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Practices and perceptions of clicker use in dog training: A survey-based investigation of dog owners and industry professionals

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ABSTRACT

Clicker training is an animal training technique derived from mechanized laboratory-based studies of animal learning. However, clicker training in the real world often takes place with a human trainer in an environment that is not as well controlled as a laboratory. Attempts to empirically evaluate applied clicker training techniques using testing protocols adapted from laboratory-based studies have been largely unsuccessful in replicating the learning benefits seen in laboratory animals. One proposed explanation for these inconsistencies is that methods used in the scientific evaluation of clicker training, and methods used by trainers in the industry, are not the same. The purpose of the present study was to determine what clicker training is, why people use it, and what methods are considered best practice in the context of applied dog training. A total of 586 dog owners and dog training professionals completed an online questionnaire. The results suggest that individuals do neither restrict the definition of clicker training with training using a clicker device but also include alternative signals such as verbal markers. Overall, individuals reported that clicker training was successful but acknowledged that certain handler skills need to be mastered before a person should begin clicker training with a dog. Survey respondents also showed substantial methodological variety in how they believed clickers should ideally be used. Systematic investigation into these methodological differences, along with empirical assessment of purported benefits, is now required so that evidence-based best practice recommendations in clicker training can be developed. Closer alignment between scientists and practitioners is likely to benefit both groups and the many animals that are currently trained for companion and working roles.

Introduction

Clicker training is a popular technique in dog training, whereby a signal (often a sound from a small plastic clicker device) is implemented as part of a positive reinforcement sequence (Pryor, 2005). For example, to reward a dog for sitting, the trainer emits a signal immediately when the dog sits, then delivers something the dog likes, such as a morsel of food, praise, or a game of tug (Skinner, 1951; Feng et al., 2017). When the presentation of a reward is probabilistically contingent on such a signal, the signal is most commonly thought to become a classically conditioned secondary reinforcer (Anderson, 2000). Including a signal between observing a desired behavior and delivering a reward is thought to facilitate the learning process, based on principles derived from B.F. Skinner's theory of operant conditioning (Skinner, 1938). Under laboratory conditions, the efficacy of a clicker-type reward-predicting signal is supported by research showing that such signals can improve rates of learning when primary reinforcement is delayed (e.g., Grice, 1948; Lieberman et al., 1979; Kaplan & Hearst, 1982). Their use in companion animal training was popularized by Karen Pryor in her book *Don't Shoot the Dog!* (Pryor, 1999; historical account by Gillaspy et al., 2014). Clicker training continues to grow in popularity; dedicated ClickerExpo seminars hosted by Karen Pryor Clicker Training attracted more than 1400 participants from around the world in 2016 (Clayton, 2016).

Proponents of clicker training have reported that using this technique in applied settings helps dogs learn faster, makes them more eager to learn, and encourages problem solving (Feng et al., 2017).

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However, empirical evaluation of clicker-type training yields mixed results. Evidence suggests that dogs, cats, and horses learn no more quickly when trained with a click-food sequence than when trained using food alone (McCall & Burgin, 2002; Williams et al., 2004; Smith & Davis, 2008; Chiandetti et al., 2016; Willson et al., 2017; Blandina, n.d.), and the continued use of the clicker when primary reinforcement is withheld has been shown to increase resistance to extinction as compared with withholding all feedback in dogs (Smith & Davis, 2008) but not horses (Williams et al., 2004). Another study found that miniature goats demonstrate accelerated rates of learning when correct responses are immediately followed by a tone before a reward (access to drinking water) and incorrect responses are immediately followed by a different no reward tone (Langbein et al., 2007). Considering the well-established improvements in rate of performance when predictor signals are used where the primary reinforcement is delayed in a Skinner box–type environment (for a review, see Lattal, 2010; Feng et al., 2016), and the industry-reported benefits (e.g., Pryor, 2005; Feng et al., 2017), it seems premature to conclude that clicker training is no faster than training dogs with food alone. Rather, there are perhaps specific factors relating to how it is implemented that impact whether benefits are observed.

A recent theoretical review of clicker-type reward-predicting signals reported that these types of signals are thought to facilitate the learning process via one or more of the following mechanisms: providing an immediate source of reinforcement before reward delivery, bridging the time between the dog performing the desired behavior and the subsequent reward, or marking the precise instant the dog performs the desired behavior (Feng et al., 2016). In a follow-up study, analysis of clicker training books, Web sites, and advice from dog trainers found that all 3 predictor signal mechanisms were mentioned as explanations for how dogs perceived the clicker (Feng et al., 2017). In addition, most sources stated that the clicker was used as a form of communication in training; something that was not mentioned in the reviewed literature. The emphasis on communication by dog trainers, but not in scientific studies, is most readily explained by the fact that most dog training does not occur in an automated distraction-free environment—as is common in laboratory studies—but rather as an interaction between a dog and a human trainer. This fundamental difference between clicker-type predictor signals used in a laboratory setting and clickers used in an applied setting requires further investigation. It is important to understand and study clicker training in an applied setting as its own phenomenon, rather than assuming that the conditions found to optimize learning in highly distilled laboratory studies are necessarily optimal when learning occurs as part of a larger human-dog interaction.

Previous qualitative assessment of the phenomenon of clicker training (Feng et al., 2017) provides a preliminary framework for understanding clicker training as it occurs in applied settings. The purpose of the present study was to expand on those findings by investigating the perceptions and practices of clicker training in a wider population of individuals. To do this, an online questionnaire on clicker training was developed and distributed to individuals who lived with and/or worked with dogs.

Materials and methods

Participants

Individuals who were at least of 18 years, fluent in English, and who lived and/or worked with dogs were invited to participate. No other constraints were implemented, resulting in participants from around the world. Survey responses were collected between September 1, 2016 and November 3, 2016.

Materials

The questionnaire was developed based on a wide range of sources: scientific literature pertaining to the use of conditioned reinforcers, books, and Web sites on clicker training with dogs, and interviews with self-identified dog trainers (Feng et al., 2017). It contained 5 separate sections. Section 1 consisted of 11 demographic questions determining age, gender, level of education, type and location of dwelling, and employment status. Section 2 contained 1 question on the participant's dog training expertise and groups of questions regarding experience and perceptions for each of 19 common dog training practices, derived from a previously published training methods survey (Blackwell et al., 2008). Section 3 had 3 questions from The Perceptions of Dog Intelligence and Cognitive Skills Survey (Howell et al., 2013) on general beliefs about dog intelligence. Section 4 was a modified version of the Monash Dog Owner Relationship Scale (MDORS; Dwyer et al., 2006). This scale provides scores for the following relationship dimensions: perceived emotional closeness, shared activities, and perceived costs, where higher scores represent higher perceived closeness, more shared activities, and lower perceived costs (Howell et al., 2017). Finally, Section 5 consisted of 64 questions regarding beliefs about clicker training. The questions were developed based on a content analysis of several best-selling clicker training books, interviews with dog trainers, and prominent clicker training Web sites (Feng et al., 2017). These comprised 13 questions on what clicker training is, 22 questions on why people use clicker training, and 29 questions on how people thought clicker training should be done. Wherever possible, continuous visual analog scales (VASs) were used owing to their suggested superiority to Likert-type scales (Funke & Reips, 2012). The complete questionnaire is included in Appendix A.

As an incentive for participation, respondents could elect to enter a prize drawing for 1 of 3 copies of Seth Casteel's *Underwater Dogs* (Little, Brown and Company, 2012).

Procedure

This project was approved by the La Trobe University Human Research Ethics Committee (approval number S16-169). Participants were recruited via the Internet through social media, dog-related special interest Web sites and online forums, and personal correspondence via a recruitment advertisement. Participants were also encouraged to share the questionnaire Web site with family, friends, or clients who might be interested in participating. All individuals who clicked on the link to complete the questionnaire were provided with a participant information statement detailing the purpose of the survey and an explanation that all participation was anonymous. All individuals were required to provide consent to participate before accessing the questionnaire.

Sections 1-3 were presented to all survey participants. Section 4 was presented only to individuals who owned 1 or more dogs at the time of participation ($n = 570$), and Section 5 was administered only to individuals who indicated familiarity with clicker training ($n = 574$). At the end of the survey, participants were given the opportunity to enter the prize draw; contact details for those participants who elected to do this were collected and stored separately from the survey responses.

Data analysis

Statistical analyses were conducted using IBM SPSS Statistics, version 24 (IBM Corp., Armonk, NY). Section 1 was summarized using descriptive statistics to define the survey sample. Consistent with the analysis procedures in the study by Blackwell et al. (2008),