

## A Fresh Look at the Wolf-Pack Theory of Companion-Animal Dog Social Behavior

Wendy van Kerkhove

*Minneapolis, Minnesota*

A popular perspective on the social behavior of dogs in multiple-dog households sees the dogs' behavior as reflecting the sociobiological laws of the rigidly structured dominance hierarchy that has been described for wolf packs. This view suggests that aggression problems among dogs are natural expressions of conflict that arise whenever dominance status is in contention. One recommended solution has been for the owner to endorse and enforce a particular dominance hierarchy because, on the wolf pack model, aggression is minimized when the structure of the hierarchy is clear, strong, and stable. This article questions the validity of this perspective on 2 principal grounds. First, because it does not seem to occur in the wild, this article suggests the strong dominance hierarchy that has been described for wolves may be a by-product of captivity. If true, it implies that social behavior—even in wolves—may be a product more of environmental circumstances and contingencies than an instinctive directive. Second, because feral dogs do not exhibit the classic wolf-pack structure, the validity of the canid, social dominance hierarchy again comes into question. This article suggests that behavioral learning theory offers another perspective regarding the behavior of dogs and wolves in the wild or in captivity and offers an effective intervention for aggression problems.

Minimizing or eliminating interdog aggression in the homes of owners of multiple dogs is a matter of paramount importance. Many instances of dog-on-dog aggression involve bloody fights that leave the owners feeling emotionally distraught and helpless. There are two commonly recommended interventions in these instances: (a) spay or neuter both dogs; and (b) have the owners determine the dogs' "dominance status" relative to one another, and then have the owners

support and maintain this dominance relationship. Often, behavior management is also advised. This treatment protocol can be found in the books of many well-known behaviorists (Dodman, 1996; Hetts, 1999; Overall, 1997). For the most part, this advice is based on the firm conviction that the dynamics of social order at work in wolf packs relate directly to the social behavior of domestic dogs. Central to this belief is the concept that a wolf pack consists of individuals continually competing for higher rank but ultimately held in check by the alpha male and alpha female. It is believed that these social hierarchies effectively reduce and minimize overt aggression between individual members of the pack (Scott & Fuller, 1965). It is further assumed that what is true for wolves also is true for dogs; it follows, therefore, that if a stable social hierarchy is established among the dogs in a family home, peace and tranquility will prevail.

My concerns about the wolf model's practical utility emerged as the by-product of seeing, firsthand, the effectiveness of alternative interventions in which information about social dominance was irrelevant. Specifically, I have found existing alternative and well-tested approaches for diminishing unwanted behavior and increasing desired behavior via principles of operant and classical conditioning to be effective in treating these aggression problems. Although the behavior modification approach does not preclude a role for ethological social dominance processes, neither does it specifically require, or explicitly recognize, one in its treatment prescriptions.

## RESEARCHING THE LITERATURE

My misgivings about the use of the dominance hierarchy model led me to research the primary literature on wolf and dog social behavior and dominance hierarchy theories in general. My initial understanding of wolf interactions was that little bloodshed occurred between wolves once a hierarchy was established; most conflicts are resolved through a repertoire of no-contact body language, vocal signals, and social conventions. However in a study of a captive wolf pack, Zimen (1975) described extremely violent interactions between two female wolves. Later, two male wolves engaged in battle, which Zimen presumed to be over the alpha position. These fights were intense and bloody, and major injuries were sustained by the wolves involved. Zimen concluded that numerous factors modulate aggressiveness in wolves: the season of the year, the social relationships between wolves, and rank. With respect to rank, the higher the wolf ranks in the pack, the greater the display of aggression. Zimen's observations dramatically contradicted the nonviolent conventions that I had come to believe occurred within wolf packs. During observations of captive wolves, clear dominance hierarchies are established; many of the challenges and altercations involving the establishment of the hierarchy involve serious injury and bloodshed.

Mech's (1999) research of the social order within wild wolf packs contradicts most of the widely held beliefs regarding dominance hierarchies. After observing wolf packs in nature during 13 summers on Canada's Ellesmere Island, he concluded that the behavior of noncaptive wolf packs is quite different from that of captive wolves. These packs consisted of a breeding pair and their offspring from the previous 1 to 3 years. The offspring in these packs, as they become 1 to 2 years old, leave and attempt to breed with other dispersed wolves, produce pups, and start their own packs—thereby becoming alphas. In the wild, all young wolves (regardless of temperament characteristics that might imply otherwise) are potential breeders and, therefore, potential alphas. Under these conditions, the wolf who lives long enough to breed, breeds. In noncaptive packs there is a seldom-contested, natural order based on age. In his 13 years of observations, Mech saw no dominance contests within the packs he watched. He did observe a consistent demonstration of rank between these wild wolves; however, they involved only the animals' postures during social interactions.

Clearly, there is more to the story of wolf behavior and social hierarchies than that in the conventional understanding, but exactly how that story should be related to the behavior of companion-animal dogs is far from clear. In addition, wolves and dogs are not exactly biologically or behaviorally the same. Indeed, because of their differences, when it comes to seeking information about the "natural dominance hierarchies" of dogs, perhaps feral dog behavior would be a better model. Five studies on feral dogs were located (Beck, 1975; Boitani, Francisci, Ciucci, & Andreoli, 1995; Fox 1987; Macdonald & Carr, 1995; Nesbitt, 1975).

## REVIEWING THE STUDIES

In reviewing each of these studies, it became abundantly clear that urban and nonurban feral dogs tend to live not in socially structured packs but rather form amorphous group associations. Often, groups of two or three are observed developing a loose association and then dissolving it within a short period. It is believed that ecology has a lot to do with this. Urban feral dogs are scavengers, getting handouts or knocking over garbage cans; they are not hunting large prey. Moreover, the survival of pups is almost nil; unlike wolves, when pups are born, usually only the mother cares for them. The primary method for feral dogs' maintaining their numbers is by the recruitment of stray companion-animal dogs. Thus, the natural pack behavior of dogs appears to be very loose, changing, and unstructured, as opposed to tight, constant, and highly structured. The question that begs to be asked is this: If wolves in nature (not captive) develop social structures completely different from those of feral dogs (not captive), should one assume that captive wolves will develop the same social structures as dogs in captivity?

What are we to make of the fact that wolves in captivity exhibit clear dominance hierarchies and that dogs in multiple-dog households exhibit a reasonable facsimile of those captive wolf pack structures? Is this evidence not enough to argue that the wolf dominance hierarchy model is an appropriate one to follow for the resolution of aggression-related behavior problems? No, I would argue that one must still consider the issue of the divergent social behavior of wolves in the wild and feral dogs. I would argue that both wolves and dogs have the capacity for very different patterns of social behavior, depending on the specifics of the surrounding environmental circumstances.

A reasonable hypothesis is that the physical restrictions and limitations of captivity define environmental circumstances, engendering the formation of dominance hierarchies in wolves. Much the same might be said for dogs living together in a household. Given this hypothesis, the structure of the environment and the nature and results of the animal's interaction with that environment—not the dictates of genetic instinct—are at work in the determination of a dog's behavior. Moreover, an implication of this hypothesis is that a clear understanding of the laws of behavior–environment interaction not only explicates the behavior seen in a given situation but also provides guidance as to the sorts of environmental interventions that will change behavior in specific ways.

When studied scientifically, social dominance is defined with reference to repeated conflicts between conspecifics over a scarce resource, whereby the same animal always gains access to the resource. With respect only to that specific resource, the winning animal is said to be dominant over the losing animal. Thus, social dominance often is quite fluid and contextual. In addition, for a meaningful formal test of dominance and to rule out differential motivation as a confounding factor contaminating the results, both animals must be motivated equally for the same resource.

If Buffy continually assumes the best resting place outdoors and, when exiting the house, rushes out the door before Jody, can we unequivocally state that Buffy is dominant to Jody in this context? Not necessarily. It could simply be that Jody is not particularly motivated to occupy the resting place or to get out the door. Or perhaps Jody just is not as quick on her feet as Buffy. The presumption of unwavering and equal motivation or motor facility among dogs for all potentially contested resources seems quite unfeasible. Yet, this presumption obviously is made whenever owners are instructed in how to determine their dogs' social dominance status. As a result, determining dominance status often is exceedingly difficult. This makes implementing a plan involving the reinforcement of the known hierarchy equally difficult.

## LOOKING FOR ALTERNATIVES

So, where does this leave owners with companion dogs who are fighting in the home and sending them to the emergency veterinarian on a Sunday evening? In

my opinion, the body of work done on the social structures of wolf packs reflects a subject too complex and incomplete to give us a reliable model for understanding the behavior of domestic dogs living in a home. In addition, it is clear that, with captive wolves, the alpha pair is most concerned with the suppression of breeding by other animals in the pack. However, many of our domestic dogs are spayed or neutered and show little in the way of sexual behavior, yet they still are fighting. That feral dogs do not behave as either captive or wild wolves do casts further question on the appropriateness of any wolf model for dog behavior. Finally, considering that the objective definition of social dominance can make determining which dog “should be the top dog” difficult at best, I have been led to look for other alternatives in tackling this problem.

In treating interdog aggression within the home, behavioral interventions based on operant and classical conditioning can work quite well. A well-established, empirical fact is that consequences are contingent on behavior, and behavior changes as a result of these contingencies. In treating interdog aggression, the behavior modification portions of the plan involve reinforcing appropriate behavior to make the response stronger and punishing inappropriate behavior to diminish that response. Negative punishment, positive reinforcement, and classical conditioning are the fundamental tactics used.

The role of negative punishment is to reduce inappropriate responses. Buffy will growl at Jody if Jody approaches Buffy when Uncle Bill is petting Buffy. If Jody gets too close, Buffy will attack Jody. The goal is to allow Jody to approach Buffy and Uncle Bill with impunity. Uncle Bill might have a leash on Buffy and allow Jody to approach. As soon as Uncle Bill detects any unwanted response in Buffy (low growl, tense body) Uncle Bill says to Buffy, “Too bad, you blew it,” leads Buffy by the leash to the bathroom, and leaves her there for 30 sec. After repeated trials, Buffy will start to learn that her response has led to the unwanted march to the bathroom. Buffy likes Uncle Bill and does not want to leave him nor to be left in the bathroom. As a result, she might try to change her response to Jody’s approaches.

The role of positive reinforcement is to strengthen appropriate responses. After repeated trips to the bathroom, Buffy is now just looking away as Jody approaches. This is not something she was taught; looking away is just an alternative response that she is offering. It is an appropriate response. Now, not only does Buffy not get marched off to the bathroom, she gets to stay next to Uncle Bill—and she gets cookies!

After a few days to a few weeks of this training, Uncle Bill perhaps notes a very interesting response in Buffy. When Buffy sees Jody approaching, she no longer looks away; rather, she wags her tail and looks quite excited and expectantly at Uncle Bill. Why has this change occurred in Buffy? Because along with the operant conditioning that Buffy endured, she also learned an association between Jody’s approach and the receipt of cookies. This is an example of associative learning

(classical conditioning) that occurred as a result of the repeated pairing of the approach of Jody with the delivery of cookies.

What is important to understand is that respondent and operant conditioning principles work in dealing with dog-on-dog aggression in the home, and they do so without our having to speculate about instinctive social forces and organizational structures and competitive motivations from the dog's ancestral past. This is not to say that there is not such a thing as "essential dogness." It is simply to say that the individual animal's personal history may be at least as important—if not more so—than the dog's ancestral history and any alleged instinctive behavioral imperatives.

### ACKNOWLEDGMENT

Portions of this article were first published in the May/June 2004 issue of *The Association of Pet Dog Trainers Chronicle of the Dog*. (van Kerkhove, 2004). For information on the Association of Pet Dog Trainers go to [www.apdt.com](http://www.apdt.com).

### REFERENCES

- Beck, M. A. (1975). The ecology of "feral" and free-roving dogs in Baltimore. In W. M. Fox (Ed.), *The wild canids: Their systematics, behavioral ecology and evolution* (pp. 380–390). New York: Van Nostrand Reinhold.
- Boitani, L., Francisci, F., Ciucci, P., & Andreoli, G. (1995). Population biology and ecology of feral dogs in central Italy. In J. Serpell (Ed.), *The domestic dog: Its evolution, behaviour and interactions with people* (pp. 217–244). Cambridge, England: Cambridge University Press.
- Dodman, H. N. (1996). *The dog who loved too much: Tales, treatments and the psychology of dogs*. New York: Bantam.
- Fox, W. M. (1978). *The dog: Its domestication and behavior*. New York: Garland STPM Press.
- Hetts, S. (1999). *Pet behavior protocols: What to say, what to do, when to refer*. Lakewood, CO: American Animal Hospital Association Press.
- Macdonald, W. D., & Carr, M. G. (1995). Variation in dog society: Between resource dispersion and social flux. In J. Serpell (Ed.), *The domestic dog: Its evolution, behaviour and interactions with people* (pp. 19–216). Cambridge, England: Cambridge University Press.
- Mech, L. D. (1999). Alpha status, dominance, and division of labor in wolf packs. *Canadian Journal of Zoology*, 77, 1196–1203. Retrieved Date, from <http://www.npwr.usgs.gov/resource/2000/alstat/alstat.htm>
- Nesbitt, H. W. (1975). Ecology of a feral dog pack on a wildlife refuge. In W. M. Fox (Ed.), *The wild canids: Their systematics, behavioral ecology and evolution* (pp. 391–395). New York: Van Nostrand Reinhold.
- Overall, L. K. (1997). *Clinical behavioral medicine for small animals*. St. Louis, MO: Mosby-Year Book.
- Scott, P. J., & Fuller, L. J. (1965). *Genetics and the social behavior of the dog: The classic study*. Chicago: The University of Chicago Press.

- van Kerkhove, W. (2004, May/June). An examination of the use of the ethological perspective for resolving inter-dog aggression problems. *The APDT Chronicle of the Dog*, 11, 10–13.
- Zimen, E. (1975). Social dynamics of the wolf pack. In W. M. Fox (Ed.), *The wild canids: Their systematics, behavioral ecology and evolution* (pp. 336–362). New York: Van Nostrand Reinhold.