developed through early feline ancestors such as *Dinictis*, a small prehistoric cat considered one of the primary ancestors of present-day felines. Over evolutionary time, the family Felidae diversified into several genera, including *Panthera*, *Lynx*, *Acinonyx*, and *Felis*. The domestic cat belongs to the genus *Felis* and is closely related to the African wildcat (*Felis silvestris lybica*), which is widely recognised as its principal wild ancestor.

Archaeological evidence indicates that the domestication of cats likely began in the Near East approximately 9,000–10,000 years ago, coinciding with the emergence of settled agriculture. Stored grains attracted rodents, creating an ecological opportunity for wildcats. Wildcats capable of tolerating human presence gained easier access to prey, while humans benefited from natural pest control.

This mutually advantageous relationship gradually laid the foundation for domestication.

The Process of Domestication

Domestication is a long-term biological and behavioural process in which a wild species adapts to living alongside humans through selective pressures across generations. In cats, domestication was less intensive compared with many livestock species. Humans did not initially impose strong artificial selection on cats for physical traits or work performance. Instead, cats largely self-domesticated by adapting to human settlements.

The earliest domesticated cats retained much of their original anatomy and behaviour. Over generations, however, behavioural traits such as reduced fear of humans, increased sociability, and tolerance of crowded environments became more common. Unlike fully wild felines, domestic cats developed the capacity to coexist peacefully with humans and other cats under suitable environmental conditions.

Selective breeding in recent centuries has further diversified domestic cats into numerous breeds with distinct coat colours, body structures, and temperaments. Breeds such as the Persian cat, Siamese cat, and Maine Coon demonstrate how human preference has influenced feline appearance and behaviour.

Changes Associated with Domestication

- a) Physical Changes- Compared with their wild ancestors, domestic cats generally show a slight reduction in body size and greater variation in coat colour, fur length, and body conformation. Wildcats typically possess camouflage coat patterns suited to natural habitats, whereas domestic cats display remarkable diversity, including solid colours, stripes, patches, and long-haired

varieties. Modern breeding practices have also produced cats with unusual physical characteristics such as folded ears, shortened tails, or hairless skin. Although these traits are aesthetically valued by humans, some selective breeding practices have raised concerns regarding animal welfare and inherited health disorders.

- b) **Reproductive Changes-** Domestication has significantly influenced feline reproductive behaviour. Wild female cats usually produce one litter annually during a restricted breeding season. Domestic female cats, however, are seasonally polyestrous and may produce multiple litters in a single year under favourable environmental conditions. This increased reproductive capacity contributed to the rapid expansion of domestic cat populations worldwide. Human management, including neutering and controlled breeding, now plays a major role in regulating domestic cat populations and preventing overpopulation.
- c) **Behavioural Changes-** Behavioural adaptation represents one of the most important aspects of domestication. Adult wildcats are generally solitary and interact mainly during mating or territorial disputes. Domestic cats, in contrast, are capable of forming social bonds with humans and other cats. Affiliative behaviours such as grooming, playing, rubbing, and resting together are frequently observed in domestic cats. Many domestic cats also display strong attachment to human caretakers, seeking interaction, food, and comfort through vocalisation and physical contact. Nevertheless, domestic cats continue to retain strong hunting instincts and territorial tendencies inherited from their wild ancestors.

Communication in Cats

Cats possess a sophisticated communication system involving olfactory, vocal, and visual signals. These communication methods allow cats to establish territory, avoid conflict, attract mates, and maintain social relationships.

- a) **Olfactory Communication-** Scent plays a central role in feline communication. Cats deposit chemical signals through urine, specialised skin glands. These scent marks provide information regarding territorial boundaries, reproductive status, and individual identity.

Urine spraying is particularly common among intact males, although females may also spray during reproductive periods. The strong odour of sprayed urine results from sulphur-containing amino acids, felinine and isovathene, which are produced in the liver and kidneys as metabolic by-products. Shortly after deposition, the two amino acids begin to degrade, and the sulphur-containing byproducts are highly odoriferous. An adult tomcat excretes about 95 mg of felinine/day, while a female excretes only 20 mg/day. This plays a major role in territorial marking and reproductive signalling.

Cats have several types of specialised skin glands that are important for olfactory communication. The glands are submandibular glands, perioral glands, temporal glands, sebaceous glands (along the base of the tail) and interdigital glands. The secretions of the submandibular, perioral, and temporal glands are deposited as scent marks when a cat rubs its face and head on objects at eye level. This behaviour of head rubbing on objects is known as bunting, which can take place in isolation or following a flehmen response to a urine mark or head mark of another cat. The final way in which cats deposit scent is through scratching. This behaviour plays an important role in conditioning the claws of

the front feet, but also functions to deposit scent from interdigital glands.

- b) **Acoustic or Vocal Communication-** Cats produce a wide variety of vocalisations adapted to different social contexts. Common vocal signals include purring, meowing, growling, hissing, and mating calls. According to how the sound is produced, cat vocalisation can be divided into 3 main groups, and those are –murmur patterns, vowel sounds and strained intensity calls.

Murmur patterns –Sound produced with a completely closed mouth. Two common murmur patterns are purr and trill or chirrup. Purr is produced while inhaling and exhaling. Most commonly associated with pleasure while nursing, being petted, resting quietly, etc. Cats may also purr during injury or illness. Trill/Chirrup is commonly known as ‘greeting murmur’. Low murmur which is directed toward caretakers or familiar cats.

Vowel sounds –The sound made with the mouth open and gradually closing as the sound is emitted. Vowel sounds are meow and a mating call. Meow is the most common vowel sound and is usually directed only toward caretakers; not often used between cats. It is uttered during amicable social encounters, to establish contact and friendly interaction, or to request interaction, play or food. Mating call is uttered by females during proestrus and estrus to advertise reproductive status and to attract tomcats.

Strained intensity call –emitted with the mouth open for the duration of the sound; typically used only in times of intense emotional stress. These include feline growl, hiss, spit and male mating call. Growl is the lowest-pitched sound made by cats, used before or during aggressive encounters. A low-pitched growl may have the effect of deceiving other cats into believing that the sender is more powerful. Hiss is uttered when frightened or cornered;

primarily a defensive vocalisation. Spit is an intense form of the hiss, used to deter threats. Male mating calls are uttered by tomcats during mating or when competing with other males for an estrus female.

- (c) **Visual Communication-** Body posture and facial expression are equally important in feline communication. Confident cats may stand tall with raised fur and direct eye contact during territorial encounters, while fearful cats often arch their backs, flatten their ears, and attempt to appear defensive. Friendly greetings are characterised by upright tails, nose touching, and rubbing behaviour. Rolling behaviour is commonly observed during play or social interaction and may also occur in females during estrus. Companion housecats also use rolling as an invitation to play and to solicit petting.

Social Organisation of Cats

Cats were traditionally considered solitary animals; however, research has shown that domestic cats can form complex social systems under suitable environmental conditions. Social organisation largely depends on food availability, population density, and human interaction.

Feral cat colonies commonly develop in areas with abundant food resources. These colonies are usually composed of related females and their kittens. Adult males are not permanent group members, but they are found living in the periphery and often travel between several groups of females. Male kittens are driven away after reaching puberty. Familiar queens of a group show hostility toward strange queens who try to join an established group, as it will help the queens to raise their kittens in a single nest. The females' estrus cycles are often synchronised, and mothers who give birth

around the same time will nurse each other's kittens.

Socialisation during early life is particularly important for domestic cats. Kittens exposed positively to humans during sensitive developmental periods are more likely to become friendly, confident adults. Inadequate socialisation, on the other hand, may result in fearfulness or aggression.

Territorial Behaviour

Territory refers to the cat's immediate living space that is frequently scent-marked and actively defended against intruders. Cats establish territories through scent marking, scratching, and patrol behaviour. Territorial defence helps secure access to food, shelter, and mates. Scratching behaviour serves both mechanical and communicative functions. In addition to maintaining claw condition, scratching deposits scent from glands located between the toes and leaves visible marks that signal territorial occupation.

Home range is the area that is used during normal daily activities, including the hunting range. The home range of male cats is generally 3-4 times larger than that of females. During breeding season, the home range of males overlaps considerably as they compete for mating. Well-fed pet cats who are allowed outside have a relatively small home range (1 acre or less) in comparison with feral cats who can have a home range of more than 400 acres.

Human-Cat Relationship in Modern Society

The relationship between humans and cats has evolved far beyond pest control. In modern society, cats provide emotional companionship, reduce feelings of loneliness, and contribute positively to mental well-being for many individuals. During greeting humans, the cat will first touch the person with its nose, followed by head rubbing for soliciting petting. Cats are also increasingly studied in veterinary

science, behavioural research, and animal welfare science. Understanding feline social behaviour and communication is essential for improving housing systems, veterinary handling practices, and enrichment strategies for companion cats.

At the same time, free-ranging domestic cats raise ecological concerns because of their impact on wildlife populations. Responsible ownership practices such as sterilisation, vaccination, and supervised outdoor access are therefore important components of modern feline management.

Conclusion

The domestication of cats represents a unique evolutionary partnership between humans and animals. Unlike many domesticated species, cats gradually integrated themselves into human society through natural behavioural adaptation rather than intensive human-directed breeding. Over thousands of years, this relationship produced an animal that retains much of its ancestral independence while also displaying remarkable social flexibility and attachment to humans.

Domestic cats continue to exhibit many behavioural traits inherited from wild ancestors, including territoriality, hunting behaviour, and sophisticated communication systems. Nevertheless, domestication has enabled cats to adapt successfully to life alongside humans in diverse environments across the world. Studying cat domestication and socialisation not only deepens our understanding of feline biology and behaviour but also strengthens the human-animal bond that has endured for millennia.

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