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Decreasing dog problem behavior with functional analysis: Linking diagnoses to treatment

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Abstract Behavioral problems in dogs account for nearly half of the reasons given for relinquishing them to shelters, and thus constitute a significant animal welfare issue. Any successful attempt to manage these problems will require an understanding of the mechanisms that control these behaviors. However, for some of the behavioral problems cited, such as jumping up on people, available treatments are not prescribed after a systematic assessment of the environmental contingencies contributing to the behavior. The current study assesses the use of functional analysis, an established technique for identifying the variables controlling problem behavior in humans, to determine the environmental factors supporting the behavior of jumping up on people in dogs. Statistically significant differences were found in the rate of jumping up behavior across conditions for each dog in the assessment phase. Treatment conditions used the maintaining variable found in the assessment phase. By comparing the rates of jumping up behavior in these conditions, we found the rates to be of lower statistical significance in the treatment condition. Therefore, results show that this methodology is effective in determining the maintaining variables for these individuals, leading to a more precise treatment.

Introduction

About 26% of the dogs living in shelters are relinquished because of behavioral problems (Salman et al., 1998), thereby leading researchers to label these problems a "significant animal welfare issue" (Bennett and Rohlf, 2007, p. 65).

Currently, dog behavioral problem assessment is limited to standardized behavioral testing and questionnaires. Standardized behavioral tests are defined as stimuli serving to elicit behavior during controlled standardized experimental situations where the outcome is compared with that of other individuals placed in the same situations, so as to classify the subject tested (Serpell and Hsu, 2001) (for reviews see Diederich and Giffroy, 2006; Jones and Gosling, 2005). For example, a dog might be considered dog aggressive if it lunges at the dog an experimenter walks by its kennel. Questionnaires are used to attempt to identify the particular problems a dog might possess, (Cottam et al., 2008; Hsu and Serpell, 2003; Segurson et al., 2005), but do not systematically analyze variables that may be maintaining these behaviors.

Many alternative treatments have been proposed for a range of dog problem behaviors. For example, to decrease the dog problem behavior of jumping up on people, within the popular literature, there exist several common techniques, including kneeing the dog in the chest (Koehler,

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1996; Pitcairn and Pitcairn, 2005), stepping on a leash to prevent the dog from jumping up (Bridwell, 2007; Lindsay, 2003), and teaching an alternative behavior (such as sitting or laying down) when coming through the door (Coren, 2004; Pitcairn and Pitcairn, 2005; Yin et al., 2008). However, all of these treatments have been proposed in the absence of a standard method with which to empirically diagnose the underlying maintaining variables for the jumping up behavior.

In the field of behavior analysis, Iwata et al. (1994a,b) developed a robust procedure that has proven useful in investigating potential maintaining consequences for problem behavior in a variety of human populations (autistic children, normally functioning children, and low-functioning adults; for a review, see Hanley et al., 2003). This procedure involves the direct observation and repeated measurement of behavior across several conditions that attempt to mimic the possible situations in which the problem behavior is observed by the caregiver. Observation of the environment before the experiment begins helps in evaluating the possible situations within which the problem behavior may occur and how the caregiver reacts in those situations. Validity is assessed by calculating the different rates of responses of the target behavior in each of the conditions. The conditions are repeated until 1 or more are shown to produce the behavior of interest at a high steady rate. Some of the most common conditions are *alone, attention, demand, and play*. In the *alone* condition, the individual is left in a barren environment where there are no social or contrived consequences available. The purpose of this condition is to determine whether the individual's problem behavior is maintained by automatic reinforcement (Vaughan and Michael, 1982). This condition is sometimes replaced with an *ignore* condition if the individual cannot be left alone or if the behavior requires the presence of another person to be carried out (e.g., hitting a caregiver). In the *ignore* condition, a caretaker is present but entirely ignores the behavior of the target individual.

The *attention* condition is conducted to determine whether attention functions as a reinforcing consequence for the individual's problem behavior. In this condition, the experimenter gives attention when the individual engages in the target behavior. The attention given in this condition should match what the caregiver was doing before the functional analysis was implemented.

The *play* condition functions as a control procedure in which the problem behavior is not expected to occur. This condition serves as a control because it provides the individual with an environment in which all maintaining variables are freely available (frequent attention, no demands, and tangible items).

The *demand* condition is conducted to determine whether escape from demands functions as negative reinforcement for the individual's problem behavior. The demand in this condition should be similar to those delivered in the natural environment (e.g., with a child, the demand might be to ask them to sort or stack items; Fisher et al., 1998).

Although the conditions described previously are the most common because they cover the majority of the environmental variables that have been shown to maintain problem behavior in humans (Carr and LeBlanc, 2003), some researchers have found other variables that may be maintaining the target behavior and have added additional conditions to the assessment. An example is the *tangible* condition, conducted to determine whether the contingent delivery of a preferred item functions as a reinforcer for the individual's problem behavior (Hanley et al., 2003). The item is given to the individual only if he or she exhibits the target behavior.

The present study incorporates procedures derived from those described by Iwata et al. (1994a,b) to study variables that maintain the dog behavior of jumping up on humans. This behavior was chosen because it is a common behavioral problem among dogs (Lindsay, 2003; Coren, 2004), that humans complain about, and one that can be potentially dangerous to small children or elderly individuals (Lindsay, 2003) while presenting little threat to the adult experimenters in this study.

Materials and methods

Subjects and setting

The subjects recruited for this experiment were 4 dogs aged between 2 and 3 years and belonging to various breeds and both sexes (Table 1). Three dogs completed the experiment. The dogs were volunteered by their primary caregivers. Inclusion criterion: We advertised for dogs who jumped up on people, a main factor was whether or not the dog was engaging in the behavior frequently enough to consider it a problem behavior. Exclusion criterion included dogs that had a history of aggression or were not

Table 1 Breed, sex, age, and behaviors previously known and trained during the demand condition for the subjects used in this study

Name	Breed	Sex	Age	Behaviors known	Behaviors trained
Lola	Mixed breed	Female	3 years	Sit, down, paw	Roll over
Molly	Lab mix	Female	3 years	Sit, paw	Down
Pretzel	Boston terrier	Female	2 years	Sit, down, paw	Play dead
Cole	Labradoodle	Male	2 years	Sit, down, paw	Play dead