JOURNAL OF APPLIED ANIMAL WELFARE SCIENCE, *7*(4), 287–291

The Concept of Dominance and the Treatment of Aggression in Multidog Homes: A Comment on van Kerkhove's Commentary

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The comparison of the behavior and the behavioral problems of domestic dogs to the behavior of wolves leads to a variety of misperceptions and problems in clinical behavior practice. Often it is assumed that dogs establish stable, mostly linear, hierarchies with other dogs in the home as well as human family members. In this context, the term *dominance* is used indiscriminately and synonymously with *aggression.*

The concept of dominance may represent an interesting hypothesis or model that helps in understanding some behaviors, but this approach tends to ignore that the social behavior of the dog is complex and has been altered through domestication. Dogs show a disintegration of ritualized aggression that normally will serve to resolve conflict, diminishing the risk of injury for group members. The provision of food—negating the need for group hunting—decreases the selective advantage for formation of stable groups in domestic dogs who live in close contact with humans (Frank & Frank, 1982).

Groups of free-ranging, domestic dogs show a great variation in social behavior depending on (a) food abundance, (b) location (rural or urban environment), and (c) competition with—or predation by—foxes, wolves, and humans. Urban groups of stray dogs may live in loosely structured pairs or small groups, whereas dogs in rural areas may form more stable, pack-like groups that resemble the social struc-

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ture of wolves and other canids (Fox, 1978; Macdonald & Carr, 1992; Pal, Gosh, & Roy, 1998).

When Belayaev (1979) selected foxes for tameness, the less fearful animals showed a number of unexpected changes in their appearance (fur, color, and tail position), as well as changes in the concentration of neurotransmitters, such as serotonin, that regulate emotion and behavior. It is possible that domestication changed the selection criteria for dogs in a similar fashion, altering their physical characteristics as well as behavior. Wolves and dogs show great similarities in their genome (Vila et al., 1997); however, the modification of mRNA expression in brain areas responsible for emotional responses—hypothalamus, amygdala, and frontal cortex—account, in part, for differences in behavior (Saetre et al., 2004).

The differences in behavior between dogs and wolves—and differences between breeds of dogs—may also be explained by a change in the rate of behavioral development. This underdevelopment—paedomorphism—leads to changes in the dog's behavior that correlate positively with the degree of the dog's physical resemblance to the wolf. Dogs who bear a stronger physical resemblance to wolves (e.g., the Siberian husky) show a larger repertoire of agonistic behaviors than do dogs who show little resemblance to wolves (e.g., the Cavalier King Charles spaniel). This effect may alter the behavior from breed to breed and influence the dog's ability to communicate and avoid conflict. Breeds with a very limited repertoire of agonistic behavior continue to display threats but fail to show submissive behaviors during encounters with conspecifics (Goodwin, Bradshaw, & Wickens, 1997). The ability of dogs to communicate and avoid fights through the use of visual signals may be impaired further by breed-specific changes to ear and tail form, posture, and hair coat as well as by skeletal changes that limit facial expressions and body postures.

No available clinical study researches the influence of breed-specific differences on communication and its influence on the incidence of fights in multidog households. Typically, I find that dogs who live in the company of conspecifics are able to coexist peacefully within the boundaries of a house. Fights between cohabiting dogs represent between 5% and 18% of the overall caseload of veterinary behaviorists (Flannigan, 2003).

Many attempts to explain the etiology of aggression between dogs in the same home are based on the assumption that the problem is due to *dominance aggression.* The term *dominance* cannot be used synonymously with the term *aggression. Dominance* refers solely to the outcome of one encounter within a dyad, requiring—to avoid escalation of the conflict—the yielding response of the opponent in favor of the dominant individual. *Aggression* will occur only if the outcome cannot be predicted from resource-guarding potential (Bradshaw & Nott, 1992, Drews, 1993). Based on availability of resources or on the specific situation—including alliances such as the presence of a third party—the motivation to react aggressively may vary individually.

That fights between dogs within the same home typically are initiated by the younger dog, once he or she reaches sexual or social maturity, or by the dog who recently was added to the home (Flannigan, 2003; Sherman, Reisner, Laliaferro, & Houpt, 1996), indicates that fights may be due to territoriality or unresolved hierarchical conflicts. The context in which these fights occur supports this:

1. Increased arousal or excitement (51%);
2. Proximity of food or toys (48%);
3. Proximity of the caregiver (43%);
4. Limitation to a confined space (37%);
5. Defense of a preferred resting place (23%); or
6. Response to a postural threat (20%) (Sherman et al., 1996).

The majority of fights within the home occur between female–female pairs (Flannigan, 2003; Sherman et al., 1996), the behavior resembling that of some groups of free-ranging dogs in which aggressive behavior has been seen more commonly between female dogs. This occurred especially around feeding locations in winter and during lactation (Pal et al., 1998), indicating that aggression is likely to increase if resources are limited and have increased value.

A dog's motivation to react aggressively may also be due to fear (lack of socialization and subsequent experience). It is likely that clinicians misdiagnose a number of cases, based on the appearance of the behavior on presentation. A careful analysis of a dog's behavior over time may reveal that fear-motivated behavior will appear more offensive if the dog learned to react in this fashion because it leads to a favorable outcome.

The dogs that I see in my clinic belong to a preselected group because they obviously failed to respond to the use of positive punishment for the aggressor and positive reinforcement to the victim of the aggression. In these cases, aggression typically escalated severly over the course of time prior to presentation. This correlation between the onset of the health issue and aggressive behavior may be coincidence, or it may be causative of the aggressive behavior. The sick dog may be the recipient of aggression, presumably due to the perceived weakness of the affected dog. In other cases, a dog's failing health may increase irritability and induce or increase aggressive behavior.

Free-ranging dogs can avoid conflict more successfully through avoidance of encounters with other dogs, making fights less common. Space restrictions and the influence of caregivers' attempts to control the behavior of their dogs may catalyze problems and prevent resolution using ritualized behavioral patterns.

Owners of affected dogs find it hard to refrain from punishing an undesired behavior such as aggression toward another dog in the home. Instead, they tend to scold the aggressor and protect or console the recipient of aggression. The tension within the home significantly affects the owner's relationship with the aggressor

and alters their interactions, which may escalate the tension between the dogs. Applying positive punishment to the aggressor and positive reinforcement to the victim apparently is ineffective because many cases have been ongoing over time and have escalated in severity.

Successful treatment of dog–dog aggression in a multidog home requires a careful history. Probably, it is ineffective to support the dog who has the highest resource-guarding potential unless it has been determined that the problem is based on a hierarchical conflict. The owner's support for this dog should be applied whenever the dogs are not fighting (allowing the dog with the higher resource-guarding potential priority access to resources).

Many owners find it extremely difficult to follow this advice. A resulting lack of compliance may be part of the reason that this approach leads to marked improvement or resolution in only 56% to 74% of the cases. The prognosis is poor if the problem persists for an extended period of time, if fights lead to injuries, or if fights are not predictable for the owner (Flannigan, 2003; Sherman et al., 1996).

Because dogs who display aggression within the a multidog home are commonly found to be anxious, it is helpful to decrease the dog's overall anxiety level by using measures that increase routine and predictability of events and owner reactions—in conjunction with avoiding conflict situations and taking safety precautions for the dogs and family members who may witness a fight.

The use of negative punishment in response to an undesired behavior (aggression) and the use of positive reinforcement for desired behavior (peaceful coexistence or friendly interactions) are excellent tools that can be used exclusively or in conjunction with the previously described approach. The use of a verbal cue ("too bad, you blew it"), followed by walking the dog to a room before the dog is left in isolation (negative punishment) may pose problems with timing, even if the verbal cue serves as a bridging stimulus. Isolation follows extended interaction with the owner (leashing the dog, walking with owner, and unleashing). If possible, the owners can be encouraged to withdraw attention immediately and reliably by leaving the room. Typically, the owners' concerns that their absence may lead to fights is unfounded. Leaving the room actually may lessen the risk of fights because most dogs fight in the owner's presence or over receiving the owner's attention.

Successful treatment of behavioral problems between dogs requires a good understanding of canine ethology, the ability to observe and identify interactions between the dogs and their owners, and a flexible approach that allows adjusting the treatment regimen to the individual situation, the dogs' motivation to fight, and the owners' abilities and expectations. Independent of ancestral history of the species and individual history of the dog, it appears the most significant factor influencing outcome of a case is the owner's compliance.

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