Understanding cats.

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Understanding Cats

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About This Column

Behavior problems are a significant cause of death (euthanasia) in companion animals. While most veterinary practices are necessarily geared toward the medical aspect of care, there are many opportunities to bring behavior awareness into the clinic for the benefit of the pet, the owner, and ourselves. This column acknowledges the importance of behavior as part of veterinary medicine and speaks practically about using it effectively in daily practice.

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A continuing issue in preventing and treating feline behavior problems, especially those that originate in social relationships, is a pervasive misunderstanding of normal feline behavior. Despite much research[1–4] (beginning in the 1970s) on the behavior of feral cats (i.e., free-living cats whose mating and other activities are not controlled by humans) that shows that they form organized social groups and have complex social relationships, the idea that cats are solitary and asocial remains common.

When food supplies are adequate, feral cats form organized social groups. The only ecologic conditions in which they are persistently solitary are when food is in short supply and widely dispersed. Even then, a queen and its offspring remain together until the young can hunt and survive on their own. The persistent idea that cats are asocial may be derived from the false perception that being "social" means behaving like species (e.g., humans, dogs, horses) that humans commonly perceive as social. However, to an ethologist (i.e., someone who studies animal behavior, especially under natural conditions), *social* is a general concept that refers to species that "live as enduring pairs, as families, or in larger groups in consequence of which social behavior makes up a major proportion of their total activity."[5] *Solitary* refers to species in which "individuals form no enduring groups or pair bonds but live most of their lives in a solitary state. Males and females commonly occupy separate territories and meet only for mating."[5]

FEMALE CATS

The social history of cat colonies is similar to that of elephants in that related females form the social core of the group, whereas males commonly emigrate when they reach 1 to 2 years of age. The most dramatic example of the sociality of queens that form the matriarchal core of a group is that they care for each other's kittens and even assist in parturition, a rare phenomenon in the animal kingdom. Queens that are members of the same colony groom and nurse each other's kittens. They also take turns staying with the kittens and hunting; thus kittens that reside in a multiqueen nest have more protection from predators. During parturition, a nonbirthing queen stays with the queen that is giving birth, licks the perineum, eats the fetal membranes, and licks the newborn kittens. These queens are often related and are thus aiding in the care of kittens that are, to some degree, related to them, a phenomenon called *kin selection*.

However, even if the queens are unrelated, the circumstances are optimal for a phenomenon called *reciprocal altruism* (i.e., altruistic behavior maintained within a species because a behavior that directly benefits another individual is likely to be reciprocated with a beneficial behavior in the future). Reciprocal altruism is likely to occur if the "favors" are approximately equal in value in both the energy and effort expended by the animal doing the favor and the benefit to the recipient. For example, the kittens of unrelated queens giving birth in the same season benefit, and each queen benefits by improved survival of its offspring. The effort of kitten care is approximately equal and is close in time. In addition, all the kittens benefit from the increased presence of an adult female as a guardian.

PREFERRED ASSOCIATES

Within a group of cats, certain members spend more time with each other—a relationship called *preferred associates*. Preferred associates can be found together not only at sites of desirable resources, such as good resting places, but also at various locations and times throughout the day. Preferred associates are more likely to groom each other (allogroom) and rub each other (allorub) than are nonpreferred associates. Behaviorists are just beginning to understand what facilitates cats becoming preferred associates and engaging in greater quantities of affiliative (friendly) behavior, such as allogrooming and allorubbing. To date, research[6] indicates that being related and highly familiar with each other are important factors. Unrelated cats that have not known each other long are less likely to engage in affiliative behavior and more likely to engage in aggressive behavior.

MALE CATS

Contrary to the popular belief that intact male cats always have an adversarial relationship, intact males in feral colonies are often preferred associates. They may allogroom and allorub and sleep together. There are two major life strategies for male cats. Cats that might be called *family males* maintain a close, long-term association with a group of queens in a colony. Queens in estrus preferentially mate with familiar rather than unfamiliar males. Other males spend substantial time wandering among colonies in search of queens in estrus. Large, wandering males have much greater success mating than do small, wandering males. Small males that do not have close affiliative relationships with a group of females have the lowest rates of copulation. Queens mate with multiple males. Males that are familiar with each other and have established affiliative relationships may surround a queen in estrus and alternate copulating with waiting without engaging in agonistic behavior with each other as they wait. Sexual competition and conflict are more likely between males that are less familiar with each other, especially if a large wandering male powerful enough to gain access to the queen arrives.

Strangers (i.e., cats that are not members of the colony) are actively rejected. Males that attempt to immigrate into a colony must persistently engage in interactions on the periphery for several weeks before they are accepted as regular members of the colony.

HUNTING

Hunting is usually a solitary activity, which contributes to the incorrect idea that cats are solitary. A feral cat's diet mostly consists of small mammals, such as mice, rats, and young rabbits. Multiple kills are required to sustain one cat, so sharing these kills would not be an adaptive behavior. However, there are numerous anecdotal reports of groups of two to five cats engaging in cooperative hunting of larger game, including adult rabbits and squirrels. In these situations, the feral cats' hunting tactics are similar to those of lionesses hunting large game. The cats spread out, and one or more cats attempt to move between the prey and its potential safe retreat (i.e., a tree for squirrels; burrows or dense brush for adult rabbits). The life history that leads to cooperative hunting in cats is not yet understood. Regardless, solitary hunting for very small game will probably remain the preference of feral cats.

Feral cats form social groups called colonies *in which cooperative, friendly social behaviors are the predominant form of interaction. These same behaviors can be observed in housecats.*

HIERARCHIES

Within feral colonies and groups of housecats there is competition for resources. Pairs of cats usually form relationships in which the relative dominant versus subordinate status is clear. In healthy, well-established relationships, overt aggression is uncommon. Instead, status is demonstrated by ritualized signaling.[7] The signals of subordinate cats are the most important factor in maintaining peaceful coexistence. As was recognized in primates and other species several decades ago, *subordinance hierarchy* is probably more accurate than *dominance hierarchy*,[8] but the latter is still the most commonly used descriptor. Subordinate cats defer to dominant cats by looking away, crouching, and moving away. They may also lower their tail lateral to a hindlimb. This contrasts with dogs in which the tail is lowered between the hindlimbs. In some situations, a subordinate cat lies down and rolls over in response to an approaching dom-

inant cat, although this behavior appears to be far more common in dogs. Dominant cats approach subordinate ones with their limbs fully extended while staring. They may extend their hindlimbs so much that their back slopes upward from the neck to the base of the tail. The ears are held upright and rotated to the side. In extreme situations, approximately 1 to 2 inches of the base of the tail is elevated while the rest of it hangs toward the ground. In addition, cats that make an intense dominant display may slowly wag their head from side to side.

High-ranking cats have priority access to desirable resources, such as food. In some households, they may also control particular resting sites, the litterbox, and other resources. In behaviorally healthy colonies and households, high-ranking cats control resources only when they want to use them, allowing low-ranking cats to access the resources at other times. One cause of intercat aggression is when a high-ranking cat spends significant time and energy guarding resources, even when it is not using them. The phenomenon of the "bully cat" will be discussed in a future column on intercat aggression.

In behaviorally healthy households, signaling of status is often subtle. Although trained behaviorists can detect these behaviors (e.g., slight turning away of the head in response to a brief stare), owners may not readily detect them. Therefore, when behaviorists work with multicat households experiencing a behavior problem, it is often desirable for the owners to videotape the cats' normal interactions. It may be impossible to determine, even with extensive observation, which cat in a household is subordinate and which is dominant. There may be multiple reasons for the difficulty in determining this. Sometimes, especially if resources are abundant, the friendly aspects of a relationship between cats predominate and eliminate the need to compete. The cats greet each other with friendly rubs, purrs, and meows rather than compete, even subtly, for space. If they are both hungry at the same time, they eat side by side. If they both like the same resting area, they lie down side by side or even partially on top of one another.

In other situations, cats in the same household or colony rarely or never directly interact with each other. In these situations, the cats probably have an unfriendly relationship but simply avoid direct interaction rather than fight with each other.

Sometimes a cat that is high ranking in most situations may have a low interest in a particular resource, while a cat that is usually low ranking has a high interest in the same resource. In such situations, the cats' relationship may appear to change, depending on the context, although extensive study can reveal the underlying asynchrony of the relationship and the contexts in which dominance reverses.

CONCLUSION

Like all social species, cats are born with the capacity to learn social behavior but do not automatically know the social skills particular to their species. Kittens and juvenile cats that mature in a group of socially functional adult cats learn appropriate social behavior (e.g., play but do not bite hard), whereas kittens and juvenile cats that mature while isolated from other cats do not learn species-specific social skills. These cats could be called *asocial*: they are likely to be excessively aggressive toward or fearful of other cats. However, this is a behavioral pathology and not normal for cats in their natural environment. Kittens raised in a household of cats that interact well will likely develop desirable social behaviors.

In a behaviorally healthy group of cats, high-ranking cats control resources only when they want them and may even share with cats with which they have particularly friendly relationships.

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