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Persistence of food guarding across conditions of free and scheduled feeding in shelter dogs

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ABSTRACT

The hypothesis that free access to food might reduce food-related aggression in shelter dogs was tested. Dogs that exhibited food-related aggression in a standardized assessment (ASPCA SAFER[®]) were provided either unlimited access to food or two scheduled daily feedings for 3 days (Groups A and B) or 9 days (Groups D and E). Both within- and between-group comparisons revealed no systematic reductions in food-related aggression produced by unlimited access to food under these conditions. For subjects in all experimental groups (i.e., those that exhibited food-related aggression on an initial assessment), aggression scores sometimes decreased but were not related consistently to whether food access was unlimited or scheduled. For subjects that did not exhibit food-related aggression on an initial assessment (Group C), aggression scores increased slightly across assessments. Statistical tests to determine if SAFER[®] food scores changed across assessments due to 3-day feeding manipulations yielded *p* values above 0.05 on 5 of 6 tests. SAFER[®] food scores increased after (one of the) 3 days of scheduled feeding for dogs in a control group (*p* = 0.048). Food-related aggression decreased following 9 days of scheduled feeding (*p* = 0.002) and 9 days of free feeding (*p* = 0.026). Overall, then, food access did not systematically affect food-related aggression in shelter dogs as measured by the SAFER[®] assessment using the temporal parameters arranged.

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1. Introduction

In dogs, food can set the occasion for aggressive behavior if a dog is approached or touched while eating (Lindsay, 2005; Overall, 2013). This response has been referred to as “food guarding” and has been reported to be the most common circumstance surrounding dog bites to familiar children (Reisner et al., 2007). Hence, an evaluation of dogs’ behavior in the presence of food and their response to an attempt to remove the food is included in many animal shelters’ behavioral assessment strategies prior to adoption [see Assess-A-Pet[™] (Bollen and Horowitz, 2008); Match-Up Behavior Evaluation (Dowling-Guyer et al., 2011); Match-Up II Shelter Dog Rehoming Program (Marder et al., 2013); ASPCA SAFER[®] Aggression Assessment (Weiss, 2012)]. All of these evaluations include an assessment of a dog’s response to being touched on the head or body or when attempting to remove the food bowl while the dog is eating. Dogs

are scored based on the presence, absence, or severity of aggressive behavior exhibited. In a survey of 77 shelters nationwide, 14% of dogs being evaluated for adoption exhibited aggressive behavior in the presence of food or non-food items and over half these shelters considered the dogs unadoptable (Mohan-Gibbons et al., 2012).

The variables that affect food-related aggression are not well understood. For example, dogs that exhibit food-related aggression in a shelter do not always exhibit that aggression in their adopted homes and dogs that do not show food-related aggression in the shelter may exhibit the behavior after adoption (Marder et al., 2013). Variables that might affect the probability or severity of food-related aggression in shelter dogs include stress caused by the shelter environment (Bennett et al., 2015), the provocative nature of the food-guarding assessment (Marder et al., 2013), variables in individual dogs’ learning histories, ages, or motivational variables such as the type or degree of access to valued food items.

Of these variables, the most feasible for shelters to control is probably the degree of food access, which would presumably change the motivational value of food. Dogs will guard food from

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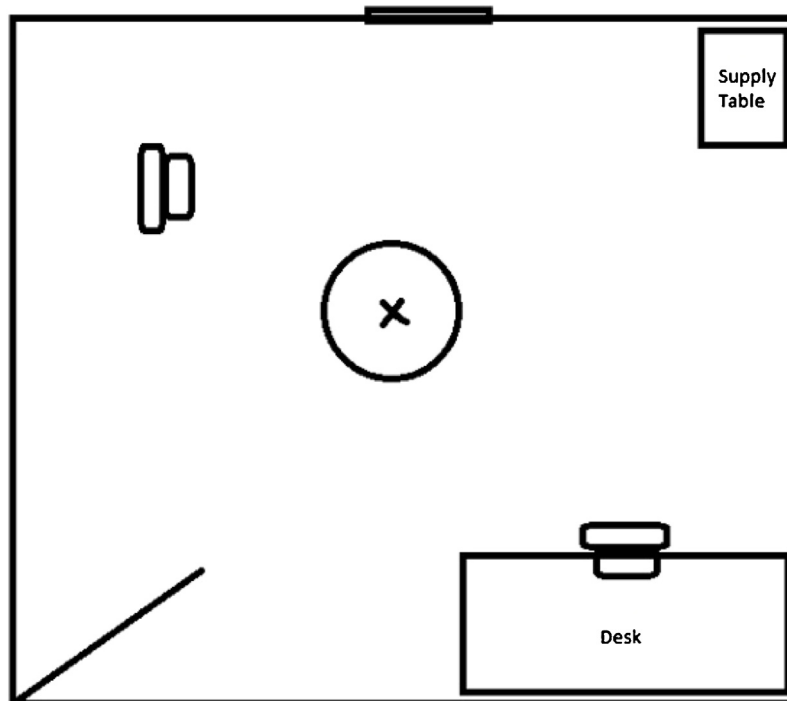


Fig. 1. Floor diagram of room where SAFER[®] Assessments were conducted. The x marks the spot where the food bowl was placed. The circle represents a 12-in (or, approximately 30-cm) radius of space that was marked on the floor to provide a visual demarcation, allowing the assessors to determine whether the dog moved more than 0.30 m from the bowl in those instances when a dog left the bowl while exhibiting aggression. A table, desk, and 2 chairs were in the room (as labeled) but were not used for food-related testing.

one another and food-related growls will deter other dogs from approaching a food item (Cafazzo et al., 2010; Farago et al., 2010). Thus, if access to a food source is restricted or limited making food highly valued, dogs may be more likely to engage in aggressive behavior to prevent food removal by another dog or a human. It is known from studies of deprivation and satiation in a variety of species that the value of a stimulus can be changed by controlling access to it (e.g., Epstein et al., 2003; Miniyamimoto et al., 2012). For instance, in rats the motivational value of food can be affected by body weight (Ferguson and Paule, 1997), food deprivation level, and food quality (Gulotta and Byrne, 2015). In rats, food deprivation can engender competitive fighting (Davis, 1933; Zook and Adams, 1975) and higher levels of territorial aggression than free-fed controls (Lore et al., 1986). However, in group-housed dogs placed on restricted calorie diets (25, 40 or 50% reduction) to induce weight loss, most showed no change in the frequency of biting, snapping, mounting or focused barking (note, dogs were fed separately and food-guarding behavior was not evaluated) (Crowell-Davis et al., 1995a,b). Although scheduled daily feeding, as is typical in most shelter environments, is not equivalent to food deprivation, it remains possible that this restricted, scheduled feeding produces higher rates of food-related aggression relative to conditions of unlimited access to food. Indeed, one of the recommended components of at least one behavior modification program for reducing food-guarding behavior is free access to food (Mohan-Gibbons et al., 2012).

The recommendation by Mohan-Gibbons et al. (2012) to provide food-guarding dogs with free access to food is consistent with a behavioral perspective that food-related aggression would vary as a function of the degree of food access if the aggression serves the purpose of food protection/procurement. From this perspective, the degree of food access may be interpreted as a *motivating operation* (see Laraway et al., 2003). Motivating operations are events, operations, or stimulus conditions that momentarily alter the rein-

forcing effectiveness (i.e., value) of other events. In the present case, food deprivation or food satiation could alter the reinforcing effectiveness (i.e., value) of food and, in turn, alter the likelihood of aggressive behavior that functions to prevent its removal or regain its access. In other words, if the dog has been deprived of food, even for just several hours, he or she may find food access more reinforcing and be more likely to exhibit behavior that in the past has prevented its removal. If the dog is provided with free access to food, the dog may be less motivated to prevent the removal of food.

The purpose of this study was to assess the effect of food access (free food access versus scheduled food access) on the behavior of dogs exhibiting food-related aggression in a shelter environment. Although the provision of free access to food as a means to ameliorate food guarding has sometimes been recommended, the efficacy of such a manipulation has, to our knowledge, not been tested systematically.

2. Materials and methods

The study design was approved by the Institutional Animal Care and Use Committee of Northern Michigan University.

2.1. Study site

This study was performed at the Lucas County Canine Care & Control shelter (LC4) in Toledo, Ohio, USA from October 2014 to September 2015. LC4 is an open-admission municipal dog shelter with an intake of approximately 3600 dogs per year. Their canine population consists of dogs surrendered by their owners and stray dogs brought in by citizens or picked up by Canine Control Officers. The approximately 25 shelter staff ranged in education level from completion of high school or equivalent to completion of a veterinary degree. The Live Release Rate (i.e., percentage of dogs adopted

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