Journal of Applied Companion Animal Behavior

Vol. 1, No. 1. 2007

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Mission: The mission of the Journal of Applied Companion Animal Behavior is to disseminate theoretical and applied information to the animal training and behavior consulting community and thereby contribute to the knowledge-base in the profession and improve the human–animal bond.

Target Audience: Professional companion animal trainers and behavior consultants.
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Editor’s Introduction

Welcome to the premier issue of the Journal of Applied Companion Animal Behavior (JACAB). There are numerous sources of information for pet guardians and various professional association newsletters and magazines that provide brief articles for professional animal behavior consultants, but there is a paucity of peer-reviewed sources for in-depth and detailed essays for professionals. The Association of Animal Behavior Professionals produces an excellent journal; I hope that JACAB will also contribute to the growth of animal behavior consulting as a serious profession.

Animal behavior consulting is a relatively new field as a profession. The industry is developing quickly and professional animal behavior consultants are striving to access more scientifically reliable information. JACAB will strive to provide useful essays toward that end.

I hope you find this and following issues useful.

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Social–Psychological Dynamics in Dog Training: The Power of Authority and Social Role Designation and its Possible Effects on Dog Training

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Introduction

The role of the professional dog trainer is to instruct guardians on how to change their companion dog’s behavior and to do so in ways that promote a healthy relationship between dog and guardian, certainly avoiding abusive treatment of dogs. However, some professional dog trainers advise clients to use abusive methods, and many guardians accept these recommendations, even though their natural inclination would normally be to avoid using abusive punitive techniques on their companion dogs. In this article, I will review some classic research on why people often tend to obediently accept methods they would otherwise reject and explore some human cognitive processes that contribute to this tendency. I will also offer advice to professional dog trainers on how to empower clients to take personal responsibility for the way they interact with their companion dogs, elaborating on a win/win principle. Specifically, I consider the willingness of dog trainers to follow the instructions of dog training instructors, even when following those instructions could potentially harm their dogs. Dog training instructors have the power of authority over their students, and with this power comes an awesome responsibility to give clear advice that can be followed safely.

Humans who live with pet dogs want them to be obedient. An obedience-trained dog is a matter of pride, and people compliment each other on well-mannered pets. The message to the dog is consistent: if you follow rules, you will usually be able to avoid aversives and maybe even have your behavior reinforced.

However, there is a dark side to obedience called “destructive obedience.” Destructive obedience involves one person obeying the demands of another that result in harm to an individual, a group or society. The world has seen destructive obedience in action many times, including the holocaust of Jews in Nazi Germany, during which six million people were killed by people who were “following orders.” Recently a pet dog guardian hired a pet trainer, and according to media reports, ended up assisting in the killing of her dog. The guardian was following the instructions of the trainer who allegedly stated that the dog needed an exorcism. This story demonstrates how powerful obedience to authority can be.

Social role designation is “a cluster of socially defined expectations that individuals in a given situation are expected to fulfill” (Allison, 2006). For example, when trainers or guardians label dogs as “dominant,” this label establishes a social structure between dog and guardian of dominant versus subordinate. A power struggle for “dominance” can ensue, which can damage the guardian–dog relationship (O’Heare, 2007).

A number of experimental studies have examined the nature of destructive obedience and social role designation. This paper summarizes some of the key studies and examines their relevance to dog training.

Experimental Studies of Human Obedience

In the 1960s and 1970s, a social psychologist, Stanley Milgram (Milgram, 1974), conducted a series of 18 experiments attempting to understand destructive obedience. The
experiments asked whether humans would inflict pain on other humans if they were ordered to by an authority figure. Psychiatrists predicted that Milgram’s study would find that only a very small percentage of subjects would comply with the orders (Sheridan and King, 1972). Although Milgram’s experiments would be considered unethical today for a number of reasons, they provided valuable information about the willingness of people to follow instructions that resulted in harm to other people.

The subjects in Milgram’s initial experiments were told that they were participating in a study designed to examine the effects of punishment on learning. The subjects were given the role of teachers who were attempting to help another person (the learner or “victim”) learn word pairs. If the learner got the word pair correct, the experiment continued to the next word pair question. However, if the learner got the answer wrong, the subject was required to increase the level of shock administered. (In fact, the learners were actors who did not actually receive shocks but reacted with apparent distress each time they were “shocked.”) In the original study, the victim of the shocks was located in a separate room and the subject was able to hear but not see him. In later studies (Milgram, 1974), Milgram moved the victim closer to the subject to examine how visual and even physical contact would influence the results.

During the original experiment, an authority figure introduced to the subject as the “experimenter” used statements such as “the experiment requires you continue” if a subject objected to shocking the victim. It was the obedience to these statements that Milgram was researching.

The findings of this study were surprising and disturbing. In Milgram’s first experiment, 26 out of 40 subjects (roughly two thirds) obeyed the orders of the experimenter to the end, punishing the victim to the most potent level of shock available when told that the experiment required it (Milgram, 1974). When Milgram brought the victim and the subject into closer proximity, the percentage of obedient subjects shocking the victim decreased until, when the subject and the victim were touching, the percentage of obedient subjects dropped to 30% (Milgram, 1974).

Milgram was curious about what caused subjects to be obedient or disobedient. He personally interviewed some subjects immediately after the study, and mailed questionnaires to others, disclosing the true nature of the experiment to both groups. The obedient subjects assigned responsibility for the shocks to the experimenter (Milgram, 1974). When instructed to administer shocks, subjects abdicated personal responsibility. Furthermore, they wanted to please the experimenter. Disobedient subjects referred to religion or value systems when refusing to shock the learner.

In 1972, Sheridan and King replicated Milgram’s study of obedience to authority using an authentic victim (Sheridan & King, 1972). The experimental question was whether using an authentic victim would influence the percentages of obedient and disobedient subjects. A puppy was selected to be the authentic victim and to receive shocks. The puppy was visible to subjects and would yelp and jump when shocked, yet 100% of the female subjects and 54% of male subjects were fully obedient. Clearly, this result demonstrates the power of authority and, especially, the strong desire of females to be obedient to authority figures.

In his book Obedience to Authority: Current Perspectives on the Milgram Paradigm, editor Thomas Blass (2000) discusses how the National Transportation Safety Board indirectly suggests, in a review of airplane accidents (in the United States), that destructive obedience causes up to 25% of all plane crashes. In Blass’s book, Eugen Tarnow is quoted explaining that voice recorders recovered after plane crashes established that co-pilots noticing errors by the pilot failed to speak up or were bullied into silence by the pilot, resulting in the crash of the plane.
Relevance of Studies of Human Obedience to Dog Training

The concept of destructive obedience is relevant to dog training because dogs routinely suffer physically, psychologically and emotionally when guardians follow the directions of instructors who advise the use of aversive techniques.

For example, obedience of pet dog guardians to their instructors can lead to dogs being hung (generally by a choke chain) with their feet off the ground, locked in crates and only released when “working,” shocked using an electronic collar, “alpha rolled” (when a person forcibly rolls a dog onto its back and holds the dog in that position), and scruff shaken (when a person grabs a dog by both sides of the face and shakes the dog). When pet dog guardians follow instructions to use these practices, they can cause physical and psychological damage to their dogs. Obedience can even kill; many dogs have been killed because obedient owners complied when an instructor labeled the dog “dominant” and recommended euthanasia.

In some class environments, instructors do not permit any challenges to their authority from other instructors or from pet dog guardians. They may have prepared replies to discourage objections from their students and they may select for obedience in their staff by firing, or not employing, staff who do not follow instructions precisely.

Milgram’s findings that “obedient” subjects wanted to please the experimenter are interesting because it is likely that many people who train their dogs wish to please their instructor. Such people may even be prepared to follow an instructor’s directions that could result in harm to their dog.

Milgram’s studies showed that proximity of the subject to the victim seemed to make it harder for the subject to shock the victim. In dog training, proximity to the “victim” (dog) may be less of a buffer against destructive obedience than in studies with human victims because dogs are a different species. In his book The Inner Ape, De Waal (2005) explains that there may be some cross-species barriers when analyzing facial expressions of different species.

Experimental Studies of Social Role Designation

In 1971, social psychologist Philip Zimbardo designed the Stanford Prison experiment. The study was never completed, but it gave humans profound insight into their own behavior. College students who replied to a newspaper advertisement were randomly assigned to be prisoners or guards. In this case, the authority was the role assigned to the students by Zimbardo, and all of the prison guards were obedient to their roles.

The local police agreed to “arrest” the prisoner students in an attempt to make the experiment more realistic. Prisoners were required to wear smocks with numbers sewn on them and nylon stockings over their heads to create the appearance of a shaved head. The guards operated on 8-hour shifts and were empowered to create their own rules.

Most prison guards became abusive toward their prisoners. Within one day, the guards’ behaviors had shifted to “dominating, powerful and coercive” (Blass, 2000). Day by day, the guards steadily increased their coercion and aggressive practices, which humiliated and dehumanized the prisoners. Zimbardo wrote, “within 36 hours after being arrested, the first prisoner had to be released because of extreme stress reactions of crying, screaming, cursing and irrational actions that seemed pathological.” He went on to say, “a fifth prisoner was released after he broke out in a full body rash following the rejection of his appeal for a parole by our mock parole board” (Blass, 2000). Only 6 days into the experiment, Zimbardo ended the study. He explained, “we had to do so because too many normal young men were behaving pathologically as powerless prisoners or as sadistic, all-powerful guards” (Blass, 2000). Zimbardo noted that much time and effort had gone into the selection process, which chose only the “most normal, healthy and well-adjusted college students.”
While some guards did not choose to treat prisoners in sadistic ways, none of the “good” guards ever refused an order by a sadistic guard, nor did they “intervene to stop or prevent despicable behavior by another guard” (Blass, 2000).

Relevance of Social Role Designation to Dog Training

The Stanford Prison experiment provides further evidence that obedience to people in positions of authority can have unfortunate consequences. It also showed that complete empowerment of one human over another can lead to abuse. Although the subjects were “normal, healthy and well-adjusted” people, they were capable of abusive behavior when put in a position of authority. Dogs are expected to be both obedient and completely subordinate to human will. This may make dogs particularly vulnerable to abuse by humans.

The Stanford Prison Experiment also demonstrated how social role designation can have extremely destructive consequences. Social dominance theory (also known as “pack theory”), which places dogs and guardians in “dominant” and “subordinate” roles, is frequently misused, and guardians are told that they must behave in a way that is dominant in relation to the dog. By assigning the guardian the role of being dominant, dog trainers may be setting dogs up for abuse. Dominance implies power, and the Stanford Prison Experiment and other prisoner abuses have shown a tendency of people to become abusive when empowered over another being (Zimbardo, 2004). James O’Heare (2003), in his book *Dominance Theory in Dogs*, says that, as a result of dominance theory being introduced into the dog training world, “People started using dominance theory to justify dominating their dogs and relationships were hopelessly ruined and many dogs killed because they were labelled dominant. They were dominant because they walked through doors first or pulled on leash. It created a combative, adversarial and confrontational relationship between humans and companion dogs.”

Human Cognitive Processes that May Contribute to Forceful Training

Deindividuation and Dehumanization

Conditions that lead to the use of aggression, according to Zimbardo (1999), are deindividuation and dehumanization. People deindividuate other humans by placing them in groups that they themselves do not belong to, frequently put them in uniforms (for example, as in prisons), and at times will disguise them. According to Zimbardo, “taken together, these actions will deindividuate them and also reduce the [cognitive] information processing.” This means that by modifying a person’s appearance (deindividuating), the people in positions of power are less likely to cognitively process whether the disempowered individuals are being treated kindly or respectfully.

Dogs are not humans, but it seems logically possible that by disallowing individual differences, by categorizing a dog as an “animal” as if humans are not animals, humans are capable of the same process of deindividuation with dogs as has been seen in history and experiments with other humans. Speciesism can make abuse seem more acceptable. When people refer to dogs as “just a dog” or when dog emotions or feelings are ignored, deindividuation and (for lack of a better term) dehumanization are in operation. This mental baseline sets the stage for inhumane training.

Since dehumanization is at work when humans aggress toward other humans, it seems probable that a dehumanization dynamic is occurring when people choose to train dogs with physical violence. Albert Bandura and his colleagues (1975) conducted a study in which the researchers examined the minimal conditions necessary to create dehumanization in people. Focusing on the manipulation of perceptions of one group of college students towards another, the researchers instructed one group to teach the other group by collectively shocking them when they made mistakes. The shock box had 10
levels of intensity that could be delivered for errors in any one of the 10 trials. Bandura et al. deceived one group of students regarding the other group by allowing the teaching group to overhear the assistant say one of three phrases to the experimenter. The first, which was neutral, was “the subjects from the other school are here.” The second, which was humanizing, was “the subjects from the other school are here, they seem nice.” The third phrase, which was dehumanizing, was “the subjects from the other school are here, they seem like animals.” The teaching group never saw the learning group and never had any direct contact with them, so this was the only information they had about the other group.

The results of this study showed that the students who heard the third (dehumanizing) phrase increased the intensity of the shock after each subsequent trial. They were able to justify higher levels of shock by attributing blame to the victim; since the subjects were “like animals,” it became more personally acceptable for them to administer the shocks. The elevated shock intensity was statistically relevant over the neutral control group. The humanizing label was found to reduce aggression significantly below the level of the neutral control.

Assuming that there is a parallel between human-to-human aggression and human-to-dog aggression, it could be postulated that the dynamic of dehumanization may be, in part, responsible for forceful dog training.

**Moral Justification**

Moral justification—the act of cognitively justifying the use of violence against another being—may also come into play in dog training. How many times have trainers heard that the use of shock or other means of aversive stimulation is justified on the basis of saving the dog’s life? Bandura (1999) says, “people do not ordinarily engage in harmful conduct until they have justified to themselves the morality of their actions. In this process of moral justification, detrimental conduct is made personally and socially acceptable by portraying it as serving socially worthy and moral purposes.”

**Minimizing and Ignoring**

Bandura (1999) describes minimizing, ignoring and misconstruing consequences as detrimental effects that can contribute to victimization. Minimizing refers to the aggressor diminishing any sort of stress, pain or suffering that the aggressive actions are creating. A shock becomes “stimulation” or a shock collar becomes an “e-collars,” terms that attempt to minimize the painful effects that the dog actually experiences. People use deceptive rhetorical devices such as these to minimize the moral content of their actions.

Ignoring is another dynamic that enables trainers to use force. By simply ignoring the signs of stress and focusing on other desired things, such as the suppression of the unwanted behavior, the trainer can choose not to pay attention to yelps of pain. This ignoring creates a cognitive bias that allows people to attend to data that supports their own preconceptions and avoid data that refutes it.

**Ideas for Hope**

**Critical Thinking and Personal Responsibility**

People abdicate responsibility for their actions as a means of protecting themselves emotionally from guilt. By abdicating responsibility, they place distance between themselves and the pain they caused another person or animal (Bandura, 1999; Bandura et al., 1975). This is a potentially dangerous dynamic that may cause harm to dogs.

Critical thinking and personal responsibility are the keys to empowering guardians and trainers to think independently, rather than obediently following what is recommended or popular. Guardians and trainers should also take responsibility for their actions, promote the concept of taking responsibility and encourage critical thinking.
Win/Win Scenarios

One way to prevent abuse is to advocate win/win training. Win/win training presents a theory of behavior change that empowers both the dog and the trainer. The goal of all interactions is that both the dog and the trainer win (Steinker, 2006). Contrary to what some trainers and guardians believe, dog training is not a zero-sum game in which someone must lose for someone else to win. In most interactions between humans and dogs, it is possible to find behavioral solutions that enable both the dog and the human to attain what they desire. This is a win/win situation.

Encouraging humans to find the win/win solution to human–dog interactions can be a key component of preventing abuse. By focusing on finding the win/win scenario, the issue of dominance and its potential abuse is reduced.

Self-awareness and Awareness of the Dog’s Wellbeing

Self-awareness enables dog trainers to know when a technique they have just used may have had a cathartic effect because it is negatively reinforced. O’Heare (2007) describes how this can establish a cycle of countercontrol; that is, “some irritating behavior resulting in an aversive intervention is negatively reinforced, which stimulates countercontrol measures in the dog, which is also negatively reinforced, which begins a cycle of countercontrol measures and negative reinforcement.”

Self-awareness also prevents a trainer from blaming the dog for training or handling errors. If trainers are aware of the dog and are able to read the dog’s body language and facial expressions, they can evaluate whether the training technique is causing stress and are then in a position to modify the training process to minimize or eliminate stress.

Education

In his 1999 article, “Transforming people into perpetrators of evil,” Philip Zimbardo discusses peer pressure as a compelling factor in aggressive acts committed by some people. Zimbardo goes on to say that “perpetrators never see their acts as evil deeds.” This statement seems to imply that some dog training clients may opt to use aggression or pain in modifying their dog’s behavior, never recognizing their acts as abusive. It seems that it is imperative to educate clients that positive reinforcement methods are available and that these methods are equally or more effective (O’Heare, 2004, 2007). Most clients would then probably choose the nonaggressive and painless option of dog training. Education also can give people insight into reading signs of stress in dogs; they are then able to choose training methods that minimize stress rather than trigger it (Steinker, 2006).

Education also seems a likely option to inoculate humans against using deindividuation and dehumanization. Bandura (1999) explains that “psychological theorizing and research tends to emphasize how easy it is to bring the worst out in people through dehumanization and other self-exonerative means…. What is rarely noted is the equally striking evidence that most people refuse to behave cruelly, even under unrelenting authoritarian commands, if the situation is personalized by having them inflict pain by direct personal action rather than remotely and if they see the suffering they cause” (Bandura et al., 1975; Milgram, 1974). Bandura refers to this as the power of humanization. As professional trainers, we frequently discourage the use of humanization. Yet it seems to me that what we ought to be doing is encouraging humanization but discouraging projection. Projection is the psychological process by which we attribute our own emotions to that of another being. When a guardian informs us that a dog deliberately urinated in his shoe, this is likely to be a projection and possibly destructive to the dog behavior change process. But when a guardian recognizes that their dog is an individual being with thoughts and feelings, this seems to me to be constructive humanization that should be encouraged, and that will safeguard against abuse and violent dog training techniques.
Once again, education can serve to enlighten trainers and guardians and avoid the use of aversives with dogs. Gaining an awareness of psychological dynamics that can create moral justification also seems a potentially successful means of guarding against violence in dog training. Being aware of these dynamics makes them less likely to occur. Understanding that they are common methods used by people to justify violence against other people, and assuming one’s principled values are nonviolent in nature, one can then use this awareness to break the pattern and assume new, more dog-friendly behaviors.

Furthermore, an understanding of the principles of behavior and the power of positive reinforcement can encourage more dog-friendly choices. Murray Sidman, author of Coercion and Its Fallout, puts it this way, “Just as the givers of shocks become shocks themselves, the givers of positive reinforcers become positive reinforcers themselves.” Sidman (2000) coined the term “fallout.” Fallout refers to the secondary detrimental effects of aversive or coercive stimulation. One component of fallout is social disruption and problematic respondent conditioning. For example, if jumping up is followed with a knee to the chest, the dog will associate the unpleasant experience with the agent administering it, which will cause disruptive effects on the relationship, potentially including aggressive countercontrol behaviors. In other words, if you use aversives as part of the learning process, then you yourself will become aversive to the student, whether that student be a human or dog. Likewise if you use positive reinforcement, this is also associated with you, via classical conditioning, and you become positively reinforcing to the learner.

As shown by the Stanford Prison Experiment, recommending that a guardian be dominant over a dog sets the stage for the use of aversives, which creates fallout.

Conclusion

Both the Milgram studies and the Stanford Prison Experiment show us a potential dark side of being human with regard to methods used in dog training. Professional dog trainers are in a position of authority with clients, and the research reviewed here indicates that this is a significant responsibility. As dog trainers and authority figures, we must adhere to a strict code of ethics to prevent dogs from being trained using pain and stress in contrast to fun and play. Many clients will be willing to obediently coerce their dogs if told to do so by an authority figure when they would normally be inclined not to do so. People often seek to please authority figures (positive reinforcement), avoid embarrassment (negative reinforcement) involved in refusing to follow the dog trainer’s recommendations, and carry out various self-deceptive cognitive processes that promote destructive obedience. It is vital for professional dog trainers to empower guardians to use their judgment, take personal responsibility for what they do to their dog and avoid common cognitive pitfalls that can lead to abusive treatment of dogs. Clients need to be armed with powerful and effective positive-reinforcement-based methods and the courage to use them in accordance with a win/win principle of dog training. This will serve clients well throughout the life of their relationship with their dog and future dogs.

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Explaining and Changing People’s Use of Aversive Stimulation in Companion Animal Training

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Harsh aversive stimulation is fraught with problematic secondary effects and is detrimental to the relationship between guardians and their companion animals; a positive-reinforcement-based approach is preferable. Many people, nevertheless, continue to use harsh aversive stimulation with their pets. In this article, we will seek a behavioral explanation for why this occurs and outline a strategy for how we can promote nonaversive approaches from clients and thereby encourage clients to make choices that are in the long-term best interest of their relationship with their companion animal.

Harsh aversive stimulation includes any application of a stimulus that an animal then behaves to escape or avoid, which stimulates significant emotional reaction and punishment-associated problematic secondary effects, such as aggression, social disruption and countercontrol. Evidence suggests that harsh aversive stimulation is a serious welfare problem for companion animals (e.g., Hiby, Rooney, & Bradshaw, 2004; Schilder & van der Borg, 2004). Therefore, a need exists to identify the controlling and maintaining variables influencing this guardian behavior and deduce strategies for changing this behavior.

Guardians use harsh aversive stimulation in many cases to achieve punishment of a target behavior. Performing punishment effectively requires strict adherence to certain criteria and is subject to problematic secondary effects (notably discussed in Estes, 1944; Hutchinson, 1977; Pierce & Cheney, 2004; Sidman, 2000; Skinner, 1953). Punishing behavior rarely results in permanent suppression of the behavior (Appel & Peterson, 1965) and is likely to result in countercontrol (Sidman, 2000), aggressive behavior resulting from escape/avoidance contingencies, and various emotional behaviors such as social disruption, global behavioral suppression, respondent aggression and problematic respondent associations between the aversive stimulus and the guardian (Pierce & Cheney, 2004).

As in all cases of operant behaviors, antecedents set the occasion for the behavior, and consequences influence the frequency of the behavior. Antecedents include setting events, motivating operations and discriminative stimuli. Setting events provide the environmental context that makes a behavior more or less likely to occur. Motivating operations include establishing operations and abolishing operations and influence how valuable the reinforcer will be (which, therefore, contributes to how likely the behavior will be). Discriminative stimuli are the immediate antecedent stimuli that indicate that a specific schedule of reinforcement will be in effect for a specific operant set. Antecedents set the occasion for a behavior, and reinforcement maintains behavior. When a behavior results in the presentation of a stimulus that then increases the future frequency of that behavior, we call it positive reinforcement. When a behavior results in the removal of a stimulus that then results in an increase in the future frequency of that behavior, we call it negative reinforcement. Reinforcement drives behavior, including
behavior that involves the use of harsh aversive stimulation.

Guardians often make use of harsh aversive stimulation in the context of their own emotional responses. Aversive stimulation is a part of life, not just something we do intentionally to one another. Problem companion animal behavior, such as barking in dogs or screaming in parrots, and other daily stresses and frustrations result in problematic secondary effects including emotional responses. Aggression and impulsiveness are characteristics of these problematic secondary effects and provide a part of the context in which guardians choose how to interact with their companion animal. This emotional backdrop forms part of the motivating operations that make the immediate suppression of annoying companion animal behavior more valuable, and harsh aversive stimulation thereby becomes more likely. The problem behavior becomes the discriminative stimulus, evoking the harsh aversive stimulation.

The use of harsh aversive stimulation is maintained by both positive reinforcement and negative reinforcement. Extrinsically, animals often respond to aversive stimulation with agonistic behaviors or displacement behaviors, such as jumping up or looking away and lip licking in dogs. Deferential dog behaviors are often viewed as an “apology” by people rather than simply an avoidance/escape-maintained social behavior or as a displacement behavior. Furthermore, some people believe that this conflict management behavior indicates a form of “submission” that reinforces their social dominance. Because of this belief, guardians will increase the frequency of behaviors that they believe establish their “dominant” role in the relationship.

There are likely also intrinsic or automatic reinforcers contributing to the maintenance of punitive behaviors. When an individual aggresses, various hormones, neurotransmitters and endorphins are activated. Such substances as cortisol, testosterone, dopamine and endorphins can have an analgesic and euphoric effect. It is possible that this mind-bath of chemicals provides an automatic positive reinforcement for the use of harsh aversive stimulation. Testosterone, for example, rises in anticipation of a challenge. When there is a conflict (such as is experienced by the guardian facing an irritating problem behavior in their companion animal), the “winner” tends to experience an increase in testosterone, while the “loser” experiences a decline (Mazure & Booth, 1998). This can last for an hour or two. Testosterone can act to reinforce aggressive behaviors in this way or act as an establishing operation for aggressive behavior. In a training session, the guardian may become primed early on to be more aggressive and less patient for the duration of the session, thereby modulating the likelihood of aggressive punitive behaviors. Similarly, endorphins and cortisol (the chief stress-fighting hormone in the body) act to promote immediate action and create reinforcement. Unlike the other reinforcers described above, this effect would be most prominent in aggressively punitive behaviors, rather than in the deliberate and nonemotional punitive behaviors that a professional might use. Do not be fooled though. There are numerous high-value reinforcers maintaining the punitive behavior of the “cool and collected” professional trainer, and not all professional trainers who use harsh aversive stimulation are cool and deliberate, even when they may appear to be. Anything that, for example, achieves quick, visible results for the client can reinforce trainer behaviors that lead to those results.

The most prominent influence on the use of harsh aversive stimulation is likely to be negative reinforcement. The immediate suppression of the companion animal’s annoying behavior creates a powerful consequence that serves to maintain the guardian’s behavior. The more annoying or noxious the problem behavior, the more reinforcement will be provided for behaviors that immediately suppress the animal’s behavior, even if the guardian’s behavior is problematic in the long run. Negative reinforcement often leads to countercontrol as well (see Sidman, 2000).

Aversive (annoying or noxious) stimulation tends to promote impulsive behavior. Impulsiveness relates to choice behavior. When
an animal faces a choice between a smaller value, immediate payoff and a longer term, higher value payoff, they may choose either way depending on their species’ characteristics and individual learning history. When an individual chooses the immediate, smaller payoff rather than the longer term, large payoff, we call this “impulsive behavior,” particularly when the short-term choice is shortsighted or an inferior choice compared with investing in the long-term payoff. The opposite is referred to as “self-controlled behavior.” For a more detailed discussion of impulsiveness and self-control, see Ainslie (1975). Humans may choose impulsive or self-controlled options but often tend to become shortsighted, looking for the immediate payoff in the form of behavior suppression in their companion animal, particularly when their punitive behavior is maintained by negative reinforcement. Under stress, people tend to become impulsive. This can be adaptive in regard to facing emergencies, but is often maladaptive in the real world.

Self-control seems to be central to understanding why many people make use of aversive stimulation with companion animals. They may put some effort and time into achieving a generally higher valued reinforcement (a happy, well-adjusted pet who no longer performs the problem behavior and still has desirable associations with the guardian), or they can choose to put in less time and effort to immediately stifle or suppress the behavior (but with greater chance of problematic secondary effects and less chance of the behavior remaining suppressed).

We can best understand self-control and impulsivity by way of the value discounting function. This model states that the value of a reinforcer (V) is directly related to reinforcer magnitude (M), and inversely related to reinforcer delay (D). Formula 1, below (referred to as the hyperbolic decay function), describes this relationship:

\[ V = \frac{M}{1 + KD} \] (1)

where K refers to a discounting rate parameter (Mazure, 1987, described in Domjan, 2003).

This equation presents a hypothetical choice behavior arrangement, in which the value of a reinforcer is a function of the magnitude of the reinforcer and the duration the individual will have to wait for its delivery. If a person faces the choice of using aversive stimulation, whether they will choose to use it or to put more time and effort into a less aversive option will depend, according to this model, on:

- the relative magnitude of the reinforcers (the larger the better)
- the relative delay for each choice (the shorter the better).

Generally, all else being equal, individuals will choose the option with the greatest magnitude of reinforcement, and the one with the least delay involved. When there is a delay for one choice, the individual may forgo the immediate payoff if the magnitude of the delayed reinforcer is exceptionally large, relatively speaking. The longer the delay, the more attractive becomes the smaller, short-term reinforcer. Lowering the value of the short-delay reinforcer and/or raising the value of the longer delay reinforcer can promote self-controlled behavior. The more aversive the experience of the dog’s behavior, the more likely the person will be to act impulsively, because the short-delay reinforcer will be of greater value than the long-delay reinforcer. Before we consider approaches for encouraging less impulsive strategies in guardians, we will explore some variables influencing the strategy.

Part of the problem is that some guardians may simply fail to recognize the potential pitfalls of punitive behaviors and lack an understanding of the alternatives. As the old saying goes: “violence begins where knowledge ends.” People faced with a social irritant respond as all animals do, with countercontrol. They seek to control aversive stimulation. The person faced with an aversive stimulus (such as their pet’s annoying behavior) experiences a conditioned emotional response that further motivates their
choice behavior. They become even more shortsighted and impulsive than usual (Semmelroth, 2004). People also make use of cognitive biases, accepting or seeking out data that tends to confirm their existing choice, while rejecting data that does not. This all sets the occasion for certain choice strategies. The choice to use aversive stimulation is reinforced by both intrinsic reinforcers (endogenous or originating from within the body) and extrinsic reinforcers (exogenous or originating from outside the body). All of this together contributes to their decision to use aversive stimulation with companion animals, and indeed with other people.

A cycle of reciprocal countercontrol (O’Heare, 2007), maintained by negative reinforcement, is an insidious result of the use of harsh aversive stimulation. Here is how the cycle of reciprocal countercontrol works: The guardian finds some particular companion animal behavior irritating. The guardian’s punitive behavior (such as “correcting” the animal with leash pops, earth-quaking [jostling the hand that a bird is perched on] etc.) is negatively reinforced as a quick-fix tactic. However, this behavior produces an irritation for the animal, who in turn resorts to countercontrol, which is also negatively reinforced. The cycle of reciprocal countercontrol continues, and all the while problematic secondary effects from the lose–lose scenario degrade the relationship and produce further problematic behavior. Figure 1 provides a visual representation of the cycle of reciprocal countercontrol.

![Figure 1. The cycle of reciprocal countercontrol. Some irritating behavior results in an aversive intervention, which is negatively reinforced. This stimulates countercontrol measures in the companion animal, which are also negatively reinforced, beginning a cycle of reciprocal countercontrol measures maintained by negative reinforcement.](image)

It is likely that many people (trainers and guardians alike) are not aware of options that would access the higher magnitude but delayed reinforcer. To the extent that they lack knowledge or resources to carry out nonaversive alternatives, the impulsive choice would seem more reinforcing than the self-controlled choice, and would become more probable. Conversely, as knowledge of nonaversive strategies and tactics increases, so too would the attractiveness and probability of self-controlled choices. In simple terms, if the guardian is not aware of less aversive and more creative solutions, they are more likely to resort to the “quick fix” of punitive behaviors.
Most guardians may have an empathetic sense that aversive stimulation may result in problematic emotions in their companion animal, but they probably do not appreciate the full range and probability of fallout resulting from its use. If they fail to recognize the costs associated with aversive stimulation, they may see the impulsive choice as more attractive and the delayed self-controlled choice as less attractive.

The aversive experience that the guardian is operating under may further increase the attractiveness of the impulsive choice. The more annoying the aversive for the guardian, the more attractive will be the immediate solution (the greater the magnitude of the reinforcement of suppressing the pet’s behavior). For example, if a dog barks (or a parrot screams) only occasionally, the guardian may be willing to explore various options for changing the behavior. If the dog barks (or the parrot screams) incessantly, the guardian is more likely to resort to the immediate suppressive characteristics of aversive stimulation. Furthermore, the effects of being intensely annoyed may narrow the guardian’s ability to consider other solutions.

The variables outlined above help to explain the common choice to use impulsive, aversive tactics rather than self-controlled strategies. These hypotheses still require experimental testing, but the basic principles imply strategies we may implement to encourage self-controlled choices over impulsive choices.

How might we make use of this model in changing the punitive behaviors of those using impulsive, aversive tactics? By increasing “tools” in the guardian’s toolbox of techniques, tactics and strategies for managing and changing problem behavior effectively and efficiently, by decreasing the response effort for nonaversive options, and by generally empowering clients with self-controlled options, we can make the self-controlled options more attractive and probable. Instructing on proactive rather than reactive strategies may be another effective means of encouraging guardians to use methods other than aversive stimulation. It is also possible to make impulsive choices less attractive and probable by educating guardians on the range and extent of likely problematic secondary effects associated with the use of aversive stimulation. By increasing the value of the self-controlled choice and decreasing the value of the impulsive choice, we make the self-controlled choice more attractive and probable than the impulsive choice.

Aggressive, punitive behaviors are often used in the context of frustration, an emotional response associated with frustrating conditions. Frustration-aggression theory suggests that, when people perceive that they are being prevented from attaining some goal (i.e., they are frustrated) the probability of their behaving aggressively will increase. Furthermore, the closer they are to attaining their goal when they are frustrated or the more invested in attaining the goal they are, and the more unexpected the frustration, the higher the probability that they will aggress. Problem companion animal behaviors can be frustrating and, in response to that frustration, people may become aggressive (a secondary effect of aversive stimulation). Under these conditions, they may be more likely to make impulsive rather than self-controlled choices.

Strategies for professional behavior consultants seeking to change punitive behaviors of guardians are summarized below:

- In coaching people how to train their dogs or other animals, apply the same principles you would apply to training a nonhuman animal. Set the client up for success. This includes breaking tasks for guardians into smaller approximations or smaller tasks and training them to fluency (steady state) before expecting more. Ensure you quantify behaviors, in order to allow the client to see visually that their choices are effecting appropriate changes; this will act to reinforce self-controlled behavior. Ensure the goals chosen will be achieved, to promote empowerment. By making it easier for the person to understand, retain and apply appropriate training techniques, we empower them and set them up for success. Bring guardian behavior to generalization,
just as you would with dogs, cats and parrots.

• Educate guardians about the kinds and extent of “fallout” that can occur with the use of aversive stimulation, even when it is carried out in accordance with the criteria for effective punishment. Explain countercontrol, social disruption, aggressive retaliation, and other secondary and longer term results of the use of aversive stimulation, including the fact that suppression is usually temporary only and does not address the reinforcement that actually maintains the behavior. In particular, explain how using aversive stimulation can damage their relationship with their dog, but avoid harping unnecessarily on these lessons. Many behavior consultants use this tactic solely, but it is rarely effective without implementing the first point as well.

• Educate guardians on basic strategies and techniques for proactively preventing problem behaviors and changing existing problem behavior. Arm them with principles and strategies that they can apply to a wide variety of situations. Make yourself available, if possible, for questions and follow-up.

• Help guardians to recognize when they are angry, irritated, desperate or frustrated. When people are angry, they behave impulsively and often aggressively (Semmelroth, 2004). Coach clients to end training sessions on as good a note as possible when they recognize that they are angry, and take a break. Encourage guardians to identify the environmental events that surround their emotional behavior (i.e., aggression, impulsivity). They can remind themselves that anger is rarely the most productive or efficient solution to problems. Assume them that it is normal to become frustrated and angry from time to time. If we recognize we have become impulsive and dangerous when we are angry and that this is an ineffective solution, we are less likely to act impulsively. We can choose to remember that the risks of using aversive punitive behaviors are too high a cost for the momentary suppression of behavior. Encourage clients to seek creative solutions. They can often find a way to discontinue their interaction with the companion animal for a little while (during which time their physiology returns to normal and they become more self-controlled and less aggressive). Alternatively, they can find a way to calmly achieve an incompatible behavior for the dog. They can start thinking proactively and train a behavior at another time so they can apply it when the problem situation arises. Once they have calmed down and are in a frame of mind to think clearly and less impetuously about the situation, they can return to training. Until then, they can use management and antecedent control procedures to prevent continued rehearsal of the dog’s problem behavior. Through empowerment and successful application of behavior change procedures, anger should dissipate, replaced with joy in response to their successes.

• Fundamentally, guardians should be encouraged to access reinforcement for self-controlled behavior. Available reinforcers need to be identified for avoiding aversive stimulation and making use instead of creative, positive-reinforcement-based approaches to interacting with their pet. As usual, it is all about the reinforcers.

In summary, people tend to make use of harsh aversive stimulation in their interactions with dogs as a means of punishing annoying behavior. This choice is seen to be of higher value than using creative positive-reinforcement-based approaches. Their behavior is maintained by both positive and negative reinforcement, which promotes an impulsive approach. This option is maladaptive, though, because of the likely secondary effects associated with the use of harsh aversive stimulation. In order to encourage guardians to avoid harsh aversive stimulation, we need to address antecedents and consequences. By instating antecedent control procedures, such as
motivating operations that make aversive techniques less valuable and nonaversive techniques more valuable in the eyes of the client, and differentially reinforcing approximations to nonaversive approaches, we help ensure that clients will make choices that are in the long-term best interest of their relationship with their companion dog.

Acknowledgements

Thank you to the review board members responsible for reviewing this article. They contributed excellent advice for modifications to the article.

References


The Pet Overpopulation Crisis: How Training the Public Can Make a Difference

Melissa Riesen


Currently in the United States, more than 50 million dogs reside in roughly 38% of all households (Hart, 1995, p. 162). With dogs being such a popular pet, it is no wonder that there is a market for dogs. Unfortunately, in that market, the demand is for purebred puppies, not adult dogs. In fact, the supply of adult dogs greatly outweighs the demand for them. Because the demand for purebred puppies exists, vendors, such as irresponsible breeders and puppy mills, mass produce puppies for profit. However, there are not enough good homes for “man’s best friend” as an adult. The result, euthanasia, is an unfair byproduct. This article examines the pet overpopulation crisis, taking a closer look at the causes, the results, and the possible solutions. It is imperative that dog training professionals take advantage of the wealth of opportunities to educate dog owners about this horrible problem. After all, we, the consumer, created the market; therefore, we should be educated about the problems that come with it.

The Causes

The bottom line of the pet overpopulation crisis is that “the number of cats and dogs far exceeds the number of loving homes available” (People for the Ethical Treatment of Animals [PETA], n.d.a, para. 3). One study focusing on human–animal relationships found that approximately 64% of puppies are abandoned within the first year of ownership in the United States (Arkow & Dow, 1984). Although there is a demand for puppies, there is little demand for adolescent and adult dogs, which is what puppies become in only a few short months. Every year, 6–8 million abandoned animals enter animal shelters; only about half of them are able to be adopted out into homes (Humane Society of the United States [HSUS], n.d.a). The rest are euthanized. The greatest consequence of the pet overpopulation crisis is that too many animals compete for good homes. In order to battle pet overpopulation, it is important to know and understand the causes.

The responsibility for the pet overpopulation crisis is shared by irresponsible pet owners, backyard breeders and puppy mills. Although irresponsible guardians are not necessarily mass producing puppies, like some breeders and puppy mills, they are still a significant contributor to the problem. The reasons that people allow their dogs to breed are numerous. They include the choice to not sterilize their dog because of financial reasons or ignorance, the desire for their children to experience the “miracle of birth,” macho attitudes, and indifference (In Defense of Animals [IDA], n.d., para. 2–3). Also, many people breed their dogs because their dog is “special” and they want a puppy from their special dog. Unfortunately, there are many special dogs out there that need homes.

There are two types of breeders: responsible breeders and irresponsible breeders, often referred to as “backyard breeders.” A backyard breeder is any breeder who intentionally breeds dogs in a manner that does not meet the standards of a reputable breeder (discussed later in this article). These could be dogs ranging from mongrels to American Kennel Club (AKC) registered purebreds. Backyard breeders know little about genetics and temperament and will typically produce dogs with health and behavioral problems. Because backyard breeders know little about genetics and genetic defects, it is rare to see one offer puppies that are certified free of genetic diseases (Orthopedic Foundation for Animals certified, for example). Furthermore, backyard breeders are generally not inclined to maintain responsibility for their puppies for the rest of their lives. It is also
common for backyard breeders to stake their qualifications solely on their dog’s papers. Whether or not the registration is recognizable or obscure, it is misleading to the consumer. “Buyers may be swayed by talk of ‘papers’ and ‘AKC registration’, but these papers cannot ensure good temperament or good health” (PETA, n.d.b, para. 12).

Puppy mills are the seedy underbelly of the pet market. “Puppy mills are facilities that produce purebred puppies in large numbers” (HSUS, n.d.b, para.1). They are able to thrive because of the high demand for purebred puppies. The puppies are typically distributed by brokers and pet shops (HSUS, n.d.b, para. 1). In fact, “even if a store claims that it doesn’t buy from puppy mills, there is a good chance that it buys from a broker who does” (PETA, n.d.b, para. 4). Moreover, the Pet Industry Joint Advisory Council estimates that pet stores sell approximately 300,000 to 400,000 puppies annually, while “HSUS [the Human Society of the United States] estimates that number to be 500,000” (HSUS, n.d.b, para. 6). Brokers not only deliver puppies to pet stores, they distribute them to agents, and agents disperse the puppies to the public, usually under the guise of the innocent and unfortunate owner of a bitch that “happened” to get pregnant (McConnell, 2002, p. 125).

Puppy mills breed dogs for quantity, not quality. They are unconcerned with genetic defects and temperament issues that are allowed to pass from “generation to generation” (PETA, n.d.b, para. 11). Because of the lack of concern for the quality of the animals being produced, it is no wonder that the quality of the environment in which they are produced is equally substandard. “The animals are usually kept in squalid conditions, with just enough sustenance to keep them alive” (IDA, n.d., para. 6). In her book, The Other End of the Leash, Patricia McConnell recalls a visit to a puppy mill and the horrible conditions in which the dogs lived:

The last one I visited raised each litter in small, hanging wire cages. The urine and feces was supposed to fall through the wire, except, of course most of the waste remained in the cage, so the puppies played in it for lack of anything else to do. Many of the dogs had serious physical deformities… Those problems can be serious and genetically mediated, so no responsible breeder would have bred them (McConnell 2002, p. 124–125).

So, the question remains; if the conditions in puppy mills are so abhorrent, why hasn’t anyone shut them down?

The United States Department of Agriculture (USDA), which is responsible for enforcing the Animal Welfare Act, has been ineffective at regulating puppy mill operations. Part of the problem is that the USDA does not regulate retail stores and has classified puppy mills as such (HSUS, n.d.b, para.7):

On May 11, 2000, a coalition of animal protection organizations and individuals filed a lawsuit charging the USDA with failing to halt cruel and inhumane practices at breeding facilities. The plaintiffs outlined the USDA’s illegal actions in exempting pet dealers who were not retail stores from compliance with … the AWA. On July 31, 2001, the U.S. District Court for the District of Columbia ruled that the language and history of the AWA clearly outlines that an individual who sells dogs and cats from his or her own premises is not a ‘retail pet store’. Thus, the court found the USDA’s exclusion of all commercial dealers who sell dogs and cats directly to the public is in violation of Congress’ express intent under the AWA. Upon appeal by the USDA, the decision was overturned (HSUS, n.d.b, para. 9–11).

Puppy mills and other breeders who mass produce puppies are still going strong today. Ending the profit for those who contribute to pet overpopulation is one of the best strategies for fighting it. Additionally, McConnell warns potential adopters, “Whatever you do, don’t let yourself get seduced by pet stores, ‘agents’ or ‘no-kill shelters’” (McConnell, 2002, p. 128). There are several different causes for pet
overpopulation, but just one major result, euthanasia.

The Results

“Euthanasia is the act of inducing a painless death. The word itself comes from ancient Greek eu + thanos (‘good death’)” (Rhoades, 2002, p. 1). Euthanasia of healthy animals is a problem that exists due to the pet overpopulation crisis. There are not enough homes for all the animals—there is no place for them to go.

Because of the high number of unwanted companion animals and the lack of good homes, sometimes the most humane thing that a shelter worker can do is give an animal a peaceful release from a world in which dogs and cats are often considered ‘surplus’ and unwanted. PETA, AMVA, HSUS, concur that an intravenous injection of sodium pentobarbital administered by a trained professional is the kindest, most compassionate method of euthanizing animals. The American Humane Association considers this the only acceptable method (PETA, n.d.c, para. 3).

The other practices employed by shelters today are considered to be less humane, or may impose more risk to personnel than sodium pentobarbital injection. They include drowning, shooting, poisoning, gassing, decompressing, or injecting animals with a paralytic substance (Rhoades, 2002, p. xiv). The problem with gunshot and chloroform is that they can be dangerous to staff performing the euthanasia. Decompression and gas chambers cause a terrifying and painful death for animals. The use of T-61, an injectable solution, causes paralysis, particularly paralysis of the diaphragm, so that the animal suffocates, but initially is still conscious (Rhoades, 2002, pp. 132–133).

Nearly 4 million animals are euthanized in animal shelters every year. “Shelters cannot humanely house and support all of these animals until their natural deaths—they would be forced to live for years, lonely and stressed, in cramped cages and kennels, and other animals would have to be turned away because there would not be room for them” (PETA, n.d.c, para. 1). Although the pet overpopulation crisis and its consequences look bleak, there are solutions.

The Solution

There are several ways we can battle the pet overpopulation problem. The first, and probably most important, is education. It is imperative to educate the public about the problem and how they can help to solve it. It is also necessary for communities to implement an aggressive spay/neuter campaign and program. Furthermore, it is important for people to adopt animals from shelters and breed rescue organizations, or—if they absolutely must have a purebred puppy—from a reputable breeder. “Education programs must be created to educate adults and children about the causes of over population and to help them realize that there are many wonderful animals waiting in shelters for caring families to adopt” (IDA, n.d., para. 7).

In a survey performed by the Massachusetts SPCA, the public was asked if they were aware of a pet overpopulation problem in their community. Thirty-nine percent of dog owners responded that they were (Massachusetts SPCA, 1991). Of course, this sample is not representative of the entire population, but it does offer us some perspective. It suggests that less than half of the community is even aware that there is a problem. As discouraging as this information is, the HSUS estimates that 72% of dogs owned in the United States are spayed or neutered (HSUS, n.d.c). This is good news, as many people are getting their dogs spayed or neutered anyway, despite being unaware of the pet overpopulation problem. It is possible that people will be more receptive to spay/neuter education than initially thought. However, it is pertinent to note that this is a percentage of owned animals. It has been my anecdotal experience that the number of unowned animals that are not spayed or neutered is equally high. Unfortunately, it takes only a small number of dogs to produce many, many puppies.

“In six years one female dog and her offspring can theoretically produce 67,000 dogs” (HSUS, n.d.a). This is just one female dog. And
when it is considered that more than 25% of owned animals are not spayed or neutered and most likely a high percentage of unowned animals are not spayed or neutered, it becomes clear how just a small number can be creating an epidemic. This is why spay/neuter programs are so important. The HSUS has seen a significant decline, 30–60%, in euthanasia in areas that have implemented a spay/neuter program. Specifically, spay/neuter programs are most effective if they have reduced fees or are somehow subsidized (HSUS, n.d.d, para. 2–3). Spaying or neutering an animal is still met with resistance by some people. Along with the reasons discussed earlier in this article, “reasons for not neutering female dogs include interest in breeding (44%), expense of surgery (26%), and concern about weight gain and personality change (26%)” (Beaver, 1999, p. 228).

However, many of those notions are just myths. There are actually many benefits to getting a dog spayed or neutered. Animals that are spayed or neutered have lowered risks of cancer, and a lower incidence of behavioral problems. In fact, one study showed that behaviors such as mounting, urine marking and aggression appear to be reduced in neutered males (Hopkins, Schubert, & Hart, 1976, pp. 1108–1110).

Because not all veterinarians have experience performing pediatric surgery, they often recommend waiting until the animal is 6 months or older before spaying or neutering. However, spaying and neutering can be performed as early as 2 to 4 months. In fact, this is common practice among shelter veterinarians. Moreover, “it is cheaper and easier to neuter the younger animals as many clinics charge by weight” (Guerrero, 1997, para. 7). As well, it is beneficial to have animals spayed or neutered before sexual maturity to reduce the chances of copulation. Owners also notice more advantages behaviorally in animals spayed or neutered earlier; “by 2 years after ovariohysterectomy, dogs neutered at ages 7–10 weeks are considered by owners to be smarter than dogs neutered 6 months or later, and other undesirable behavioral side effects are reported lower as well” (Beaver, 1999, p. 229). Spay and neuter may be the most effective weapon against pet overpopulation; however, it is pertinent to note research showing that, in order to be effective, it must occur at a rate of 85% (Nasar, Mosier, & Williams, 1984, p. 282). An effective program must be aggressive and highly accessible to all members of the community.

An animal shelter can be a wonderful place to obtain a dog. However, many people protest against going to animal shelters because shelters euthanize animals. As a result, many shelters have adopted some type of lowered-to-no euthanasia policy, and thus the “no-kill” term was born. Despite the popular term used by some animal shelters:

In reality all shelters are responsible for the euthanasia of dogs in their communities… Turning away un-adoptable dogs, or turning away dogs when a shelter is full, does not spare the lives of these dogs. It merely forces another shelter to do the deed. Nobody in the shelter field wants to kill animals (Sternberg, 2002, p. 23).

The problem with some “no-kill” shelters is that they have to turn animals away. They also do not euthanize dogs with temperament issues, and if they cannot adopt them out, will house them for the remainder of their life in confinement. Dogs housed long term in a kennel deteriorate emotionally and behaviorally. This is infinitely less humane than euthanasia. It is also unethical to make a potentially aggressive dog available for adoption to avoid euthanizing it. Euthanasia in animal shelters is a community problem because the community produces these unwanted animals. Furthermore, the unfortunate truth is that the community decides which animals are adoptable, not animal shelters. Many animal shelters have to make dogs available according to the demand of the people in the community. And generally people want puppies, purebreds, small breeds, and animals that look physically distinctive.

Despite this, an animal shelter can be an excellent resource and educational tool. Reputable shelters offer adopters animals that have been vaccinated, microchipped and spayed or neutered, and have gone through a formal behavioral or temperament assessment. For
people who must have a purebred, it is estimated that 25% of dogs in animal shelters are purebred (HSUS, n.d.a). Animal shelters can also refer potential adopters to good breed rescue organizations. As for those who still cannot bring themselves to set foot in an animal shelter, many shelters offer mobile and satellite adoption centers.

For people who absolutely must have a purebred puppy, the following is a list of things to look for in a responsible, quality breeder. First, a reputable breeder breeds dogs for the love of the breed, not to make money. Second, there should be a five-generation pedigree with a minimum of eight titles in the last three generations. Third, the puppy should be physically and temperamentally healthy and fit the breed standard. Fourth, the dog should be certified free of genetic diseases (Orthopedic Foundation for Animals, Canine Eye Registration Foundation, Brainstem Auditory Evoked Response) (Guerrero, 1997, para. 10). Fifth, the breeder should allow the adopter to meet the parents of the puppies, who should be friendly and sociable, and the adopter should also be able to see where the parents and puppies are kept. And finally, the breeder should demand that the adopter return the puppy to them if they do not wish to keep it. “Responsible breeders are appalled at the thought that their pups might end up clogging up animals shelters…” (McConnell, 2002, p. 127). There are enough dogs in this country, including purebreds. If people are choosing to breed, they (as breeders) and their dogs should be the best of the best. If not, to the animal welfare community, they are nothing more than backyard breeders.

So exactly how can the training community educate the public? There are ways that trainers can incorporate information about pet overpopulation into their regular education of dog owners. Add a pet overpopulation handout to the training handouts given out after class. Offer short, complimentary consultations to your students interested in getting another dog or thinking about breeding their current dog, and advertise this at the end of your first class. Offer temperament evaluating services for those who are ambivalent about adopting an adult dog. Make sure you discuss the health and behavioral benefits of spaying and neutering in your puppy classes. Even making information available on your website would be helpful.

Conclusion

The pet overpopulation crisis is simply described as a surplus of companion animals. It is caused by people who do not spay or neuter their animals and people who mass produce them. The result is euthanasia. Specifically, animal shelters are forced to euthanize because there are not enough loving homes in their communities for all the animals being produced. The solution is education, aggressive spay/neuter campaigns and low-cost programs, more adoption from animal shelters and breed rescues, and, as a last resort, purchasing a purebred puppy from a responsible breeder. Trainers are in an excellent position to educate pet owners. If the dog training community can take advantages of opportunities to educate the public, pet overpopulation may be a story that we tell our grandchildren one day.

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The Human–Canine Bond: The Evolution of Unique Social Skills

Bobbi MacInnis, B.A


Over the course of history, humans have, for a variety of reasons, domesticated everything from cats and dogs to snakes and horses. Yet none of them receive the attention, care and love that dogs do. Why is this? What makes dogs man’s best friend? The answer seems to lie in the long relationship between the two species. Domestic dogs are remarkably skilled at reading human social and communicative behavior, perhaps even more so than our nearest primate relatives. Those specialized social skills are the foundation of the inimitable relationship between humans and dogs. Dogs are our hunting partners, guards and cherished family companions, and the specialized social skills they possess make them perfectly suited for filling these roles.

Research conducted at the Max Planck Institute for Evolutionary Anthropology in Germany has concluded that these unusual social skills have a heritable component, initially evolved during domestication as a result of selection on systems mediating fear and aggression towards humans (Hare & Tomasello, 2005). Differences in chimpanzee and human temperament suggest that a similar process may have led to the evolution of the distinguishing social skills of our own species. This essay will explore the evolution of the unique social-communicative skills of dogs, suggesting that humans and dogs were subject to a convergent social evolution. It will examine the theory that dogs and humans have been subject to similar selective pressures, and discuss how this has impacted the development of the relationship between humans and dogs.

In 1998, Hungarian researchers studied the performance of domestic dogs during an experiment in which they hid a piece of food or an attractive object in one of several opaque containers. They then looked at or pointed to that location in an attempt to help the dog find the hidden object. In initial studies, they set up situations in which food was hidden in one of several locations and then a cue was given to indicate where the food was hidden. Across all the studies, the results showed that the dogs were able to use several different behaviors to locate the hidden food at above chance levels: a human pointing to the target location; a human gazing at the target location; a human bowing or nodding to the target location; and a human placing a marker in front of the target location (a totally novel communicative cue) (Soproni, Miklosi, Csanyi, & Topal, 2001). The dogs were even able to do the task correctly when the human walked towards the wrong container while pointing in the opposite direction to the correct container. In addition, dogs performed equally well whether cues were provided by conspecifics or humans. “In all of these cases, the dogs used the behaviors effectively from their very first trials, showing that they already possessed the required skills before the experiment” (Hare & Tomasello, 2005).

In subsequent research, a comparison between chimpanzees and dogs, subjects of both species were given the “novel block” cue, where the human gets the animal’s attention and places a block on the target container. The dogs performed much better than the chimpanzees tested (Hare, 2002). In other studies, dogs have performed well in this task even when they only see the block placed initially and it is removed before they make their choice, demonstrating that they are not just attracted to the block itself. This is significant because the dogs’ ability to interpret human social and communicative behavior appears to be more flexible than that of other animals more closely related to humans phylogenetically, such as chimpanzees, bonobos and other great apes (Hare & Tomasello, 2005). With respect to gaze cues, dogs only use a
human head and eye direction cue to locate hidden food if the person is gazing directly at one of the two possible hiding locations; they ignore a human’s gaze if the person stares into space above the correct hiding location. This suggests that dogs discriminate human communicative behaviors from other behaviors, in ways similar to human infants (Hare & Tomasello, 2005).

What is interesting about these findings is that dogs, relative to other animals, do not seem to show special flexibility in other nonsocial areas. When dogs are directly compared with primates in their ability to do such things as make inferences about the location of hidden food based on nonsocial cues, they fail miserably in comparison with nonhuman apes. Dogs also fail means–end tasks that require them to avoid pulling a string that is not connected to food in favor of one that is connected to the food, a task that most primates solve easily (Hare & Tomasello, 2005). It seems, therefore, that the skills of dogs represent a specifically social specialization.

The first and most common hypothesis regarding the origin of the specialized social skills of domestic dogs is that dogs grow up with humans and learn from them, causing an “enculturation” similar to that proposed to explain the unusual cognitive abilities of apes raised by humans. This theory implies that the ability to read human social behavior should develop over a dog’s lifetime and should vary depending upon the amount of exposure a dog has had to humans. However, a cross-sectional comparison of puppies found that different age groups did not differ in their ability to use a human pointing or gaze cue; even puppies as young as 9 weeks old were nearly perfect in basic tests. In addition, when a group of puppies in an obedience class was compared with a group of litter-reared puppies (with little exposure to humans) in their ability to use the same pointing and gazing cues, both groups were equally skilled at using the cues (Hare & Tomasello, 2005). These findings did not support the hypothesis that dogs need unusual amounts of exposure to humans to learn to read human social and communicative behavior.

A second hypothesis suggests that domestic dogs inherited their specialized social skills through common descent with the wolf. However, two independent studies have found that wolves reared by humans are not as skilled as dogs in using human social behaviors to find hidden food. In addition, when human-reared dogs and wolves were both presented with an impossible task of opening a locked box with food inside, the dogs almost immediately gave up and directed their gaze alternately between the human and the box, whereas wolves continued to try to solve the task on their own until the test ended (Miklosi, 2003). Studies comparing wolves and dogs on simple nonsocial problem solving or memory tasks typically find that wolves perform as well as, if not better than, dogs (Hare & Tomasello, 2005). Overall, these comparisons do not support the hypothesis that dogs inherited their social skills directly from wolves.

The third hypothesis is that the unique social skills of dogs evolved during the process of domestication. In 1959, Dr. Dmitry Belyaev and his colleagues began one of the longest running experiments in history with the goal of studying the behavioral genetics of domestication. An experimental population of foxes was selectively bred based on a single criterion, their tendency to approach humans fearlessly and nonaggressively. When fox kits from this domesticated population were compared with age-matched dog puppies on the basic pointing and gaze-following tests, the foxes were as skilled as the dogs in using the human social cues. When compared with a population of control foxes that were bred randomly with respect to their approach towards humans, the domestic foxes were more skilled than the controls at using human social cues. Crucially, neither population of foxes was bred or tested for their ability to use human communicative gestures or behaviors. Therefore, these findings confirm the likelihood that dogs’ unusual ability to read human social-communicative behaviors evolved during the process of domestication, and in addition identify a selective pressure that is likely to have played a role in driving the evolution: selection against fear and aggression towards humans (Hare & Tomasello, 2005).
Such selection probably occurred as wolves began exploiting the niche created by refuse in and around human settlements. For dogs, understanding the communicative cues of humans was presumably an important aspect, either direct or indirect, of the domestication process (Brauer, Kaminski, Riedel, Call, & Tomasello, 2006).

Once the initial evolution occurred so that dogs were motivated to apply these inherited cognitive abilities to solve a new set of social problems involving humans, the variance in these cognitive abilities might have come under direct selection. When dogs evolved constraints on fear and aggression, cooperation with people became possible. Consequently, among the cooperator dogs were some that were also better communicators. They got the jobs of helping people with herding or hunting. Therefore, a pleasant temperament may have been the prerequisite for gaining the survival advantages offered by communication skills (Walton, 2002a). There is little evidence to support the second selection event, but it proposes an interesting theory that deserves further investigation.

Recent findings propose that the unusual social skills of dogs arose as a result of domestication and represent a case of convergent evolution with humans. Research suggests that human-like social intelligence could have initially evolved, not as an adaptation, but rather as a byproduct of selection on seemingly unrelated social–emotional systems (Hare & Tomasello, 2005). Support for the hypothesis that changes in temperament allowed for further social–cognitive evolution in humans comes from studies of chimpanzee cooperation. The basic finding is that cooperation among chimpanzees is highly constrained by levels of interindividual tolerance, probably controlled by systems mediating fear and aggression (Hare & Tomasello, 2005). For example, without any training, chimpanzees will cooperate to pull ropes together to retrieve a heavy box of food, but they are only willing to do this if the food is sharable, the partners are out of each others’ reach, and the partners have shared food previously in a similar context. If these criteria are not met, the chimpanzees will not cooperate. It seems that unless the conditions are right subordinate chimpanzees are not willing to risk being attacked by intolerant dominants and dominants are unable to control their aggression towards subordinates trying to obtain food, even if it means they will receive no food at all.

Furthermore, chimpanzees perform better in tasks when competing than when cooperating. “In the standard object choice task, this finding was robust regardless whether the competitor was a human or another chimpanzee” (Hare & Tomasello, 2004). In addition, chimpanzees exploit the social behaviors of others when competing for food. Chimpanzees commence food-finding behavior when they see a human who has previously established a competitive relationship with them, reaching unsuccessfully toward a potential food location in an apparent attempt to obtain hidden food (Hare & Tomasello, 2004). However, if the same chimpanzee sees a helpful human pointing to the hidden location, they do not use the gesture to locate food (Hare & Tomasello, 2005). This complexity for primates is something of a mystery if you consider that chimpanzees, in particular, seem to have many of the requisite skills to solve such a problem, as demonstrated in other cognitive tasks. For example, in several other situations, chimpanzees appear to be capable of assessing what another individual can see, including following their gaze direction to objects hidden from their immediate view (Hare, 2006). Therefore, it could be that chimpanzees do not demonstrate human-like skills in using communicative gestures because they lack the human-like temperament for sharing information.

Research with chimpanzees suggests that a prerequisite for flexible forms of human cooperation and communication is a human-like temperament (Hare & Tomasello, 2005). In fact, the evolution of human-like temperament might have preceded the evolution of more complex forms of human cognition: “It is only after the human temperament evolved that variation in more complex forms of communicative and cooperative behaviors could
have been shaped by evolution into the unique forms of cooperative cognition present in our species today” (Hare & Tomasello, 2005). Following this line of reasoning, one might entertain the hypothesis that an important first step in the evolution of modern human societies was a kind of self-domestication (selection on systems controlling emotional reactivity) in which human-like temperament was selected (individuals within a social group either killed or ostracized those who were overaggressive). Thus, like domestic dogs, this selection for tamer emotional reactivity put our hominid ancestors in a new adaptive space within which modern human-like forms of social interaction and communication could be selected for (Hare & Tomasello, 2005).

Critics of this hypothesis question whether domestication alone can account for the social skills observed in dogs. They argue that, although domestication is often viewed as directional selection against aggression and fear, the actual process was likely to be influenced by the type of interaction between humans and the species in question. In addition, they contend that any emergent social skills towards humans in domesticated animals are probably a function of the social behavior exhibited by the wild ancestor. This is clearly seen in the divergent performances of domesticated animals during the “cueing task.” On the basis of observing human communicative cues, goats show some evidence of finding hidden food, but horses seem to perform poorly (Miklosi & Topal, 2005). Research conducted with pet dogs and cats reared in the same human families also shows that, although both species were equally skillful in using human pointing cues, cats were less likely than dogs to look towards a human when faced with an unsolvable situation (Miklosi & Topal, 2005). Critics suggest that the reduction in emotional reactivity alone is not sufficient to explain dog behavior and we must look for behavioral changes that might have emerged as a result of selection in social domains other than aggression and fear.

Miklosi and Topal (2005) also point out a methodological position to be considered that makes the fox experiment difficult to interpret. They argue that it is very likely that the foxes have inadvertently been selected for basically the same behavior as they actually showed during the cueing test, approaching humans or hands providing food. “Namely, when the experimenter extended his arm to the bowl containing hidden food in the cueing test, performance of tamed foxes can be attributed to their selected preference for approaching humans or parts of the human body. As such cueing was also relatively easy for socialized wolves to rely on, without further control experiments the relevance of the fox study on the origin of social skills in dogs is disputable” (Miklosi & Topal, 2005).

Critics also advise that information acquired from experimental object-choice and gaze tests with primates should be reviewed with caution. Researchers at the University of Louisiana at Lafayette attempted to assess the influence of different procedures on chimpanzees’ performance in the object-choice tasks. Five chimpanzees were tested using three experimenter-given cues to food location: gazing, glancing and pointing. In one procedure, the subjects entered the test unit and approached the experimenter on each trial (LEAVE Method). In the other procedure, the subjects stayed in the test unit throughout a session, witnessed the hiding process, and waited for 10 seconds, during which the cue was provided (STAY Method) (Barth, Reaux, & Povinelli, 2005). The subjects scored at high levels far exceeding chance in response to the gaze cue only when they approached the experimenter for each trial (Barth et al., 2005). They performed at chance levels when they stayed inside the test unit throughout the session. They scored at chance levels on all other cues irrespective of the procedure (Barth et al., 2005).

These findings imply that chimpanzees can immediately exploit social gaze cues, and previous conflicting findings were likely due to the different meta-procedures that were used (Barth et al., 2005). The critics argue that greater attention should be devoted to the exact methods used, and that the results of this research should be extended to nonprimate species as well. Thus, it would be crucial to reevaluate the effect of
different methods on the dogs’ performance (Barth et al., 2005). In the studies with dogs, the subjects typically approach the experimenter from a distance (LEAVE Method), and it would be interesting to see if they perform equally as well when sitting in front of the experimenter (STAY Method).

In order to fully understand the impact of selection for tameness on the ability to interpret social signals, more research must be conducted. Given that this area of research is relatively new, the theories surrounding the origins of the unique social skills of dogs are in their infancy. Oddly enough, the strength of the human–canine bond may be just the reason why more research in this field is not ongoing. There are more studies on the call of the red winged blackbird than on what different dog barks mean, and more data on the head movements of some lizards than on what a dog’s tail wagging means (Walton, 2002b). There is speculation that the dearth of details on humans’ most loyal companion might have something to do with scientists distancing themselves from anything that goes beyond cold, hard facts: “Science has always been uncomfortable with emotions, so there’s a real bias against studying domestic animals; especially canines that may sleep in our beds and eat off our plates and otherwise get spoiled” (Walton, 2002b).

The most recent research that has been conducted on the origins of the unique social skills of dogs and humans argues that a convergent evolution has occurred. It seems that domestic dogs and humans have evolved similar social-communicative skills. In both cases, these abilities seem to have been adapted for certain kinds of communicative interactions with human beings. Thus, the coevolution of dogs with humans must have selected for a set of cognitive abilities between the two that makes the bond between humans and dogs unique. The domestic dog’s unique ability to communicate improves the relationship between dogs and humans and lends insight into why both dogs and humans feel a special connection to one another. Additional explorations into the ways in which dogs do and do not interact with humans, and how they evolved their special social skills, will provide us with an exciting opportunity to gain further insight into the developments leading to human-style cooperative actions and communication.

References


Development of a Dog Personality Questionnaire

Amanda C. Jones


Abstract

How can dog personality (or temperament) be measured quickly, easily, and efficiently? How can a dog owner’s experience with his or her dog be used to obtain reliable, valid information about the dog’s personality and behavior? In this article, I will briefly discuss the history of dog personality research, which is more extensively reviewed in Jones and Gosling (2005). Here, I will also lay groundwork justifying why a questionnaire designed to assess individual dogs’ personalities might best address the questions posed above. I will then outline the design of a series of studies I am currently conducting to develop and evaluate the Dog Personality Questionnaire (DPQ).

Early in the twentieth century, Nobel laureate Ivan Pavlov began a research program designed to identify the basic types of dog personality (e.g., Pavlov, 1906). Despite this auspicious start, the study of temperament and personality in animals took years to evolve into an area of research (except, of course, in humans). Now, it is widely accepted that nonhuman animals, from mice to octopuses, can also be characterized in terms of personality (Gosling & Vazire, 2002). Dogs, in particular, have been examined extensively. It is easy to understand why dogs and their personalities have garnered extensive research attention. Not only are they a very common pet in the United States (Humane Society of the United States, 2007) and ubiquitous wherever humans live, but they are also used to realize a number of essential applied goals, such as guiding visually impaired people and searching for explosives. As a result, many groups of people are interested in assessing the personalities of dogs efficiently, reliably, and accurately. These groups include: (a) potential pet owners wanting to find a dog suitable for their particular circumstances (e.g., family dog vs. guard dog), (b) shelters seeking to identify suitable homes for dogs, (c) service-dog programs (e.g., guide dogs, hearing dogs), and (d) working-dog programs (e.g., patrol dogs, detection dogs). Many of these groups must evaluate dogs using very limited resources. They may have little time with each dog, few trained evaluators, minimal facilities, and other limitations. However, a well-validated, reliable, effective instrument for measuring dog personality that is easy and quick to use and widely applicable has yet to be developed. (Most previously developed questionnaires focus on assessing behavioral problems rather than general personality [e.g., Goodloe & Borchelt, 1998; Hsu & Serpell, 2003; Serpell & Hsu, 2001].) The goal of the research described here is to develop such an instrument and evaluate its psychometric properties, including aspects of reliability and validity.

Before a tool for assessing the broad construct of dog personality could be developed, the construct to be studied had to be explicitly defined (e.g., DeVellis, 2003). For the term personality to be used to characterize nonhuman animals, and dogs specifically, personality must be defined, and how (or whether) it differs from temperament must be determined. Personality is often reserved for discussing adult humans, and temperament for discussing human infants and other animals. However, these uses are not consistently maintained, and the terms tend to be used interchangeably (McCrae et al., 2000). I use the term personality because the distinction between the two terms is not maintained sufficiently, nor is a distinction between them generally useful for the current purposes.
Finding a definition of personality to suit all applications of the term is challenging. The phenomena studied by personality psychologists include temperament and character traits, dispositions, goals, personal projects, abilities, attitudes, physical and bodily states, moods, and life stories (John & Gosling, 2000). Only a very broad (and thus somewhat vague) definition would satisfy most. For example, personality can be defined as those characteristics of individuals that describe and account for consistent patterns of feeling, thinking, and behaving (Pervin & John, 1997), a definition broad enough to capture most phenomena studied by personality psychologists. I adopt a broad definition, and my use of the term personality includes personality in all nonhuman animals as well as humans. The dog personality assessment tool described in this article will assess personality in terms of traits (or factors). I adopt Gosling’s (1998) definition of traits as “aggregate summary trends in behavior.” An individual’s traits are also consistent and reflected in the individual’s feeling, thinking, and behaving across time and situations.

One weakness of previous research in dog personality is a failure of studies to build on each other. This may be because the studies are very diverse in origin and in focus. Previous studies are unified by their common interest in dog personality, but the researchers conducting these studies come from a wide variety of backgrounds, bringing with them assorted perspectives and publishing in a broad range of journals. As a consequence of researchers’ distinct disciplinary affiliations and research goals, these efforts at understanding personality in dogs have followed largely independent paths. The result is that it is hard to keep track of the various findings—the studies are scattered across journals in anthrozoology, psychology, biology, animal behavior, and veterinary medicine, among others.

Each of these discipline-bound studies is interesting and valuable in its own right, but it provides only a relatively narrow glimpse of dog personality. Taken together, the studies provide broader insight not only into dog personality, but also into the strengths and weaknesses of the methods used to assess dog personality. In recent years, there has been a movement to improve personality assessment methods and to bring together the diverse research. Jones and Gosling (2005) reviewed the literature with the goals of comprehensively describing and discussing the various methods used to assess dog personality, summarizing the major findings from the dog personality literature, pinpointing major gaps in science’s understanding of dog personality, and using those gaps to inform suggestions about the research challenges that lay ahead. Diederich and Giffroy (2006) also reviewed the literature, focusing on both the methods used to conduct behavioral tests and promoting standardization of testing and language. Taylor and Mills (2006) reviewed the literature with the goal of promoting systematic behavioral test development; they specifically review issues related to testing (e.g., reliability, validity) and also summarize the most frequently used behavioral test components.

In order to ground the current study—the development of a new, questionnaire-based tool for assessing personality in dogs—in the existing research and theory, I used the existing research as a starting point to develop the questionnaire. In an attempt to also examine assessment of dog personality in more applied settings, I also turned to shelter and working dog assessments. As described below, I culled behavioral and trait descriptions from the dog personality literature and other sources (e.g., existing shelter intake forms) and used these as the basis for the questionnaire items.

Study 1 (Completed study)

The goal of Study 1 was to develop an initial questionnaire for assessing dog personality; this study had two parts. First, I generated a pool of potential items for use in the questionnaire. The pool of items generated was intended to be comprehensive, representing as many aspects of dog behavior and personality as possible. In order to compile a very comprehensive list of descriptors, I drew together descriptors from multiple sources, including the dog personality and temperament research literature and tools used in applied settings (e.g., shelters);
sources were supplemented with items generated by dog experts. This process resulted in an initial list of 1,284 descriptors. These 1,284 descriptors served as the starting point for the process of sorting potential items based on content, eliminating items that did not fit my criteria (e.g., were applicable to very narrow contexts or only certain types of dogs, like guide dogs), and creating a list of 360 questionnaire items.

In the second part of Study 1, I administered the items to a small sample of participants in order to obtain feedback that would help me to identify and revise questionnaire items that were difficult for participants to understand or that described situations participants’ dogs did not encounter. In this part of Study 1, the 360 items were piloted online with a sample of 152 dog owners who volunteered to fill out the questionnaire, and the questionnaire items were modified based on their feedback.

Study 2 (Completed study)

Study 2 had two goals: to determine the number of factors, or personality traits, underlying the behaviors and descriptors in the 360-item questionnaire, and to develop a concise and coherent scale. I administered the questionnaire online to dog owners who volunteered to participate, then I analyzed (using exploratory factor analysis, or EFA) the responses from 3,737 participants to the lengthy questionnaire. Independent criteria indicate that both the 4- and 5-factor solutions offered clear and interpretable personality traits. The 5-trait solution was selected over the 4-trait solution; the difference between the two was how they divided dogs’ aggressive behaviors. In the 4-trait solution, aggression towards people and aggression towards other animals were lumped together. In the 5-trait solution, the two types of aggression were divided into separate traits. In practical terms, this means that a dog who is aggressive towards other animals but not towards people might receive a moderate rating on Aggression if the 4-trait solution were used, but would likely receive a low rating on Aggression towards People and a higher rating on Aggression towards Animals in the 5-trait solution. The five traits were labeled descriptively as Fearfulness, Aggression towards People, Activity/Excitability, Responsiveness to Training, and Aggression towards Animals.

Once the five factors (or traits) had been selected, items loading on each trait were analyzed, again using EFA, to determine the number of facets composing each trait. Fifteen facets were identified. For example, Aggression towards People was divided into two facets, which were labeled descriptively as General Aggression towards People and Situational Aggression towards People. In addition to other criteria (e.g., how strongly each questionnaire item was associated with each trait), the results of the trait and facet analyses provide guidance for creating a new, briefer and more manageable 102-item form of the questionnaire to be administered in Study 3.

Study 3 (In progress)

In Study 3, my primary goal is to determine how well the five traits found in Study 2 replicate in a new, shorter questionnaire and a new sample of participants. Replication of the 5-trait solution in a new sample is key to establishing the solution’s generalizability; if the solution does not generalize to the new sample and questionnaire, then it may be idiosyncratic to Study 2. I have just finished administering the 102 items to an online sample of more than 2,000 volunteer participants. These data will be analyzed to test whether the hypothesized 5-trait model fits the newly collected data (using confirmatory factor analysis and structural equation modeling).

I will also examine psychometric properties of the questionnaire. In addition to the trait analyses in Study 3, examination of the psychometric properties (e.g., whether the items measure what they are intended to measure, whether ratings of dogs on items that purport to measure a single trait are strongly related to each other) will guide the creation of two final forms of the DPQ. The questionnaire from Study 2 will be shortened to a “long form” of approximately five items per facet (or 75 items) and a “short form” with approximately three items per facet (or 45 items).
In a second phase of Study 3, participants will be asked to rate their dogs’ personalities on the DPQ and then, on a separate occasion, to provide a free-form description of their dog. The goal of this phase of the study is to look at the language dog owners use to describe their dogs’ personalities and compare it with that used on the DPQ.

Study 4 (Upcoming study)

The goal of Study 4 is to address another type of reliability: interobserver reliability. If a tool has high interobserver reliability, then the ratings different observers ascribe to a target when using the tool are highly correlated. To assess how well the ratings of dogs’ personalities made using the DPQ generalize across observers, I will have approximately 100 pairs of participants familiar with the same dog complete the online questionnaire rating that dog. I will then examine how well the pairs of observers’ ratings correlate on each item and on each factor of both the long form and the short form of the questionnaire. The adequacy of the DPQ’s interobserver reliability will be determined by comparing the correlations with those found in previous dog personality research (reviewed in Jones & Gosling, 2005) and in human personality research.

Study 5 (Upcoming study)

The goal of Study 5 is to address a third type of reliability: test–retest reliability. For a questionnaire, test–retest reliability, or reliability across time, addresses the consistency of a single observer’s reports taken at different points in time. (This differs from a behavioral test, in which test–retest reliability refers to the consistency of the dog’s behavior at two or more different assessment times.) If a tool has high test–retest reliability, then the scores that are obtained when the test is administered at time 1 agree, or are highly correlated, with the scores obtained when the test is administered again (i.e., at times 2, 3, and so on). To assess the DPQ’s test–retest reliability, I will administer the online questionnaire twice, with 1 month between administrations, to approximately 100 participants. It is important to realize, and often misunderstood, that test–retest reliability is considered a property of the assessment tool itself; it is not a property of the people rating the dogs. A good tool will have clearly written items that elicit similar responses from people at administrating times 1 and 2.

Once these data are collected, I will examine how well the pairs of ratings correlate on each item and on each factor of both forms of the questionnaire. As with interobserver reliability, the adequacy of the DPQ’s test–retest reliability will be determined by comparing the correlations with those found in previous dog personality research (reviewed in Jones & Gosling, 2005) and in human personality research.

Study 6 (Upcoming study)

The aspects of reliability assessed in the previous studies are crucial prerequisites for predictive validity. Predictive validity is the extent to which scores on a given measure are related to some external, independent measure. The goal of Study 6 is to address how well participants’ ratings of their dogs on the DPQ predict the dogs’ behavior on independent measures. For the purpose of this study, I will devise a new Test Battery to assess behavior that is thought to be related to the long form of the DPQ (the five dog personality factors and their facets). Participant–dog pairs in the Austin area will be recruited to take part in the study. Owners will complete the long form of the questionnaire on paper, and then their dogs will be assessed using the new Test Battery. I will specify which items I predict to relate to each component of the Test Battery, then assess the relationship between scores that are expected to be related and scores that are expected to be unrelated.

Once this series of studies is complete, the results will be made readily available to the public. The results will include the questionnaire items, a summary of the demographics of the sample (e.g., dog owners’ age, sex, occupation; dog’s age, breed, castration status), and the results from Studies 4–6 (interobserver and test–retest reliability, and validity). This way,
whether the DPQ is ready for widespread use or in need of further revision, researchers and practitioners will be able to determine how useful the DPQ might be to them.

Readers interested in assisting with the development of the DPQ are asked to volunteer or help recruit volunteers for Study 4 and/or Study 5. Participation in Study 4 requires at least two people who are familiar with the same dog and willing to rate the dog independently. Participation in Study 5 requires only one person to complete the questionnaire, but that person must complete the questionnaire, rating the same dog, twice with a 1-month interval between completions. Studies 4 and 5 will both begin in June 2007 and continue until adequate data have been collected. To sign up to participate in the study or learn more about this and related research, please visit the DPQ homepage (http://survey.psy.utexas.edu/API/dpq.php) or the University of Texas at Austin’s Animal Personality Institute homepage (www.animalpersonality.org).

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Human Influence on Physical and Temperamental Traits of the Dog

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Humans have greatly influenced the physical and temperamental shape of the domestic dog. The strongest pressure on the shape of most kennel club registered breeds today is appearance, rather than temperament and function. Through breeding practices, dogs are “sometimes chronically deformed by our taste for strange or comical physical features” (Serpell, 1995b, p. 261). Dogs are also “regularly subjected to painful and pointless cosmetic procedures in order to fit our capricious, aesthetic preferences” (Serpell, 1995b, p. 261). Although such practices appear to some as harmless, they can be detrimental to the comfort and health of the dog. There are steps we can take to ensure that all breeds of dog continue to be healthy, physically comfortable and long-lived, while still maintaining endearing characteristics that make them so appealing to mankind.

Functions of the Dog

Historically, the domestic dog has provided food, shelter, clothing, transportation and companionship (Beaver, 1999, p. 4). Dogs have been used to hunt game, dispose of rodents, fight wars, guard valuables and tend livestock (Serpell, 1995b, p. 259). Their more recent roles include scientific research, search and rescue operations, assistance for the disabled, alerting a person prior to seizure or diabetic episode, and detection of a wide variety of substances such as drugs, explosives, accelerants in suspected arson, mold and termites in homes, and various types of cancer in humans (Beaver, 1999, pp. 51–54; Serpell, 1995b, p. 259). “In the twentieth century, dogs have been used to meet more human needs than any other domestic species” (Beaver, 1999, p. 4). It is difficult to imagine a more versatile and useful animal than the domestic dog.

The most common role for the domestic dog in Western society today is as a family pet (Hart, 1995, p. 66). There are an estimated 52 million dogs in the United States, and 40% of U.S. homes have at least one dog (Beaver, 1999, p. 6).

Detrimental Practices Affecting the Shape of the Dog

Detrimental practices affecting the shape of the domestic dog include:

- Indiscriminate breeding. This increases the risk of genetic diseases.
- Breeding for homogeneous appearance. This is accomplished by inbreeding, which can cause an increase in congenital defects.
- Breeding for unusual features. Due to pleiotropy (the fact that a single gene can control more than one trait), this can cause unwanted characteristics.
- Extreme breed standards. These may not take into consideration the dog’s physical comfort or ability to function.
- Cosmetic surgery. This is sometimes performed to modify appearance or to correct breed faults, putting the dog through unnecessary pain and risk.

People may intentionally or unintentionally support detrimental practices in various ways, for various reasons. For example, people who adopt dogs may like the appearance of a particular breed, such as a flat-faced breed, because it has a childlike appearance, without realizing that the appearance has a detrimental effect on the animal’s health (Coppinger & Coppinger, 2001, p. 240). Professional breeders may trust that breed standards are humane and acceptable, and are reinforced for breeding extreme appearance by winning conformation shows. Backyard breeders may be ignorant of
congenital diseases, and so fail to test for hip dysplasia and other identifiable diseases. Puppy mills may breed dogs for profit, without regard for the health of the individual or the breed (“Puppy mill,” 2006).

**Indiscriminate Breeding**

“Dogs are usually bred by people who have no training in either behavior or genetics, despite having a wealth of hands-on practical experience” (Willis, 1995, p. 62). Uneducated or unethical breeders may not take steps to avoid known genetically driven physical problems in a particular breed. For example, the breeder may mate dogs that have not had their hips examined for hip dysplasia.

Indiscriminate breeding increases when a breed becomes popular. This often occurs when a dog actor or icon becomes successful (Beaver, 1999, p. 7). Dogs with less desirable traits, which would not otherwise be bred, are mated to meet demand. Popular breeds can become victims of puppy mills and backyard breeding (American Society for the Prevention of Cruelty to Animals, 2006).

Indiscriminate breeding can produce dogs with congenital diseases such as hip dysplasia, a debilitating hip disease; and progressive retinal atrophy (PRA), a disease that causes gradual loss of sight (Presberg, 2006). Mandatory tests for known genetic diseases such as these, as prerequisites for kennel club competition, can reduce the occurrence of identifiable genetic problems in a breed. For example, a prerequisite eye test for border collies entered in herding trials reduced PRA from 12% to 2% (Wolfensohn, cited in Hubrecht, 1995, p. 181).

Indiscriminate breeding can also produce dogs with behavioral problems such as fear and aggression. The German shepherd dog and American cocker spaniel, for example, have an inherited tendency to suffer from these behavioral problems (Voith, cited in Lindsay, 2001, p. 233; Willis, cited in Willis, 1995, p. 61).

Some congenital diseases, such as hip dysplasia and PRA, can be identified prior to breeding through veterinary examinations (Presberg, 2006). Identification of other problems, such as fear and aggression, may require the breeder to follow up with annual reports from adopters throughout the life of the offspring, and adjust breeding practices as needed.

**Breeding for Homogeneous Appearance**

Every modern breed of dog originated through crossbreeding, giving them a level of hybrid vigor (Coppinger & Coppinger, 2001, p. 316). Dogs are inbred to provide a homogeneous breed appearance. Unfortunately, inbreeding for many generations increases the expression of defective genes, causing genetic diseases to become more common in a gene pool and reducing hybrid vigor (Coppinger & Coppinger, 2001, p. 316).

Through inbreeding, “bad alleles, uncommon in the canine population as a whole, may achieve a much higher frequency of occurrence owing to their presence in a small founder population” (Bragg, n.d., p. 4). This can cause an increase in otherwise uncommon behavioral and physical problems, such as flank-sucking in Doberman pinschers (Hart, cited in Hubrecht, 1995, p. 181); and collie eye anomaly, which can cause loss of sight, in breeds such as the rough collie and Shetland sheepdog (“Collie eye anomaly,” 2006).

Once a stud book closes, dogs become inbred quickly. If a breed is started with 500 unrelated founding males and a closed stud book, by the tenth generation (within 15 years) inbreeding will begin. If only champions are bred, inbreeding is accelerated (Coppinger & Coppinger, 2001, p. 315).

**Breeding for Unusual Features**

“In some breeds, genetic defects have arisen as accidental by-products of selection for other, apparently unrelated, traits” (Hubrecht, 1995, p. 181). Due to the “mysterious laws of correlation” (pleiotropy), a gene, or series of
genes, can control more than one characteristic (Coppinger & Coppinger, 2001, p. 251). For example, the ability to hear is related to the presence of skin pigment in the inner ear. The white coats that occur in some dogs are due to a lack of skin pigment, so breeding for white coats can result in deaf dogs (Presberg, 2006). This occurs in many breeds, including Australian shepherds, boxers, Dalmations and border collies.

**Extreme Breed Standards**

When a group of feral dogs is isolated enough to become homogeneous, they tend to have a moderate shape and size. Their shape is similar to that of a dingo and they weigh between 25 and 35 pounds (11–16 kg). Their shape and size vary slightly depending on their particular niche, but are similar worldwide (Coppinger & Coppinger, 2001, pp. 86–87). This is a healthy and comfortable shape for a dog.

Before the 19th century, most breeds were developed for working characteristics (Hubrecht, 1995, p. 180). Today, dog breeding is dominated by the show ring (Willis, 1995, p. 61). Breed standards and the opinions of show ring judges have a major impact on the proliferation of certain physical traits in a breed’s gene pool. Former president of the American Kennel Club (AKC), Kenneth Marden, states that: “We [the AKC] have gotten away from what dogs were originally bred for. In some cases we have paid so much attention to form that we have lost the use of the dog” (“Rosettes to ruin,” n.d.).

Many modern purebred dogs come in extreme shapes, from the bulldog to the borzoi, and extreme sizes, from the chihuahua to the Great Dane. Recent emphasis on exaggerated characteristics in the appearance of different breeds has been damaging to breed behavior and physiology (Serpell, 1995b, p. 259). Although dogs have “infinitely malleable shapes,” this does not mean that it is acceptable to breed deformations of the basic shape merely because we like the appearance (Coppinger & Coppinger, 2001, p. 240).

“By moulding dogs to fit our own curious notions of canine beauty, we condemn many of them to chronic pain or ill-health through the propagation of inherited physical disorders” (Serpell, 1995a, p. 252). In 1994, *Time* magazine estimated that as many as 25% of purebred dogs were afflicted with serious genetic problems (Humane Society of the United States, 2002). Examples of physical problems caused by extreme breed standards include:

- Turned-in eyelids (entropion), which can cause pain and blindness if untreated, in breeds selected for diamond-shaped eyes, such as the chow chow (Hubrecht, 1995, p. 181).
- Turned-out eyelids (ectropion), which can lead to conjunctivitis, in breeds with loose facial skin, such as the bloodhound (Hubrecht, 1995, p. 181).
- Respiratory defects in breeds with extremely short muzzles, such as the bulldog (Hubrecht, 1995, p. 181).
- Shortened and deformed legs (achondroplasia) in short-legged breeds, such as the dachshund and beagle (Coppinger & Coppinger, 2001, pp. 249–250).
- Congenital heart diseases in extremely large breeds, such as the Great Dane (“Great Dane,” 2006).
- Patella luxation, which can cause debilitating knee pain, in extremely small breeds, such as the chihuahua (“Chihuahua,” 2006).

In addition, extreme breed standards can compromise the dog’s ability to communicate with other dogs. Features that interfere with dog communication include hair over eyes, stub tails, unusual tail carriage and unusual ear carriage (Bradshaw & Nott, 1995, p. 252). An inability to display and read body signals properly can cause aggression to escalate when it otherwise would be cut off through ritualized body posturing.

Some breeders are seeing the issues these standards cause, and promoting a return to healthier breed standards. For example, breeders of the Cavalier King Charles spaniel are
breeding dogs with longer muzzles to return to the traditional Tudor type of King Charles spaniel (Cavalier King Charles Spaniel Club, 2002).

**Unnecessary Cosmetic Surgery**

“The desire to make dogs conform to some arbitrary physical ‘ideal’ has also encouraged the development of a number of surgical procedures which are carried out on dogs for non-therapeutic reasons” (Young, cited in Hubrecht, 1995, p. 181). Unnecessary cosmetic surgeries include tail docking, ear cropping and ear implants (to correct a badly cropped ear).

Tail docking and ear cropping procedures, for appearance in the show ring, are approved by the AKC. But canine cosmetic surgery doesn’t stop there. There is a growing trend in areas including California and Brazil for dog owners to enhance their dogs’ appearance through cosmetic surgery. Surgical procedures include facelifts, tummy tucks, nose jobs, breast reductions and testicular implants. Some of these surgeries, such as nasal surgery to alleviate breathing difficulties and facelifts to reduce problematic skin folds, are aimed at correcting health problems caused by extreme breed standards. Other surgeries, such as breast reductions and testicular implants, are performed to conceal a genetic defect, thereby improving the dog’s chances of becoming a show champion. And some of these surgeries are performed to make the dog more attractive, for the owner’s prestige (Kingstone, 2004; Robins, 2005).

Hubrecht (1995, p. 192) states:

Surgery carried out purely for “cosmetic” purposes is clearly of no possible welfare benefit to the animals involved, and is now considered unacceptable by the Royal College of Veterinary Surgeons, the RSPCA [Royal Society for the Prevention of Cruelty to Animals], the British Veterinary Association and British Small Animal Veterinary Association. In July 1993 it became illegal in the UK for a lay person to dock a puppy’s tail, and an EEC provision has been drafted to prohibit cosmetic operations. Nonetheless, the British Kennel Club still supports the practice of tail-docking. (p. 182)

Some kennel clubs, such as the British Kennel Club, are now becoming more enlightened and allowing natural ears and tails in breeds such as the Doberman pinscher, which has traditionally had cropped ears and a docked tail (British Kennel Club, 2001). However, judges are still responsible for selecting winners, and may still be drawn to the look of Dobermans with erect ears and stub tails, reinforcing breeders and owners for these types of cosmetic surgery.

**The Bulldog Example**

In the 17th and 18th centuries, bulldogs were developed as the butcher’s working dog, to help control bulls (Coppinger & Coppinger, 2001, p. 248). Later, they were used in sport. Their legs were straight and their noses were of a suitable length to provide oxygen and cooling, allowing them to work (Coppinger & Coppinger, 2001, p. 228).

The modern bulldog is predisposed to over 44 known congenital diseases. This is compared to seven known congenital diseases in the border collie, which is still considered a working dog and has not yet been bred with exaggerated features (Linville, 2001).

In the modern bulldog, the head and neck are thick and heavy and the legs are bowed. Seventy percent of bulldogs tested by the Orthopedic Foundation of America had hip dysplasia, and none were reported to have excellent hips (Coppinger & Coppinger, 2001, p. 249).

The nasal bones have an extremely slow rate of development, remaining short. Because of the short nasal bones, other facial bones are pulled into awkward positions. The palate is pulled upward, so that the teeth stick out and the dog drools constantly. Bulldogs have a severe under-bite, so have difficulty eating. There is no space for the bulldog to develop turbinate bones, so
there is less respiratory tissue covering these bones. As a result, bulldogs are unable to breathe properly and have chronically low blood oxygen levels. They also have less of the tissue that helps cool the brain, and so easily suffer heatstroke (Coppinger & Coppinger, 2001, pp. 305–306).

Bulldogs often require artificial insemination to breed. Due to the exaggerated head size of the pups, bulldogs have difficulty delivering young and often require caesarian section (Coppinger & Coppinger, 2001, p. 228).

The form of the bulldog has changed dramatically in the past century. Bulldogs have lost the features that allowed them to work and breed normally. The form in which they are now bred, with difficulty breathing, eating and running, appears to be terribly uncomfortable for the dog.

Solutions

The plasticity of the domestic dog is truly amazing. However, we should keep the interests of the dog in mind when choosing to breed extremes, and do our best to ensure that our desire for a certain appearance does not cause discomfort or suffering for the dog. “Value should be placed on what the dogs can do, how healthy they are, and how they feel. The real value of the pet dog, the companion dog, and the service dog is their behavior” (Coppinger & Coppinger, 2001, p. 324).

To avoid unnecessary discomfort and suffering in dogs, the dog-loving community should come together with a goal of improving all breeds. Everyone can play a role toward this effort.

Researchers and scientists can document known relationships between physical and mental traits (Mackenzie et al., cited in Willis, 1995, p. 62). Veterinarians, certified animal behaviorists and other educated professionals can make clear recommendations to breeders and kennel clubs to ensure the health and comfort of the dogs produced.

Kennel clubs can open their studbooks for a “periodic infusion of new genetic material” carefully chosen to strengthen each breed (Bragg, 2006, p. 5; Peck, 2003). Breed standards can be modified to support the comfort and health of the dogs produced, maintaining endearing features but not to an extreme that causes health problems or discomfort. Surgical procedures such as tail docking, ear cropping and other types of unnecessary cosmetic surgery can be disallowed for the show ring. Physical certification against identifiable genetic issues such as hip dysplasia and eye diseases can be a prerequisite for the show ring. Behavioral evaluation can also be a prerequisite for the show ring, to avoid proliferation of temperament and performance problems (Serpell, 1995b, p. 259). Show ring judges can be encouraged to disqualify nervous or aggressive dogs, “regardless of physical beauty” (Willis, 1995, p. 61).

Breeders can aim to improve a breed’s temperament and function, rather than its appearance. Basic education in behavior and genetics, perhaps toward a breeder’s certification, may help breeders make more informed decisions when planning litters.

Dog guardians can seek reputable breeders to avoid supporting puppy mills and backyard breeders. Dog guardians can boycott breeds that are known to have physical problems, to avoid supporting show ring fads.

Societies can establish laws to curb puppy mills and backyard breeding, and to encourage responsible breeding practices. Societies can offer certification for breeders, to encourage basic education in behavior and genetics. Societies can also establish laws to prevent suffering caused by unnecessary cosmetic surgery, such as tail docking, ear cropping and ear implants.

If these steps are taken, we can celebrate the health, beauty and companionship of dogs for many generations to come. “No other species, domestic or wild, has ever become so inextricably involved in our lives and our affections as dogs have” (Serpell, 1995b,
It is our responsibility, as an intellectual species, to ensure that dogs are healthy, fit and comfortable in their own skins.

References


To Buy Or Not To Buy: A Guide to Dog Training Equipment

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School For Dogs Aldinga Bay Inc.
Companion Animal Sciences Institute


Abstract

Guardians wishing to purchase equipment for their dogs often have no reliable criteria on which to base a decision to choose between available products. In this study, head collars, flat collars, harnesses and leads from nine equipment companies were assessed by personnel with varying experience in dog training. The products were ranked using a scoring system, and their advantages (pros) and disadvantages (cons) were separately recorded. The top-ranking products in each category of equipment were the New Trix Easyway™ Collar for head collars, the Premier Keepsafe Break-Away Collar™ for flat collars and the Softouch SENSE-ation™ Harness for harnesses. Black Dog Wear™ Double Ended Lead and Smart Lead® were equal in the lead category.

Introduction

A dog guardian who wishes to purchase equipment for his/her dog may be confronted with a wide range from which to choose. Often the equipment is packaged, and the package cannot be opened to inspect the equipment before purchase. The choice must then be made on the basis of a visual inspection of the parts of the equipment that can be seen and the manufacturer’s recommendation regarding the size of the dog and the appropriate size of the equipment. This study has assessed various parameters of some selected equipment and endeavored to give an overall rating of the products studied.

Materials and Methods

Twenty-five equipment manufacturers from five different countries were contacted. The aim and methodology of the study were explained, and the manufacturers were invited to submit equipment for assessment. Ten manufacturers responded positively; eight of these sent equipment and one distributor contributed equipment on behalf of a manufacturer, with the manufacturer’s knowledge. The companies that supplied equipment and the equipment submitted are shown in Table 1. Two manufacturers agreed to participate in the trial but failed to supply equipment. Equipment was received from Australia, Canada, the United Kingdom and the United States of America. One piece of equipment (Kumalong No Pull Harness) was tested at the manufacturer’s request, despite being only a prototype.
Table 1. Companies that Provided Equipment for the Trial and the Equipment Submitted

<table>
<thead>
<tr>
<th>Company</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agline (distributor for EzyDog™)</td>
<td>Neo Collar, Harness</td>
</tr>
<tr>
<td>Black Dog Wear™</td>
<td>Training Halter®, Infin8 Halter®, Double Ended Lead, Smart Lead®, Strong Lead, Standard Collar</td>
</tr>
<tr>
<td>Kumalong Dog Products</td>
<td>No Pull Harness (prototype only)</td>
</tr>
<tr>
<td>NewTrix™ Advanced Pet Products</td>
<td>Easyway™ Collar</td>
</tr>
<tr>
<td>Premier™ Pet Products</td>
<td>Gentle Leader® Head Collar, Gentle Leader Easy Walk™ Harness, Keepsafe Break-Away Collar™</td>
</tr>
<tr>
<td>Softouch Concepts Inc.</td>
<td>SENSE-ation™ Harness, SENSE-ible™ Harness</td>
</tr>
<tr>
<td>Sporn Pet Products</td>
<td>No Pull Harness™, Training Halter™, Double Handled Lead™</td>
</tr>
<tr>
<td>The Canny Company Limited</td>
<td>Canny® Collar</td>
</tr>
<tr>
<td>Tug N Hug Pet Harness Company</td>
<td>Easy On/Off No-Pull Harness, Tuff N Huff Easy On/Off Dog Harness</td>
</tr>
</tbody>
</table>

Ten individuals, with levels of expertise ranging from accreditation and certification by the Delta Society Australia in positive dog training to inexperienced pet guardians, together with their dogs, were recruited to assess the equipment. A collective of seven aspiring positive trainers and five dogs participated in the assessment of the head collars only, as part of their trainer education; their assessments were recorded as a single entry. Assessors were located throughout Australia in both urban and rural locations. Due to the differing numbers of each piece of equipment submitted for inclusion in this trial, not every piece of equipment was assessed by all assessors. Head collars were not tested on the four brachycephalic dogs in the testing team.

Assessors were asked to rate each of the 14 criteria in the Assessment Protocol (Table 2) on a scale of 1 to 5, where 1 = very poor, 2 = poor, 3 = average, 4 = good and 5 = very good.
Table 2. Assessment Protocol

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| Instructions for putting on                   | • These are the instructions that show the dog’s guardian how to attach the equipment to the dog—not instructions for use.  
• How clear are these instructions to someone who has not used this equipment before?                                                  |
| Ease of putting on                            | • How easy was the equipment to place onto the dog?  
• Take into account that some dogs have not been conditioned to equipment and some guardians will not use successive approximations to habituate the dog to the equipment. |
| Adjustability                                 | • Is the item easily adjusted to fit the dog?  
• Given the size/weight range that the article is to cover, is there enough adjustability to meet the extremes of size and weight?     |
| Instructions for use                          | • These are the instructions that show the owner how to use the equipment—not how to attach it to the dog.                                                                                                    |
| Ease of use                                   | • Does the guardian need to be a contortionist/genius in order to have the equipment work effectively on the dog?                                                                                                 |
| Efficacy                                      | • How efficient is the equipment in doing the job for which it is designed?  
• How efficient is the equipment in doing the job it says it will do?                                                                                                                                       |
| Suitability for dog tested                    | • Not all equipment is suitable for all dogs.  
• Was this piece of equipment suitable for the dog on which you tested it?                                                                                                                                     |
| Dog’s comfort level/acceptance                | • Consider this comfort/acceptance level from both the point of view of a dog that is taught how to accept the equipment and also from the point of view of the dog whose guardian places it on the dog with the expectation that it will be accepted by the dog. |
| Quality of fabric from which it is made       | • Is the webbing/material of high standard?                                                                                                                                                                 |
| Quality of fittings                           | • Quality of buckles.  
• Quality of rings (has the company adequately changed the gauge of the rings/buckles for the size of the item?)                                                                                             |
| Overall quality of materials                  | • Do the materials compliment each other?  
• Are there inferior buckles/rings on good-quality webbing or vice versa?                                                                                                                                     |
| Quality of construction                       | • Have the materials been well put together?  
• Could the equipment rub, pinch, pull out coat etc.?                                                                                                                                                       |
| Value for money                               | • Given the above criteria, is it worth the given cost?                                                                                                                                                     |
| Aesthetics                                    | • Does the equipment look good?  
• Is the colour range to your liking?  
• Is it old fashioned/modern looking etc.?                                                                                                                                                                  |

Where a manufacturer provided equipment in several sizes, the assessments of each size were combined and the mean score in each criterion was calculated. An overall score was calculated for all criteria for each item of equipment by summing the scores given by each assessor and expressing this as a percentage of the maximum score possible. This percentage was used to rank each manufacturer’s product within a given equipment type. For each item of
equipment, an assessor mean score was calculated; the interassessor difference was measured by the range of assessments given for each item of equipment.

**Results**

Tables 3, 5, 7 and 9 show the rank order of overall scores as a percentage, the mean assessor score and the range of assessor scores for each item of equipment. Tables 4, 6, 8, and 10 list the principal positive and negative comments expressed by the assessors.

**Head Collars**

**Table 3. Head Collars: Rank Order of Scores, Assessor Mean and Range**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Overall score (%)</th>
<th>Assessor mean/maximum (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NewTrix™ Easyway™ Collar</td>
<td>87</td>
<td>61/70 (51–69)</td>
</tr>
<tr>
<td>Gentle Leader® Head Collar</td>
<td>82</td>
<td>57/70 (49–64)</td>
</tr>
<tr>
<td>Canny® Collar</td>
<td>66</td>
<td>46/70 (37–65)</td>
</tr>
<tr>
<td>Black Dog Wear™ Training Halter®</td>
<td>65</td>
<td>46/70 (34–55)</td>
</tr>
<tr>
<td>Black Dog Wear™ Infin8 Halter®</td>
<td>60</td>
<td>42/70 (29–55)</td>
</tr>
</tbody>
</table>

NewTrix™ and Gentle Leader® scored well, both with scores over 80%. NewTrix™ achieved high scores in the quality of material, fittings, construction and efficacy categories. Gentle Leader® had comprehensive instructions and scored well in aesthetics and efficacy. While not as high as the scores of NewTrix™ or Gentle Leader®, the scores for the Canny® Collar and the Black Dog Wear™ products were still 60% or higher.
Table 4. Head Collars: Positive and Negative Comments

<table>
<thead>
<tr>
<th>Product</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
</table>
| Black Dog Wear™ Infin8 Halter® | • Dog still secured on inbuilt collar if nose band is slipped.  
• Cotton fabric rather than synthetic. More comfortable for the dog.  
• Once correctly fitted, conveys feeling of security to the handler. | • Fitting difficulty, particularly for beginners.  
• Nose piece is too thin and can twist, causing discomfort for dog.  
• Instructions for fitting and use need expanding. |
| Black Dog Wear™ Training Halter® | • Easy to fit and to use.  
• Dog still secured on inbuilt collar if noseband is slipped.  
• Dog comfortable once fitted correctly. | • Noseband could cut or rub due to poor fit or lack of padding.  
• Difficulty adjusting noseband.  
• Instructions for fitting and use need expanding. |
| Canny® Collar | • Controls from behind—dog’s neck not subjected to trauma from turning suddenly.  
• Can use as a normal collar if not using the head collar.  
• Easy to fit. | • Dog’s nose pulled down when pressure applied.  
• The D-rings are not strong enough for larger, powerful dogs.  
• Loose rings insubstantial and easy to lose. |
| NewTrix™ Easyway™ Collar | • Quality construction with padded noseband.  
• Failsafe safety connector.  
• No obstruction of airways, mouth, flews. | • Expensive for some.  
• Placing over head and ears could be a problem to some dogs.  
• Collar increases overall lead length. |
| Premier Gentle Leader™ Head Collar | • Excellent support and instruction material, including training DVD.  
• Easy to fit.  
• Value for money. | • No safety connector with basic package.  
• Noseband unpadded and too thin.  
• Requires very specific fitting to be effective, otherwise too tight (resulting in discomfort for the dog) or too loose (resulting in its being ineffectual or coming off). |

Flat Collars

Table 5. Flat Collars: Rank Order of Scores, Assessor Mean and Range

<table>
<thead>
<tr>
<th>Product</th>
<th>Overall score (%)</th>
<th>Assessor mean/maximum (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premier Keepsafe Break-Away Collar™</td>
<td>81</td>
<td>57/70 (46–69)</td>
</tr>
<tr>
<td>EzyDog™ Neo Collar</td>
<td>76</td>
<td>54/70 (37–65)</td>
</tr>
<tr>
<td>Black Dog Wear™ Standard Collar</td>
<td>71</td>
<td>50/70 (41–60)</td>
</tr>
</tbody>
</table>

Premier’s Keepsafe Break-Away Collar™ was assessed highly in adjustability, efficacy and aesthetics. The strength of the EzyDog™ Neo Collar lay in overall quality of materials, ease of putting on and aesthetics. The Black Dog Wear™ flat collars scored well in the categories
of ease of use and comfort/acceptance level for the dog. As all of the collars scored over 70%, each would be satisfactory for its intended use. Personal taste would dictate preference because all the collars differ in appearance.

Table 6. Flat Collars: Positive and Negative Comments

<table>
<thead>
<tr>
<th>Product</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Dog Wear™ Standard Collar</td>
<td>• 6-month guarantee on materials and workmanship.</td>
<td>• Plastic clip may not be strong enough for some heavier dogs.</td>
</tr>
<tr>
<td></td>
<td>• Double-stitched reinforcement.</td>
<td>• Fabric likely to stretch with use.</td>
</tr>
<tr>
<td></td>
<td>• Value for money.</td>
<td>• Slim design has more adverse impact on throat if dog pulls.</td>
</tr>
<tr>
<td>EzyDog™ Neo Collar</td>
<td>• Well padded, soft, durable.</td>
<td>• Too cumbersome for some breeds.</td>
</tr>
<tr>
<td></td>
<td>• Reflective trim great for night-time visibility.</td>
<td>• Requires second loop for dog ID tags, rather than putting them on current ring or collar.</td>
</tr>
<tr>
<td></td>
<td>• Good value for money.</td>
<td>• Velcro adjustment may become “fuzzy” with use (particularly with long-coated dogs) and lose its adjustment value.</td>
</tr>
<tr>
<td>Premier Keepsafe Break-Away Collar™</td>
<td>• Took just enough pressure to break away but not so little that it would come off easily.</td>
<td>• Lead must be attached to both D-rings or collar could pull apart while walking. Incorrect fitting could lead to potential danger because of this.</td>
</tr>
<tr>
<td></td>
<td>• Good instructions—very clear and easy to understand.</td>
<td>• Could be constantly chewed up if worn by multi-dog households who pull collars off in play.</td>
</tr>
<tr>
<td></td>
<td>• Relatively easily to re-clip after having broken apart.</td>
<td>• Cannot grab hold of dog collar at all as it gives way too easily—can’t grab dog in emergency.</td>
</tr>
</tbody>
</table>

Harnesses

Table 7. Harnesses: Rank Order of Scores, Assessor Mean and Range

<table>
<thead>
<tr>
<th>Product</th>
<th>Overall score (%)</th>
<th>Assessor mean/ maximum (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Softouch SENSE-ation™ Harness</td>
<td>84</td>
<td>59/70 (52–69)</td>
</tr>
<tr>
<td>Softouch SENSE-ible™ Harness</td>
<td>81</td>
<td>57/70 (52–64)</td>
</tr>
<tr>
<td>EzyDog™ Harness</td>
<td>80</td>
<td>56/70 (42–66)</td>
</tr>
<tr>
<td>Premier Gentle Leader Easy Walk™ Harness</td>
<td>78</td>
<td>55/70 (50–59)</td>
</tr>
<tr>
<td>Sporn Training Halter™</td>
<td>71</td>
<td>51/70 (45–54)</td>
</tr>
<tr>
<td>Sporn No Pull Harness™</td>
<td>69</td>
<td>49/70 (40–64)</td>
</tr>
<tr>
<td>Tug N Hug Easy On/Off No-Pull Harness</td>
<td>69</td>
<td>48/70 (34–53)</td>
</tr>
<tr>
<td>Kumalong No Pull Harness (prototype)</td>
<td>60</td>
<td>42/70 (27–52)</td>
</tr>
<tr>
<td>Tug N Hug Tuff N Huff Easy On/Off Dog Harness</td>
<td>49</td>
<td>34/70 (24–45)</td>
</tr>
</tbody>
</table>
The widest range of interproduct scores was seen in this category. The high scorers (80% or above) were Softouch Concepts Inc and EzyDog™. Both the Softouch SENSE-ible™ and Softouch SENSE-ation™ harnesses scored well in ease of putting on, product quality and each of the instruction categories. Efficacy also rated highly with the Softouch products. Although not marketed as a training harness, the EzyDog™ Harness scored well in efficacy and extremely well in quality and acceptance/comfort level for the dog. The remaining harnesses, with the exception of the Tug N Hug Tuff N Huff Harness, rated between 60% and 78%. Premier Gentle Leader Easy Walk™ Harness scored highly in quality, efficacy and ease of use, but some assessors thought it was a little expensive. Each of the Sporn™ harnesses was considered easy to fit and effective, but concern was expressed about the movement of the Sherpa Sleeves™ on the thin leg straps causing irritation to the dog. It was also felt that the instructions for use could have been more detailed. The Tug N Hug Easy On/Off No-Pull Harness scored well in quality of materials and construction but did not rate highly on value for money. The Kumalong No Pull Harness was assessed as a prototype. Many comments were made about the need for improvement in the quality of fittings and construction. However, the Kumalong did score well on aesthetics, ease of use, value for money and adjustability. Tuff N Huff also scored well on quality of materials and construction, but was not considered easy to put onto the dog nor well accepted by the dog.
<table>
<thead>
<tr>
<th>Product</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>EzyDog™ Harness</td>
<td>• Padded chest plate for comfort.</td>
<td>• No fitting instructions.</td>
</tr>
<tr>
<td></td>
<td>• Great versatility, with excellent adapter for car harness.</td>
<td>• If not fitted correctly, may slip, causing discomfort (need written fitting and usage instructions).</td>
</tr>
<tr>
<td></td>
<td>• Reflective strips for safety.</td>
<td>• Synthetic material—may be slightly sweaty in breast plate area.</td>
</tr>
<tr>
<td>Premier Gentle Leader Easy Walk™ Harness</td>
<td>• Well constructed from quality components.</td>
<td>• Frustrating to adjust.</td>
</tr>
<tr>
<td></td>
<td>• Very adjustable.</td>
<td>• Appropriate size (as per packet) did not fit properly.</td>
</tr>
<tr>
<td></td>
<td>• Excellent instructions on product and on website.</td>
<td>• Some rubbing and hair pulling at buckle attachment.</td>
</tr>
<tr>
<td>Kumalong No Pull Harness (prototype)</td>
<td>• Simple to put on and effective.</td>
<td>• Quality of materials needs improvement.</td>
</tr>
<tr>
<td></td>
<td>• Lightweight.</td>
<td>• Not much use against an established puller—strong dog could break harness.</td>
</tr>
<tr>
<td></td>
<td>• Basic product, basic price.</td>
<td>• Limited adjustment.</td>
</tr>
<tr>
<td>Softouch SENSE-ation™ Harness</td>
<td>• Excellent instruction manual for fitting and use.</td>
<td>• Buckles undersized for large dog. Was the product strength tested?</td>
</tr>
<tr>
<td></td>
<td>• Well-constructed, quality product.</td>
<td>• Ensure correct fitting or could impede movement.</td>
</tr>
<tr>
<td></td>
<td>• Easy to fit, adjust and remove.</td>
<td>• Impacts on shoulder movement.</td>
</tr>
<tr>
<td>Softouch SENSE-ible™ Harness</td>
<td>• Very easy to fit and remove—no need to move body parts on the dog.</td>
<td>• Lead clip could dig into the dog.</td>
</tr>
<tr>
<td></td>
<td>• Excellent instructions.</td>
<td>• Some sharp edges.¹</td>
</tr>
<tr>
<td></td>
<td>• Quality product.</td>
<td></td>
</tr>
<tr>
<td>Sporn Training Halter™</td>
<td>• Easy to put on and adjust.</td>
<td>• Sherpa sleeves can slip, causing discomfort.</td>
</tr>
<tr>
<td></td>
<td>• Effective once correctly fitted.</td>
<td>• Collar too large for small dogs.</td>
</tr>
<tr>
<td></td>
<td>• Dog’s comfort level appeared good.</td>
<td>• Better instructions for use required.</td>
</tr>
<tr>
<td>Sporn No Pull Harness™</td>
<td>• Lightweight.</td>
<td>• Thin straps may cut into dog if padding moves.</td>
</tr>
<tr>
<td></td>
<td>• Easy to fit.</td>
<td>• Largish flat metal strap holder became very hot on the skin of short-coated dog.</td>
</tr>
<tr>
<td></td>
<td>• Effective.</td>
<td>• Easy to get muddled if straps get twisted or entwined.</td>
</tr>
<tr>
<td>Tug N Hug Easy On/Off No-Pull Harness</td>
<td>• Dog unable to back out of harness.</td>
<td>• Too many straps to adjust.</td>
</tr>
<tr>
<td></td>
<td>• Good quality materials and fittings.</td>
<td>• Instructions need improving—photographs not clear.</td>
</tr>
<tr>
<td></td>
<td>• Good adjustment for sizing.</td>
<td>• Didn’t stop dog pulling.</td>
</tr>
<tr>
<td>Tug N Hug Tuff N Huff Easy On/Off Dog Harness</td>
<td>• Easy to take on and off.</td>
<td>• Complicated to put on.</td>
</tr>
<tr>
<td></td>
<td>• Comfortable for the dog.</td>
<td>• Bulky.</td>
</tr>
</tbody>
</table>
With the exception of the instruction categories, Black Dog Wear™ Double Ended Lead did well across the spectrum of criteria. However, some assessors commented that they believed it to be a little too expensive. Black Dog Wear™ Smart Lead® suffered from the same lack of adequate instructions, but scored well in suitability, dog comfort/acceptance level and ease of use. The Sporn Double Handle Lead™ scored highly in overall material quality and the quality of the instructions for use. Black Dog Wear™ Strong Lead did not score as highly as the other leads and again was let down by lack of instructions.

### Table 10. Leads: Positive and Negative Comments

<table>
<thead>
<tr>
<th>Product</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Dog Wear™ Smart Lead</td>
<td>• 6-month guarantee.</td>
<td>• In the wrong hands, this could be used as a non-release choker (hopefully mistakenly)!</td>
</tr>
<tr>
<td></td>
<td>• Suggestions for appropriate sizes for the dog given by weight on tag (can see at a glance if size is right).</td>
<td>• Would like to see a heavier duty clip for very large dogs.</td>
</tr>
<tr>
<td></td>
<td>• Adjustable and good quality product.</td>
<td>• Stitching on fabric can hurt hands when handle is clipped.</td>
</tr>
<tr>
<td>Black Dog Wear™ Double Ended Lead</td>
<td>• D-rings allow for a combination of adjustments.</td>
<td>• Fingers can be injured on D-rings if lead is pulled through hand.</td>
</tr>
<tr>
<td></td>
<td>• 6-month guarantee.</td>
<td>• A little expensive.</td>
</tr>
<tr>
<td></td>
<td>• Versatile.</td>
<td>• No instructions for use or fitting.</td>
</tr>
<tr>
<td>Black Dog Wear™ Strong Lead</td>
<td>• Great to have a guarantee.</td>
<td>• Fabric could burn hands if dog lunges or pulls constantly.</td>
</tr>
<tr>
<td></td>
<td>• Good quality and size clip.</td>
<td>• Doesn’t really offer any more than the less expensive leads.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hand grip not padded, not adjustable for hand sizes.</td>
</tr>
<tr>
<td>Sporn Double Handle Lead™</td>
<td>• Very comfortable padding in the two handles.</td>
<td>• Needs to be lighter and easier to adjust.</td>
</tr>
<tr>
<td></td>
<td>• Love its versatility and length [of lead] is great.</td>
<td>• Confusing, even with fair instructions.</td>
</tr>
<tr>
<td></td>
<td>• Excellent quality lead.</td>
<td>• Fingers could be injured on metal clips if lead pulled through hand.</td>
</tr>
</tbody>
</table>

*These were the only two positive comments made on this product.
Discussion

Using the assessment criteria selected for ranking, the top product in each type of equipment was the New Trix Easyway™ Collar for head collars, the Premier Keepsafe Break-Away Collar™ for flat collars, the Softouch SENSE-ation™ Harness for harnesses, and for leads, Black Dog Wear™ Double Ended and Smart Leads. There was considerable variation in the assessments given by the assessors for any given product. Variables such as guardians’ experience, and the breed, weight and morphology of dogs, may explain this. Guardians’ personalities may play a role as well; some may have been reluctant to be critical; others may have been excessively critical. Perhaps the dogs’ temperaments and level of training could also have affected the guardians’ assessments. These factors may explain some of the contradictory entries in Tables 4, 6, 8, and 10. It further suggests that individual preference may always be a marked factor in choosing equipment.

Acknowledgements

The author wishes to acknowledge the willing participation of the following companies (listed alphabetically) without whom this paper could not have been written: Agline (supplier of EzyDog™), Black Dog Wear™, Kumalong Dog Products, NewTrix™ Advanced Pet Products, Premier™ Pet Products, Softouch Concepts Inc, Sporn™ Pet Products, The Canny® Company Limited and Tug N Hug Pet Harness Company.

Thanks also go to those who assisted with the testing: Elizabeth Doyle with Jacob and Babe (Akitas); Susanne Eckert with Mila, Piper and Gunter (Rottweilers); Rose Handke with Sadiki (Rhodesian Ridgeback); Carole Husein with Tyfan and Ace (Border Collies); Di Oakley with Elvis (Jack Russell Terrier); Jenni Rudd with Solo (Pointer); Sarah Rutten with Tyson and Maxi (Pugs); Derell Sayer with Bonnie and Clyde (German Shepherd Dogs); Bodil Schou-Hansen with Coco (Dogue de Bordeaux), Ming and Chiang (Chows); School for Dogs Aldinga Bay Inc Trainers’ Group and their dogs; Sara Gillespie for allowing Holly (Maltese x Shih Tzu) and Carter (Maltese x Cavalier King Charles Spaniel) to be borrowed; and my long-suffering Joe and Bruno (Griffons Bruxellois).

Finally, I wish to thank Professor Arnold Gillespie for assistance with correlating the data and for critical reading of the paper.
Social Dominance: Useful Construct or Quagmire?

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Abstract

Though social dominance theory promised great explanatory, descriptive and predictive value as an ethological construct, the field of social dominance is thus far a quagmire. Most notions of social dominance are vaguely stated, and the explanations of how it operates often lack clarity and are poorly articulated. The purpose of this theoretical and semantic research article is to analyze the various notions of social dominance, addressing the questions “what is social dominance?” and “of what value are these notions?” I analyzed 21 distinct notions of social dominance using a uniquely constructed algorithm that classified each notion as a definition or an explanation. Every operationally distinct notion that was determined to be relevant to social relationships was evaluated for fatal flaws. Those notions with fatal flaws were eliminated from further analysis, and the value of the remaining notions was assessed. The value of two definitions and six explanations was found to range from low to moderate. None were valued highly. Notions with high value are needed to achieve the promise of social dominance. Principally, a complete and coherent theory needs to be formulated. It must identify assumptions explicitly with easily operationalized variables, have wide explanatory power, and make falsifiable predictions. Thus far, no such theory exists, and application to companion animal behavior has done much harm to the relationship between dog and guardian.

Introduction

The field of social dominance is thus far a quagmire. Despite a vast literature on the topic, no agreement has been reached on exactly what is meant by social dominance. Those notions that exist often lack coherence or clearly stated assumptions and prediction.

The purpose of this analysis is to address the questions of what social dominance is and of what value it is. This is meant to provide a foundation for progressing toward a coherent theory of social dominance.

The term dominant is used generally to refer to the individual who exerts the most influence or control over others; who rules or governs; who surpasses others in power; who is commanding and prominent; who is the more important, strong or noticeable. The most common notion found in definitions of dominant was exercising the most influence or control.

Animals can achieve dominance in different ways. The individual who maintains the most influence and control of either others or circumstances may do so by brute force or by cultivating alliances and coalitions. Since different measures of dominance do not intercorrelate well, perhaps dominance refers to the individual who is most competent at exerting control. There may be different manners of achieving that control for different species.

Social dominance should be distinguished from the various other concepts of dominance (e.g., competitive dominance). Social dominance should apply to social relationships and deal with interpersonal exertion of influence and control. Social relationships are recognized “when two (or more) individuals interact regularly or periodically over an extended period of time, recognize each other, and remember the results of past encounters” (Hand, 1986).
Limited resources can create a conflict of interest between animals within social relationships, which sets the occasion for competition. Aggression is useful in competition, but it must be weighed in a cost–benefit analysis with the value of the relationship and the risk associated with use of aggression. In a competitive situation, we would expect some kind of regulation of escalated overt aggression; this might be the use of assessment and display in conventional interactions, whereby each opponent gathers information on which competitor would win if aggression were escalated. The competitors may use immediate information (e.g., display) for this, but they might also make use of the history of previous encounters with the other individual to assess their likelihood of winning this resource. They would likely balance this assessment and the attendant risk with the value of the resource in question and decide whether to defer or escalate if necessary. In this environment, we would expect conventions or rules to emerge in which at least some escalated competitions would be settled via preemptive deference rather than overt aggression. This seems to be the basis for social dominance. But a formal, coherent theory is more than a plausible story. My goal is to explore the various and disparate notions of social dominance so that theory building can move forward.

Methods

I performed a thorough review of the literature, identifying 18 commonly discussed notions of social dominance. The notions were selected based on the criteria that they: (a) are commonly discussed notions in the literature; (b) are social, in the sense that they require some form of interactions between individuals (as distinguished from some forms of competitive dominance); and (c) deal with dominance in the sense that they involve the influence and control exerted by individuals over other individuals.

I will use the term notion to describe most of the treatments of dominance, since I have not yet determined whether they are ideas, definitions, explanations, hypotheses, models or some other type of utterance.

Analysis Protocol

Different types of notions have different purposes and address different questions, and should be evaluated with specific criteria according to the purpose of the notion. Given this, the various notions were classified by type prior to evaluation and then evaluated in accordance with criteria appropriate to their classification. Systematic analysis of the various notions allows the research questions to be addressed.

The protocol illustrated in Figure 1 shows the analysis in detail. The red shape indicates the pool of notions considered. The green level represents the first stage in the analysis—determination of whether the notion is a denotative definition, connotative definition or explanation, as well as initial filters for congruence, and whether the notion relates to social relationships or not. The blue level represents the analysis stage, in which each surviving notion is evaluated for fatal flaws and finally assessed for value.
Figure 1. Algorithm outlining each step available for analyzing each notion. The shield-shaped boxes, with more than one line entering and only one exiting, are logical “and-gates.” Each of the criteria immediately preceding the and-gate from which a line comes must be met in order for the notion to continue through the and-gate. If one or more criteria are not met, the notion is discarded at the and-gate.

**Definition/Explanation Distinction**

The most fundamental way to identify the most basic distinctions is to divide the notions into categories based on the questions that the notions are meant to answer. The most basic questions applicable to the topic are *what* and *how/why*. This distinction represents the two broad categories “definition” and “explanation,” respectively (Fogelin, 1987; Little, Groarke, & Tindale, 1998). The what-question (definition) asks what is social dominance. A definition identifies the essential properties of a term and differentiates it from other terms. The how-
question (explanation) usually asks how does social dominance operate. It can also ask more specific how-questions about elements of dominance. The why-question (explanation) usually asks why does social dominance exist or some more specific why-question about an element of dominance. An explanation is a group of statements from which the thing to be explained can logically be inferred and whose acceptance removes or diminishes its problematic or puzzling character. Therefore, notions were first classified as either definition or explanation by determining the question they provide an answer for.

If the authors proposed a definition that stands alone or is otherwise distinct from their explanation, these were considered separately as a definition and as an explanation. If, on the other hand, the definition is implicit in the explanation or otherwise indistinguishable from the explanation, it was treated as a facet of the explanation and classified as an explanation only.

Definitions (the What Notions) (Box 2.2)

Definitions are intended to clarify the meaning of a word, term, concept or idea. In defining a term, we can focus on the denotation or connotation of the word. I based my classification on these two techniques, classifying each definition as either denotative or connotative, then evaluating it and finally discussing it in order to find its utility as a definition.

Denotative definitions tell us what a thing is by enumerating objects that constitute the class in question; they can be a complete enumeration or a partial enumeration (Copi, 1986, p. 149).

Connotative definitions tell us what a thing is by identifying attributes shared by, and only by, objects contained in the class in question. Connotative definitions are achieved by naming the “genus” of which the term is a subclass, and then identifying the difference that distinguishes its members from other “species” within that genus (Copi, 1986, p. 157).

If a definition enumerates a list of objects to define itself, it was classified a denotative definition. If the definition identifies the genus and species of the term in question, it was classified a connotative definition. If a combination definition was identified, the denotative definition was retained as a denotative definition and the connotative definition was retained as a connotative definition.

Relevance to Social Relationships (Box 2.4 for Denotative and 2.7 for Connotative)

Next, I assessed each notion for its relevance to “social relationships.” I discarded those that are irrelevant and retained for evaluation those that are relevant.

Social, in the context of the term social dominance, refers to the quality of a series of at least two encounters between at least two individuals, such that the information remembered from previous social encounters with that particular individual affects future encounters. The necessary conditions are (a) at least two encounters between at least two individuals and (b) previous encounters affect the outcome of future encounters between two specific individuals. I discarded notions not specifically requiring both of these necessary conditions.

Operational Congruence (Box 2.5 for Denotative and 2.8 for Connotative)

Although worded differently in some cases, some notions of social dominance seem operationally identical. For simplicity’s sake, I treated as one those notions surviving the social relationship criterion that were found to be operationally identical to any other notions surviving the social relationship criterion. What is left is a distinct list of definitions of social dominance. This is important for the sake of simplicity and clarity. I treated as one those definitions that identify the same attributes, either with identical words or synonyms or by way of inference. I then treated as one, with name preference going to the notion published first, those that are operationally identical.
Evaluation of Denotative Definitions

I then classified the denotative definitions by degree of completeness in their enumeration, and then by their level of representativeness. I retained those that are reasonably complete and representative with consideration of conventional use of the notion of social dominance. I discarded those that are not. I retained notions meeting all criteria in the denotative definition evaluation (i.e., completeness and representativeness), and discarded those notions that fail one or more of the criteria.

Completeness (Box 3.1)

The more objects that I could identify that should be enumerated within the definition through consideration of conventional notions of the term, the less complete the definition was considered. I discarded those notions that fail this criterion. If I could not identify significantly important objects in the enumeration, where they should be, in the context of conventional use of the term, social dominance, I discarded the notion because it fails the completeness criterion.

Representativeness (Box 3.2)

With consideration of the conventional use of the term, I evaluated each definition for representativeness by efforts to find unrepresented objects. If significant misrepresentations could be identified, the notion failed the representativeness criterion. The more unrepresented objects, the less representative the definition. I discarded those notions that fail this criterion.

Value of Denotative Definitions (Box 3.3)

I assessed the general value, or usefulness, of the denotative definitions of social dominance that have been retained. In a broad sense, the surviving definitions are free of serious flaws. This final stage should refine the value assessment by taking the most useful denotative definitions of social dominance available and clarifying their value more particularly and precisely. Below, I discuss the surviving definitions in terms of how complete and representative they are, and how consistent the definition is with conventional ideas of what social dominance should and should not include.

Evaluation of Connotative Definitions

According to Copi (1986), there are five broad criteria by which to judge the value of connotative definitions (essential attributes, circularity, too broad or too narrow, ambiguous obscure or vague language, negative). The remaining explanations were evaluated based on these five criteria. I retained those notions meeting all criteria in the connotative definition evaluation and discarded those notions that fail one or more of the criteria.

Does the definition state the essential attributes of the species? (Box 3.4)

The definition should identify the essence of the term. A species only contains the characteristics it contains and none is more essential than another; as used here, identifying the essential attributes of the species means identifying the conventional connotation by which we decide if an object or situation is defined by the term (Copi, 1986, p. 159). A notion meets the essential-attributes criterion if it is consistent with conventional use of the term social dominance. If I could identify an inconsistency, the notion fails the essential-attributes criteria. I discarded those notions that fail this criterion.

Does the definition avoid circularity? (box 3.5)

“A circular definition is one that assumes a prior understanding of the term being defined” (wikipedia.org1, n.d.). A definition is circular if it uses a synonym or near synonym to define the term (wikipedia.org3, n.d.) or if the description of the term relies on the term itself (Copi, 1986, p. 159). circularity is similar to tautology. “A tautology is a statement which is true by its own definition, and is therefore fundamentally uninformative. Tautologies use circular reasoning within an argument or statement”
(wikipedia.org2, n.d.). If a term is circular, the definition will fail to achieve its purpose of explaining the meaning of the term. If I could identify a circular or tautological definition, the definition failed to pass the “circularity” criteria and was discarded.

**Does the definition avoid being neither too broad nor too narrow? (Box 3.6)**

A good connotative definition will not include more or fewer things within the class and subclass it lays out than it should to identify the meaning of the term in question. If I could argue in respect to conventional use of the term that a definition contains either too narrow or too broad a definition (in other words, if it includes or excludes things it should not), then it fails to avoid too broad or narrow a definition and I discarded it.

**Does the definition avoid ambiguous, obscure or figurative language? (Box 3.7)**

If a definition is ambiguous, it fails to fulfill the function of clarifying the meaning of a term. If I could identify ambiguous, obscure or figurative language that significantly hampers the definition, it fails to achieve the appropriate clarity and I discarded it.

**Does the definition avoid being negative where it can be affirmative? (Box 3.8)**

Some terms, by their nature, require a negative definition. This rule simply requires that, where it is possible to do so, the definition should be a positive rather than negative one. If I could argue that a definition is negative where it should be positive, then it fails to achieve the negativity test and I discarded it.

**Value of Connotative Definitions (Box 3.9)**

Below, I discuss the retained connotative definitions in terms of identifying what objects they include and exclude. I contrast and compare each surviving connotative definition to the conventional idea of social dominance, and present a qualitative value judgment based on the assessment. I also determine the value of the definition, based on the appropriateness of what is included and excluded from object membership, compared with conventional use of the term social dominance, and with what is useful in a definition.

**Explanation (the Why and How Notions)**

Unlike definitions, explanations provide understanding by identifying reasons, causes and/or consequences for a thing. An explanation is a group of statements from which the thing to be explained can logically be inferred and whose acceptance removes or diminishes its problematic or puzzling character. An explanation accounts for the conclusion with premises.

**Relevance to Social Relationships (Box 2.10)**

I handled relevance to social relationships in a similar way to relevance for the definitions (see the relevant section above).

**Operational Congruence (Box 2.11)**

Two explanations are operationally identical if one can generate the same predictions and reference to the same factors meant to explain the same facts. If more than one explanation surviving the social relationship criterion makes the same predictions, they were considered as one, with name preference going to the first notion published.

**Evaluation of Explanations**

Copi (1986) provides five criteria by which to evaluate the usefulness of explanations. I chose these criteria because they represent a broad and generally agreed upon set of criteria for evaluating definitions and explanations. I retained notions meeting all criteria in the explanation evaluation (i.e., relevance, testability, compatibility with previously well-established hypotheses, predictive or explanatory power, and simplicity), and I discarded those notions that fail one or more of the criteria.
Relevance (Box 3.10)

The fact in question must be deducible from the hypothesis, if not from the hypothesis alone then from the hypothesis and certain causal laws that may be presumed to be highly probable, or from the hypothesis and certain stated assumptions. If the fact in question is not deducible from the model, then it fails to explain the fact. If I could identify relevant facts or propositions presented by the explanation that cannot be inferred from the premises or assumptions of the explanation, I discarded it for violation of the relevance criterion.

Testability (Box 3.11)

For a hypothesis to be valuable scientifically, there must be a way to demonstrate that the hypothesis is not true. If a hypothesis is not refutable, it does not meet this basic requirement of science. If I could identify a plausible method of testing the explanation, the explanation meets the criteria of testability. I discarded those notions that fail this criterion.

Compatibility with previously well-established hypotheses (Box 3.12)

In many cases, if a new hypothesis is incompatible with previously well-established hypotheses, then the new hypothesis is likely less valuable. If I could not identify a previously well-established hypothesis that conflicts with the explanation in question, the explanation meets the criteria of compatibility. I discarded those notions that fail this criterion.

Predictive or explanatory power (Box 3.13)

The range of observable facts that can be deduced from the hypothesis is referred to as its predictive or explanatory power. I evaluated the range of facts or observations explained or predicted by the explanation. If the explanation predicts or explains important and relevant essential aspects of what is considered conventionally to relate to social dominance, then the explanation meets the criterion of predictive or explanatory power. I discarded those notions that fail this criterion.

Simplicity (Box 3.14)

The simplest theory that accounts for all the relevant facts is preferable because it is easier to understand and work with. If an explanation is relatively simple in terms of its number of assumptions, number of propositions and ease of understanding, it meets the criterion of simplicity. If it seems particularly complex, or relies on numerous or questionable assumptions or observations, then it fails to meet this criterion. I discarded those notions that fail this criterion.

Value of Explanations of Social Dominance (Box 3.15)

As with the definitions, I assessed the general worth of the explanations of social dominance that had not been discarded through the analysis. I evaluated surviving explanations to identify what phenomena they might help us explain. Below, I explore benefits and limitations, and I make a qualitative value judgment based on this.

Results

My first task was to identify notions of social dominance that met the criteria outlined above. Below, I very briefly outline some key features of the selected notions of social dominance.

Review of the Literature

1. Privileged role dominance

Wilson (1975) describes a notion of dominance, termed “privileged role dominance” by Drews (1993). The essence of this notion seems to be that, as age increases and developmental stage changes, dominance decreases. Social dominance is said to relate to food or resource transfer and is not related to agonistic contests.
2. Reproductive dominance

Wilson (1975, p. 285) describes a notion of dominance based on observations of various species of paper wasp (*Polistes* sp.). Wilson outlines four behavioral tactics that may be used, individually or in combination, to contribute to maintaining dominance:

1. Dominant individuals demand and receive the greatest share of food when that resource is limited.
2. They lay the greatest number of eggs in new brood cells.
3. When rivals manage to lay eggs, they eat them.
4. They use overt aggression to compete successfully with rivals.

Drews (1993) describes the notion as defining the most reproductively successful as dominant. But reproductive activity is the measure of fitness, which is to be a consequence of aggressive competitive tactics described.

3. Dominance is aggressiveness

This simple notion of dominance suggests that, as aggressiveness increases, so too does dominance (Drews, 1993). This notion addresses the observation that animals that are more aggressive are often able to encourage others to defer to them and are most likely to win competitive encounters. Drews puts the argument in this way:

1. The tendency to use overt aggression within a society is variable.
2. Those who are more aggressive than a competitor will be the dominant individual in that contest or relationship.
3. Those who are not as aggressive will be the subordinates.

4. Dominance is a trait that conveys rank

Baenninger (1981) posits that dominance can be thought of as an intervening variable, and that any given animal might possess some trait or traits—which we will call dominance—that contribute to their willingness to engage in and ability to win competitive encounters with other individuals. If the individual wins a statistically significant number of contests with a variety of other individuals, then we infer that this individual possesses more of the trait called dominance. Baenninger proposes assertiveness or aggressiveness as possible synonyms for traits that may contribute to “dominance.” Baenninger points out that this empirically based prediction of future outcomes does nothing to help us explain the process, as a theoretical prediction would.

5. Winner is dominant—loser is subordinate

This simple notion suggests that dominance is merely a synonym for winning, and subordinate is a synonym for the loser in any given dyadic encounter, regardless of whether the contest is escalated or not (Drews, 1993). Once an outcome for a particular contest is determined, the dominance or subordination is determined for that contest.

6. Successful combatant

This notion of dominance proposes that the individual who wins one or more contests by either display or escalation of aggression is dominant over their opponent (Drews, 1993). The individual most willing to escalate and who is the most aggressive tends to win and hence be dominant. This is similar to Parker’s (1974) notion of resource holding power (RHP) in which the individual most able to continue the contest for the longest is the winner and hence the dominant individual. In this notion of dominance, overall fighting ability is related to dominance; as overall fighting ability increases, so too does dominance. Drews points out that this notion does not imply that escalation is avoided or that individuals recognize each other and incorporate an outcome history into their decision making.

7. Dominance is lack of aggressiveness

Vessey (1981) proposes a notion of dominance that focuses on control of resources through display and submission but does not rely on learning from previous encounters or
individual recognition. The notion assumes that, in a contest between two animals, each may assess the opponent through mutual display of fighting ability. Each opponent is able to compare their fighting ability and their opponent’s, based on the predictable traits correlated with fighting ability rather than remembering previous outcomes. The opponent who is least likely to win chooses to conserve their energy and submits, while the other gains the resource, thereby controlling the interaction. Control and predictability are necessary, whereas learning or individual recognition is not. Dominance status can be assigned after a single contest (Drews, 1993).

8. Consistent winner of agonistic contests

In repeated agonistic contests, where A consistently defeats B, then A is dominant and B is subordinate (Drews, 1993). This notion requires repeated agonistic contests but does not imply escalated aggression or its avoidance, individual recognition, social relationships, memory or learning. It merely recognizes asymmetry in the proportion of defeats or wins in agonistic encounters.

9. Spheres of dominance / Consistent winner in given context

Hand (1986) defines social dominance as “consistent winning at points of social conflict, regardless of the tactics used” (p. 201). He further defines social conflict as “occurring when the behavior of two (or more) individuals indicate that their motivational priorities are incompatible: they seek the same thing or different things, and both cannot be satisfied” (p. 201). He then defines social dominance further in this way: “[Social dominance]... refers specifically to ‘familiar’ dyads in which one party follows the ‘rule’ that it will defer.” He identifies two types of social dominance: primary and secondary. Primary social dominance is described as superior force, real or apparent. It can be intrinsic to the individual or derived, due to asymmetries in the relationship between the opponents. Secondary social dominance, on the other hand, depends on leverage rather than superior force. Leverage refers to an asymmetry in the cost of winning. Where the cost for one opponent to win is lower than the cost of the other to win, the first individual possesses a leverage advantage and may consistently win encounters due solely to this mechanism.

Hand (1986) explains that we should expect context-specific payoff asymmetries; that fitness gains can be different in different contexts. The “spheres of dominance” notion presumes that dominance can be different in different contexts, within the definition of conflict and dominance offered above. “Spheres of dominance” classifies social dominance as “pure” or “mixed.” Pure dominance/subordination relationships are characterized by one member always being dominant, while the other is always subordinate, across all contexts. Conversely, a mixed social dominance relationship is one in which one member is not always dominant in all contexts. “Spheres of dominance” differentiates social dominance from other forms of conflict resolution. Hand identifies, broadly, three theoretical extremes: relationships with no conflict; relationships in which social dominance is used to determine resource allocation; and egalitarian systems as used to determine resource allocation. An egalitarian system is in operation when conventions are used to avoid conflicts that result in there being a loser and winner, or when wins and losses are achieved equally between both members. When periods of winning by both individuals are short lived, the relationship can be characterized as unresolved. Conventional conflict resolution is thought of as a continuum, with social dominance at one end and egalitarianism at the other end. Empirical observation is used in order to determine where a particular relationship falls on this continuum.

10. Priority of access to resources

Priority of access to resources is generally considered central to a proper notion of dominance. Dominance is used to describe the asymmetry in access to resources. In this argument (Hand, 1986, p. 202), the dominant individual is said to be the one who displaces others from a resource, contests successfully for
a resource or maintains possession of a contested resource. In this system, it is not required that aggression be avoided (Drews, 1993). Fighting is also not necessary.

11. Peck order

If A pecks B and B never or seldom pecks A, then A is dominant and B is subordinate. This notion describes a despotic regime or linear hierarchy. It does not allow for nonlinear social structures. Directionality of agonistic behavior is the determining factor in assigning rank.

12. Barrette and Vandal’s dominance

Drews (1993) paraphrased Barrette and Vandal’s (1986) discussion into a definition in this way: “dominance is an attribute of a relationship between two individuals, whenever an asymmetry in the outcome of agonistic interactions is measured.” This is a modification of the peck-order notion in that it allows for more than one interaction type (i.e., agonistic behaviors other than pecking). Drews (1993) further summarizes the modified peck order neatly as characterized by the following:

1. Asymmetry in outcome of agonistic encounters.
2. Avoidance of escalation mediated by deference.
3. Influence of past encounters in subsequent response.

13. Intervening variable

The intervening variable notion of social dominance states specifically that dominance does not exist in the sense that it is directly observable and measurable (i.e., a trait) but rather that it is a construct. Hinde and Datta (1981) propose that social dominance can be a useful explanatory concept. They criticize many commentators on social dominance (e.g., Bernstein, 1981) for confusing empirical notions (what they call data language notions) of social dominance with theoretical notions that explain the phenomenon (what they call theory language notions). They argue that social dominance is not a dependent variable or independent variable. Social dominance is, by this notion, an intervening variable; we observe directionality and we may explain it by postulating the construct of social dominance, similar to how we use the term intelligence to explain certain skills. Hinde and Datta suggest that some independent variables could affect specific interactions and that some may be context dependent. They further propose that these independent variables may interact, which is posited as explaining why merely identifying correlations with these measures and outcomes may not prove useful. They propose certain independent variables (e.g., size, maternal rank, hormonal condition, dyadic experience, age and experience of terrain) as modulating certain intervening variables (e.g., dominance, authority) that then produce the observable dependent variables (e.g., A supplants B, B grooms A, B is submissive to A, A has priority of access, A leads and B follows). In this sense, social dominance is a construct used to explain the relationship between the independent and dependent variables. Different independent variables have different strengths of effects on different dependent variables.

14. Essence of dominance

Drews (1993), proposes the following definition for dominance:

Dominance is an attribute of the pattern of repeated, agonistic interactions between two individuals, characterized by a consistent outcome in favor of the same dyad member and default yielding response of its opponent rather than escalation. The status of the consistent winner is dominant and that of the loser subordinate.

Operationally, dominance ranks (i.e., the position of one individual in a dominance hierarchy) are calculated after assessment of dominance status (the status of one individual within a dyad based on directionality of statistically significant outcomes) in every possible dyad in the group.

Drews (1993) points out that this definition is merely a structural descriptive model that
allows for future study of the phenomenon. He explains that one can use the definition in order to suggest that dominance is merely a descriptive tool, an illustration of one attribute of dyadic relationships, and a useful estimate of an individual’s ability to influence the behavior of others through their ability to inflict costs on others. It is a basis for explaining conventional tactics that result in the replacement of escalated aggression with avoidance or display, and to consider social dominance a product of cost–benefit considerations.

15. Formal dominance

The notion of formal dominance originated with de Waal (1986) and has since been elaborated upon by Preuschoft and van Schaik (2000). Here, I outline the contributions of both.

The directionality of communication signals, as opposed to outcomes of aggressive encounters, is highly stable across time and is hence predictable. De Waal agrees with Rowell (1966) that submissive signals are particularly consistent in their directionality, as contrasted with dominant or aggressive outcomes. Given this, de Waal argues that social dominance should really represent the directionality of signals. De Waal’s (1986) “formal dominance” is a departure from the usual notion of either determining dominance based on the outcomes of agonistic contests or relating the independent variables of traits with the dependent variables of outcomes. De Waal points out that, usually, the proposed independent and dependent variables cannot be correlated well. This is the impetus for his formal dominance notion, which, rather than focusing on outcomes or these correlations, focuses solely on the independent variables.

Preuschoft and van Schaik (2000) define dominance slightly differently than in formal dominance (“long-term dyadic relationships that are characterized by an asymmetric distribution of power,” p. 78), but they also focus on communication signals. They propose that “dominance in groups seems to function as a conflict management device, preventing escalated competition by conventionalizing means and priority of access, thus allowing for peaceful coexistence of group members” (p. 90).

Preuschoft and van Schaik (2000, p. 78) suggest that dominance emerges only in individuals who use contest competition, which they define as a situation in which an individual attempts to monopolize a resource. In contest competition, (a) A enhances his own interests at a cost to B, (b) A’s behavior is goal directed, and (c) B is forced to incur a cost by A. This is contrasted with scramble competition, in which individuals maximize efficiency in locating and exploiting a resource so that they may consume as much as possible. In scramble competition, aggressive or other agonistic behaviors are not observed. Only in contest competitive scenarios is social dominance said to be able to emerge, since aggressive encounters and communication are likely.

This notion predicts that, as familiarity increases, escalation decreases in favor of conventional behaviors such as display and preemptive deference. It also predicts that animals will prefer to interact with familiar individuals because conventional interactions are less costly than dealing with strangers and performing full stepwise escalation and assessment; it saves time and energy.

Preuschoft and van Schaik (2000, p. 79) identify three factors that determine whether conflict results in escalated aggression: the value of the resource to each individual (and hence each individual’s motivation), an estimation on the part of each individual as to how likely they are to win, and the cost each individual is willing to incur in seeking the resource. Preuschoft and van Schaik hypothesize that individuals will seek to predict the costs and benefits of competitive encounters. They suggest that individuals will initiate a stepwise escalation upon meeting in order to perform an assessment of the opponent’s fighting ability in comparison to their own. This predicts that, if one individual determines through their initial assessment that they are weaker, less motivated or prepared to incur fewer costs, then they should withdraw and defer. The notion then explains that extensive assessment may become
too expensive and so general rules may develop. Preuschoft and van Schaik suggest rules for different grouping patterns, but the one that concerns us here is the stable association grouping class, in which members are familiar with one another through frequent encounters. In such social relationships, prior experience with the opponent informs the decision rules, and transient behavioral signals are used. The notion proposes that prevention of escalation is a mutual interest and so signaling of fighting ability (display) can be used in place of actual escalation when the outcome is predictable. Ritualized display of fighting ability and motivation are used to inform the members of these predictable outcomes.

After repeated display and assessment interactions, in which each individual performs stepwise escalations and signaling of agonistic abilities and intentions, each can settle into conventional low-cost behaviors. Dominance–subordination relationships represent these conventional interactions. Each subsequent interaction after the first meeting adds data to each member’s assessment and to their ability to predict their relative likelihood of winning an escalated contest; the power asymmetries are known.

Preuschoft and van Schaik refer to submission as an advertised harmlessness and explain that this effectively appeases the opponent and inhibits their aggression. They explain that submission acts in stable social relationships as a compensation for the dispersal effects (individuals breaking from the group and going out on their own) of competition and escalated aggression.

In terms of group structure, Preuschoft and van Schaik (2000) explain that these dyadic dominance–subordination relationships interconnect to form networks or relationships, which we refer to as dominance hierarchies. They suggest that these hierarchies can be linear (i.e., A > B > C > D > E > F), nonlinear/triangular (e.g., A > B and B > C, but C > A), pyramidal (e.g., A > [B = C = D = F]) or reflect a class system (e.g., [A + B] > [C = D + E + F]). In this way, the model allows for a variety of group structures and introduces the possibility of nondyadic relationships such as alliances and coalitions.

16. “Hawk–dove game”

The “hawk–dove game” suggests that “animals with the capacity to wreak havoc on other members of their species frequently refrain from doing so” (Barash, 2003, p. 216) and asks the question “how are we to explain those wonderful, fascinating cases of restrained lethality” (Barash, 2003, p. 216) from an evolutionary standpoint? John Maynard Smith and George Price (as discussed in Barash, 2003, p. 217) attempted to answer that question with a game theoretic model of the evolution of social conflict called the hawk–dove game.

In the hawk–dove game, there are two types of individuals: hawks and doves. Each type represents a different strategy. The hawk threatens and then, if necessary, they fight. The dove avoids escalated aggression. The hawk–dove game aims to explain how these two basic behavioral strategies might coexist in the same group at the same time. As with all strategic games, a matrix can be formed in which the payoffs for the combinations of dyadic strategies are outlined. The matrix for the hawk–dove game is illustrated below.
This payoff matrix identifies the costs \( c \) and value \( v \) (measured in units of reproductive fitness) faced by players who may use these basic strategies in a contest for a limited resource. If each individual is a hawk, he or she will fight until one individual is seriously injured, and the winner will possess and consume the resource in question. Each individual is equally likely to win, which makes this a symmetric game. If both individuals play dove, then each consumes the resource with a probability of 1/2, without a fight (Osborne, 2004, p. 398). The strategy set (hawk, hawk) is a unique Nash equilibrium (a strategy profile in which no player has an alternative strategy that increases their payoff, given the other players’ strategy) and hence hawk is an evolutionarily stable action if \( v > c \). If \( v = c \), then hawk–hawk is an equilibrium also, but not a strict one. If \( v < c \), then the game has no symmetric Nash equilibrium with pure strategies (Osborne, 2004, pp. 399–400). If hawks are abundant, they gain a higher payoff, but as they become more abundant, they face more hawks in their contests and their payoffs begin to suffer relative to the dove strategy. At this point, the dove strategy becomes favorable. However, as the doves then increase in frequency, they become vulnerable to invasion by hawks. Neither strategy, on its own, is evolutionarily stable. If the cost of fighting increases, the proportion of hawks at equilibrium decreases. If the value of the resource increases, then the proportion of hawks should also increase.

The above focuses on pure strategies, in which the players choose either the hawk or dove strategy alone. A mixed strategy would allow the player to choose which of the two strategies they will employ, based on a probability. Maynard Smith and Price inserted the values 10 for value of resource, 20 for the cost of fighting in hawks, and 3 as the cost of wasted time displaying in doves. With these arbitrary values, it can be determined that hawks make up 8/13 of the population and doves make up 5/13 of the population (Barash, 2003, p. 219). Rather than there being 8 hawks and 5 doves in a population of 13 members, each member could change their strategy from hawk to dove or vice versa, with a probability of 8/13 playing hawk and 5/13 playing dove.

A variant of the hawk–dove game can transform it into an asymmetric contest.

### Table 1. Payoff matrix for basic hawk–dove game, where \( c \) represents cost and \( v \) represents value. In each of the four quadrants, the figures before the comma represent the payoff for player #1 and the figures after the comma represent the payoff for player #2. Player 1 is the vertical axis, or the rows; Player 2 is the horizontal axis, or the columns.

<table>
<thead>
<tr>
<th></th>
<th>Dove</th>
<th>Hawk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dove</td>
<td>( 1/2(v - c), 1/2(v - c) )</td>
<td>( v,0 )</td>
</tr>
<tr>
<td>Hawk</td>
<td>( 0,v )</td>
<td>( 1/2v, 1/2v )</td>
</tr>
</tbody>
</table>

### Table 2. Variant of the hawk–dove game with asymmetry. \( V \) is the value of the resource (territory) to the owner, \( v \) is the value of the resource (territory) to the intruder and \( c \) represents the cost.

<table>
<thead>
<tr>
<th></th>
<th>Dove</th>
<th>Hawk</th>
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</thead>
<tbody>
<tr>
<td>Dove</td>
<td>( 1/2V, 1/2v )</td>
<td>( 0, v )</td>
</tr>
<tr>
<td>Hawk</td>
<td>( V, 0 )</td>
<td>( 1/2 (V - c), 1/2 (v - c) )</td>
</tr>
</tbody>
</table>

In this case, the rows are player 1, who is the owner of a territory, and the columns are player 2, who is the intruder. Strategies hawk–dove and dove–hawk are equilibrium strategies if \( V < c \).
and \( v < c \). The strategy in which the intruder devers to the owner is called the bourgeois strategy and is common in the animal kingdom. The strategy in which the owner devers to the intruder is not common at all and is called the paradoxical strategy (Osborne, 2004, p. 409).

17. “War-of-attrition model”

The “war-of-attrition model” is a game theoretic representation of two animals fighting over a prey resource, but it can model many other disputes; the prey could represent any indivisible resource, and fighting can represent any costly behavior (including mere waiting).

In the war-of-attrition model, each competitor determines a point in time during a contest at which they will concede if their opponent has not already conceded. The competitor who is prepared to endure the longest in the contest will consume the resource and the other will not. Duration of enduring is related to the cost the individual is prepared to incur in order to consume the resource. In the war-of-attrition model, time is considered continuous rather than discrete, starts with zero and runs indefinitely. It is assumed that the value player \( i \) assigns to the resource is \( v_i > 0 \). The value they assign to a 50% probability of consuming the resource is \( v_i/2 \). The dispute is settled when one of the competitors concedes. The cost of enduring for one unit of time is considered one unit. For example, if \( i \) concedes first at \( t_i \), her payoff is \( -t_i \). On the other hand, if the other player \( j \) concedes first at time unit \( t_j \), player \( i \) ’s payoff would be \( v_i - t_j \). The third possible outcome is for each opponent to concede at the same time, in which case \( i \) ’s payoff would be \( 1/2v_i - t_i \) (Osborne, 2004, p. 77).

18. Parker’s model of escalated fighting and resource holding power (RHP)

The notion of resource holding power (RHP) is a measure of absolute fighting ability of an individual. It is part of a model of escalation of aggression in competitive encounters (Parker, 1974).

The model asks the question: how should the outcomes of aggressive disputes during a fight be decided? The answer Parker (1974) offers is that each individual possesses a fitness budget. When an opponent inflicts an injury upon an individual, their fitness budget declines. Through mutual assessment, each opponent estimates which should run out of this fitness budget first. The one that should deplete their fitness budget first should defer before escalation occurs.

Parker (1974) points out that, with equal RHPs, there might be circumstances in which payoff imbalances exist. Whether an individual is the holder of a resource or the attacking intruder is one such case, whereby the possessor will have a higher RHP than the intruder, even if otherwise they would be equal. In the case of a resource holder versus an attacker, the attacker will have to possess a significantly greater fitness budget in order to surpass the holder advantage.

Each opponent in a conflict assesses the relative RHP, which correlates to an absolute probability \( (c_{acb}) \) of winning the next bout. A bout is determined by the infliction of an injury. Each individual spends from their fitness budget in order to inflict injury on their opponent and for their withdrawal. This defines the critical probability \( (c_{crit}) \) of winning the next bout for each opponent. If \( c_{abs} > c_{crit} \) escalation is the better strategy. If \( c_{abs} < c_{crit} \) withdrawal is the better strategy.

Parker explains that assessment of RHP is an evolutionarily stable strategy (ESS) because any individuals choosing a different strategy would fail to defer to individuals with higher RHP, fail to gain the resource in question, suffer injury, and become less likely to reproduce. The strategy of assessing RHP and using assessment before choosing whether to escalate (limited war) is assumed to be an ESS over total war and total peace. If the opponent escalates, then escalating after conventional assessment is attempted is the preferred strategy.

The model suggests that those individuals who respond to RHP thresholds appropriately
before they withdraw will be selected for. Parker (1974) describes it this way: “given that his RHP is \( x \) and mine is \( y \), and that in this situation I have \( a \) units available to expend and he has \( b \) units, will I run out of expendable fitness units before he does?”

Parker (1974) lays out his main model in five points:

The function of conventional fighting (display) is to allow each individual to assess their opponent’s relative RHP, providing an absolute probability (\( c_{\text{abs}} \)) for each combatant to win the first bout in an escalated fight. A bout is determined by the infliction of an injury upon an opponent. The probability of winning (\( c_{\text{abs}} \)) is assumed to be directly proportional to the relation between the individuals’ respective RHPs. Where \( x \) and \( y \) are individuals, this is stated \( r_x/(r_x + r_y) \).

“Suppose that the loss in fitness due to an injury in the first bout would be \( l \). For this possible loss, there will be a critical minimum probability of winning the first bout (\( c_{\text{crit}} \)) below which retreat (rather than escalation) is the more favorable strategy. \( c_{\text{crit}} \) is greater the greater the search cost for an alternative resource.”

If and only if \( c_{\text{abs}} > c_{\text{crit}} \) for both individuals, then escalation is expected to occur. If \( c_{\text{abs}} > c_{\text{crit}} \) for one individual and \( c_{\text{abs}} < c_{\text{crit}} \) for another, then the latter is expected to defer or disengage rather than face the loss of fitness likely in the conflict. If \( c_{\text{abs}} < c_{\text{crit}} \) for both individuals, then the winner is expected to be the one with the lesser negative score.

After the first bout, each combatant will reassess. As a result, of the outcome of the first bout, the loser’s RHP and \( c_{\text{abs}} \) will decrease, while the winner’s \( c_{\text{abs}} \) will increase. This is consistent with observations of losers disengaging after damaging bouts in conflict encounters.

The goal of the “game” is to “play” for the disengagement of the opponent; for the reversal of their \( c_{\text{abs}} > c_{\text{crit}} \) to \( c_{\text{abs}} < c_{\text{crit}} \).

Whether an individual will choose the withdraw strategy or the escalate strategy will depend on whether the “probable future fitness gain rate due to continued investment in the resource (in gain extraction, fighting, courtship persistence, etc.)” is greater or less than the “probable future fitness gain due to withdrawal for resumption of searching for alternative resources.”

### Analysis

Each of the 18 notions of social dominance was systematically analyzed as outlined above. The results are summarized in Table 3.

1. **privileged role dominance**

“Privileged role dominance” was determined to be a connotative definition. Although this definition requires two or more individuals in at least two encounters, it does not require that previous encounters affect the outcome of future encounters. Neither Drews (1993) nor Wilson (1975) state or imply that previous encounters affect future encounters. Therefore, I discarded this definition because it failed the social relationship criterion.

2. **reproductive dominance**

“Reproductive dominance” was determined to be an explanation. This explanation requires neither that previous encounters affect future encounters nor that two individuals meet at least two times. I discarded this explanation because it failed the social relationship criterion.

3. **Dominance is aggressiveness**

“Dominance is aggressiveness” provides an explanation. Although this explanation requires two or more individuals in at least two encounters, it does not require that previous encounters affect the outcome of future encounters. Therefore, this explanation failed the social relationship criterion and was discarded.
4. Dominance is a trait that conveys rank

“Dominance is a trait that conveys rank” was determined to be an explanation. Although this explanation requires two or more individuals in at least two encounters, it does not require that previous encounters affect the outcome of future encounters. Therefore, I discarded this explanation because it failed the social relationship criterion.

5. Winner is dominant, loser is subordinate

“Winner is dominant, loser is subordinate” was determined to be a connotative definition. This definition neither requires that previous encounters affect future encounters nor that two individuals meet at least two times. Therefore, I discarded this explanation because it failed the social relationship criterion.

6. Successful combatant

“Successful combatant” was determined to be an explanation. This explanation neither requires that previous encounters affect future encounters nor that two individuals meet at least two times. I discarded this explanation because it failed the social relationship criterion.

7. Dominance is lack of aggressiveness

“Dominance is lack of aggressiveness” was determined to be an explanation. This explanation neither requires that previous encounters affect future encounters nor that two individuals meet at least two times.

8. Consistent winner of agonistic contests

“Consistent winner of agonistic contests” was determined to be a connotative definition. Although this definition requires two or more individuals in at least two encounters, it does not require that previous encounters affect the outcome of future encounters. Therefore, I discarded this definition because it failed the social relationship criterion.

9. Spheres of dominance

“Spheres of dominance” provides both a connotative definition and an explanation. I retained this definition and explanation because they met the social relationship criterion.

Definition analysis

I specifically considered Hand’s (1986) compound definition for social dominance (as “consistent winning at points of social conflict, regardless of the tactics used….” and “refers specifically to ‘familiar’ dyads in which one party follows the ‘rule’ that it will defer”). I retained Hand’s definition for social dominance because it fell within an acceptable range and met the connotative definition criteria, but it suffers slightly from ambiguous terminology (e.g., “familiarity”) and from being slightly narrow (e.g., requiring that one member of a dyad follow the rule that they will defer).

Explanation analysis

It is important to note that Hand’s explanation for dominance is based specifically on his definition of dominance and not on his definition of social dominance. I would have discarded this definition for dominance because it would not have met the social relationship criterion. However, because he also provided a definition of social dominance, I assessed that. I retained the explanation because it met each of the explanation analysis criteria.

Definition value

Hand’s definition of social dominance puts “familiar” and “rule” in full quotes, indicating that he realizes that these terms might be vague or ambiguous. However, he defines “rule” in the same sentence as meaning “deferring,” so that is redeemed. The term “familiar” is defined by onelook.com this way: “adjective: having mutual interests or affections; of established friendship (Example: ‘On familiar terms’); adjective: well known or easily recognized (Example: ‘A familiar figure’); adjective: within normal everyday experience; common and ordinary; not strange” (onelook.com, n.d.),
which is consistent with everyday use of the term. Clearly, “familiar” refers to relationships in which the individuals meet repeatedly and remember each other.

Another potential source of vagueness is the statement that one party follows the rule. Hand does not state whether it has to be only one individual to follow the rule or whether the two individuals can alternate in following the rule. He does state that only one party follows the rule, but does this mean that only one party follows the rule within the encounters they share or that each party takes turns following the rule? My interpretation of this is that “‘familiar’ dyads in which one party follows the ‘rule’ that it will defer” means that one, and only one, member of the “familiar dyad” follows this rule. If the definition had stated that within a particular encounter one member follows the rule, I would tend to interpret this as allowing for alternate rule following. But because the topic is the relationship rather than one particular encounter, it seems logical that the statement “follows the rule” should apply consistently to the topic, which is the relationship as a whole. For these reasons, I have determined that “one party follows the rule” means that one, and only one, party within a dyadic relationship always follows the rule. If I am wrong in my interpretation, then I would argue that the definition is vague, in which case I would not have retained it beyond the definition analysis criteria stage.

Given the resolution of potential vagaries within the definition, I can discuss the limits of inclusion. This definition would describe all situations involving social relationships in which encounters resolve by one member always deferring. The definition allows for any means by which this may come about (including force options or leverage). It can refer to any encounter in which the subordinate preemptively defers, as well as situations in which display behaviors are exchanged, or when escalated aggression takes place, or even when one defers because the other has some form of leverage over them.

This definition would exclude any nonsocial relationships, as well as any social encounters in which it is not one particular member that defers each time. If the other member sometimes defers, this definition would no longer consider it a case of social dominance. In that case, it would seem this definition no longer considers this “consistent winning.”

The value of this definition is severely limited because it excludes social relationships in which the same dyad member is not always the one who defers. It does address the observation that in dominance relationships there usually is a consistent asymmetry in the outcomes of agonistic encounters, but it is too severe in ruling out all cases except ones in which one particular member always defers.

Overall, this definition is of moderate value.

Explanation value

Hand raises a number of unique, and potentially very useful, notions in his explanation of how social dominance operates. One of the ideas is that social dominance may be contextual; that is, an individual may be dominant in one context but not in others. This might help explain why there is such poor correlation between contexts and outcomes in studies of conflict. For example, we know that in wolves the male is dominant in such matters as food but the female is often dominant in matters of rearing of young (Mech, 1999). By postulating spheres of dominance, we explain these seeming irregularities. Of course, this might make the hypothesis difficult to test in many cases, and it comes with the risk of circularity or begging-the-question problems. For example, if we leave open the possibility of identifying any time an individual in a dyad wins as a context and any time his opponent wins as another context, we have a problem. Of course, if we make sure that winning in that context remains stable across time, then we escape this difficulty. Furthermore, if we identify specific rational categories of contexts prior to testing hypotheses about their stability, we can also escape this problem. If we allow for spheres of dominance, they must be stable
across time in previously specified contexts in order to be useful.

Another unusual aspect of the “spheres of dominance” explanation is that it proposes that social dominance resolves many kinds of social conflict and not just those involving resources. Conventionally, we think of social dominance as related solely to the resolution of conflict over resources, but Hand (1986) points out that, too often, reference to dominance as defined by access to resources is circular (dominance is access to resources and those who get access to resources are dominant). Hand identifies various social conflicts that are not about resources, yet are moderated by the dominance/subordinate relationship. The “spheres of dominance” explanation helps us encompass these, along with access to resources, as affected by social dominance. This helps us explain such social conflicts as decisions about the direction a troop of primates will travel or which gull will be allowed to sit and incubate the eggs. Other explanations of social dominance related solely to priority of access to resources exclude these cases.

Hand also distinguishes social dominance from egalitarian systems and unresolved relationships. By doing this, the “spheres of dominance” explanation does not force all agonistic encounters into a dominance framework. This is particularly useful in helping us explain various patterns we observe in social structures, such as consistent winning versus relatively equal winning versus relationships which are as yet unresolved (in that an individual wins and loses in rapid succession).

Overall, the “spheres of dominance” model helps us understand issues surrounding contextual differences in outcomes of social conflict situations, and what social dominance is as contrasted with aggressive dominance and egalitarian systems of social structure. This model is wide reaching and perhaps the most valuable of the explanations retained to the value assessment stage. All considered, I would rate this model at the high end of a moderate value.

10. Priority of access to resources

“Priority of access to resources” was determined to be a connotative definition. Although this definition requires previous encounters to affect the outcome of future encounters, it does not require two or more individuals in at least two encounters. Therefore, I discarded this definition because it failed the social relationship criterion.

11. Peck order

“Peck order” was determined to be a connotative definition. This definition requires that previous encounters affect future encounters, and that two individuals meet at least two times. I retained this definition because it meets the social relationship criterion and all of the connotative definition criteria. This definition is not operationally identical to any other definition retained to this stage of analysis.

Definition value

The “peck order” definition is limited because it identifies “pecking” as the necessary type of agonistic encounter. Applied to chickens, particularly chickens kept in crowded and contrived conditions, this definition allows us to identify the dominant from the subordinate within a dyad and hence allows us to formulate a hierarchy of social dominance rank. If this social structure remains stable across time, then this might be of value in determining rank within these crowded chicken populations, but it does not allow us, on the face of it, to apply the term dominance to other species that do not peck.

If we assume (for sake of argument) that the word peck could be replaced with the idea that any agonistic attack type could be used, the definition becomes much more useful. In that case, we could look at social relationships and determine whether a social dominance system is present by observing the directionality of agonistic attack behaviors. This sets up a rather extreme criterion for inclusion because it is likely that, in some social groups, attacks occur in both directions rather than in just one direction. Under this definition, anything short...
of 100% in one direction is excluded from being referred to as social dominance. The definition was nevertheless defined clearly.

The definition does not account for preemptive deference. In many cases, which we might like to refer to as social dominance, a subordinate might defer prior to being attacked. We might like to see this as an interaction involving a dominant and subordinate, but if no “pecks” take place, we are unable to define the situation as involving social dominance. The neglect of preemptive deference limits this definition even further.

Generally speaking, this definition is clear but quite limited in its applicability and value because it makes use of pecking specifically rather than any other agonistic behaviors; it sets up an extreme criterion for membership by excluding all cases that are less than 100% unidirectional, and it does not account for preemptive deference. Therefore, I would rate this definition as of low value.

12. Barrette and Vandal’s dominance

“Barrette and Vandal’s dominance” provides both a connotative definition and explanation. Although this definition requires previous encounters to affect the outcome of future encounters, it does not require two or more individuals in at least two encounters. I discarded this definition, and also the explanation because it failed the social relationship criterion.

Explanation analysis

The hypothesis states that social structure is a function of differences in outcomes of agonistic encounters, deference, and history of past relationship. Although this explanation requires that previous encounters affect future encounters, and that two individuals meet, it does not require that the individuals meet at least two times. Barrette and Vandal do not state whether dominance requires more than one encounter, but they do state that for ranking of individuals within a group “…the observer has ideally recorded at least one interaction in all the dyads in the group.” Barrette and Vandal go on to outline their study, in which they determine rank in cases of single encounters. While this explanation certainly allows for social relationships, it does not require them. Therefore, it was appropriate to discard this explanation because it failed the social relationship criterion.

13. Intervening variable

The “intervening variable” was determined to be an explanation. This explanation requires at least two individuals to encounter one another in at least two encounters, and it requires that previous encounters affect the outcome of future encounters. Therefore, this explanation meets the social relationship criterion.

Explanation analysis

This explanation satisfied all of the explanation criteria and was retained for value assessment. It is not operationally identical to any other explanation retained to this stage of analysis.

Explanation value

The “intervening variable” explanation is a special case, because the focus of the explanation is an attempt to clarify the type of model used to understand the phenomenon of social dominance. As reviewed above, the intervening variable explanation suggests that social dominance is best not considered a dependent variable or independent variable but rather an intervening variable, much as “intelligence” is. The authors also suggest that there may be interaction between independent variables that results in social dominance. In this regard, the intervening variable explanation helps explain one major problem in the field of social dominance: disappointing intercorrelation among independent variables. In other words, the various factors that result in particular outcomes of agonistic encounters are generally not well correlated with one another. This has been a major drawback of theories of social dominance, which have attempted to describe these factors. The proposal that social
dominance is an intervening variable and that the independent variables involved have interacting relationships explains why correlations have been weak (if social dominance reflects a real phenomenon). What we need now is a model that would identify these interacting relationships. This is a promising avenue in research. In that limited sense, the “intervening variable” explanation is moderately valuable.

In their article, Hinde and Datta (1981) propose certain independent variables and their relative strength of influence upon the intervening variable of dominance, and the relative strength of influence of dominance upon their proposed dependent variables.

This explanation may help explain any phenomena that must relate common relationship features with the observed behaviors constituting outcomes. For example, if we observe A supplanting B, this model suggests that size, maternal rank, hormonal condition and dyadic experience are most influential, and that age is less influential, on putative outcome. Likewise, if we observe that A has priority of access to resources over B, then we expect this to be influenced to a lesser extent by size, maternal rank, hormonal condition and dyadic experience than when A supplants B. It is influenced more by age.

What determines whether B is submissive toward A? This model proposes that size, maternal rank, hormonal condition, dyadic experience and age are relevant factors. The model generates specific and testable hypotheses, which is a major asset.

It may be that this explanation is more relevant to certain primate societies than other species, and that specific independent and dependent variables, and their relative strength of influence, must be identified for different species. Maternal rank, grooming and leading (i.e., walking first and determining direction of travel) are particularly important in certain primate societies and less prominent in other species. The explanatory power of the model is greater than would otherwise be the case, to the extent that it is shown to be consistent with empirical evidence for certain species and less consistent with other species. It would still be valuable to have a framework for devising these kinds of species-specific models, and this is what the intervening variable model offers. It would also be extremely valuable to identify within this framework any independent and dependent variables and their relative strengths of influence broadly across species.

Size, maternal rank, hormonal condition, dyadic experience and age, but not experience of the terrain, affect dominance, whereas age and experience of the terrain and—to a lesser extent—size, maternal rank, hormonal condition and dyadic experience influence authority most prominently. Dominance results in outcome-observations, such as A supplanting B, B grooming A, B submitting to A and, to a lesser extent, A having priority of access to resources, but not to A leading while B follows. Authority leads to the observations of A having priority of access to resources and, to a greater extent, A leading and B following.

Extensive empirical study will be required to devise well-tested models within this intervening variable framework. Potentially, variables and the relationships between them would have to be identified for each species under consideration.

14. Essence of dominance

“Essence of dominance” was determined to be a connotative definition. Although this definition requires two or more individuals in at least two encounters, it does not require that previous encounters affect the outcome of future encounters. Therefore, I discarded this definition because it failed the social relationship criterion.

15. Formal dominance

“Formal dominance” provides both a connotative definition and explanation. Both the definition and explanation require at least two individuals to encounter one another in at least two encounters, and they require that previous encounters affect the outcome of future encounters. Therefore, I retained both the
definition and explanation because they meet the social relationship criterion.

This definition is not operationally identical to any other connotative definition retained to this stage of analysis, and the explanation is not operationally identical to any other explanation retained to this stage of analysis.

**Definition analysis**

The “formal dominance” definition meets each of the connotative definition criteria except the “ambiguous, obscure, or figurative language” criterion. The “formal dominance” definition uses two terms that are less clear than they should be. “Long term” and “power” are vague, making this definition far less useful than some other definitions. Long term means “relating to or affecting a time long into the future” (encarta.msn.com, n.d.), which could, even in reasonable scale, mean days, weeks, months, or years. Unless the authors define the timeframe intended, I simply do not know the intention of the definition. Power can mean “possession of controlling influence... one possessing or exercising power or influence or authority... possession of the qualities (especially mental qualities) required to do something or get something... physical strength” (onelook.com1, n.d.). Does the definition refer to physical strength? Might it perhaps refer to one of the other descriptions above, each of which is rather vague in themselves, in this context? Without a more specific notion of what these two terms mean, it is impossible to evaluate it. Consequently, I discarded this definition.

**Explanation analysis**

I retained for value assessment the “formal dominance” explanation because it met each of the explanation criteria.

**Explanation value**

The “formal dominance” explanation seems reasonable, but it focuses on communication signals as an indication of dominance. The authors state that these cannot be correlated with outcomes, and so I cannot see what “signal direction” really tells us. Since the explanation does not claim to be able to correlate outcomes with communication signals—and in fact they point to this as a reason for using communication signals—the “formal dominance” explanation was not discarded at the explanation analysis stage, but this certainly is a confusing aspect of this explanation.

De Waal’s (1986, 2000) contribution to “formal dominance” is to explain social dominance as related to the directionality of communication signals between individuals in social relationships, as opposed to explaining social dominance by way of the outcomes of agonistic encounters.

This in itself is of limited value because de Waal’s “formal dominance” does not explain the relationship between directionality of communication signals and dominance (the exertion of control over others). If this explanation avoids the problem of intercorrelation of outcomes and traits, then what does directionality of communication signals tell us except that communication signals themselves are unidirectional? Of what use is knowing the directionality of signals if it does not allow us to predict outcomes, particularly regarding the exertion of influence or control? It would seem that identifying unidirectional communication signals independent of outcomes would be of far less value than an explanation of social dominance that explains resource allocation (i.e., outcomes).

Preuschoft and van Schaik’s (2000) contribution to this focus on communication was to provide a better framework for de Waal’s ideas. They explain why social dominance has evolved: “dominance in groups seems to function as a conflict management device, preventing escalated competition by conventionalizing means and priority of access, thus allowing for peaceful coexistence of group members” (p. 90). They also explain how social dominance operates, by identifying three factors that determine whether conflict results in escalated aggression: the value of the resource to each individual (and hence each individual’s
motivation), an estimation on the part of each individual as to how likely they are to win, and the cost each individual is willing to incur in seeking the resource (p. 79).

“Formal dominance,” consequently, explains how and why overt aggression is replaced with conventional behaviors such as display of intent and fighting ability within social relationships. This element was neglected in the “Barrette and Vandal’s dominance” definition explored above. “Formal dominance” also explains why replacement of overt aggression by conventional behaviors occurs in a gradual process (because a stepwise assessment of display behavior is required in order for each member to learn the costs and benefits involved in escalating). “Formal dominance” also explains how and why some individuals in social relationships will preemptively defer to others in situations of contested resources. When we observe the various relationships between dyadic relationships within a society, “formal dominance” explains the different classes of structure we measure (i.e., linear, nonlinear, and pyramidal).

In the field of psychology, social dominance can help us explain the interactions of humans in families, in the workplace, and in other groups of at least two people in which repeated encounters take place. In situations in which resources are limited and competition within these stable groups occurs, social dominance is predicted to take place. The “formal dominance” notion explains why it develops and how it operates.

“Formal dominance” predicts how behavior changes through time, and that communication signals will develop called submissive signals and/or dominance signals. The submissive signals are predicted to be extremely stable and unidirectional. They indicate that the sender advertises their lack of intention to actively compete for the resource in question. Dominance behaviors are also said to be stable and unidirectional, indicating a reinforcement of the sender’s intention to actively compete for the resource. Examples of submissive behaviors that might be seen in humans in family or work groups might include failure to make eye contact, disengaging from a confrontation, and other signals that the sender uses to endear themselves to the other and otherwise indicate that they do not intend to escalate. By doing so, they advertise that there is no need for the dominant individual to make use of overt aggression or other leverage acts to reinforce their preferential access to the resource.

In biology, “formal dominance” helps explain why we see similar communication signals in stable social relationships. In groups that form social relationships, such as wolves, we observe directional communication signals, reduction of overt aggression over time in relationships, replacement of overt aggression with conventional behavior and other social interactions described by the “formal dominance” explanation.

An extremely wide variety of important social interactions occurs between both humans and nonhumans, and “formal dominance” accounts for many of the observations common to these interactions. I would rate this explanation at the high end of moderate value.

### 16. Hawk–dove game

The “hawk–dove game” was determined to be an explanation. This explanation requires at least two interacting individuals in at least two encounters, and requires that previous encounters affect the outcome of future encounters. Therefore, this explanation met the social relationship criterion. This explanation is not operationally identical to any other explanations retained to this stage of analysis.

**Explanation analysis**

I retained the hawk–dove game explanation because it met each of the explanation criteria.

**Explanation value**

The hawk–dove game offers a unique approach to understanding why social animals would avoid conflict or escalate aggression and
how such strategies could remain stable within societies. It brings a more rigorous approach to understanding these strategies.

Social dominance is what happens to social structure when asymmetries in fighting ability and other qualities exist. In that regard, the main theory of the hawk–dove game is severely limited because it models symmetric contests. The variant that introduces asymmetries is of much more value since it allows us to explore the relationship between costs and values for escalation versus disengagement in situations in which asymmetries exist. By focusing on the payoffs (both costs and benefits) of the strategies in question, the hawk–dove game makes use of a simple, important guiding principle in behavior.

The choice of strategies is also useful. The hawk strategy and the dove strategy can be thought of as the escalate/dominant strategy and the defer/submit strategy, respectively, and the payoff matrix allows for modeling of various dominance scenarios.

The theoretical framework of game theory allows us to explore various phenomena such as social dominance—indeed, anything involving decision making. By systematically matching a payoff structure to each strategy for each “player,” this model helps us see why these strategies could have evolved. It also helps us predict the decision-making process for individuals. It offers a probability for the choice of available strategies for each player, which we can test empirically.

Barash (2003, p. 227) points out that game theory and the hawk–dove game are particularly useful when behavior is not so obviously related to asymmetries between players. When behavior is related to asymmetries, game theory is less useful. The hawk–dove game itself is of low value because it models symmetric relationships.

17. War-of-attrition model

The “war-of-attrition model” was determined to be an explanation. This explanation neither requires that previous encounters affect future encounters nor requires that two individuals meet at least two times. I discarded this explanation because it failed the social relationship criterion.

18. Parker’s model of escalated fighting and resource holding power (RHP)

“Escalated fighting and resource holding power” was determined to be an explanation. This explanation neither requires that previous encounters affect future encounters nor that two individuals meet at least two times. I discarded this explanation because it failed the social relationship criterion.
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<tr>
<th>Name of Notion</th>
<th>Denotative Definition</th>
<th>Connotative Definition</th>
<th>Explanation</th>
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<td>1. Privileged role dominance</td>
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<td>2. Reproductive dominance</td>
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<td>3. Dominance is aggressiveness</td>
<td>DIS</td>
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<td>4. Dominance is a trait that conveys rank</td>
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<td>5. Winner is dominant, loser is subordinate</td>
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<td>6. Successful combat</td>
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<td>7. Dominance is lack of aggressiveness</td>
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<td>8. Consistent winner of agonistic contests</td>
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<td>9. Spheres of dominance</td>
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<td>10. Priority of access to resources</td>
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<td>11. Peck order</td>
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<td>12. Barrette and Vandal’s dominance</td>
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<td>13. Intervening variable</td>
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<td>14. Essence of dominance</td>
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<td>15. Formal dominance</td>
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<td>16. Hawk–dove game</td>
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<td>17. War-of-attrition model</td>
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<td>18. Parker’s model of escalated fighting and resource holding power</td>
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Table 3. Results of analysis showing the classification of each notion and whether it survived to the value assessment stage. DIS = Discarded; LOW = Retained to value assessment and determined to be of low value; MOD = Retained to value assessment and determined to be of moderate value; HIGH = Retained to value assessment and determined to be of high value.

Discussion

I started with 18 notions of dominance, which I extracted from a review of the literature. After differentiating definitions and explanations, I established 21 distinct notions of social dominance. Two definitions and five explanations survived to the value assessment phase. I found neither definition to be particularly useful as they both were at variance with conventional notions of social dominance in some important way. I found the “spheres of dominance” definition to be more useful than the “peck order” definition.

The most valuable explanation was most likely “spheres of dominance,” although “formal dominance” was also moderately useful. The game theory model brings needed rigor to the problem, but it does not bring it to exactly the problem we want to understand. The game theoretic approach does show promise as a framework for modeling social dominance.

In the present study, my goal was to address the question of what social dominance is and of what value it is, by means of a conceptually systematic approach. Because social dominance is often treated in a haphazard manner, my goal was to lay a foundation for theoretical advancement. By providing a rationale for inclusion and exclusion of notions, and by differentiating between explanations, connotative and denotative definitions, I have created a filter through which we can identify putative notions of social dominance, and a way to evaluate these notions in an appropriate manner. Definitions and explanations are best evaluated with different criteria.

In the final value assessment phase, the evaluation was qualitative. The accuracy of the
evaluation will rest on one’s agreement that the notion should conform with the general understanding of what a notion of social dominance should refer to and that I have made a fair determination of this. Furthermore, a determination of value is based on a scale that I also determined. It is my belief that social dominance could be a theory that would explain the social organization resulting from the exertion of influence and control within social relationships. This is an extremely broad and widely applicable field of interest. If a theory were to have such wide-reaching explanatory power, making significant predictions that would apply to all society-forming species, it would provide a large explanatory power. In order to achieve this, the notion should not merely be a good story but should also provide a theoretically strong model, conforming to established requirements for that. It is with this potential that the scale of value assessment was made. None of the notions evaluated provides this optimum potential as a theory (or even definition). A value assessment resulting in a rating of high would rightly be reserved for a theory with wide applicability, and higher explanatory and predictive power. It should also clearly state the assumptions, variables, factors and predictions in a coherent manner.

In the case of moderately rated explanations and definitions, in some cases minor adjustment could result in a higher rating. In this study, I did not attempt to modify the notions or systematically tease out valuable aspects of them. This will likely be a very important step in gaining greater clarity of the topic and eventually coming to agreement on more valuable, formal notions of social dominance.

Certain common features of notions of social dominance presented themselves throughout this study. Some features were exposed as problematic or flawed, while others are likely to be important in a proper model of social dominance. Here I would like to discuss some of these important features as a way to stimulate further theory development.

Social dominance seems to function as a conflict resolution mechanism that regulates overt aggression. Most fundamentally, social dominance is a construct we use to describe the observed pattern in social relationships, which seems to allow members of societies to exert influence and control over others in competitive encounters for limited resources, while minimizing the risks associated with overt aggression. It is observed that animals in societies are less aggressive with one another than they are toward intruders invading their territories. It is also observed that the more potentially damaging the weaponry of the individuals, the more obvious is social dominance. It is also observed that, when groups of individuals are forced into crowded conditions, social dominance systems arise where they were not so pronounced before. These observations can be explained by naming the organizational patterns or mechanisms observed “social dominance” and hypothesizing that their function is to reduce the risks associated with overt aggression.

Depending on how broadly we wish to define resources, we might consider all objectives contested for as resources. Some objectives that individuals compete for may not be thought by some to be resources. For example, access to a mate or the opportunity to literally lead a troop may be considered resources. With a broad definition of resources, competition among social animals might be considered always related to resources.

Hand (1986) argues that leverage can be used to maintain resource allocation and competitive advantage as well as overt aggression. By considering leverage, we significantly improve the power of the model.

A key component of a model of social dominance should probably involve the idea that individuals will make use of a cost–benefit evaluation in determining their strategies and tactics for competitive encounters. There may be many risks associated with competition for resources within a society. The risks of being harmed or expending energy in a contest are important in a society, and so too might be damage to social relationships and loss of social group cohesion, an important asset in society-
forming species. The benefits include access to the resource itself and may include a reputation factor, whereby opponents learn to defer in future encounters. This would significantly improve the economics of social living in future encounters. Of course, benefits and risks will be related to motivating operations such as satiation or deprivation. We would expect that a deprived individual would be more likely to perceive the resource as worth a higher risk than a satiated individual. This might explain why dominant individuals frequently yield access to a resource to a subordinate.

Information based on previous experience (learning) is important in determining a course of action. This information could come from at least two different sources. One source of information is from the outcomes of previous encounters with the same opponent. Another is information from experience with individuals who share some characteristics of relevance with the opponent. Consistently losing to a particular opponent in the past would tend to indicate a greater risk and a lesser opportunity for benefit. This individual is more likely (all else equal) to defer rather than escalate. Conversely, consistent winning in such a situation would lead to a lesser likelihood of deferring.

Another element that might be factored into a model of social dominance is temperamental disposition to assertiveness. Assertiveness is a variable general behavior trait within a population, and it seems reasonable to assume that the more assertive will be more likely to exert power and influence over others.

How might we put such factors to work in a model of social dominance? Each encounter could result in decisions based on the factors discussed above or others in various ways. When we talk about decisions, we are in a position to make use of game theory. This cost–benefit evaluation can be represented in a game theory payoff matrix to utilize the benefits of that approach. An iterated game theoretic model would help us explore in simulation studies the various parameters through many interactions or even generations.

Further research needs to be carried out in which formal, complete and coherent models of social dominance are proposed. Mathematical approaches or logical argumentation would be valuable approaches to formalizing some of the weak notions that lack clarity. Once formal models have been articulated, my next suggestion is computer simulation. This would allow for extensive exploration of the models. By doing computer simulation studies with formal models, each parameter can be explored in detail across thousands of encounters and even thousands of generations. Finally, of course, predictions that the models generate should be compared with empirical data to determine the usefulness of the model. Studies founded on vague or weak theoretical bases provide us with vague and weak evidence. Only with a strong, clear theoretical basis can empirical studies provide evidence that will help us gain useful insights into the structure of social relationships and group dynamics.

The notion of social dominance will probably be more useful in some contexts than others. It promises to be useful in an ethological/sociological context as an explanation for various observations, although there are other, more behavioral, models that may be at least as useful, if not more so. In the context of explaining, predicting and, most importantly, changing companion animal behavior, social dominance offers little help. In the history of its use and misuse in the context of explaining and changing companion animal behavior, it has been used to promote, explicitly or implicitly, an adversarial relationship between human and companion animal, which has resulted in degradation of the social bond and precipitous decline in the animal’s welfare. It has also been used to promote abusive treatment of companion animals. In the context of companion animal behavior, social dominance seems to have done far more harm than good.

Conclusion

What is social dominance? Based on the value assessment of the surviving notions, social dominance is a construct describing features of a social relationship that addresses the resolution
of social conflict, including but not limited to the allocation of limited resources, through the exertion of control and influence. This takes place in a way that minimizes the risk of overt aggression by way of the use of conventionalized display behaviors. This minimization of risk involves a cost–benefit evaluation of the benefits of seeking to win a particular social conflict versus the likely associated cost. The term “exertion of control and influence” means the involvement of aggressive behavior and/or other forms of leverage. I differentiate social dominance from other forms of dominance by its occurrence in social relationships. “Social” in the context of the term social dominance refers to the quality of a series of at least two encounters between at least two individuals such that the information remembered from previous social encounters with that particular individual affects future encounters.

Of what value are the available notions of social dominance? Potentially, social dominance could be very valuable because it helps us understand the dynamics of competitive encounters and exertion of power in social relationships. This is useful in a wide variety of fields within psychology and biology. The notion of social dominance could help us understand why animals in social relationships avoid overt aggression and how this mechanism operates. It would allow us to predict the course of social relationships in society-forming species as a sociological and ethological construct. It might even help us understand better why we and some other species are social. Each of these is an incredibly important field of inquiry. As it stands, the value of present notions of social dominance is at best disappointingly moderate in comparison with this ideal. The reason I reach this conclusion is a general lack of rigorous theory building and modeling in this area, as well as simple lack of clarity and articulation in the literature.

References


INTERVIEW

An Interview with Bob Bailey by Angelica Steinker

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Angelica: What is the most challenging behavior you ever trained? Why was it so challenging? How did you overcome the challenge?

Bob Bailey: It is difficult to say what was the most challenging, and for several reasons. I consider training (animals) and teaching (people) to be the synonymies, though others may not. Teaching people was usually tougher (challenging) than training animals, even though the processes are much the same. Many (most?) people tend to be very resistant to new ideas. The challenge was to change trainer (people) behavior; as is so often the case, the challenge usually was to find a high enough value reinforcer to make it worthwhile for the trainer to want to change. I used everything from pizza through tokens to access to games and playing up to the trainer’s competitive instincts (some might call it work ethic) — Bailey’s Dictum: get the behavior!

If the subject is restricted to animals, it is difficult to beat the challenge of open environment training: dolphins and sea lions at sea; ravens, vultures, and gulls in free flight; dogs and cats in large airports or shopping malls. The rigors of open environment training are compounded by distance, time, and situational novelty and complexity.

My company, Animal Behavior Enterprises, trained many kinds of animals for open environment operations. We usually trained to client specifications, that is, the client usually determined what the animal was to accomplish and where it was to accomplish it. How the animal did it, and how we got the animal to do it, was up to us. Often times the species to be used was also specified by the client. Another way to describe it was the mission problem was given us and we designed a system to solve the mission.

Much of what we trained animals to do was counter to what the animal would have done in the wild. We usually guided animals into unfamiliar surroundings, where they were to ignore novel and sometimes hostile stimuli. A dog or cat might be remotely guided into a busy airport or shopping mall, where they would be cued to sit or lie down for long periods of time. A dolphin might be guided several miles and asked to perform one or more complex tasks over a long time while in that strange environment. Guidance and other stimulus control signals were usually surreptitious. The development and deployment of such signals was sometimes more difficult than getting the behavior. Perhaps it is the complexity of the animal–machine interface and the “systems” approach needed for these somewhat elaborate schemes that made these training tasks so challenging, and, in my view, interesting.

But, training cats, dogs, birds, and whatever for single-take TV commercials can be challenging. There was precious little on-site rehearsal time. TV producers and directors were constantly changing their minds. The stage was never as advertised. The shooting script was never what you contracted or trained for. And, what about the deceptively simple appearing automated shows my company is perhaps famous for? Designing, producing, and training entertaining and reliable automated animal shows that can be shipped around the world was a challenge. Our shows could be used by virtually anyone willing and able to read and
follow written instructions. However, we had hundreds of these shows “on the road” at any one time. The creative misinterpretation of simple written instructions by the average person on any continent was staggering, and begs description. How does one answer the question, “Do we really have to keep putting feed into the electric feeders?” Needless to say, we spent more time “people proofing” the equipment, and the animals, then we did any other aspect of production.

What was the most challenging animal or project? After many thousands of clients, animals, behaviors, and employees, over almost half a century, I cannot say for sure. I can say that they were all a challenge, and life was very interesting.

Angelica: What is the most challenging dog you ever worked with? Why was he/she challenging? How did you overcome the challenge?

Bob Bailey: We had a couple of American (not the British version) Basset hounds that the Army sent us to test for mine detection work. The distribution of various natural physical and mental characteristics of higher organisms may be described by what is called a bell-curve. In the normal bell-curve, there are relatively few animals with what might be called exceptionally good characteristics at one end of the curve, and a few animals with exceptionally poor characteristics at the other end. In the middle are the vast majority of organisms with more or less normal levels of whatever the characteristic might be. The physical appearance of the line describing such a curve resembles a bell. Well, none of the American Bassets I have worked with could have been described as mental giants. But, these two government Bassets may have been at the very end of the low end of the bell curve. Additionally, the speed of motion of these dogs resembled that of exhausted garden slugs.

Was training these dogs impossible? Of course not. Was it slow and tedious? An understatement. Was it impractical to get these dogs to make rapid, repetitive detections? Well, yes. Again, an understatement. Each detection was painfully slow, and was followed by the rather leisurely chewing of whatever food reward offered. What about non-nutritive reinforcers? Sure, if we were willing to accept the several seconds of introspection, or perhaps meditation, that preceded the dog’s approach to the proffered toy. What we ended with was the incredible spectacle of two almost perfect molasses-slow detection dogs. It was painfully funny to watch. I’ve trained opossums and sloths, and there were some remarkable similarities with these particular dogs.

Angelica: What is the most challenging animal you ever worked with? Why? And how did you overcome the challenge?

Bob Bailey: Again, it was not so much the challenging animal, it was the challenging behavior and the environment in which the behavior happened. Ravens and crows are very smart birds. But, it was a challenge to teach the birds to fly out 400 meters, enter a totally strange room and recognize classes of room furniture, and then, depending on the furniture, select one unfamiliar object of a certain class from many other objects, pick up that object, and return.

Why was this a challenge, and how did we overcome the many hurdles that faced us? The number of potential targets was astronomical. It was not practical to train under every conceivable circumstance. We had to rely on the birds’ powers of generalization. We trained using such things as simple blocks and dowels of wood shaped similarly to the final objects. We trained discriminations, and then generalizations, all the while at close range and for thousands of trials. We maintained a high level of reinforcement, but we pushed for accuracy and speed of performance; what has come to be called “fluency.” We automated when practical. Machines were tireless and more accurate than people. Record keeping was important, and the machines tracked numbers of trials and successes. Because we trained over 100 ravens, and each raven performed many thousands of trials, we found it worthwhile to automate. We had learned that machines could perform repetitive training tasks very well, and
we were very good at building labor and time saving machines. These machines improved our product and reduced costs. Of course, the machines could not have done this without expert supervision by skilled trainers. The trainers knew when to change the settings on the machines, or when to step in and take over when the machine could no longer do the work accurately. If we had a “secret” to our training, it was the adherence to training fundamentals; the use of machines when practical; and the trainer’s skill to know when and how to take over from the machines.

I won’t say that this was the most challenging, but just an example of the challenges that faced us.

Angelica: As professional trainers, we spend more time working with humans than we do with companion animals. What advice do you have for us in modifying the behavior of humans?

Bob Bailey: First, try to forget briefly that you are a professional trainer. Try to put yourself in the shoes of your client. Remember when you did not know so much about training. Don’t be dismissive about the client’s problems. Listen much. Talk little. Observe. Ask gentle but probing questions. What are the client’s problems? Not what you immediately interpret the problem to be, but the problem as described. Have empathy, and maybe even sympathy for the human condition, as well as for their animal charges.

OK, you’ve watched and you’ve listened. You arrive at some conclusions, and a course of action. But, remember, it is your course of action, not your client’s. Until your client buys into your recommendations, you don’t have a prayer for implementation. Your client will do most, maybe all, of the training. So, what does your client want? What would make it worthwhile for the client to follow your plan? How can you make your plan your client’s plan? This is not the time to build your ego. You are a hired gun. You provide a service. The measure of your service is the success of your client and the service animal, not how well you quote some rules of training. The measure of your skill is how well the student translates your words into successful action.

How do I know this to be true? The desire for success is universal. I learned to determine what the client needed to be successful from the client’s point of view. It doesn’t matter if the client needs a new animal stage show, or if the client needs a dog that will retrieve a dropped telephone—success is defined by the client’s needs. Clients may be impressed initially by technical words, but it is the understanding and following of simple instructions that leads to success. I stayed in business not because I impressed clients, but because I helped them to be successful.

As some of you know, I don’t much like to write about personal issues and practices, but rather about the technology I believe best for changing behavior. However, in this case, I believe I have a worthwhile sample of teaching the technology. In my first level operant conditioning (chicken training) workshop, students get (by shaping and by luring) very simple behavior. The emphasis is on getting behavior, and a high rate of success. The tasks are simple, but not always easy. As the class progresses, and especially at the very end, the tasks are still simple, but more and more difficult. Always, there are clear and obtainable objectives, with lots of very fast feedback. Students seldom have a chance to rehearse poor behavior (a major point often overlooked when teaching novice trainers). They see their mistakes quickly, thanks to the chickens quickly either learning, or failing to learn, the target behaviors. By the end of the class, most students see how they have changed their behavior in many ways. They begin to understand my remarks at the beginning of the class, where I say that I am not interested so much in changing the behavior of chickens as I am interested in changing the behavior of students. I have done much the same teaching with dogs. However, people training dogs tend to get hung up with social issues. But, that is another topic for another day.
So, what do I suggest? Start simple. Give the client a small success teaching their dog to do a simple task. Don’t ask for the moon. Don’t be afraid to praise small successes. Some people appreciate seeing their successes in writing, so consider the value of written records. If you don’t succeed in lighting up the client’s eyes the first time, try something else. You may appreciate complexity; your client doesn’t. Your client wants it, whatever it is, to work. If the client is disabled and cannot handle a clicker, don’t require it; don’t even mention it. Don’t inadvertently discourage your client. Give the client only useful tools. Don’t set up the client for failure. Take small steps. When the client is ready to move on to more challenging tasks and methods, be prepared to introduce them.

Angelica: Concept training is becoming something of increasing interest in companion animal training. Can you tell us some concepts that you have trained and how long it took to reliably get the behavior on cue?

Bob Bailey: Not exactly sure what you mean here, but I will give it a shot. I have already mentioned that our ravens were taught concepts involving objects and actions. We also did this with dolphins and some other animals. Many animals are poor generalizers. I suggest that most trainers push too fast when teaching generalizations. Here are a few suggestions: Don’t mix up lots of objects and actions in a training session. For that matter, early on, teach only a few objects and actions. For instance, teach a retrieve (which is really a pick up and bring it to me) and a push separately at first. Teach retrieving until any object touched, or approached, when given the FETCH command, is picked up and brought to the handler. Separately, teach the PUSH command until any object approached or touched, when given the PUSH command, is pushed with the nose. Before moving on to other commands, be sure that the dog will fetch and push flawlessly, even with objects never before used. Then move on to TUG, and other such commands.

Some trainers barely get discrimination before beginning what is called “proofing” or making difficult demands, with a high potential for failure. I believe this slows training. I have almost always trained to a high level of proficiency before making serious demands. By the time most dogs learn half a dozen locomotion and manipulation commands (go places and handle objects), I have found that what some call “concept formation” begins. But, these behaviors must be solid, and the animal willing to perform them under almost any condition.