

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

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O'Heare, J., & Santos, A. (2007). Explaining and Changing People's Use of Aversive Stimulation in Companion Animal Training. *Journal of Applied Companion Animal Behavior*, 1(1), 15-21.

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:

$$V = M/(1 + KD) \quad (1)$$

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.

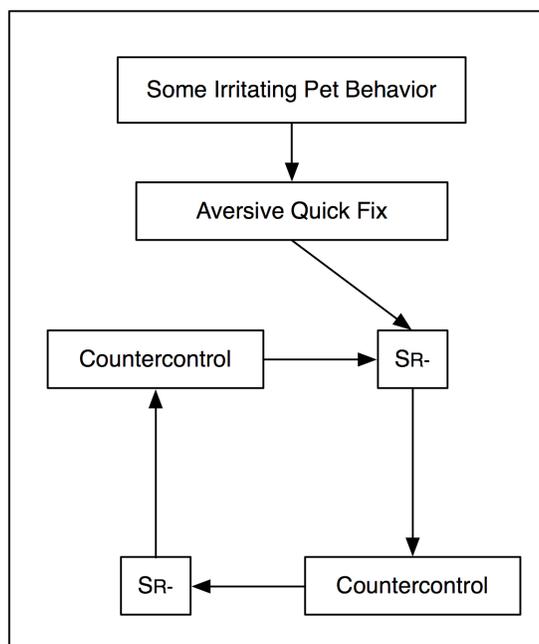


Figure 1. The cycle of reciprocal countercontrol. Some irritating behavior results in an aversive intervention, which is negatively reinforced. This stimulates countercontrol measures in the companion animal, which are also negatively reinforced, beginning a cycle of reciprocal countercontrol measures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

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. Assure 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.

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