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# The Effects of Reward-Based Training on the Behavioral Assessment of the Domestic Dog

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**THE EFFECTS OF REWARD-BASED TRAINING ON THE BEHAVIORAL  
ASSESSMENT OF THE DOMESTIC DOG**

A Thesis

Presented to

The Faculty of the Department of Agriculture

Murray State University

Murray, Kentucky

In Partial Fulfillment

of the Requirements for the Degree

of Master of Science in Agriculture

By Shelby Vandergraff

December 2017

**THE EFFECTS OF REWARD-BASED TRAINING ON THE BEHAVIORAL  
ASSESSMENT OF THE DOMESTIC DOG**

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### Abstract

Contrary to popular belief, pet overpopulation is caused more by owners failing to keep their dog than with accidental or intentional breeding (Moulton et al., 1991). Factors related to relinquishment have been researched, and concluded that behavioral problems are the most reoccurring reasons observed (Bailey, 1992; Miller et al., 1996; Patronek et al., 1996; Serpell, 1966; Salman et al., 1998, 2000; Scarlett et al., 1999; New et al., 2000; Shore et al., 2003, 2005; Mondelli 2004, Blackwell et al., 2008). When animals are relinquished to the shelter, the likelihood of the animal being euthanized increases. The purpose of this research was to observe if utilizing reward-based training on a select sample of dogs, by teaching them three basic cues, would improve their behavioral assessment results. Behavioral assessments are performed in shelters to determine the dog's behavior which can affect its adoptability, and served as an instrument of measurement for this research. The cues were unrelated to the behavioral assessment and consisted of "leave it", "place", and "sit". The researcher compared the pre and post test item numbers and the total numbers of each dog from the initial assessment to the final assessment. The mean of the total scores of each dog from the initial assessment was 13.66 ( $SD = 3.44$ ). The mean of the total scores of each dog from the final assessment was 10.33 ( $SD = 2.07$ ). The results of a dependent paired samples  $t$ -test were statistically significant at the .05 alpha level,  $t(5) = 2.599$ ,  $p = 0.04$ . The Cohen's D measure of effect size was 1.035435, which corresponds to a large effect. Due to the results, the null hypothesis is rejected, thus indicating statistical significance in both the initial and final assessment scores. Practical significance was also indicated. The application of reward-based training to the pet dog improves behavioral assessment scores, which improves adoptability and retention in the home, and decreases risk of euthanasia.

## Table of Contents

Title Page.....	i
Signature Page.....	ii
Acknowledgments.....	iii
Abstract.....	iv
List of Tables .....	viii
List of Figures.....	viii
<b>1. Introduction.....</b>	<b>1</b>
Background and Setting.....	1
Statement of the Problem.....	2
Purpose of the Study.....	3
Definition of Terms.....	4
Limitations of the Study.....	10
Basic Assumptions of the Study.....	10
Significance of the Study.....	11
<b>2. Review of Literature.....</b>	<b>12</b>
History of Canine Behavior and Welfare.....	12
Trained Cues of Dogs and Their Effects.....	17
Characteristics of Dogs and Factors that Affect Trainability.....	22
Methods of Canine Training.....	24
Canine Relinquishment to Shelters.....	28
Behavioral Assessments in Shelter Settings.....	32
<b>3. Methodology.....</b>	<b>37</b>
Research Design.....	37
Sampling Procedure.....	41
Instrumentation.....	42
Data Collection Procedures.....	43
Data Analysis Procedures.....	44

Budget and Timeline.....	45
<b>4. Results .....</b>	<b>46</b>
Introduction.....	46
Description of Subjects.....	46
Analysis of Research.....	47
Summary.....	50
<b>5. Conclusion and Recommendations.....</b>	<b>51</b>
Discussion.....	51
Recommendations for Future Research.....	52
Recommendations for Veterinary Practitioners.....	52
Recommendations for Shelters and Pet Owners.....	53
Appendices	
A: IACUC Application and Approval.....	55
B: Instrument - SAFER™ Assessment.....	68
C: SAFER™ Facility Requirements and Equipment.....	75
D: Behavior Modification Protocol: I Hold the Resources.....	77
References.....	79



**List of Tables**

Table 1.0 Description of Canine Samples Used .....	47
Table 2.0 Descriptive Measures and Results of a <i>t</i> -test on Effects of Training on Initial and Final Behavioral Assessments .....	50

**List of Figures**

Figure 1.0 Proficiency of Cues.....	43
Figure 2.0 Initial Assessments .....	48
Figure 3.0 Final Assessments .....	48

## **Chapter 1: Introduction**

### **Background and Setting**

Animal behavior from a veterinary clinical perspective is associated with animal welfare. Behavior can lead to a diagnosis or yield the opportunity for the veterinary professional to educate the owner, resulting in a happier animal at home. Veterinary professionals view dog or cat behavior as the patient's form of communication and utilize that behavior to educate the client about what the patient is trying to express. Clients often ask their veterinarian or veterinary technologist, for help with behavior and training of their animal, often times to prevent the animal from being re-homed. When the veterinary staff is knowledgeable of behavior and training, it helps build a better client-pet relationship and the practice reaps the benefits of a returning client. Pet overpopulation is caused more by owners failing to keep their dog in the home than with accidental or intentional breeding (Moulton et al., 1991). The National Council on Pet Population Study and Policy (NCPSP) researched factors related to relinquishment of animals to shelters, and concluded that behavioral problems are the most reoccurring reasons observed (Bailey, 1992; Miller et al., 1996; Patronek et al., 1996; Serpell, 1966; Salman et al., 1998, 2000; Scarlett et al., 1999; New et al., 2000; Shore et al., 2003, 2005; Mondelli 2004, Blackwell et al., 2008).

Veterinary professionals need to have the education and knowledge that gives them the skill set, to inform their clients on how to handle basic animal behavior and training. Knowledge of behavior will help prevent these animals from being relinquished unnecessarily. Owners of dogs with behavioral problems are more likely to consult a trainer rather than a veterinary professional (Herron et al., 2009; Lord et al., 2008), so it

is also important for the veterinary clinic to have an established relationship with a reputable trainer. Lack of veterinary intervention can be problematic, if the training regimen is implemented by a varying range of competence and ethical practice of behavior modification, creating unsafe environments for anyone handling the dog (Herron et al., 2009). Once the animal is in the shelter setting, it is often out of the veterinary professional's hand, leaving the animal care worker responsible for the canine's welfare. At that point, it is much more difficult to implement any type of training, than it would have been in the home setting.

### **Statement of Problem**

Educating veterinary professionals and animal care workers about animal behavior and training, gives them the ability to inform the general population on ways to communicate with animals and improve the human-animal bond. If owners and potential adopters are educated on animal behavior and training, the animal is less likely to be rehomed or relinquished, and they are able to find the appropriate resources for help if needed. When animals are relinquished to the shelter due to behavioral issues, this increases the likelihood of the animal being euthanized. Fifty to seventy percent of all euthanasias are the result of behavior problems (Spencer, 1993; Salman, 1998). In 1895, the American Society for the Prevention of Cruelty to Animals (ASPCA) claimed that 96 percent of dogs relinquished were euthanized (Zawistowski et. al., 1998), but recently the rate is closer to 31 percent (ASPCA, 2016). Once the canine is in the shelter setting, what can be done to improve the animal's adoptability? Behavioral assessments are frequently used in shelters to observe a dog's behavior, in different real-life situations, to determine adoptability and placement.

## **Purpose of Study**

### **Objective**

The purpose of this research is to observe if utilizing reward-based training on a select sample of dogs, teaching them three basic cues, will improve their behavioral assessment results. If the training does improve the dogs' behavioral assessment, this can then increase the likelihood of the animal being adopted and retained in the home. The cues were unrelated to any aspect of the behavioral assessment. Behavioral assessments are performed in shelters to observe a dog's behavior and determine its adoptability. Assessments are designed to replicate common situations that could occur in a real-world setting once the animal has been adopted such as evaluations for: rough play, handling, resource guarding, and exposure to new people, children, other animals and other dogs (Bennett et al., 2012).

### **Research Question**

Training three cues unrelated to the assessment, with reward-based methods, will positively improve the dog's behavioral assessment, when comparing the pre-assessment and post-assessment evaluation.

1. Is there a significant difference in behavioral assessment scores after a select population of canine patients have been trained by means of positive reinforcement?

## Definition of Terms

Alpha Roll: Flipping the dog on its back and laying on the dog (Koehler, 1962; Greenebaum, 2010).

American Society for the Prevention of Cruelty to Animals (ASPCA): A non-profit organization dedicated to preventing cruelty to animals (ASPCA, 2017).

Animal Ethology: Study of animal behavior (Gonyou, 1994).

Anomalous: Deviating from or inconsistent with the common order, form, or rule (Dictionary.com, n.d.).

Anthropomorphism: The attribution of uniquely human characteristics to non-human creatures and beings, phenomena, material states and objects or abstract concepts (Goebelbecker, 2010).

ASPCA Meet Your Match (MYM)™ Safety Assessment for Evaluating Re-homing™ (SAFER)™ Assessment: A behavioral assessment that covers seven key areas for aggression assessment. These include: reaction to restraint and touch, reaction to novel experiences including movement and noise stimuli, behavior around toys and food, and level of arousal towards another dog (SAFER Manual and Training Guide Weiss, 2007)

Aversive: Causing avoidance of a thing, situation, or behavior by using an unpleasant or punishing stimulus, as in techniques of behavior modification (Yourdictionary.com, n.d.)

Behavior: Anything that an organism does involving actions and response to stimulation (webster.com, n.d.).

**Behavioral Assessment:** A series of standardized experimental situations where stimuli serve to elicit behavior, that is then compared to other individuals placed in the same situation, in order to classify the subject tested (Serpell and Hsu 2001).

**Bite Inhibition:** A dog's ability to control the amount of pressure when mouthing an object (Becker, 2015).

**Classical Conditioning:** Repeated pairings of a neutral stimulus with an unconditioned stimulus generates the unconditioned response, or one which requires no specific training. A conditioned stimulus predicts an unconditioned stimulus and causes a conditioned response (Becker, 2015).

**Conflict-Related Aggression:** Previously referred to as dominance aggression by many behaviorists. Many conflicts occur when a dog is put into a confrontational situation or when the dog cannot predict what is going to happen due to inconsistencies in dog-owner interactions. The dog is placed into a motivational conflict in these situations (Deer Run Animal Hospital; Purdue University Animal Behavior Clinic, n.d.).

**Coprophagy:** Eating of dung, or feces (Encyclopedia of Britannica, 1998).

**Cues:** Stimuli to elicit behaviors include voice prompts, hand signals, movements, sounds, facial expressions, body postures, physical manipulation, lures, or any of the nearly limitless possible prompts that dogs associate with performing a behavior. Cue implies the dog has a choice compared to command (Fisher, 2008).

Differential Reinforcement of an Incompatible Behavior: Training that teaches a dog to replace an unacceptable behavior with one that is incompatible with the unwanted behavior. This results in an increase in the acceptable and incompatible behavior (Becker, 2015).

Fear Aggression: Occurs when the dog is scared. Fearful dogs present with snapping, growling and/or escape attempts. These dogs try to avoid the situation until there are no escape options, then they may escalate to biting (k9aggression.com, n.d.; Overall, 1997).

Health-Related Aggression: Response to illness, injury or chronic pain, such as underlying medical problems. The loss of hearing or sight can cause a dog to be caught off guard, resulting in aggression. Aggression can be redirected toward nearest human or animal, who may not necessarily be the trigger (k9aggression.com, n.d.; Overall, 1997).

Helicopter Move: While holding onto the leash of a dog, the handler spins the dog around in the air (Koehler, 1962; Greenebaum, 2010).

Immunosuppression: A situation in which the body's immune system is made less effective (Cambridge Advanced Learner's' Dictionary and Thesaurus, n.d.).

Interdog Aggression: Involves more-generalized aggression to all dogs or dogs of a certain breed or size. The dog's history may be important (for example, aversive events may have occurred in the dog's life) (k9aggression.com, n.d.; Overall, 1997).

Learned Helplessness: When a dog learns that no matter what he does he cannot escape from an aversive situation and gives up trying. Learned helplessness is a negative,



detrimental emotional state that has been associated with anxiety and depression (Becker, 2015).

National Council on Pet Population Study and Policy (NCPSP): Connects those who affect the health and welfare of cats and dogs with the science based info, tools and insight they need to make sound, impactful decisions (ASPCA, 2017).

Negative Punishment: Removing pleasant stimulus to reduce unwanted behavior (Greenebaum, 2010; Dennison, 2005).

Negative Reinforcement: Removing unpleasant stimulus to increase desirable behavior (Greenebaum, 2010; Dennison, 2005).

Operant Conditioning: Increase or decrease in frequency of behavior based on the associated consequences of the behavior. The quadrants of learning (positive reinforcement, negative reinforcement, positive punishment, negative punishment) fall under the heading of operant conditioning (Becker, 2015).

Positive Punishment: Addition of unpleasant stimulus to reduce unwanted behavior (Greenebaum, 2010; Dennison, 2005).

Positive Reinforcement: Addition of pleasant stimulus to increase desirable behavior (Greenebaum, 2010; Dennison, 2005).

Predatory Aggression: Includes two types: dogs that stalk, stare at or silently pursue small animals, (including dogs), and sometimes infants, and those who chase moving objects such as bicycles, etc., although some dogs exhibiting this behavior may be exhibiting territorial behavior (k9aggression.com, n.d.; Overall, 1997).

**Premack Principle:** High-probability behaviors (those performed frequently under conditions of free choice) can be used to reinforce low-probability behaviors (Dewey, 2007).

**Resource Guarding:** When a dog is protective of his valued possessions. Guarding behavior can progress from warnings of unease, like freezing or snarling, to more aggressive behaviors like snapping or biting with the goal to increase distance (Becker, 2015).

**Reward-Based Training:** Relies on techniques of positive reinforcement and negative punishment (Greenebaum 2010; Fennel 2004).

**Shaping:** The process of teaching a dog a complex behavior by breaking it down into simple steps. The simple behaviors are trained in a gradual progression, with each new step building upon the previous step moving the dog closer to the goal behavior (Becker, 2015).

**Stress Signals:** Behavior and body language indicative of escalating tension and anxiety, such as barking, whining, pacing and/or panting. Stress signals may begin with mild avoidance and progress to more extreme anxiety and panic (Becker, 2015).

**Targeting:** Teaching a dog to touch a certain part of himself to an object or area (Becker, 2015).

Territorial Aggression: When the dog protects an inappropriate location as its territory, or an appropriate location in an inappropriate context (k9aggression.com, n.d.; Overall, 1997).

Test Battery: A series of standardized experimental situations where stimuli are designed to elicit behavior that is then compared to others tested in the same environment enabling the subject to be classified (Bennett et al., 2012; Diederich and Giffroy, 2006).

The Koehler Method: William Koehler was a specialist dog trainer who would use pain as much as he would use reward, in order to motivate a dog to perform an action. Koehler advocated a balance of positive reinforcement and positive punishment (Foden, n.d.).

### **Limitations of the Study**

1. A sample size of seven dogs.
2. The behavioral assessment doesn't cover all possible behavioral reactions that may be observed in an-home setting. Example: predatory behavior, aggression within the species, territorial aggression, and owner-directed aggression, resource guarding, or other fear-related behaviors.
3. People not involved in research study can have outside influence on dogs, (e.g., kennel workers, students, faculty).
4. The dog being trained may not be food-motivated.
5. Unknown history of dogs.
6. Canine does not respond to assessment accurately.
7. Animals may present behavioral reactions to stimuli differently in a shelter setting, than in a home setting.

### **Basic Assumptions of the Study**

1. Dogs will learn cues in ten days of training.
2. No outside training will be occurring during the data collection period.
3. No dogs will be adopted out during study.
4. No dogs will be removed from facility for other reasons.
5. Evaluator and observer are unbiased.
6. Evaluator is unknown to dogs.
7. Dogs will present behaviors during assessment as they would in home.
8. Dogs will display behaviors to evaluate.
9. Dogs will be willing to learn and be food-motivated.

### **Significance of the Study**

Pet overpopulation has been a long standing issue in our society. Spay and neuter programs are pushed as the main means of addressing this matter. Pet overpopulation is caused more by owners failing to keep their dog in the home than with accidental or intentional breeding (Moulton et al., 1991). Spay and neuter programs are simply not enough to manage the overpopulation. Shelters and humane societies are set up for housing and care of these animals. If animals are not adopted out in a timely manner, they may be euthanized. Fifty to seventy percent of all pet euthanasia is the result of behavior problems (Spencer, 1993; Salman, 1998). Problem behaviors in dogs are often the result of anxiety and can damage the pet-owner relationship (Mugford, 1981). If the relationship is stressed enough due to these issues, relinquishment to a shelter or even euthanasia can occur (Roll and Unshelm 1997).

Veterinary professionals and animal care workers need to have the knowledge to tackle these behaviors and help the animal stay in its current home, or if it is relinquished, increase the animal's adoptability and retention in a home. If training the dog improves the overall behavior problems; training could be easily implemented in a shelter setting. If owners and potential adopters are encouraged to select dogs based on attuned behaviors, providing an appropriate environment, and utilizing reward-based training methods, the owner and animal can build a stronger human-animal bond and decrease incidence to relinquishment to shelters (Kwan and Bain 2013).

## **Chapter 2: Review of Literature**

### **Review of Literature**

Approximately 3.3 million dogs enter animal shelters nationwide. Of those 3.3 million, 670,000 dogs are euthanized (ASPCA, 2017). In 1895, the American Society for the Prevention of Cruelty to Animals (ASPCA) claimed that 96 percent of dogs relinquished were euthanized (Zawistowski et al., 1998), but recently the rate is closer to 31 percent (ASPCA, 2016). The National Council on Pet Population Study and Policy (NCPSP) researched factors related to relinquishment of animals to shelters and concluded that behavioral problems are the most reoccurring reasons observed (Salman et al., 1998). Vacalopoulos and Anderson (1993) estimated that up to 90 percent of dogs in homes exhibit behaviors that the owner views as inappropriate or unacceptable. If these behaviors are detrimental enough, relinquishment occurs. To prevent the euthanasia of healthy dogs, there is a need to address their behavior and make them more appealing and adoptable with the ability to stay in their new home.

### **History of Canine Behavior and Welfare**

Animal ethology is the study of animal behavior (Gonyou, 1994). In the past, animal ethology has strictly concerned eating habits and reproductive displays and behaviors. Konrad Lorenz, Nikolaas Tinbergen, and Karl von Frisch, three pioneering ethologists won a Nobel Prize in physiology or medicine in 1973 for their discoveries concerning "organization and elicitation of individual and social behavior patterns" (nobelprize.org, n.d.). Today, ethology has evolved into an in-depth field with more attentiveness to the animal's welfare and wellbeing. Veterinary professionals have long

used presentation of abnormal behaviors as indicators of communication, health or disease, and welfare of the animal because the patient's cannot verbalize their exact feelings. Understanding an animal's ethology incorporates genetic factors and predispositions to behavior (Overall et al., 2006), as well as environmental factors (Appleby et al., 2002). These factors are especially useful when assessing problem behaviors and emotional state.

Domestic canines (*Canis familiaris*) have had a symbiotic relationship with humans for more than 14 thousand years (Coren, 1994; Topal et al., 1997), which not only embraced companionship, but also has given many opportunities to learn about the physical and behavioral changes that have occurred through the domestication process (Topal et al., 1997). The domestic canine changed from an animal utilized for work to now a companion (Serpell, 1995; Morey, 1997; Deldalle and Gaunet, 2014). Some dogs are still used for working purposes today. Dogs are clearly now a social species highly capable of complex communication with humans (Hare and Tomasello, 2005; Blackwell et al., 2008), and have developed the ability to associate subtle visual signals from people and with that create positive or negative outcomes (Rooney et al., 2001; Cullinan et al., 2004; Blackwell et al., 2008). Humans observing these phenomena tend to develop an anthropomorphic view of their pet, which can create underestimation and overestimation of their pet's cognitive abilities (Bradshaw and Casey, 2007; Blackwell et al., 2008). Sentimental anthropomorphism results in people treating their pets as objects of affection instead of focusing on their needs as an animal (Irvine, 2004, Greenebaum, 2010). When a pet is treated as a prize or object, often enough, the pet is also viewed as disposable when expectations are not met (Greenebaum, 2010).

Behavior has a profound effect on the welfare of our canine companions and the human-animal bond that is formed (Kwan and Bain 2013). Today's domestic dog exhibits behaviors that are natural for their species, but the owner may find these behaviors to be annoying (Wells and Hepper, 2000). Humans often misinterpret canine behaviors, which can lead to poor conduct and miscommunication (Greenebaum, 2010). George Robert Mead (1907) believed that animals only reacted on instinctual premises and lacked the personality and cognitive ability to have symbolic interactions (Greenebaum, 2010; Mead, 1907; Sanders, 1999). Modern sociologists argue that dogs are actively involved as mindful participants in engagement with other animals and humans (Greenebaum, 2010; Arluke and Sanders, 1996; Alger and Alger, 1997; Sanders, 1999; Brandt, 2004).

Traditional means of population control of pets such as spay and neuter programs, only address a single aspect of the issue. People in general; contribute to the pet overpopulation by failing to keep their dog in the home more than they do with accidental or intentional breeding (Moulton et al., 1991). Americans even euthanize due to frustration of the behavioral problems they deem as unfixable (Greenebaum, 2010). Typically, dogs that end up euthanized are aged as young adult and have been returned after adoption. This does not directly correlate with excess puppies being born (Patronek et al, 1995).

Behavior problems have been reported as a primary reason a dog is returned to a shelter (Bailey, 1992; Miller et al., 1996; Patronek et al., 1996; Serpell, 1996; Salman et al., 1998, 2000; Scarlett et al, 1999; New et al., 2000; Shore et al., 2003, 2005; Mondelli 2004, Blackwell et al., 2008). Dogs are residing in shelters for longer periods of time



than in previous years (Protopopova, 2016). The environment the dogs are housed in needs to compliment their well-being and behavior, instead of being detrimental and contributing to behavioral issues. Dogs residing in a shelter environment are spatially and socially restricted, exposed to novel and stressful settings, and separated from a figure of attachment when they are kenneled for an extended period of time, thus contributing to decreased welfare (Protopopova, 2016). Indicators of negative welfare states, such as stress and pain, are typically observed by physiological and behavioral parameters, frustration, aggression, and abnormal behaviors (Deldalle and Gaunet, 2014; Gregory and Fraser, 2008). Over 30 percent of dogs relinquished by their owners to a shelter setting are due to behavior problems (Wells and Hepper, 2000). These behavioral issues could be caused by a damaged human-animal bond, undersocialization, anxiety, or past experiences that have occurred, which often result in relinquishment to a shelter or even euthanasia (Roll and Unshelm, 1997). One-fourth of dogs relinquished to shelters are believed to have behavioral or health issues that are serious enough to make the dog unable to be adopted out to a home (Kass et al., 2001).

For the 3.3 million dogs being housed in shelters (ASPCA, 2017), increasing their adoptability is crucial. By understanding a dog's state of welfare and quality of life, we can positively change the animal's behavior. In an ethological sense, focus has been on behaviors that are unusual or harmful as indicators of poor welfare (Gonyou, 2014). If a dog is in physical pain or emotionally stressed, the dog will present with behavioral indicators (e.g., changes in appetite, or locomotor activity, excessive salivation, stereotypical patterns of movement). These behaviors are usually adverse in that they cause harm such as excessive grooming (Hiby et al., 2006), aggression (Gonyou, 2014),

coprophagy (Beerda et al., 1999), and pacing/circling (Hubrecht et al., 1992). Although dogs are surrendered to shelters due to behavioral problems, the stress of being in a shelter can also lead to anomalous or abnormal behavior, in turn, creating even more problem behaviors for the dog (Tuber et al., 1999). When a dog is being housed in a shelter setting, they are susceptible to psychological stressors (e.g., decreased mobility, isolation, exposure to excessive noise, unfamiliar daily routines) (Tuber et al., 1999; Menor-Campos et al., 2011). In regards to welfare, discomfort and frustration can result in aggression (Gonyou, 1994). Aggression in companion dogs can fall into types and must be diagnosed and treated by a professional in an appropriate manner (Borchelt and Voith, 1982). It has been shown that increased physical activity and human interaction are the most effective means in reducing canine stress in the shelter setting (Tuber et al., 1999; Wells and Hepper, 2000; Haug, 2008).

There are many ways to improve the general welfare of a dog in a shelter environment. Enrichment programs can be designed primarily to alleviate problem behaviors and promote the animal's sense of wellbeing through exercise (Protopopova and Wynne, 2015). Classical conditioning and positive reinforcement help reduce stress by associating people or trainers with food (Protopopova and Wynne, 2015). Social interaction between people and shelter dogs makes the dogs more behaviorally attractive, this likely also makes the animal happier overall (Coppola, 2006; Hubrecht, 1993; Tuber, 1996; Wells, 2004; Wells and Hepper, 2000). Providing proper training and appropriate social opportunities minimizes the negative impact that can occur from the dog being housed in a shelter setting (Tuber et al., 1999).

## **Trained Cues of Dogs and Their Effects**

Past studies have reported a relationship between reduced undesirable behaviors in companion dogs and attendance to training class (Clark and Boyer, 1993; Jagoe and Serpell, 1996; Blackwell et al., 2008), or obtaining any form of training (Kobelt et al., 2003; Bennett and Rohlf, 2007). A correlation has been established between training techniques utilized and the occurrence of problem behaviors (Kwan and Bain 2013). Training results in a decrease of unwanted behaviors (Alexander et al., 2011, Clark and Boyer, 1993; Jagoe and Serpell, 1996; Kwan and Bain, 2013), increased adoptability (Hays, 2004; Kwan and Bain, 2013), and increased retention of the dog staying in the household (Duxbury et al., 2003; Kwan and Bain, 2013).

Fewer problem behaviors have been found in dogs trained with rewards only (Hiby et al., 2004). Reward-based methods show significant benefits such as enhanced willingness to learn new training tasks; while punishment-based methods show detriments such as reduced interaction during play and lower incidence of willingness to interact with new people (Rooney and Cowan, 2011). Aversive training is defined as training with an unpleasant stimulus that causes avoidance (Yourdictionary.com, n.d.). Using positive punishment and aversive training has been shown to result in negative effects on behavior in other studies (Schilder and van der Borg, 2004; Blackwell et al., 2008). Training based on punishment has been shown to cause stress (Rooney and Cowan, 2011; Schalke et al., 2007), fearfulness (Rooney and Cowan, 2011; Schilder and van der Borg, 2004; Blackwell and Casey, 2006), an associated higher incidence of problem behaviors (Hiby et al., 2004; Arhant et al., 2010; Rooney and Cowan, 2011), aggression toward people (Arhant et al., 2010; Rooney and Cowan, 2011), aggression

toward other dogs (Haverbeke et al., 2008; Arhant et al., 2010, Rooney and Cowan, 2011), increased over-excitability (Arhant et al., 2010; Rooney and Cowan, 2011), and decreased ability to focus and ignore distractions (Haverbeke et al., 2008; Haverbeke et al., 2008; Herron et al., 2009; Hiby et al., 2004; Roll and Unshelm, 1997; Rooney and Cowan, 2011). Positive reinforcement training resulted in the pet dog showing less incidence of attention seeking behaviors, aggression, and fear avoidance (Blackwell et al., 2008), as well as fewer behavioral issues and more reliable cues as reported by dog owners (Arhant et al., 2010; Blackwell et al., 2008, Hiby et al 2004). Professionals who utilize reward-based methods teach behavioral responses through operant conditioning (Pryor, 2002; Fennel 2004; Dennison 2005; Greenebaum, 2010). Reward-based training relies on techniques of positive reinforcement and negative punishment (Greenebaum, 2010; Fennel, 2004). What the animal is motivated by can be used as the reinforcer, which can be anything from tennis balls, to rope toys, to food.

Numerous studies have investigated the effects of human contact on dogs in a shelter environment (Hennessy et al., 1997; Hennessy et al., 2002; Hennessy et al., 1998; Thorn et al., 2006). Human interaction may decrease negative behavioral changes, alleviate stress, and provide effective enrichment for dogs housed in kennels (Gonyou, 1994; Tuber et al., 1996; Hennessy et al., 2002; Coppola et al., 2006; Thorn et al., 2006.; Fuller, 1967; Lynch and McCarthy, 1997).

Training easily increases the human-canine interaction time. Living in a shelter environment typically means living in a kennel with confined spaces, frequent barking, and minimal contact with people (Thorn et al., 2006). Some shelters have now implemented training and behavior programs orchestrated by professional trainers and

certified applied animal behaviorists (Thorn et al., 2006). The shelter staff is often volunteer-based; therefore consistency with encounters can create difficulties with training and interaction. Some staff also believe that training is not a worthwhile investment of time or that inadequate results will ensue indefinitely (Thorn et al., 2006). If the dogs do not receive appropriate interaction time, the ending result produces dogs that respond in a highly aroused state because of the minimal human interaction that occurs (Thorn et al., 2006; Sternberg, 2002; Wells and Hepper, 1992). Training a shelter dog improves its behavior and thus makes it more attractive to a potential adopter. Training creates a less stressful environment by providing more predictable and controllable interactions (Veissier and Boissy, 2007), thus improves behavior and adoptability (Luescher and Reisner, 2008). Training has been shown to decrease barking, stress behaviors, and lunging at visitors (Thorn et al., 2006). Dog training incorporated into the daily routine of shelter staff correlates with an increase in the adoption rate and decrease in the euthanasia rate (Thorn et al., 2006).

Teaching a dog to sit should be made into the structured means for interacting with the dog (Tuber et al., 1999). Utilizing the Premack Principle, shelter caretakers can easily teach the dogs to sit as a person approaches or lets the dog out of the kennel. The Premack Principle simply states that more probable behaviors (dog coming out of kennel) will reinforce less probable behaviors (sitting). By teaching the dog to sit first, before being let out of the kennel, the Premack Principle is in effect. Potential adopters are less likely to adopt a dog exhibiting behaviors such as hyperactivity or being withdrawn. Teaching a dog to sit when a person is approaching the kennel makes the dog more adoptable by creating acceptable conduct for greetings (Tuber et al., 1999). This requires

minimal training (e.g., 10-15 minutes a day), by novice trainers to teach dogs to sit when people approach regardless of person or location as long as the behavior is reinforced (Thorn et al., 2006). Reinforcing the sitting behavior with objects or people of desire is the first step in teaching impulse control. Instead of reacting inappropriately, the dog will have a choice to sit, which has a rich reinforcement history. The sit behavior is often obtained using the luring method. A treat is held above the dog's nose and lured up over the dog's head to encourage the dog to sit, then reinforced immediately when the behavior is performed (Luescher and Medlock, 2009). Behavior professionals advise the use of differential reinforcement of incompatible behaviors, or positive reinforcement of incompatible appropriate behaviors (Yin et al., 2008; Landsberg et al., 1997; Overall, 1997). An example of this would include sitting, instead of jumping up and barking.

A dog that comes to the front of the cage and does not bark when someone approaches is also thought to increase the dog's chance of adoption (Luescher and Medlock, 2009). Increased contact with humans makes shelter dogs more attractive from a behavioral aspect and also increases their general welfare (Luescher and Medlock, 2009). Training gives dogs an increase of control of the environment, which enables the dog to produce predictable outcomes (Luescher and Medlock, 2009). Eye contact between pet and owner is associated with a significant increase in reliability of sitting during training exercises (Deldalle and Gaunet, 2014; Braem and Mills, 2010). Eye contact can be used as encouragement or a guide when dogs need extra assistance with problem solving (Deldalle and Gaunet, 2014; Gaunet, 2009; Gaunet and Deputte, 2011). Teaching a cue such as "leave it", can help teach the dog to ignore a distraction and instead offer eye contact; thus also teaching impulse control. The dog learns when it

wants something to not just react, but to look to the handler for guidance. Impulsivity is often related to the context of aggression (Wright et al., 2012; Fatjo et al., 2005; Overall, 2001; Peremans et al., 2003; Reisner et al., 1996).

Target training is a method that teaches the animal to target or touch an object with a body part. When utilizing a cue such as "place", target training and shaping are used. "Place" can be the cue for going to a bed and remaining in place in a sit or down stay. Targeting and shaping are utilized in many instances of dog training. Little research has been done regarding the implementation of shaping in an applied behavior animal setting (Yin et al., 2008; Galbicka, 1994; Pear and Legris, 1987). Shaping is performed by hand delivery of reinforcers (Yin et al., 2008; Peterson, 2004; Skinner, 1972), thus results in variation with timing, stimuli, and placement that occur with the reward (Yin et al., 2008; Johnston and Pennypacker, 1993). "Place" can be utilized in different situations such as, asking the dog to get on a weight scale. When a visitor comes to the house, dogs can be trained to "place" (go to bed or designated area) and remain in a sit or down-stay position while the owners answers the door (Yin et al., 2008; Miller, 2001; Yin, 2004). Teaching a dog a "place" cue, also helps the dog focus his or her attention despite environmental distraction. A dog that is reliable to responding to cues with distractions creates impulse control for the dog. Impulsive dogs are shown to be more likely to exhibit problem behaviors (Wright et al., 2012; Fatjo et al., 2005; Yin et al., 2008). Dogs with a higher level of impulsive response are more likely to express aggression, as are humans, rats, and non-human primates (Wright et al., 2012; Apter et al., 1991; Evenden and Ryan, 1996; Harmon-Jones et al., 1997; Higley et al., 1996).

### **Characteristics of Dogs and Factors that Affect Trainability**

Along with domestication of the canine, came socialization (Topal et al., 1997; Kretchmer and Fox, 1975). When a pet dog is socialized properly from a young age, training and manners are typically developed more successfully. The more socialized a companion dog is, the more likely it is to behave appropriately in varying situations (Topal et al., 1997). Voith et al. (1992) determined that poor relationships between pet and owner result in more behavior problems than poor training. Behavior problems are shown to have detrimental results on the relationship between the owner and the pet; thus functioning as an important reason in the relinquishment decisions (Salman et al., 2000). Owners that acquired the dog initially from a shelter are 50 percent more likely to return that animal for behavioral issues (Salman et al., 2000). Information given from the owner at time of relinquishment to a shelter suggests that trainability is important in terms of developing and maintaining a healthy bond between the pet dog and owner (Serpell and Hsu, 2005; Salman et al., 2000). Dogs acquired from responsible breeders were shown to have a decreased level of undesirable behaviors compared to dogs acquired from a shelter or rescue (Blackwell et al., 2008; Bailey, 1992; Miller et al., 1996; Patronek et al., 1996; Serpell, 1996; Salman et al., 1998, 2000; Scarlett et al., 1999; New et al., 2000; Marston and Bennett, 2003; Shore et al., 2003; Mondelli et al., 2004; Shore, 2005). One behavior that has been consistently shown prevalent in adopted dogs is the expression of separation-related anxiety (Blackwell et al., 2008; Guthrie, 1999). This could be related to the breakdown of the human-animal bond that occurs with relinquishment. Neuter status is associated with relinquishment of that animal to the shelter for behavioral reasons also (Salman et al., 2000).



Studies show that neither sex nor neuter status affects trainability (Serpell and Hsu, 2005). It has long been thought that females are typically easier to train than males; but according to a study that was deemed inconclusive (Serpell and Hsu, 2005; Hart and Hart, 1985). Canines less than two years of age are also shown to present with behavioral issues related to relinquishment (Salman et al., 2000). The length of time of ownership is relevant to pet dog relinquishment and is most likely to occur within less than three months (Salman et al., 2000). This is a relatively short amount of time for a significant bond between pet and owner to become established.

Breed has been shown to be a factor that affects trainability in dogs (Serpell and Hsu, 2005). Scott and Fuller (1965) studied the temperament differences among five different breeds of dogs including: Basenjis, Beagles, Shetland Sheepdogs, Cocker Spaniels, and Wire-Haired Fox Terriers. It was noted that there were significant differences, especially in terms of what the animal was genetically bred for. There is also a difference between show lines and working lines of particular breeds. Hart and Hart (1985) also studied breeds to determine their trainability; with results showing that working type breeds such as, sporting dogs and herding dogs scored significantly higher in trainability.

### **Methods of Canine Training**

In terms of theories of dog training, there are two main concepts; the traditional dominance-based methods and the contemporary reward-based methods (Greenebaum, 2010). Past training experiences can affect a dog's future aptitude and motivation to learn new training tasks (Rooney and Cowan, 2011; Marshall-Pescini et al., 2008). Shelter

animals often have an unknown history, which therefore could affect the canine's trainability.

Dominance training is based on the social dominance concept that utilizes harsh corrections to diminish unwanted behaviors by establishing dominance over the dog (Greenebaum, 2010; Yin, 2007). The human-pet relationship is naturally an unequal one due to the fact the human is in control of food, water, when the animal can relieve itself, and teaching the animal what is or is not acceptable (Greenebaum, 2010; Irvine, 2004). There is a continuous debate as to the relative value of the varying training techniques and some advocate the value of punishment when applied in the correct manner for a certain task (Rooney and Cowan, 2011; Tortora, 1982; Yeon et al., 1999; Marschark and Baenninger, 2002). A well-known modern punitive trainer is Cesar Millan, who has no formal education or training. His methods consist of physical and psychological intimidation as well as flooding, which is overwhelming the animal with what it fears (Greenebaum, 2010). What Millan calls, "calm submission," is actually what veterinary behaviorists term "learned helplessness": the dog emotionally and physically shuts down (Greenebaum, 2010; Pesman and Martin, 2006). William Koehler, a well-known dominance-based trainer advocated a balance of positive reinforcement and positive punishment (Foden, n.d.).

According to Greenebaum (2010), the Koehler method, popular in the past, used methods such as the helicopter move (while holding on to the leash of a dog, the handler spins the dog around in the air), alpha roll (flipping the dog on its back and laying on it), and use of choke chains and throw chains (hitting dog on the rear with a sharp blow) (Koehler, 1962; Greenebaum, 2010).

Dominance theory is based on outdated ideas of wolf pack behaviors that are not relevant to today's domestic dog (Greenebaum, 2010; Yin, 2007). Many critics agree the dominance theory leads to aggression, rather than diminishes it (Yin 2007; Herron et al., 2009). Canine aggression and other behavioral issues are not the result of a dog displaying dominant behavior, but rather a result of fear or underlying anxiety; thus, punishing will only exacerbate the aggression (Herron et al., 2009; Guy et al., 2001; Mertens, 2002; Luescher and Reisner, 2008). Immediate effects of utilizing aversive training methods can include health risks due to the increased amount of psychological stress, resulting in anxiety and fear (Arhant et al., 2010; Beerda et al., 1998; Blackwell et al., 2006; Blackwell et al., 2008; Schalke et al., 2007; Schilder et al., 2004; Schilder and van der Borg 2004), and also aggressive reactions (Arhant et al., 2010; Herron et al., 2009; Hiby et al., 2004; Roll and Unshelm, 1997). The use of aversive techniques in training has negative implications on the canine's welfare and causes suffering (Hiby et al., 2004; Beerda et al., 1997). Aversive training methods have resulted in increased stress and poor performance of dogs in the presence of their trainer (Kwan and Bain, 2013; Haverbecke et al., 2008). Applying positive punishment to manage aggression will only result in a dog with increased fear and arousal levels which can teach the dog to bite without warning (Herron et al., 2009; Landsberg et al., 2003). Studies show that dog bites more often occur by a familiar dog, than a stray dog, thus making it even more crucial for owners to know how to properly interpret dog body language and communication with their pet (Berzon and DeHoff, 1974; Moss and Wright, 1987). Prevention of undesirable behaviors is incredibly important because it increases the

likelihood of the animal remaining in its home (Blackwell et al., 2008; Hart, 1995; Marston and Bennett, 2003).

According to BF Skinner's breakthrough, operant conditioning is broken into four types of reinforcement and punishment.

1. Positive reinforcement: addition of pleasant stimulus to increase behavior.
2. Positive punishment: addition of unpleasant stimulus to decrease behavior.
3. Negative reinforcement: removing unpleasant stimulus to increase behavior.
4. Negative punishment: removing pleasant stimulus to decrease behavior  
(Dennison, 2005; Greenebaum, 2010; Skinner, 1972)

Reward-based training utilizes the concept of reinforcing desirable behaviors to increase the likelihood of that behavior to occur again. Because of this, dogs learn to exhibit less attention seeking behaviors, less aggressive responses, and less fear responses (Blackwell et al., 2008). Fewer problem behaviors have been found in dogs trained with rewards only (Hiby et al., 2004; Blackwell et al., 2008; Rooney and Cowan, 2011).

Using positive punishment and aversive training has been shown to result in negative effects on behavior in other studies (Schilder et al., 2004; Blackwell et al., 2008).

Reward-based training does require precise timing and skill to ensure the dog can quickly determine what is being reinforced (Greenebaum, 2010).

Reward-based methods have been shown to be more effective than punishment-based methods for teaching dogs appropriate behaviors and eliminating inappropriate behaviors (Kwan and Bain 2013; Hiby et al., 2004; Rockwood and Bain, 2007).

Aggressive responses can develop as a result of conflict about uncertainty, due to inconsistent owners (Cullinan et al., 2004; Blackwell et al., 2008). The effect of inconsistency is further supported by the dog's increased fear responses towards people deemed as familiar (Arhant et al., 2010; Casey et al., 2007). Positive reinforcement solely used, or used with negative punishment, results in a lower incidence of undesirable behaviors compared to positive punishment (Blackwell et al., 2008). Dogs taught a sit cue with negative reinforcement were shown to display more stress signals such as low posture, lip licking, and yawning (Deldalle and Gaunet, 2014; Beerda et al., 1998; Schilder and van der Borg, 2004). It has also been shown that dogs trained with negative reinforcement techniques are more likely to be distracted during training, exhibit behavior problems, exhibit less reliable skills, and not offer play behaviors (Wright et al., 2012; Roll and Unshelm, 1997; Hiby et al., 2004; Haverbeke et al., 2008; Herron et al., 2009; Rooney and Cowan, 2011).

## **Canine Relinquishment to Shelters**

The National Council on Pet Population Study and Policy found that behavioral issues, such as aggression towards humans and animals, are the most frequent reasons given for canine relinquishment (Salman et al., 2000; Bennett et al., 2012; Patronek et al., 1996; Salman et al., 1998). Among behavioral problems, aggression has been listed as the most frequent reason for relinquishment (Salman et al., 2000; Bennett et al., 2012; Patronek et al., 1996; Salman et al., 1998; Houpt, 1983; Jagoe and Serpell, 1996; Mugford, 1981; Reisner, 1997). Salman et al. (1998) determined that half the dogs in their study were relinquished to shelters for behavioral reasons and 12 percent had already bitten a person. Behavior problems are shown to have detrimental results on the relationship between the owner and the pet; thus these problems function as an important reason in the relinquishment decision (Salman et al., 2000). Problematic behaviors can result in so much owner distress that the only solution appears to be handing the animal over to the care of a shelter to be re-homed (Wells and Hepper, 2000; Patronek et al., 1995; Salman et al., 1998; Wells, 1996). Owners typically struggle with the decision to relinquish their dogs and likely do not have access to adequate resources to help them prior to relinquishment (Kwan and Bain 2013; Digiacomo et al., 1998). According to Kass et al. (2001), 97 out of the 615 dogs they studied were relinquished for euthanasia due to behavioral issues. The dogs deemed as public health concerns exhibited aggressive behaviors toward people and other animals (Kass et al., 2001). Less severe behavioral problems included disobedience, excessive vocalization, unfriendliness, fear of people, destructiveness, escape, house soiling, and hyperactivity (Kass et al., 2001). Prevention of undesirable behaviors is incredibly important because it increases the likelihood of the

animal remaining in its home (Blackwell et al., 2008; Hart, 1995; Marston and Bennett, 2003).

Association was found between relinquishment and a variety of factors such as neuter status, training level, age of pet, and length of ownership (Salman et al., 2000). Other associations included breed, sex, diet, and relationship with all people in the household (Wells and Hepper, 2000). Dogs that were obtained for little to no cost, sexually intact, older than six months of age, lived outside, and were more work than expected were at increased risk for being surrendered to a shelter (Salman et al., 1998). Some might view a sexually intact dog obtained from an animal shelter, who displays problem behaviors, a heavier workload to own and maintain (Salman et al., 1998). A dog exhibiting aggression within the household is the most common behavioral issue addressed in referrals to behavior therapy clinics (Knol, 1987; Mugford, 1995). When owners use positive punishment techniques, there is an increased risk of the dog to react aggressively to dogs or familiar people (Arhant et al., 2010; Herron et al., 2009; Roll and Unshelm, 1997). Wells and Hepper (2000) reported that fearfulness was the most commonly reported behavior by the relinquishing owner in their study. This could be related to a variety of reasons such as negative past experiences or lack of training and socialization. Dogs that were purchased or adopted from a pet store or shelter showed a higher incidence of social fear of humans and animals (Wells and Hepper, 2000; Jagoe, 1994), possibly to the caged environment predisposing the animal to react fearfully to novel stimulus. Owners that acquired the dog initially from a shelter are 50 percent more likely to return that animal for behavioral issues (Salman et al., 2000). Jagoe (1994) suggests that dogs acquired from pet stores, rescues, or shelters are more likely to display

unacceptable behaviors than dogs bred at home or obtained from breeders, friends, or relatives. Sex of the dog has been shown to be related to exhibition of problem behaviors (e.g., aggression toward other dogs, tendency to stray, and undesirable sexual behaviors), with males being more problematic (Jagoe, 1994, Mugford, 1995; Wells and Hepper, 2000). Neuter status is associated with relinquishment of that animal to the shelter for behavioral reasons (Salman et al., 2000). If the animal is in a sterile state and behavior modification is being practiced, hormone-related behavior problems can be remedied (Wells and Hepper, 2000; Maarschalkerweerd et al., 1997; Neilson et al., 1997). Separation anxiety and related behaviors occur significantly more in dogs adopted from shelter environments (Wells and Hepper, 2000; Jagoe, 1994; McCrave, 1991; Salman et al., 2000; Wright and Nesselrote, 1987). Dogs less than two years of age are relinquished more often for behavioral problems than older dogs (Salman et al., 2000). Puppies adopted from shelters are less likely to show problem behaviors such as: sexual problems, fearfulness, and straying tendencies due to their age (Wells and Hepper, 2000), but may exhibit age appropriate behaviors that are seen as intolerable by owners. Dogs considered young adults are more likely to display excitability, excessive activity, and excessive barking (Wells and Hepper, 2000). Length of ownership is also associated with relinquishment, with returning of the dog most likely to occur within three months from adoption (Salman et al., 2000).

An animal shelter's main goal is to re-home the relinquished animals into adoptive homes, increase the adoption rates, and to decrease the amount of returns. Many factors influence the reasons why adopters choose dogs. The physical appearance of the dog is not as important as the behavior of the dog (Luescher and Medlock, 2009). Studies show



that potential adopters have a stronger preference for purebred dogs than mixed breeds (Gonyou, 1994; Patronek et al., 1995; Lepper et al., 2002). Age and neuter status of the animal also affects adoptability (Clevenger and Kass, 2003; Luescher and Medlock, 2009; Lepper et al., 2002). Overall, behavior is still the biggest aspect that influences adoption of a potential adopted dog.

Adult pets that are homeless currently outnumber puppies and kittens (Digiacomio et al., 1998; Salman et al., 1998; Salman et al., 2000), with many animals having behavioral issues that are resolvable. Fifty to seventy percent of all dog and cat euthanasias are the result of behavioral issues (Spencer 1993; Salman et al., 2000). The traditional solution to such a problem is to decrease the birth rates of these animals by promoting spay and neuter programs (Salman et al., 1998; Arkow, 1991). A broader approach has also been considered which includes the sterilization programs, pet owner education and enforcing animal control ordinances (Salman et al., 1998).

Dogs in a shelter environment are spatially and socially restricted, exposed to novel settings, and separated from a figure of attachment when they are kenneled for an extended period of time, thus contributing to decreased welfare (Protopopova, 2016). The social isolation and spatial restriction can affect dogs adversely (Luescher and Medlock, 2009; Hetts et al., 1992; Hubrecht et al., 1992; Marston and Bennett, 2003; Coppola et al., 2006). When an animal or human is exposed to stress, various changes can occur physically and mentally. When the animal remains in the shelter setting for an extended period of time, its behavior can be influenced in a way that makes the animal less attractive to potential adopters, such as spending time at the back of the kennel and losing interest in the environment (Luescher and Medlock, 2009; Wells et al., 2002).

Poor welfare can be complex and can include reduced fitness or life expectancy, impaired growth and reproduction (Protopopova, 2016; Barnett and Hemsworth, 1990; Broom, 1991), and the inability to cope with the environment and stimulus (Protopopova, 2016; Broom, 1991). When an animal is unable to cope with its living environment, the animal can develop immunosuppression and illness due to stress. Physiological stressors can occur along with behavioral abnormalities (Protopopova, 2016; Broom, 1991). Behaviors that may be indicative of stress include abnormal activity levels, paw lifting, excessive grooming and licking, circling, pacing, panting, and barking (Protopopova, 2016).

### **Behavioral Assessments in Shelter Settings**

Shelters often rely on personnel to perform an assessment to gain understanding of the dog's behavioral profile and potential health risk to the general public (Segurson et al., 2005). Assessments for behavioral observation have been developed and have a variety of lengths, complexities, and protocols for evaluation and interpretation (Christensen et al., 2007; Netto et al., 1993; Netto and Planta, 1997; Sternberg, 2003). Behavior assessments are designed to evaluate a dog's response to a stimulus at a point in time in a specific environment (Bennett et al., 2012; Taylor and Mills, 2006). These assessments are done in a test battery format which is defined as; "a series of standardized experimental situations where stimuli are designed to elicit behavior that is then compared to others tested in the same environment enabling the subject to be classified" (Bennett et al., 2012; Diederich and Giffroy, 2006). Behavioral assessments are designed to replicate common scenarios that could occur in a real-world situation once the animal has been adopted. Evaluations can assess responses with: rough play,

handling, resource guarding, and exposure to new people, children, other animals and other dogs (Bennett et al., 2012). Behavior is often assessed in stressful and novel environments; therefore the full scope of behavior can be missed or misinterpreted (Segurson et al., 2005).

The prevalence and importance of behavior problems in the pet dog has not been fully researched with neglect to areas such as etiology and epidemiology (Hsu and Serpell, 2003). Etiology is the study of the causation of a disease or condition and epidemiology is the study of the cause and distribution within a population of a disease or condition. A huge deficit in the area of canine behavior is the absence of an identifying procedure for classifying and naming behaviors and traits in the pet dog (Hsu and Serpell, 2003). Some suggest to objectively describe the physical presentation of behaviors being observed, not what the evaluator or assessor subjectively interprets the behaviors as.

Studies have been performed to determine when the ideal time to perform the behavior assessment would be and so far results have been inconclusive. A behavior assessment such as, ASPCA SAFER™, is important because it can potentially screen for aggression towards people, which is a major cause of dog bites in the United States (Segurson et al., 2005; Overall and Love, 2001; Guy et al., 2001). Information collected through behavior assessments, relinquishment questionnaires, and observations during the time of intake can enable personnel to have appropriate housing and enrichment options available to facilitate natural canine behavior and minimize stress (Bennett et al., 2012; Beerda et al., 1999). This information can also enable the education of adopters to help ensure successful long-term adoptions (Bennett et al., 2012; Bennett et al., 2015; Dowling-Guyer et al., 2011; Netto et al., 1993). There are, however, some fundamental

issues with these assessments. Certain behaviors may not be observed such as: predatory behavior, conspecific aggression, territorial aggression, and owner-directed aggression (Bennett et al., 2012; Christensen et al., 2007). Most assessments focus on resource guarding or fear-related behaviors (Christensen et al., 2007). Considering that a behavior assessment is a small glimpse into the dog's behavior; shelters or rescues should take into account other means of evaluating aspects of the dog's behavior such as evaluations by varying people, relinquishment interviews, pre and post adoption counseling, and encouragement of education for the owner by referring to trainers or behaviorists (Christensen et al., 2007; Segurson et al., 2005; Netto et al., 1993; Kroll et al., 2004).

Stress caused by the shelter setting can negatively affect the animal's behavior by increasing incidence of aggression or fear-based behavior (Bennett et al., 2015; Kruk et al., 2004; Mariti et al., 2012; Notari and Mills, 2011). Long term stress can even cause a depressive state (Bennett et al., 2015; Notari and Mills, 2011). Stress theoretically can change the way the canine responds to the items within the behavior assessment, by expressing greater or lesser aggression than the dog would in its typical state; thus resulting in inaccurate results (Bennett et al., 2015). Dogs being housed in a shelter-type setting could be suffering from unrecognized disease, sleep deprivation, social stress, noise reactivity, and emotional distress; thus resulting in dogs with inhibited responses that misrepresent aggressive tendencies (Christensen et al., 2007).

In 2007, Meet Your Match (MYM™) Safety Assessment for Evaluating Re-homing (SAFER™) was established by the (American Society for the Prevention of Cruelty to Animals (ASPCA) (SAFER Manual and Training Guide Weiss, 2007). SAFER™ is an assessment that covers seven key areas for aggression observation.

These include: reaction to restraint and touch, reaction to novel experiences including movement and noise stimuli, behavior around toys and food, and level of arousal towards another dog.

Based on the dog's behavior, each item is scored on a numeric scale 1 to 5 that indicates a plan for management from the total score (Bennett et al., 2015). Higher numbers indicate higher levels of aggression. In most areas, a score of 3 suggests potential behavior modification and/or management, a score of 4 suggests a strong recommendation for behavior modification and/or management, and a score of 5 suggests stopping that section of the test and behavior modification and/or management is required.

The SAFER™ assessment enables the shelter staff and adopters to gain a glimpse of understanding of the dog's behavior and ways to manage it. SAFER™ has not been validated in any formal manner, but is utilized in shelters across the United States (Bennett et al., 2015). For further details, studies assessing SAFER™ have been previously published by Bennett, Litster, Weng, Walker, and Luescher (2012); Bennett, Weng, Walker, Placer, and Litster (2015); Mohan-Gibbons, Weiss, and Slater (2012); Matters (2016); Flower (2016); Gloeckner (2013); and Donaldson (2010).

Equipment required for the SAFER™ assessments included: an assessment room, a video camera, a fake plastic hand attached to a wooden rod, metal food bowls, armless chairs, canned and dry dog food, a martingale or buckle collar, a six-foot leash, a rope toy, a plastic squeak toy, an unbasted rawhide chew, and a clipboard (Weiss, 2007).

The six required assessment items are as described below:

1. Look: The evaluator is lightly holding dog's head to determine how dog reacts when restrained and given direct eye contact by evaluator.
2. Sensitivity: The evaluator runs hand down shoulder to back and grasps fur and skin in a kneading motion to determine how dogs reacts to tactile stimulation.
3. Tag: The evaluator initiates play by using an excited tone of voice and lightly touches dog on rear flank to determine how dog reacts to sound stimuli and movement.
4. Squeeze: The evaluator runs hand down the dog's leg and picks up paw to squeeze it lightly to determine if the dog is sensitive to this type of unpleasant handling and determine what the dog decides to do when something mildly unpleasant occurs.
5. Food Behavior: The evaluator gives the dog a mix of wet and dry kibble and allows eating. The evaluator uses the fake hand to pull the bowl away from the dog after asking for the bowl. Next, the dog is allowed to eat again and the fake hand is pushed lightly on dog's muzzle to determine if food aggression is present.
6. Toy Behavior: The evaluator offers a toy by tossing it to the dog and allows dog to interact with toy. The fake hand is then used to reach in and take toy. This is done with each toy and the unbasted rawhide.

There is an optional seventh assessment item which is dog-to-behavior.

### **Chapter 3: Methodology**

A common behavioral assessment designed to determine adoptability, the presence of aggression, and responses to different situations and stimuli will serve as the instrument of measurement to determine the relationship between assessments scores and the effects of training three verbal cues, with positive reinforcement, to a dog residing in a shelter setting. This research project is structured to research two aims.

Aim 1: To determine the relationship with the effects of training three verbal cues to dogs residing in a shelter setting.

Aim 2: To determine if training is a plausible way to increase appropriate behaviors and interactions for dogs in a shelter-like setting.

### **Research Concept**

#### **Design**

A correlation model was used as a before and after method to determine if reward-based training creates indirect changes in a dog's behavioral assessment scores. The assessments were performed before and after training and served as a tool to elicit behaviors to compare and contrast changes. All dogs were initially assessed on Day 1 by the evaluator and the researcher, who served as the observer. The experimental group of four dogs received reward-based training for 10 days, one 20 minute sessions each day. All seven dogs had the final assessment performed on Day 10 by the evaluator and the researcher.

The three cues are as described below:

Cue 1 - Leave it (Impulse Control) Week One

1. Start with a treat in each hand. Offer one hand to dog. Dog will sniff or interact with hand in an attempt to obtain treat. Trainer will say "Leave it" and use other hand to wave treat by dog's nose and move hand next to face to lure into eye contact. (Luring is utilized due to ease of application). When eye contact made, treat given from luring hand.
2. Attach leash to dog. Can either step on leash or tie to object to secure dog. Say "Leave it", set treat on ground, lure dog away from focus on treat into eye contact. When eye contact made, treat given from luring hand.
3. Attach leash to dog. Can either step on leash or tie to object to secure dog. Say "Leave it", and toss treat away from dog. Use other hand to wave treat by dog's nose and move hand next to face to lure into eye contact. When eye contact made, treat given from luring hand.
4. Practice "Leave it" with varying objects such as: treats, toys, other people, other dogs, etc.; to ensure generalization of cue. Hand luring into eye contact will be weaned off, but can be utilized if needed.
5. Proficient: Dog will ignore object of interest and offer eye contact with a single verbal cue. Success rate to consider this dog proficient will be performed reliably three out of five times.



## Cue 2 - Place (Targeting) Week Two

1. Clicker will be introduced by performing click, treat; repeatedly until dog gains understanding that click results in treat offered. The dog will express understanding by anticipation of treat with eye contact.
2. Begin in front of bed (target). Point to bed/lure dog toward bed, when dog begins to move towards bed, say "Place". When dog's places foot on bed, click and treat.
3. Repeat this exercise until dog will stand with all four feet on bed.
4. Point to bed/lure dog toward bed. When all four feet are on bed, say "Place" and lure dog into a down position, click and treat.
5. Point to bed/lure dog toward bed. When all four feet are on bed, say "Place" and lure dog into a down position. Take a single step away from dog, return, click and treat.
6. Repeat this exercise until able to back up three steps away from bed. Some dogs prefer a sit/stay over a down/stay. Either is acceptable.
7. Proficient: Dog will go to bed, lie down or sit, and remain there for three steps away with a single verbal cue and hand signal that is pointing to bed. Success rate to consider this dog proficient will be performed reliably three out of five times.

### Cue 3 - Sit and Say Please By Sitting (Alternate Behavior and Focus) Weeks One and Two

1. Begin with treat in one hand (lure). Hold treat by dog's nose and lure into a sit position and say "Sit". When bottom hits ground, offer a treat.
2. Utilize the sit cue to teach the dog to ask nicely for something that it wants and not act inappropriately. Also, helps to teach dog to focus by teaching dog to look up at you.
3. Dog will sit for: petting, food, to go out of door, to exit or enter kennel, if jumping up, etc.
4. Proficient: Dog will sit automatically (no verbal cue) for anything the dog will find desirable. Success rate to consider this dog proficient will be the offering of a sit automatically when holding a treat, three out of five times.

ASPCA MYM™ SAFER™ assessment was performed on each dog before and after training to see if the training changes the behavioral assessment. A paired samples *t-test* was utilized to determine statistical significance because the *t-test* is designed to compares scores from a before and after comparison. The *t-test* tests the null hypothesis in regards to the observed difference between two means.

### **Variables**

The variable that the researcher is manipulating is whether or not training affects behavior. A control group of three dogs received no training and the experimental group of four dogs received training. The independent variable is the training of the dog because it is being manipulated and occurs independently of the results. The dependent variable is the behavior of the dog and occurs dependently on the training.

## Sampling Procedure

### Sample

Seven dogs were kept at Murray State University in the Carman Pavilion, which houses the teaching department for Veterinary Technology and Pre-Veterinary Medicine students. These canines were used as teaching animals for the Veterinary Technology/Pre-Veterinary Medicine program. Due to the small sample size available, this was performed as a pilot study. These dogs were all adopted by Murray State University from the Calloway County Animal Shelter. For this research, live animals were utilized, because one cannot determine behavior with a model that does not exhibit behaviors and interactions. By determining ways to improve the canine's behavioral assessment results, animal professionals can increase the adoptability, increase retention of the dog in its home, and decrease euthanasia rates.

The dogs studied were of varying ages and breeds, and also varied in lengths of time they have been housed in the facility. The majority were spayed or neutered shortly after arrival. University-owned teaching dogs have had all necessary veterinary care that a dog would receive if it was in a home. The facility is designed as a shelter-like setting with the dogs being housed in kennel runs. Dogs being utilized do get handled by the kennel workers and the students for teaching purposes and enrichment purposes. This research was performed over the summer of 2017, therefore student interactions were minimal.

## **Selection**

Canines in each group were picked by random draw using random sampling, as the researcher wanted an unbiased choice in dogs being trained. A convenience sample was chosen due to location. These seven dogs were used in this study because they have a shelter history and now live in an environment similar to a shelter (i.e., being housed in kennel runs with limited access to the outside and exposure to varying people). These dogs were housed in a controlled environment so every interaction with the animal is documented.

## **Instrumentation**

### **Development Procedures and Instrument Selection**

The researcher conducted an initial behavioral assessment on Day 1, and a final assessment on Day 10, utilizing Meet Your Match (MYM)™ Safety Assessment for Evaluating Re-homing™ (SAFER™). The SAFER assessment is composed of seven different items. The topics evaluated are: look, sensitivity, tag, squeeze, food behavior, toy behavior, and dog-to-dog behavior. Dog-dog behavior will not be utilized for this study. The results will give a better understanding of behavior, temperament, and response to different stimuli and help determine adoptability.

## Validity and Reliability of the Instrument

Although the validity and reliability of this instrument (SAFER™) has not been published, the behavior assessment is consistent and practical for this research purpose. Any person can use SAFER™ and any dog can be assessed using this assessment. This instrument is designed for general use in any shelter setting.

## Data Collection Procedures

An evaluator, who has not had any prior contact with the dogs, performed each initial assessment on all seven subjects. The researcher served as the observer/scorer on all assessments. All assessments and training sessions were video recorded. Dogs were trained three cues by the researcher. After training was complete and the dog was deemed proficient at each cue, the evaluator returned and performed the final assessment on all seven dogs. Figure 1.0 shows each cue and what proficient for that cue consists of.

Figure 1.0  
Proficiency of Cues

Cue	Definition of Proficient
Leave it	Dog ignored object of interest and offered eye contact with a single verbal cue. Success rate to consider this skill proficient was cue performed reliably three out of five times.
Place	Dog went to bed, lied down or sat, and remained there for three steps away with a single verbal cue and hand signal pointing to bed. Success rate to consider this skill proficient was cue performed reliably three out of five times.
Sit and Say Please by Sitting	Dog sat automatically (no verbal cue) for anything the dog found desirable. Success rate to consider this skill proficient was offering of a sit automatically when holding a treat, three out of five times.

### **Data Analysis Procedures**

A correlation model was used as a before and after method to determine if reward-based training creates indirect changes in a dog's behavioral assessment scores. During each item of the assessment, the dog was given a number score 1 through 5 based on the dog's behavioral responses. A score of 1 or 2 indicates no behavior modification or management needed. A score of 3 indicates potential behavior modification or management needed. A score of 4 indicates behavior modification or management strongly recommended. A score of 5 indicates to stop item for safety reasons and behavior modification or management is strongly recommended or required. Once the initial and final assessments were performed, each dog's numbers were added together for a total score for each assessment. A paired samples *t*-test was performed to compare the initial assessment total to the final assessment total. Descriptive statistics were also performed. The Cohen's D measure of effect size was 1.035435, which corresponds to a large effect. Due to the results, the null hypothesis is rejected, thus indicating statistical significance in both the initial and final assessment scores. Practical significance was also indicated.

## **Budget and Timeline**

### **Budget**

The budget is allotted from the researcher's personal funds due to the minimal financial impact. No external funding or grants were applied for this research study. The day of initial assessments, supplies acquired were three cans of Alpo canned food, a martingale collar, a leather six-foot leash, a fake hand attached to a dowel rod, a metal food bowl, and a folding metal chair. These items were also utilized for the final assessment. The video recorder utilized was the researcher's personal cell phone. All assessment score sheets were supplied by the researcher. During the training process, the researcher supplied her own training treats.

### **Time Schedule**

The duration for data collection was ten days. All dogs were initially assessed on Day 1 by the evaluator and the researcher, who served as the observer. After the initial assessment, a 20-minute training session was conducted for each dog in the experimental group. The experimental group of four dogs received reward-based training in 20 minute sessions for ten days each day before noon. The first five to 10 minutes of training involved having the dog sit before exiting any doorway and going outside so the dog could relieve itself before training. The remaining time was spent training the cues in the records/feed room at Carman Pavilion. After training had occurred on Day 10, a final behavior assessment was performed on all dogs to conclude the study.

## **Chapter 4: Results**

### **Introduction**

Each dog had an initial and final behavior assessment performed. Each section in the assessment how to assign a numerical score to determine level of aggression indicated. The numerical scores ranged between 1 and 5. After all assessments were completed, total scores from the initial assessments were compared to the total scores for the final assessments for each dog. Score of 1 or 2 indicates no behavior modification or management needed. Score of 3 indicates potential behavior modification or management needed. Score of 4 indicates behavior modification or management strongly recommended. Score of 5 indicates to stop test item for safety reasons and behavior modification or management is strongly recommended or required. These total scores enabled an easy to see compare and contrast model. For the null hypothesis to be rejected and for the research to be practically and statistically significant, the experimental group of dogs would have lower scores for the final assessment to show that reward-based training improved the behavioral assessment.

### **Description of Subjects**

Out of a sample of seven dogs, four dogs were randomly selected into the experimental group, while the remaining three dogs served as the control group. Due to the small sample size available, this was performed as a pilot study. Subjects are all adult dogs and spayed or neutered. Leon, a dog in the control group, did not have a final behavior assessment performed. During the course of research, the researcher found Leon on the enrichment patio having been visibly attacked by another dog. Veterinary



care was immediately sought and shortly after, he passed away. Refer to Table 1.0 for a detailed description of study participants.

Table 1.0

## Descriptions of Canines in Study

Dog Name	Sex and Neuter Status	Weight (lbs)	Breed	Acquisition Date	Group Category
Jumper	Male Neutered	55.8	Pit Bull Mix	Jan-16	Experimental
Cleo	Female Spayed	32.2	Shepherd Mix	Jan-17	Experimental
Charlie	Male Neutered	39.2	Labrador Mix	Jan-17	Experimental
Maggie	Female Spayed	42.4	Pit Bull Mix	Aug-15	Control
Shiba	Female Spayed	35.2	Shepherd Mix	Jul-16	Control
Tasha	Female Spayed	34.2	Australian Cattle Dog Mix	Aug-12	Experimental
Leon*	Male Neutered	25.6	Beagle	Feb-17	Control

\* Leon passed away and did not have Final Assessment performed.

### Analysis of Research

Numerical data was collected from items within the assessment. These numerical scores were then added together for each dog to have a total score for the initial assessment and a total score each for the final assessment. Descriptive statistics were performed on initial and final scores. The statistical analysis performed was the *t-test*: paired two sample for means. The experimental hypothesis states that reward-based training will create an improvement in the behavioral assessment scores. Table 2.0 shows the statistical findings from a paired samples *t-test*, which indicates there is a statistically significant difference between the initial assessment scores and the final assessment scores, ( $t [5] = 2.599, p < .05$ ). The null hypothesis for paired samples *t-test* is that the

means are equal. The null hypothesis is rejected. Figure 2.0 shows the scores assigned for the initial assessment. Figure 3.0 shows the scores assigned for the final assessment.

Figure 2.0  
Initial Assessment  
7/9/2017

Name	Look	Sensitivity	Tag	Squeeze 1	Squeeze 2	Food	Toy	Rawhide	TOTAL
Jumper*	1	2	5	1	2	3	1	2	17
Cleo*	1	1	1	1	1	2	1	1	9
Charlie*	2	2	3	3	3	2	1	1	17
Maggie	2	2	1	1	1	3	1	1	12
Shiba	1	2	1	1	1	3	1	1	11
Tasha*	1	1	1	1	1	3	4	4	16
Leon	1	1	1	1	1	2	1	1	9

\* Indicates dog was in experimental group.

Figure 3.0  
Final Assessment  
7/20/2017

Name	Look	Sensitivity	Tag	Squeeze 1	Squeeze 2	Food	Toy	Rawhide	TOTAL
Jumper*	1	2	2	1	1	3	1	2	13
Cleo*	1	2	1	1	1	1	1	1	9
Charlie*	1	1	1	1	1	1	1	1	8
Maggie	2	1	1	1	1	3	1	2	12
Shiba	1	1	1	1	1	3	1	1	10
Tasha*	1	1	1	1	1	3	1	3	12
Leon	0	0	0	0	0	0	0	0	0

\* Indicates dog was in experimental group.

Scores of 4 and 5 are shown in red to indicate behavior modification or management strongly recommended and/or required. Score of 3 is shown in yellow to indicate potential behavior modification or management needed.

The researcher compared the pre and post item numbers and the total numbers of each dog from the initial assessment to the final assessment. The mean of the total scores of each dog from the initial assessment was 13.66 ( $SD = 3.44$ ). The mean of the total scores of each dog from the final assessment was 10.33 ( $SD = 2.07$ ). The results of a dependent paired samples  $t$ -test were statistically significant at the .05 alpha level,  $t(5) = 2.599$ ,  $p = 0.04$ . The total scores from the final assessment were lower, overall, compared to the scores from the initial assessment for all dogs. The Cohen's  $D$  measure of effect size was 1.035435, which corresponds to a large effect. Due to the results, the null hypothesis is rejected, thus indicating statistical significance in both the initial and final assessment scores. Practical significance was also indicated.

Table 2.0

Descriptive Measures and Results of a  $t$ -test on Effects of Training on Initial and Final Behavioral Assessments

Assessment	$n$	Mean	Median	Min	Max	$SD$	$df$	$t$	$p$
Initial	7	13.66	11.50	9	17	3.44	5	2.599	0.04
Final	6	10.33	10.00	8	12	2.07			

### Summary

The behavior assessments served as a guide to show if behavioral changes occurred with reward-based training that was not related to the assessment. This pilot study showed that for the sample of dogs utilized, the experimental group of dogs had improved behavioral assessments after 10 days of training. The control group of dogs

also had scores that lessened in the sensitivity item of the assessment, while the other item numbers remained the same. Jumper had improved scores in the Tag item and the Squeeze item. All other items remained the same. His total scores decreased overall. Jumper displayed extremely rough play in the Tag item and the assessor struggled to detach him from her pants. Cleo had improvement in the Food item, but she had an increase in the Sensitivity item. Her total scores remained at 9. Charlie's overall scores improved significantly from 17 to 8. He was also the only dog that exhibited behavioral responses to the assessment in an obvious fearful manner. His scores lowered in Look, Sensitivity, Tag, Squeeze, and Food items. The Toy and Rawhide items remained the same at 1. Maggie had a decrease in her Sensitivity score, and an increase in her Rawhide score. Her scores remained the same at 12. Shiba had a decrease in her Sensitivity score and all other scores remained constant. Her scores overall decreased from 11 to 10. Tasha had improvement in the Toy and Rawhide section, while all other items were unchanged. Her overall scores went from a 16 to 12. By utilizing reward-based methods, we improved the dog's overall scores in the sections of Tag and Squeeze. Tag is the initiation of play and squeeze is the holding of a paw. Four dogs resource guarded food and the training had no effect on the final score for that item if the dog scored a 3 or above.

## Chapter 5: Conclusions and Recommendations

### Discussion

Reward-based methods show significant benefits such as enhanced willingness of the learner to develop a new skill; while punishment-based methods result in detriments such as reduced interaction during play and lower incidence of willingness to interact with new people (Rooney and Cowan, 2011). Using positive reinforcement training only resulted in the pet dog showing less incidence of attention seeking behaviors, aggression, and fear avoidance (Blackwell et al., 2008). With reward-based training, the dog's overall scores improved in the sections of tag and squeeze. Natural behaviors, such as food guarding or resource guarding toys, can be interpreted as maladaptive due to unrealistic expectations. These problem behaviors are often associated with anxiety and fear (Blackwell et al., 2008; Blackwell et al., 2006). Techniques utilizing force or punishment are shown to increase fear, anxiety, and arousal levels which can teach the dog to bite without warning (Herron et al., 2009; Landsberg et al., 2003). Behavior problems are shown to have detrimental results on the relationship between the owner and the pet; thus functioning as an important reason in the relinquishment decision (Salman et al., 2000). The problem behaviors can result in so much owner distress that the only solution appears to be handing the animal over to the care of a shelter to be rehomed (Wells and Hepper, 2000; Patronek et al., 1995; Salman et al., 1998; Wells, 1996). Training with rewards improves the human-animal bond by creating an animal that is confident and willing to learn. Dogs trained with rewards enjoy interacting with their handler because they are given the choice to respond to cues, instead of responding to commands out of fear.

### **Recommendations for Future Research**

This research study served as a pilot study, therefore a larger research study should be conducted to fully determine the magnitude of effect the reward-based training can have on the behavioral assessments. Study of the human-animal bond and its effects on both the owner and pet should be further researched to determine ways the bond can be strengthened or weakened. Reduction of the population of pets in shelters should be further researched to determine more ways to improve adoptability, improve retention in the home, and decrease the euthanasia rate.

### **Recommendations for Veterinary Practitioners**

The conclusions of this study further reiterate the reasons positive reinforcement and reward-based methods improve the veterinary experience for the patient and client and improve behavioral assessment scores in a shelter setting. Veterinary professionals are often at the forefront of the client and patient's relationship being whom the client turns to first for advice. The client already has an established relationship with the veterinary professionals involved in the dog's life, therefore the veterinary professional has the opportunity to improve the human-animal bond between owner and pet. There are two well-known certification programs recommended for those in the veterinary field. The Fear Free™ Initiative created by Dr. Marty Becker advocates prevention and alleviation of fear, anxiety, and stress in pets by inspiring and educating the people who care for them (Fear Free LLC, 2017). The other certification available is through Dr. Sophia Yin's CattleDog Publishing, called Low Stress Handling® University. The mission states they are dedicated to helping others experience the same joy we share with

our own pets. CattleDog Publishing utilizes scientific principles of animal behavior and creates practical applications that are easy to understand and are accessible for everyday use. Our understanding and knowledge, and thus our training and teaching techniques, are always evolving. They allow us to create unique educational materials to empower both pet-care professionals and pet owners. Our insight into the animal's point of view and awareness of how all our interactions affect them allows us and our pets to have fun and enjoy life together everyday (Low Stress Handling™ University. CattleDog Publishing, 2017).

### **Recommendations for Shelters and Pet Owners**

Shelter staff can utilize Meet Your Match (MYM)™ SAFER™ manual and training guide for recommendations for behavior modification if warranted from the results of the SAFER™ assessment (Weiss, 2007). Results from this study show that reward-based training improves behavior assessment scores. If shelters have the means to incorporate reward-based training into their daily interactions/routines, assessment scores should improve overall. The likelihood of adoption should increase as well as retention in the home, thus resulting in less euthanasia overall. Using the Premack Principle to teach dogs to sit for things that they want is an easy form of reward-based training to incorporate into the shelter system. Teaching a dog to sit when a person is approaching the kennel makes the dog more adoptable by creating acceptable conduct for greetings (Tuber et al., 1999). A dog can be trained with minimal training, 10-15 minutes a day, by novice trainers to sit when people approach regardless of person or location as long as the dog is reinforced (Thorn et al., 2006). Teaching a dog to sit for objects or people of desire, will teach and reinforce the canine to exhibit impulse control.

These principles will also apply to pet owners. Dogs exhibiting inappropriate behaviors should be trained using reward-based methods. The use of positive reinforcement training yields dogs that exhibit less attention seeking behaviors, less aggressive responses, and less fear responses (Blackwell et al., 2008). Reward-based methods have been shown to be more effective than punishment-based methods for teaching dogs appropriate behaviors and eliminating inappropriate behaviors (Kwan and Bain 2013; Hiby et al., 2004; Rockwood and Bain, 2007). Vacalopoulos and Anderson (1993) estimated that up to 90 percent of dogs in homes exhibit behaviors that the owner views as inappropriate or unacceptable. If these behaviors are detrimental enough, the owner will more than likely rehome or relinquish the dog. To prevent the euthanasia of healthy dogs, there is a need to address their behavior and make them more appealing and adoptable with the ability to stay in their new home. Training with positive reinforcement techniques has a multitude of benefits and overall improves the human-animal bond.



## Appendices

### A: IACUC Application and Approval

**MURRAYSTATEUNIVERSITY**  
**INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)**  
**APPLICATION FOR THE USE OF ANIMALS IN RESEARCH OR TEACHING**

COVER PAGE FOR PROTOCOL APPLICATIONS

<b>Principal Investigator/Instructor (must be an MSU faculty member):</b> Dr. Anna Vaughn-Doom		<b>Title:</b> Clinical Instructor/Lecturer
<b>Department:</b> Veterinary Technology		<b>E-Mail:</b> adoom@murraystate.edu
<b>Campus Address:</b> 100 AHT Center Murray, KY 42071		<b>Phone:</b> 2708097006
<b>Purpose:</b>		
<b>Protocol Type:</b>	<input checked="" type="checkbox"/> Research	<input type="checkbox"/> Instruction <input type="checkbox"/> Other, specify
<b>Application Type:</b>	<input type="checkbox"/> New Application	<input checked="" type="checkbox"/> Revised Application <input type="checkbox"/> Continuation Review
<b>Project/Course Number:</b>	2017-032	
<b>Project/Course Title</b>	The Effects of Training on Behavioral Assessments Performed on the Canine (The Effects of Reward-Based Training on the Behavioral Assessment of the Domestic Dog)	
<b>Project/Course Period:</b>	<b>From:</b> May 2017	<b>To:</b> July 2017
	<b>For projects beyond a 12-month period, the PI must submit a continuation review protocol and receive approval prior to the next period.</b>	
<b>Funding Source/Agency:</b>	N/A	
<b>Assurances &amp; Authorizations:</b>		
<p><b>As principal investigator/instructor, I hereby assure that:</b></p> <p><b>Regulations:</b> I am familiar with the <a href="#">Guide for the Care and Use of Laboratory Animals</a>.</p> <p><b>Animal Use:</b> The animals authorized for use in this protocol will be used only in the activities and in the manner described herein, unless a deviation is specifically approved by the IACUC. The animal's living conditions are appropriate and medical care is available for these animals.</p> <p><b>Alternatives/Duplication:</b> I have made a reasonable, good faith effort to find and utilize alternatives and refinements to these procedures and to avoid unnecessary duplication of previous experiments, unwarranted animal use, and unnecessary painful procedures.</p> <p><b>Statistical Assurance:</b> I assure that there has been adequate evaluation of the statistical design or strategy of this proposal, and that the "minimum number of animals needed for scientific validity are used."</p> <p><b>Occupational Health:</b> I have taken into consideration and have made the proper arrangements regarding all applicable rules and regulations regarding zoonotic diseases, anesthetic safety, radiation safety, biosafety, recombinant issues, etc., in the preparation of this protocol. All MSU employees with animal contact have received the guidelines - <a href="#">Occupational Health for Animal Care Workers</a> and they are in compliance with this policy.</p> <p><b>Immunizations:</b> Documentation of required tetanus and/or rabies immunizations is required. <b>Attach appropriate documentation to the Form P or AP.</b></p> <p><b>Training:</b> I verify that the personnel performing the animal procedures/manipulations described in this protocol are technically competent and have been properly trained to ensure that no unnecessary pain or distress will be caused as a result of the procedures/manipulations. Inexperienced personnel will be supervised.</p> <p><b>Permits/Licenses:</b> I verify that I have obtained all appropriate permits and licenses to conduct the activities described in this protocol. <b>Attach appropriate copies of the permits/licenses.</b></p> <p><b>A Curriculum Vita</b> is required every three years. I verify that I have provided a current curriculum vita to the IACUC. Original date current vita submitted to IACUC <a href="#">5/25/2017</a>.</p> <p><b>Animal Use Records:</b> I understand that records of these animal procedures must be maintained for a period of at least 3 years following the end of this protocol for inspection purposes.</p> <p>I understand the MSU Institutional Animal Care and Use Committee and the attending veterinarian can enter the premises where these animals will be used or housed for the performance of official duties.</p> <p>I understand that this protocol and all relevant records shall be accessible for inspection and copying by authorized representatives of the U.S. Department of Health and Human Services (HHS), Public Health Service (PHS), Office of Laboratory Animal Welfare (OLAW) or other PHS representatives, the U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), appropriate accrediting agencies, or the funding agency.</p> <p>The information provided is complete and correct to the best of my knowledge.</p>		

For New Applications, attach Forms A, B, C, J, L, P, S, and AP.

**MURRAYSTATEUNIVERSITY**  
**INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)**  
**APPLICATION FOR THE USE OF ANIMALS IN RESEARCH OR TEACHING**

<b>Principal Investigator/Instructor Signature:</b>	<b>Date:</b>
As Department Chairperson, I hereby acknowledge receipt of this protocol and approve its submission to the IACUC:	
<b>Department Chairperson and Dean Signature:</b>	<b>Date:</b>
<b>Protocol Received</b>	<b>Protocol Number</b>

**FORM A: ANIMAL USE SUMMARY**

In terms understandable to a layperson, briefly describe the proposed project/course, its primary aims, the major reasons for using live animals, and the procedures to which the animals will be subjected. Include the species of animals to be used, the numbers to be used in each experimental/control group, and the name, doses and route of ALL drugs that will be administered to the animals.

The proposed project will determine if training a dog creates changes in its behavioral assessment. Behavioral assessments will be performed before and after training and serve as a tool to elicit behaviors to compare and contrast changes. Behavioral assessments are used to gain an understanding of the dog's responses; and serve as an indicator, to help make informed recommendations for the dog's adoption process. Behavioral assessments are defined as a series of standardized experimental situations where stimuli serve to elicit behavior, that is then compared to other individuals placed in the same situation, in order to classify the subject tested (Serpell, Hsu 2001). For this research, live animals will have to be utilized, because one cannot determine behavior with a model that does not exhibit behaviors and interactions. By determining ways to improve the canine's behavioral assessment, we can increase the adoptability and retention of the dog in its home. The National Council on Pet Population and Study (NCPSP) researched factors related to relinquishment of animals to shelters and concluded that behavioral problems are the most reoccurring reasons observed (Salman et al., 1998). This study will use primarily positive reinforcement training and no aversive methods. A lower occurrence of undesirable behaviors in dogs occurs with the use of positive reinforcement techniques (Blackwell et al., 2008). The goal of this study is to determine if training creates an improvement in the behavioral assessment. This will enable us to decrease common behavioral issues, resulting in less dogs being relinquished and rehomed.

The researcher will conduct an initial and final behavioral assessment utilizing Meet Your Match (MYM)™ Safety Assessment for Evaluating Rehoming™ (SAFER™). The SAFER assessment is composed of seven different tests. The topics evaluated are: look, sensitivity, tag, squeeze, food behavior, toy behavior, and dog-to-dog behavior. The results will give a better understanding of the dogs' behavior, temperament, and response to different stimuli. The researcher will serve as the observer for the assessments, while the assistant is the assessor. Behavioral assessments will be performed and videotaped twice on eight Murray State owned canines. Research samples include eight Murray State owned domestic canine (*Canis familiaris*) housed at Carman Pavilion. Due to the sample size available being less than ten, this will be performed as a pilot study. These dogs were adopted by Murray State University from the Calloway County Animal Shelter. Four randomly selected dogs will be the control group; the other four randomly selected dogs will be the experimental group. No drugs will be used in this study. An initial behavioral assessment will be conducted on both the experimental and control group. The experimental group of four dogs will be trained to respond to three cues proficiently. During this time, the four dogs of the control group will not be exposed to extra training and interactions. The experimental group will be trained for twenty minutes once a day, over a course of ten days. The cues will be "Leave it", "Place", and "Sit"/Say Please by Sitting. "Leave it" will be week one (Monday-Friday) and "Place" will be week two (Monday-Friday). The third cue, "Sit" will be taught and/or reinforced week one and utilized as an alternate behavior for inappropriate behaviors during week two, also known as Say Please by Sitting. (Example. Dog jumps up, teach them sit as an alternate behavior, and then give dog reward). All cues will be taught with positive reinforcement. Positive reinforcement is defined as increasing the goal behavior by subsequently presenting a pleasant stimulus. Examples of stimuli would be: verbal praise, rewards of food treats, petting, and play. (Blackwell et al., 2008). Behavioral assessments will be performed after training, to determine if the positive reinforcement training affected the behavioral assessment on the experimental group. A final behavioral assessment will also be performed on the other four dogs serving as the control group, enabling a means for comparison.

For New Applications, attach Forms A, B, C, J, L, P, S, and AP.

**MURRAYSTATEUNIVERSITY**  
**INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)**  
**APPLICATION FOR THE USE OF ANIMALS IN RESEARCH OR TEACHING**

Cue 1 - Leave it (Impulse Control) Week One

1. Start with a treat in each hand. Offer one hand to dog. Dog will sniff or interact with hand in an attempt to obtain treat. Trainer will say "Leave it" and use other hand to wave treat by dog's nose and move hand next to face to lure into eye contact. (Luring is utilized due to ease of application.) When eye contact made, treat given from luring hand.
2. Attach leash to dog. Can either step on leash or tie to object to secure dog. Say "Leave it", set treat on ground, lure dog away from focus on treat into eye contact. When eye contact made, treat given from luring hand.
3. Attach leash to dog. Can either step on leash or tie to object to secure dog. Say "Leave it", and toss treat away from dog. Use other hand to wave treat by dog's nose and move hand next to face to lure into eye contact. When eye contact made, treat given from luring hand.
4. Practice "Leave it" with varying objects such as: treats, toys, other people, other dogs, etc.; to ensure generalization of cue. Luring will be weaned off, but can be utilized if needed.
5. Proficient: Dog will ignore object of interest and offer eye contact with a single verbal cue. Success rate to consider this dog proficient will be performed reliably three out of five times.

Cue 2 - Place (Targeting) Week Two

1. Clicker will be introduced by performing click, treat; repeatedly until dog gains understanding that click results in treat offered. The dog will express understanding by anticipation of treat with eye contact.
2. Begin in front of bed(target). Point to bed/lure dog toward bed, when dog begins to move towards bed, say "Place." When dog's places foot on bed, click and treat.
3. Repeat this exercise until dog will stand with all four feet on bed.
4. Point to bed/lure dog toward bed. When all four feet are on bed, say "Place" and lure dog into a down position, click and treat.
5. Point to bed/lure dog toward bed. When all four feet are on bed, say "Place" and lure dog into a down position. Take a single step away from dog, return, click and treat.
6. Repeat this exercise until able to back up three steps away from bed. Some dogs prefer a sit/stay over a down/stay. Either is acceptable.
7. Proficient: Dog will go to bed, lie down or sit, and remain there for three steps away with a single verbal cue and hand signal that is pointing to bed. Success rate to consider this dog proficient will be performed reliably three out of five times.

Cue 3 - Sit and Say Please By Sitting (Alternate Behavior and Focus) Weeks One and Two

1. Begin with treat in one hand (lure). Hold treat by dog's nose and lure into a sit position and say "Sit." When bottom hits ground, offer a treat.
2. Utilize the sit cue to teach the dog to ask nicely for something that it wants and not act inappropriately. Also, helps to teach dog to focus by teaching dog to look up at you.
3. Dog will sit for: petting, food, to go out, if jumping up, etc.
4. Proficient: Dog will sit automatically (no verbal cue) for anything the dog will find desirable. Success rate to consider this dog proficient will be the offering of a sit automatically when holding a treat, three out of five times.

For New Applications, attach Forms A, B, C, J, L, P, S, and AP.

**MURRAYSTATEUNIVERSITY**  
**INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)**  
**APPLICATION FOR THE USE OF ANIMALS IN RESEARCH OR TEACHING**

**FORM B: PROCEDURES**

Complete a separate FORM B for each animal species used:

<b>Animal Species:</b>		Domestic Canine ( <i>Canis familiaris</i> )		
<b>#:</b>	<b>Procedure:</b>	<b># Animals Used:</b>	<b>Pain Code:</b>	<b>Frequency:</b>
1	Training "Leave it"	4	C	20 min once a day for week one (Monday-Friday) 5 days total
2	Training "Place"	4	C	20 min once a day for week two (Monday-Friday) 5 days total
3	Training "Sit" and Say Please By Sitting	4	C	20 min once a day (during other training) for weeks one and two (Monday-Friday) 10 days total
4	Initial Behavior Assessment	8	C	Performed on each dog before training begins.
5	Final Behavior Assessment	8	C	Performed on each dog after training ends.
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
For procedures requiring justification, attach <b>FORM J: Justification of Discomfort, Distress, Pain.</b>				
<b>Drugs for alleviation of discomfort, distress, pain: (reference each procedure with its' number)</b>				
<b>#:</b>	<b>Drug:</b>	<b>Dosage:</b>	<b>Route:</b>	<b>Frequency:</b>
	N/A			

For New Applications, attach Forms A, B, C, J, L, P, S, and AP.

**MURRAYSTATEUNIVERSITY**  
**INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)**  
**APPLICATION FOR THE USE OF ANIMALS IN RESEARCH OR TEACHING**

**FORM C: ANIMAL CHARACTERISTICS AND CARE**  
(Complete a separate FORM C for each type of animal used.)

<b>Animal Characteristics:</b>				
<b>Common Name:</b>	<b>Strain:</b>	<b>Sex:</b>	<b>Age:</b>	<b>Size:</b>
Dog	Mixed	Male/Female	Adult	Mixed
<b>Source of animals:</b>	Carman Pavilion- Murray State University owned dogs, obtained from Calloway County Animal Shelter			
<b>Rationale for selection of this species/strain:</b>	Comparable to any shelter-like setting. The dogs are housed in kennel runs with rotation into an outside fenced-in area.			
<b>Number of Animals and Length of Residence:</b>				
<b>Total Number:</b>	<b>Number on Hand at One Time:</b>	<b>Average Length of Residence:</b>		
10	Around 10	Year Round		
<b>Animal Housing and Use Facilities:</b>				
Premises of housing (building and room #):		Carman Pavilion Room 207		
Premises where procedures will be performed:		Carman Pavilion Room 112		
<b>Animal Disposition:</b>				
Disposition Method:		Animals will be returned to animal colony		
For chemical euthanasia, indicate drug, dose, and route of administration:		N/A		
Identify the person authorized to perform euthanasia and/or disposal:		N/A		
<b>Veterinary Care:</b>				
Veterinarian consulted in the planning of painful procedures:		N/A		
Source of veterinary care for these animals:		Dr. Terry Canerdy, Dr. Bill Dewees, Dr. Laura Ken Hoffman		
If the above named veterinarian(s) are not currently registered with the IACUC, please submit a professional vita with this protocol application.				
<b>Multiple protocols:</b>				
Will these animals be used for any other protocols?		<input type="checkbox"/>	NO	<input checked="" type="checkbox"/> YES
If YES, indicate the additional protocols and justify:		Other teaching protocols for AHT/Pre-Vet Dept. and possibly other research protocols. These animals are utilized during courses throughout the duration of the semester. My research will be conducted while regular semester courses are not in session, to prevent any unnecessary over usage of the animals. The research conducted is minimally invasive.		

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**INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)**  
**APPLICATION FOR THE USE OF ANIMALS IN RESEARCH OR TEACHING**

**FORM J: JUSTIFICATION OF DISCOMFORT, DISTRESS, PAIN**

<b>Project/Course #:</b>	2017-032
<b>Project/Course Title:</b>	The Effects of Training on Behavioral Assessments Performed on the Canine (The Effects of Reward-Based Training on the Behavioral Assessment of the Domestic Dog)
<b>Procedure:</b>	Behavioral Assessments and Positive Reinforcement Training
<p>The following information is required by USDA regulations to justify any procedures involving:</p> <p>Pain Category C - No more than momentary or slight pain or distress and no use of pain-relieving drugs, or no pain or distress. For example: euthanized for tissues; just observed under normal conditions; positive reward projects; routine procedures; injections; and blood sampling;</p> <p>Pain Category D - animals in which pain and distress during procedures was appropriately relieved by pain- or distress-relieving drugs;</p> <p>Pain Category E - animals involved in procedures which cause pain or distress that was not relieved by drugs for scientific reasons.</p> <p>A detailed database search <i>MUST</i> be completed for alternatives on any procedures that fall into the pain categories listed above. Delineate methods and sources used in the search including database searched, date of search, period covered, and keywords used. A description on considerations of alternatives and determinations why they are not to be used must be provided. For Pain Category D, describe the use of the agent, dosage, route, and administration schedule. Also include the security and tracking of controlled drugs according to DEA requirements. (Cross Reference if these procedures were already outlined on FORM A.) If you need assistance contact your designated Research Librarian.</p> <p>List justifications for Pain Categories below.</p>	
<p>Pain Category C: no more than momentary or slight pain or distress and no use of pain-relieving drugs, or any pain or distress.</p> <p>Positive reinforcement is universally defined as the use of reward-based methods; that include an enjoyable interaction between the dog and handler, which occurs when desirable behavior is presented (Arhant et al. 2010). This quadrant of operant conditioning will be the primary method utilized for this research study. The utilization of this method in canine behavior modification has been found to be related to a fewer incidence of behavior problems and better response to cues (Blackwell et al., 2008; Hiby et al., 2004). Positive reinforcement causes little or no stress to the animal during the process of training, unlike other quadrants.</p> <p>The behavioral assessments performed before and after positive reinforcement training, are observational assessments in which the dog is put into a situation or exposed to a certain stimulus. The person performing the assessment is simply observing and notating the animal's behavior, therefore the canine patient is being observed under normal conditions. The assessments are designed to replicate real-world situations that evaluate a response to a particular stimulus, at a moment in time, in a specific environment for an individual dog (Bennett et al., 2012). These test results are used to predict how that animal may react in a similar situation outside of the testing environment (Taylor and Mills, 2006). Observing an animal under normal conditions should cause little to no stress for the animal.</p>	

For New Applications, attach Forms A, B, C, J, L, P, S, and AP.

**MURRAYSTATEUNIVERSITY**  
**INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)**  
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**FORM L: LITERATURE SEARCH**

ALTERNATIVES TO THE USE OF ANIMALS

ALTERNATIVES TO PAINFUL PROCEDURES

AVOIDANCE OF DUPLICATION

- *Federal regulations require that documentation be provided to indicate appropriate consideration of alternatives to the use of animals, painful procedures, and avoidance of unnecessary duplication.*
- *Use a separate Form L for each search conducted. It may be necessary to conduct a separate literature search for each painful procedure proposed as well as one to assure avoidance of experimental duplication.*
- *The narrative description of the search results should be an analysis of the information found rather than a simple bibliographic listing. Blanket statements such as "no information found" or "no alternatives available" are not acceptable.*

<b>Project/Course #:</b>	Effects on Behavioral Assessments of the Canine Patient Before and After Training
<b>Project/Course Title:</b>	Effects on Behavioral Assessments of the Canine Patient Before and After Training
The following information is required by USDA regulations to demonstrate that an adequate attempt was made to find and consider <b>alternatives to the use of animals, alternatives to painful procedures, and avoidance of duplication.</b>	
<b>Database Searched:</b>	Google Scholar
<b>Date of Search:</b>	3/8/2017
<b>Years Covered:</b>	1992-2014
<b>Key Words/Strategy:</b>	Animal behavior, welfare, behavioral assessment, canine, observational, operant conditioning
<b>Analysis of Search:</b> (provide a narrative description such that the IACUC can readily assess whether the search topics [Alternatives to the Use of Animals, Alternatives to Painful Procedures, Avoidance of Duplication] were appropriate and the search was sufficiently thorough):	
<p>Alternatives to the Use of Animals</p> <p>Researchers have observed animal behavior as an indicator of poor welfare and are shifting the focus on the causative factors (Gonyou, 2014). These causative factors manifest as physical representations of what the animal is feeling through the form of body language. The physiological parameters that are observed visually include: aggression, boredom, anxiety, and abnormal behavior markers such as stress and pain (Deldalle and Gauner, 2014). These parameters are expressed through the usage of a behavioral assessment on the domestic canine. In regards to animal welfare; a visual assessment of behavior can be performed to gain understanding of the animal. The assessment only improves the animal's welfare if the stimulus eliciting the stress is addressed, and the animal is taught through training how to handle the situation (Gonyou, 2014). The overall objective of an observational study is to assess and describe behaviors exhibited in natural situations, creating the ability to draw broader conclusions about the dog's temperament and behavior when presented with experimental stimuli (Jones and Gosling, 2005). The majority of training methods are based on operant conditioning. Operant conditioning is teaching an animal that its responses to stimuli have an effect called a reinforcer (Dore and Mercier, 1992; Domjan, 2006). When using operant conditioning; there must be the teaching of a behavior, the reinforcing of a behavior, and the visual observation of a reinforced behavior. As described, for an observational behavior study that is assessing the canine patient before and after training; animals that visually communicate are needed for this type of study.</p>	

For New Applications, attach Forms A, B, C, J, L, P, S, and AP.

**MURRAYSTATEUNIVERSITY**  
**INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)**  
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**FORM P: PERSONNEL (PRINCIPAL INVESTIGATOR / CO-INVESTIGATOR)**  
 (Complete a separate FORM P for each PI or co-PI involved in the handling and/or care of the animals for this protocol.)

<b>Project/Course #:</b>	2017-032		
<b>Project/Course Name:</b>	The Effects of Training on Behavioral Assessments Performed on the Canine (The Effects of Reward-Based Training on the Behavioral Assessment of the Domestic Dog)		
<b>PI Name:</b>	Anna M. Vaughn-Doom		
<b>Title/position:</b>	Veterinary Technology Lecturer/Clinical Instructor		
<b>Department:</b>	Veterinary Technology/Pre-Veterinary Medicine		
<b>Campus address:</b>	100 AHT Center Murray, Kentucky 42071		
<b>Campus phone:</b>	2708097006		
<b>E-mail address:</b>	adoom@murraystate.edu		
<b>Protocol role:</b>	Graduate Advisor		
<b>I am current on the following immunizations as appropriate:</b>			
<b>Immunization:</b>	<b>Received:</b>	<b>Date Received:</b>	<b>Comment:</b>
Rabies	<input type="checkbox"/>	N/A	N/A
<i>Documentation of Rabies immunization required. Attach a copy to this form.</i>			
Tetanus:	■	1997	
<i>Documentation of Tetanus immunization required. Attach a copy to this form.</i>			
Hepatitis:	■	1997	
<i>Documentation of Hepatitis immunization required. Attach a copy to this form.</i>			
Other (specify):	<input type="checkbox"/>		
<i>Documentation of immunization required. Attach a copy to this form.</i>			
<b>Qualifications for my role in this protocol:</b>			
<b>As a PI or Co-PI in this protocol, I hereby assure that:</b>			
<ol style="list-style-type: none"> <li>1. I have received appropriate training in the handling and care of these animals and the procedures and techniques to be employed;</li> <li>2. I have received the guidelines: <u>Occupational Health for Animal Care Workers</u> and I am in compliance with this policy;</li> <li>3. I have read and understand the <u>Guide for the Care and Use of Laboratory Animals</u>;</li> <li>4. I understand that only those procedures explicitly detailed in this protocol may be performed on the animals in question and that unauthorized deviations from this protocol must be reported to the IACUC; and;</li> <li>5. I understand that documentation of all procedures performed on these animals must be maintained for at least 3 years after the end of the protocol for inspection purposes, and</li> <li>6. I understand the MSU IACUC and Federal Regulations Regarding Noncompliance.</li> </ol>			
<b>Person:</b>	<b>Signature:</b>		<b>Date:</b>
<b>PI or Co-PI:</b>			

For New Applications, attach Forms A, B, C, J, L, P, S, and AP.



**MURRAYSTATEUNIVERSITY**  
**INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)**  
**APPLICATION FOR THE USE OF ANIMALS IN RESEARCH OR TEACHING**

FORM AP: ASSOCIATE PERSONNEL (UNDERGRADUATE OR GRADUATE STUDENTS, TECHNICIANS, STAFF)

<b>Project/Course #:</b>		2017-032			
<b>Project/Course Name:</b>		The Effects of Training on Behavioral Assessments Performed on the Canine (The Effects of Reward-Based Training on the Behavioral Assessment of the Domestic Dog)			
<b>Principle Investigator(s):</b>		Anna Vaughn-Doom			
<b>List of Associate Personnel who will be handling and/or caring for animals under this protocol:</b>					
Name	Status	Role in protocol	Give date of last immunization		
			Rabies	Tetanus	Hepatitis
<b>DOCUMENTATION OF IMMUNIZATION IS REQUIRED. ATTACH COPIES OF APPROPRIATE RECORDS TO THIS FORM.</b>					
<b>Shelby Vandergraff</b>	Graduate Researcher	Graduate Researcher (Trainer and Observer)	9/24/2010	7/10/2016	2/17/1993
<b>Kelly Kerr</b>	Assistant	Assessor	N/A	9/18/2016	9/16/1994
<p><b>As a PI or Co-PI of this protocol, I hereby assure that the above named associate personnel:</b></p> <ol style="list-style-type: none"> <li>is a complete listing of all associate personnel who will be handling and/or caring for animals under this protocol;</li> <li>have received appropriate training in the handling and care of these animals and the procedures and techniques to be employed;</li> <li>have received the guidelines: <u>Occupational Health for Animal Care Workers</u> and are in compliance with this policy;</li> <li>are familiar with the <u>Guide for the Care and Use of Laboratory Animals</u>;</li> <li>understand that only those procedures explicitly detailed in this protocol may be performed on the animals in question and that unauthorized deviations from this protocol must be reported to the IACUC; and</li> <li>Understand that proper documentation of all procedures performed is mandatory.</li> </ol>					
<b>Person</b>		<b>Signature</b>		<b>Date</b>	
<b>PI or Co-PI:</b>					

For New Applications, attach Forms A, B, C, J, L, P, S, and AP.

**MURRAYSTATEUNIVERSITY**  
**INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)**  
**APPLICATION FOR THE USE OF ANIMALS IN RESEARCH OR TEACHING**

<b>FORM S: Surgical Procedures</b>	
Complete a separate Form S for each <u>major operative procedure</u> that “penetrates or exposes a body cavity, or causes impairment of physical or physiological function.”	
<b>Species:</b>	
<b>Procedure:</b>	N/A - No surgical procedures will be performed.
N/A	

For New Applications, attach Forms A, B, C, J, L, P, S, and AP.

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**INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)**  
**APPLICATION FOR THE USE OF ANIMALS IN RESEARCH OR TEACHING**

**ANIMAL USE REPORT**

**TO BE COMPLETED ON ALL APPROVED PROTOCOLS SEMIANNUALLY**

<b>Name:</b>	Shelby Vandergraff	<b>Protocol #:</b>	2017-032
<b>Project/Course Title:</b>	The Effects of Reward-Based Training on the Behavioral Assessment of the Domestic Dog (The Effects of Training on Behavioral Assessments Performed on the Canine)		
<b>From:</b>	June 2017	<b>To:</b>	July 2017
<b>Species:</b>	Canine	<b>Number Approved:</b>	10
(Please use a separate sheet for each species.)			
<b>Note:</b> An animal may be counted in more than one category; the column will not add up to equal the total number of animals approved on the protocol.			
<b>Indicate the number of animals in each category below:</b>			<b>Inspection Date</b> ( / / )
1.	Number of animals carried over from previous protocol	7	
2.	Number of new animals received	0	
3.	Number of animals born on site	0	
4.	Subtotal (add lines 1, 2, 3)	7	
5.	Number of animals expired	1	
6.	Number of animals euthanized	0	
7.	Other disposition (Specify)	0	
8.	Subtotal (add lines 5, 6, 7)	1	
9.	TOTAL NUMBER OF ANIMALS ON HAND (Subtract line 8 from line 4)	6	
10.	Number of animals used	7	
11.	Number of animals not used	0	
PLEASE HAVE AN UP-TO-DATE REPORT PER SPECIES AVAILABLE TO THE COMMITTEE AT THE INSPECTION SITE OR WHERE ANIMALS ARE HOUSED FOR THE SEMIANNUAL FACILITY INSPECTION.			

For New Applications, attach Forms A, B, C, J, L, P, S, and AP.

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**INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)**  
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**CONCLUSION REPORT**

CONCLUSION REPORT IS DUE 30 DAYS AFTER THE ENDING DATE OF THE PROJECT. SUBMIT REPORT TO THE IACUC, 328 Wells Hall.

THE IACUC WILL NOT CONSIDER FOR REVIEW NEW PROTOCOLS OR RENEWALS FROM RESEARCHERS/INSTRUCTORS WHO FAIL TO COMPLY WITH THE ABOVE CONDITION.

<b>Name:</b>	Shelby Vandergraff	<b>Protocol #:</b>	2017-032
<b>Project/Course Title:</b>	The Effects of Reward-Based Training on the Behavioral Assessment of the Domestic Dog (The Effects of Training on Behavioral Assessments Performed on the Canine)		
<b>From:</b>	June 2017	<b>To:</b>	July 2017
<b>Species:</b>	Canine	<b>Number Approved:</b>	10
(Please use a separate sheet for each species.)			
<b>Note:</b> An animal may be counted in more than one category; the column will not add up to equal the total number of animals approved on the protocol.			
<b>Indicate the number of animals in each category below:</b>			
<b>1.</b>	<b>Number of animals carried over from previous protocol</b>	7	
<b>2.</b>	<b>Number of new animals received</b>	0	
<b>3.</b>	<b>Number of animals born on site</b>	0	
<b>4.</b>	<b>Subtotal (add lines 1, 2, 3)</b>	7	
<b>5.</b>	<b>Number of animals expired</b>	1	
<b>6.</b>	<b>Number of animals euthanized</b>	0	
<b>7.</b>	<b>Other disposition (Specify)</b>	0	
<b>8.</b>	<b>Subtotal (add lines 5, 6, 7)</b>	1	
<b>9.</b>	<b>TOTAL NUMBER OF ANIMALS ON HAND (Subtract line 8 from line 4)</b>	6	
<b>10.</b>	<b>Number of animals used</b>	7	
<b>11.</b>	<b>Number of animals not used</b>	0	

For New Applications, attach Forms A, B, C, J, L, P, S, and AP.



Institutional Animal Care and  
Use Committee  
328 Wells Hall  
Murray, KY 42071  
phone: 270.809.5336  
fax: 270.809.3535

[www.murraystate.edu](http://www.murraystate.edu)

June 7, 2017

Anna Vaughn-Doom  
Animal Health Technology  
Murray State University  
Carmen Pavilion  
Murray, KY 42071

Dear Dr. Vaughn-Doom:

It is with pleasure I inform you that the Murray State University Institutional Animal Care and Use Committee (IACUC) has approved your research protocol for the project titled, "The Effects of Training on Behavioral Assessments Performed on the Canine."

The research protocol **timeline** is approved through July 31, 2017. Please use the Animal Use Report (**attached**) to keep up-to-date information about the animals. At the **termination** of the protocol, you will need to complete the Conclusion Report (**attached**) and list **final information** concerning the animals.

The IACUC **sincerely wishes you the best** in your teaching pursuits. If you have any questions, please contact me at 270-809-3534.

Sincerely,

Kristi Stockdale  
IACUC Coordinator

cc:  
IACUC File

## B: Instrument - SAFER Assessment

# SAFER™ worksheet



<input type="text"/>		date	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
shelter name							
<input type="text"/>		<input type="text"/>					
assessor		observer					
<input type="text"/>		<input type="text"/>		<input type="text"/>			
dog's name		age		coat color			
sex		<input type="checkbox"/> male		<input type="checkbox"/> neutered male		<input type="checkbox"/> female	
		<input type="checkbox"/> spayed female		<input type="text"/>			
				breed			
date entered shelter		<input type="text"/>		<input type="text"/>		<input type="text"/>	
				dog ID number			

## item 1 – look:

	Dog leans forward or jumps up to lick the Assessor's face with tail wagging, ears back and eyes averted. <b>[Enter "1"]</b>		
	Dog's eyes are averted, with tail wagging and ears back. He allows head to be held loosely in Assessor's cupped hands. <b>[Enter "1"]</b>		
	Dog holds gaze with soft eyes, soft body. He allows head to be held loosely in Assessor's cupped hands. Dog holds gaze for three full seconds. <b>[Enter "1"]</b>		
	Dog's eyes are averted. His ears are back, his tail is down, and he has a relaxed body posture. Dog allows head to be held loosely in Assessor's cupped hands. <b>[Enter "1"]</b>		
	Dog's eyes are averted. His body posture is stiff and fearful, his tail is low and not moving. He allows head to be held loosely in Assessor's cupped hands. <b>[Enter "2"]</b>		
	Dog pulls out of Assessor's hands each time without settling during three repetitions. <b>[Enter "2"]</b>		
	Dog jumps on the Assessor, consistently rubs his shoulder on the Assessor, and will not allow Assessor to conduct the assessment. <b>[Enter "3"]</b>		
	Dog holds eye contact while remaining motionless with ears forward. His body is stiff and becomes stiffer as assessment progresses. <b>[Enter "4"]</b>		
	Dog freezes and/or growls or tries to bite. <b>[Enter "5"]</b>		
<p><b>If aggression is noted</b>, use the checklist below to evaluate the dog's response. You can use this information to help best guide the behavior team regarding potential behavior modification and management (see guide for protocols).</p>			
<input type="checkbox"/> Body stiff	<input type="checkbox"/> Eyes hard	<input type="checkbox"/> Vocalizes	<input type="checkbox"/> Exposes teeth
<input type="checkbox"/> Freeze	<input type="checkbox"/> Ears back	<input type="checkbox"/> Dog growls	<input type="checkbox"/> Snaps no contact
<input type="checkbox"/> Tail up	<input type="checkbox"/> Ears forward		<input type="checkbox"/> Attempts to bite
<input type="checkbox"/> Tail down			

**Behaviors observed before, during or after the item:**

<b>item 2 – sensitivity:</b>																	
	Dog leans into the Assessor, eyes soft or squinty, soft and loose body, open mouth. <b>[Enter “1”]</b>																
	Dog stands still and accepts the touch, his eyes are averted, and his tail is in neutral position with relaxed body posture. Dog’s mouth is likely closed for at least a portion of the assessment item. <b>[Enter “1”]</b>																
	Dog displays high energy and movement, but it is directed toward getting closer to the Assessor. His body is soft, likely panting, may jump up between attempts to lick Assessor. <b>[Enter “2”]</b>																
	Dog is active and focused on the Assessor and all other stimuli available. His body is soft, likely panting, likely to display high movement between attempts. <b>[Enter “2”]</b>																
	Dog stands still and accepts the touch, his eyes are averted, his tail is between his legs, body stiff, mouth closed, lip long, ears likely back, may lip lick. <b>[Enter “2”]</b>																
	Dog repeatedly turns toward the Assessor’s hand, with loose body and open mouth, mouths the hand, but does not apply pressure. Or, dog licks hands while lips are long. <b>[Enter “2”]</b>																
	Dog is not fearful and is struggling to get away. The dog is not focused and is in constant movement, unconnected to the Assessor. <b>[Enter “3”]</b>																
	Dog stands tall and square. His tail perpendicular to spine, mouth closed for the majority of assessment item. <b>[Enter “3”]</b>																
	Dog repeatedly turns toward the Assessor’s hand with a very fast head movement. If able, he muzzle punches the hand. His body is stiff and he has a closed mouth with a short lip. <b>[Enter “4”]</b>																
	Dog freezes, growls or tries to bite. <b>[Enter “5”]</b>																
<p><b>If aggression is noted</b>, use the checklist below to evaluate the dog’s response. You can use this information to help best guide the behavior team regarding potential behavior modification and management (see guide for protocols).</p>																	
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<input type="checkbox"/> Tail up	<input type="checkbox"/> Ears forward		<input type="checkbox"/> Attempts to bite														
<input type="checkbox"/> Tail down																	

**Behaviors observed before, during or after the item:**

<b>item 3 – tag:</b>																	
	Dog assumes play position and joins the game. Or dog indicates play with huffing, soft 'popping' of the body, etc. Dog might jump on Assessor once play begins. <b>[Enter "1"]</b>																
	Dog stands with his tail low and wagging, and comes toward the Assessor in a friendly manner when the Assessor ceases moving. <b>[Enter "1"]</b>																
	Follows at end of leash, body soft, or low and a bit fearful. <b>[Enter "1"]</b>																
	Dog is fearful but unresponsive when touched. Approaches the Assessor when the game ends. Dog is likely crouching, may have long lip or lip lick. <b>[Enter "2"]</b>																
	Dog is not fearful but is unresponsive to the Assessor, and approaches the Assessor at the end of the game (may need coaxing to approach). He is focused on stimuli other than the Assessor. <b>[Enter "2"]</b>																
	Dog repeatedly turns quickly away when touched, or repeatedly spins toward the touch, and repeatedly tries to exit. Dog may be crouching, tail is tucked, mouth closed, body stiff. <b>[Enter "3"]</b>																
	Dog responds with his tail high, ears forward, mouth likely closed for at least half of the assessment item, body stiff and body checks the Assessor. Dog is often focused on other stimuli in the room. <b>[Enter "3"]</b>																
	Dog panics with vocalization combined with tail tuck, yelping and repeatedly trying to exit. (If dog settles after 1st or 2nd tag, choose 1st "3" scoring option). <b>[Enter "4"]</b>																
	Dog stands his ground while not cornered and barks at the Assessor with ears forward, body stiff, mouth closed and lips pursed when not barking. <b>[Enter "4"]</b>																
	Dog growls or tries to bite. <b>[Enter "5"]</b>																
<b>If aggression is noted</b> , use the checklist below to evaluate the dog's response. You can use this information to help best guide the behavior team regarding potential behavior modification and management (see guide for protocols).																	
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<input type="checkbox"/> Freeze	<input type="checkbox"/> Ears back	<input type="checkbox"/> Dog growls	<input type="checkbox"/> Snaps no contact														
<input type="checkbox"/> Tail up	<input type="checkbox"/> Ears forward		<input type="checkbox"/> Attempts to bite														
<input type="checkbox"/> Tail down																	

**Behaviors observed before, during or after the item:**



**Note: If the dog's behavior upon the first attempt matches any of the response choices higher than a "2", you should use the rear flank.**

<b>item 4 – squeeze:</b>			
<b>if paw is used:</b>			
<b>First Attempt</b>	<b>Second Attempt</b>		
		Dog gently pulls back his paw. Dog may lick hand. <b>[Enter "1"]</b>	
		Dog does not respond at all for three seconds. His eyes are averted and his ears are relaxed or back. <b>[Enter "1"]</b>	
		Dog gently pulls back and whimpers. <b>[Enter "2"]</b>	
		Dog gently places his open mouth over the Assessor's hand without applying pressure. <b>[Enter "2"]</b>	
		Dog closes mouth, becomes stiff. <b>[Enter "3"]</b> Note: If this behavior occurs on the first attempt, use the flank instead.	
		Dog is soft in body and eye, and moves his legs/body so that the Assessor is unable to hold the paw <b>[Enter "3"]</b> Note: If this behavior occurs on the first attempt, use the flank instead.	
		Dog yelps repeatedly or screams. <b>[Enter "3"]</b> Note: If this behavior occurs on the first attempt, use the flank instead.	
		Dog head flips while pulling back paw. <b>[Enter "3"]</b> Note: If this behavior occurs on the first attempt, use the flank instead.	
		Dog reaches toward the Assessor's hand on the second attempt while moving his paw away when the Assessor attempts to lift it. The dog will not allow the Assessor to assess second time. <b>[Enter "4"]</b> Note: If this behavior occurs on first attempt, use the flank instead.	
		Dog growls. <b>[Enter "4"]</b> Note: If this behavior occurs on the first attempt, use the flank instead.	
		Dog freezes and/or tries to bite. <b>[Enter "5"]</b> Note: If this behavior occurs on the first attempt, use the flank instead.	
<b>if rear flank is used:</b>			
<b>First Attempt</b>	<b>Second Attempt</b>		
		Dog sits, mouth open or lip long. <b>[Enter "1"]</b>	
		Dog does not respond at all. <b>[Enter "1"]</b>	
		Dog gently places his open mouth over the Assessor's hand without applying pressure. <b>[Enter "2"]</b>	
		Dog closes mouth, begins to purse lips and becomes stiff. <b>[Enter "3"]</b>	
		Dog head flips while moving hip away. <b>[Enter "3"]</b>	
		Dog growls. <b>[Enter "4"]</b> Note: If this behavior occurs on the first attempt stop the assessment. Proceed to the Food and Toy Behavior items if additional information is desired.	
		Dog tries to bite. <b>[Enter "5"]</b> Note: If this behavior occurs on the first attempt stop the assessment. Proceed to the Food and Toy Behavior items if additional information is desired.	
<p><b>If aggression is noted, use the checklist below to evaluate the dog's response. You can use this information to help best guide the behavior team regarding potential behavior modification and management (see guide for protocols).</b></p>			
<input type="checkbox"/> Body stiff	<input type="checkbox"/> Tail down	<input type="checkbox"/> Ears forward	<input type="checkbox"/> Exposes teeth
<input type="checkbox"/> Freeze	<input type="checkbox"/> Eyes hard	<input type="checkbox"/> Vocalizes	<input type="checkbox"/> Snaps no contact
<input type="checkbox"/> Tail up	<input type="checkbox"/> Ears back	<input type="checkbox"/> Dog growls	<input type="checkbox"/> Attempts to bite

**Behaviors observed before, during or after the item:**

**note**

If the dog does not eat, try another type of food. If necessary, reassess at a later point.

### item 5 – food behavior:

	Dog lifts head and ceases eating when you reach to pull the bowl away or push him out. <b>[Enter “1”]</b>		
	Dog calmly allows the food to be moved, follows the dish, but does not interfere with the dish's movement. Dog's body is soft and loose, eyes soft, tail neutral. He lifts his head when hand is pushed against his cheek. <b>[Enter “1”]</b>		
	Dog follows the dish with his tail down, body likely a bit stiff. Dog lifts head after a bit of pressure from hand to cheek. <b>[Enter “2”]</b>		
	Dog follows the dish, his tail between his legs, ears are forward. His body is stiff. Dog does not lift his head from the bowl when hand is applied to his cheek. <b>[Enter “3”]</b>		
	Dog gulps food, begins to eat faster and with bigger bites, body stiff. He does not lift head when hand is applied to cheek. <b>[Enter “3”]</b>		
	Dog freezes and/or growls. <b>[Enter “4”]</b>		
	Dog tries to bite. (Use chart on the worksheet to identify level of bite attempt/bite.) <b>[Enter “5”]</b>		
<p><b>If aggression is noted</b>, use the checklist below to evaluate the dog's response. You can use this information to help best guide the behavior team regarding potential behavior modification and management (see guide for protocols)</p>			
<input type="checkbox"/> Body block	<input type="checkbox"/> Ears back	<input type="checkbox"/> Paws in bowl	<input type="checkbox"/> Snaps at hand (no contact)
<input type="checkbox"/> Body stiff	<input type="checkbox"/> Ears forward	<input type="checkbox"/> Urinates in bowl	<input type="checkbox"/> Repeated contact bite
<input type="checkbox"/> Freeze	<input type="checkbox"/> Eyes hard	<input type="checkbox"/> Bites bowl	<input type="checkbox"/> Leaves bowl to bite hand
<input type="checkbox"/> Tail up	<input type="checkbox"/> Exposes teeth		<input type="checkbox"/> Bites up Assess-a-Hand®
<input type="checkbox"/> Tail down	<input type="checkbox"/> Vocalizes		

*Behaviors observed before, during or after the item:*

**note**

Recommend using 2 non-food toys (rope, squeaky, etc.) and then 1 unbasted rawhide item. Enter number for each item in that part of the column.

<b>item 6 – toy behavior:</b>																						
<b>Toys only</b>	<b>Rawhide (if used)</b>																					
		No interest. <b>[Enter “1”]</b>																				
		Dog settles down close to chew, will relinquish toy or rawhide to you. <b>[Enter “1”]</b>																				
		Dog settles close, keeps a firm grip and is loose and wiggly. He does not place his body between you and the toy/rawhide. <b>[Enter “1”]</b>																				
		Dog takes toy away, keeps a firm hold. His body is between you and the toy or rawhide, and he is loose and wiggly. No growling or stiffness. <b>[Enter “2”]</b>																				
		Dog takes toy/rawhide away, keeps a firm hold. His body is stiff. <b>[Enter “3”]</b>																				
		Dog freezes and/or growls. <b>[Enter “4”]</b>																				
		Dog attempts bite (use chart on worksheet) <b>[Enter “5”]</b>																				
<p><b>If aggression is noted</b>, use the checklist below to evaluate the dog's response. You can use this information to help best guide the behavior team regarding potential behavior modification and management (see guide for protocols)</p>																						
<table border="0"> <tr> <td><input type="checkbox"/> Body block</td> <td><input type="checkbox"/> Ears back</td> <td><input type="checkbox"/> Paws on toy</td> <td><input type="checkbox"/> Snaps at hand (no contact)</td> </tr> <tr> <td><input type="checkbox"/> Body stiff</td> <td><input type="checkbox"/> Ears forward</td> <td><input type="checkbox"/> Urinates on toy</td> <td><input type="checkbox"/> Repeated contact bite</td> </tr> <tr> <td><input type="checkbox"/> Freeze</td> <td><input type="checkbox"/> Eyes hard</td> <td></td> <td><input type="checkbox"/> Leaves toy to bite hand</td> </tr> <tr> <td><input type="checkbox"/> Tail up</td> <td><input type="checkbox"/> Exposes teeth</td> <td></td> <td><input type="checkbox"/> Bites up Assess-a-Hand</td> </tr> <tr> <td><input type="checkbox"/> Tail down</td> <td><input type="checkbox"/> Vocalizes</td> <td></td> <td></td> </tr> </table>			<input type="checkbox"/> Body block	<input type="checkbox"/> Ears back	<input type="checkbox"/> Paws on toy	<input type="checkbox"/> Snaps at hand (no contact)	<input type="checkbox"/> Body stiff	<input type="checkbox"/> Ears forward	<input type="checkbox"/> Urinates on toy	<input type="checkbox"/> Repeated contact bite	<input type="checkbox"/> Freeze	<input type="checkbox"/> Eyes hard		<input type="checkbox"/> Leaves toy to bite hand	<input type="checkbox"/> Tail up	<input type="checkbox"/> Exposes teeth		<input type="checkbox"/> Bites up Assess-a-Hand	<input type="checkbox"/> Tail down	<input type="checkbox"/> Vocalizes		
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<input type="checkbox"/> Tail up	<input type="checkbox"/> Exposes teeth		<input type="checkbox"/> Bites up Assess-a-Hand																			
<input type="checkbox"/> Tail down	<input type="checkbox"/> Vocalizes																					

**Behaviors observed before, during or after the item:**



**note**

Be sure to take your observational “snapshot” in the first few seconds of the approach. Dogs do not have to touch.

enter name and sex of dog-to-dog helper dog.

name \_\_\_\_\_ sex  male  female

**item 7 – dog-to-dog behavior:**

	Dog approaches the helper dog in play position. His mouth is open. <b>[Enter “1”]</b>
	Dog approaches the helper dog submissively (head low, tail low, ears back, lip long). <b>[Enter “1”]</b>
	Dog approaches helper dog with tail at spine level, body not stiff, ears relaxed, lip long or neutral. <b>[Enter “2”]</b>
	Dog does not approach the helper dog. Turns body to side in relation to other dog, or exits. <b>[Enter “2”]</b>
	Dog approaches the helper dog, body soft, tail well above spine level, ears forward. <b>[Enter “2”]</b>
	Dog approaches the helper dog by rushing in with his tail high, stiff body, head tall, and ears erect. <b>[Enter “3”]</b>
	Dog charges the helper dog while growling or attempting to bite. <b>[Enter “4”]</b>

**If aggression is noted**, use the checklist below to evaluate the dog’s response. You can use this information to help best guide the behavior team regarding potential behavior modification and management (see guide for protocols).

<input type="checkbox"/> Freeze	<input type="checkbox"/> Eyes soft	<input type="checkbox"/> Vocalizes	<input type="checkbox"/> Exposes teeth
<input type="checkbox"/> Body soft	<input type="checkbox"/> Eyes hard	<input type="checkbox"/> Dog growls	<input type="checkbox"/> Snaps no contact
<input type="checkbox"/> Body stiff	<input type="checkbox"/> Ears back		<input type="checkbox"/> Attempts to bite
<input type="checkbox"/> Tail up	<input type="checkbox"/> Ears forward		
<input type="checkbox"/> Tail down			

*Behaviors observed before, during or after the item:*

	Look	Sensitivity	Tag	Squeeze 1	Squeeze 2	Food	Toy	Rawhide	Dog
1									
2									
3		P	P	P	P	P	P	P	
4	R	R	R	R	R	R	R	R	P
5	S	S	S	S	R	R	R	R	

For each item, mark an ‘x’ in the box that intersects with the score for that item.  
 (Ex.: If the Sensitivity item has a score of “2”, put an “x” in the box where row “2” and “Sensitivity” intersect.)

**Legend:**

- P** = Potential behavior modification and/or management
- R** = Behavior modification and/or management strongly recommended
- S** = STOP item for safety reasons. Behavior modification and/or management strongly recommended.  
Move to food if SOP suggests

**General observations and recommendations:**

## C: SAFER™ Facility Requirements and Equipment

www.aspcapro.org

### facility requirements and equipment

SAFER™ assessments demand little in the way of special equipment or space. Most tools can be found in the average shelter.



#### assessment room

The ideal assessment room is a large, quiet and relatively empty room. However, any quiet room that is at least 10' x 10' can work.



#### video camera and tripod

The video camera is used to record every assessment. Often, behavior occurs quickly, and a review of the tape can help determine what behavior was demonstrated. Further, taping helps with quality control, as Assessor handling can be reviewed and then improved upon based on taped observations.



#### Assess-A-Hand®

This tool is used for two assessment items. It is simply a plastic hand on a stick, and is available at [www.suesternberg.com](http://www.suesternberg.com).



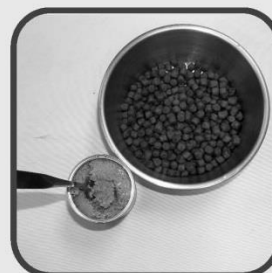
#### food bowls

The food behavior item is conducted using a food bowl. The bowl should be an appropriate size for the dog being assessed. Metal bowls are preferred for most assessment rooms as they will most easily slide across the floor when manipulated.



#### two armless chairs

Several of the assessment items are conducted while seated in a chair. The chair should be armless so that the Assessor can easily move on and off, as well as side to side. The Observer should be seated during the same items that the Assessor is seated.



#### dry and canned dog food (at least two types)

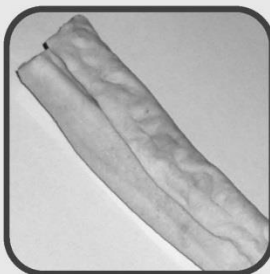
The food behavior assessment item requires that the dog consume the food presented during the assessment. We recommend moderately valuable food—a kibble mixed with canned. Two types of food should be available in case the dog does not find the first choice palatable.

**NOTE: It is strongly recommend that the assessment room be stocked with items to help diffuse aggression, should it become necessary to do so. For example keep SprayShield (formerly Direct Stop), an air horn, and/or a bucket of water on hand.**



#### two to three toys

For the toy behavior item, two to three toys should be presented such as a rope toy, squeaky toy or ball (big enough to be removed from the dog's mouth). The toys should be of varied textures and shapes. Minimally, we recommend a rope and a squeaky.



#### new unbasted rawhide per dog

The rawhide item requires an unbasted rawhide. It should be large enough that it can be touched with the Assess-a-Hand® when the dog has his mouth fully around it. Ideally, a new rawhide should be used with each dog.



#### buckle or martingale collar

During the assessment, the dog must wear a collar with a buckle or plastic clasp that does not tighten when the leash is tugged. If your shelter fits all incoming dogs with semi-martingale collars (also known as Premier collars), there is no need to change them for the assessment. However, the buckle collar is preferred.



#### six-foot leash

The leash must be six feet long and size-appropriate for the dog. Cotton web, nylon or leather leashes 1/2 inch to 5/8 inch in width are both strong and easy to handle for most Assessors.



#### clipboard

A clipboard is used by the Observer to hold the SAFER™ worksheet.



#### optional sound machine

Many facilities have difficulties controlling external sound around the assessment room. Sound machines that emit white noise (sounds like the static on your radio) can be quite effective in buffering noise outside the assessment room.

## D: Behavior Modification Protocol: I Hold the Resources

# behavior modification protocols

One of a series of ASPCA® Behavior Modification Protocols developed by Emily Weiss, Ph.D., CAAB



## i hold the resources

The goal of this program is to manage a bossy or anxious dog using predictable, non-physical methods.

Any dog would benefit from this program; however, dogs that feel they need to control resources in the home and guard them from humans do quite well. Other behaviors such as body slamming, shoulder rubbing, and body blocking indicate a dog that would benefit from this program. The basis of the program is that the dog must do something, such as “sit,” before he receives anything of value to him.

### identifying dogs for the program:

- The dog scores a “3,” “4,” or “5” on the Food Behavior item (only if he body blocks, places paws in bowl or bites the bowl) and the Toy Behavior item, and your behavior team chooses behavioral intervention for the dog.
- The dog exhibits body slamming, shoulder rubbing, and/or tall body posture throughout the assessment. (*Note: For safety reasons, the dog should have a loose body and soft eye while exhibiting these behaviors.*)

### before you begin:

#### teach the dog the “sit” cue.

- Get dog to stand toe-to-toe with you.
- Place bit of tasty, stinky food (hot dogs or cheese) between thumb and forefinger.
- Bring treat (lure) to dog’s nose and get his attention with it. It is okay if he licks or nibbles at it, but do not give him the treat yet.

- Slowly raise the lure up and as the dog follows it with his nose, move it back over his head a few inches.
- As his head tilts back, he is likely to sit.
- As soon as the rear touches the floor, say “yes” and give the dog the treat.
- Practice 6-10 times in quick succession.
- After the dog is anticipating the next move and begins to sit before you move your hand up and back, he is ready to learn the verbal command. Take a piece of food, hold it in your hand at about waist level and when the dog looks like he’s ready to offer the behavior, say “sit.” When he sits, say “yes” and give him the food.
- Dogs need the opportunity to generalize. In order for him to really know the cue, you must practice it in many locations, under various weather conditions, around different levels of distraction, and on different flooring surfaces.

### program instructions:

The program requires you to ask the dog to "sit" before he receives anything that is important to him. This can be used on a consistent basis for all of the dogs in your facility and should be used to manage dogs that are in a behavior modification program prior to adoption. The dog should "sit" for the following things to occur:


- Receive his meals
- Receive toys or treats
- Have a person enter his kennel
- Exit his kennel
- Go through a door
- Receive attention
- Have his leash put on
- Anything he really likes!



By keeping clear rules in your kennels, your dogs will understand that you control important resources. In addition, they'll learn that if they don't defer to you, they will not receive items that they perceive to be valuable. You will have better and clearer communication with the dogs using non-physical methods. Your adopters will see the dogs' manners and will be more likely to take a dog home!

**when the dog is adopted:** Review the "I hold the resources!" instructions with the adopter which can be found in the Reproducible Forms and Templates section. Remember to follow-up with the adopter at three days, three weeks and three months post-adoption.

## i hold the resources!



**Congratulations!**  
You have adopted a new family member.

As your adoption counselor discussed with you, your dog displayed some funny behavior around important resources while in the shelter. What does this mean? It means that your dog may be more likely to control resources or attempt to control resources by jumping, his head and eyes and/or body slapping you and/or rubbing you with his shoulder and then gnawing you. While we conducted a management program with the dog while he was with us, we suspect that you continue this work with the dog when you take him home. The simple premise of the program is that you control the resources in the home using non-physical/non-physical methods. We suggest you follow the plan below, beginning the moment your dog comes into your home.

The program requires you to ask the dog to "sit" before he receives anything that is important to him. This can be used on a consistent basis throughout the life of your dog and should be used to manage a dog that needs behavioral intervention.

**the plan:**

**1. Teach the dog the "sit" cue.**

- Get dog to stand toe-to-toe with you.
- Place bit of food between thumb and forefinger.
- Bring treat (and) to dog's nose and get his attention with it. It is okay if he licks or nibbles at it, but do not give him the treat yet.
- Slowly raise the lure up and as the dog follows it with his nose, move it back over his head a few inches.
- As his head lifts back, he is likely to sit.
- As soon as the rear touches the floor, say "yes" and give the dog the treat.
- Practice 6-10 times in quick succession.
- After the dog is anticipating the next move and begins to sit before you move your hand up and back, he is ready to learn the verbal command. Take a piece of food, hold it in your hand at about waist level and when the dog looks like he's ready to offer the behavior, say "sit." When he sits, say "yes" and give him the food.

**2. You ask your dog to "sit" for the following things to occur:**

- Receive his meals
- Play with his favorite toys
- Engage in play with you
- Jump up to lay on the couch or bed
- Go through the door
- Cross the street
- Have his leash put on
- Exit the elevator
- ...Anything he really likes!

By keeping clear rules in your kennels, your dog will understand that you control important resources. In addition, he'll learn that if he doesn't defer to you, he will not receive items that are valuable to him. You will have better and clearer communication with your dog using non-physical methods, which is the best case scenario for both of you!

If you are unable to do the preceding exercises, we suggest you choose another dog to adopt. While we cannot 100 percent predict the future, research does show that dogs who display anxiety around resources in the shelter are more likely to display the same behaviors in the home. We want you and your dog to create a strong bond early on post-adoption and for your dog to have the opportunity to be able to work through the issues. Please take the time to ask yourself if you are ready to take on a bit of a project.



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