MEASURING THE EFFICIENCY OF CLICKER TRAINING
FOR SERVICE DOGS

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ABSTRACT

Clicker training, a young method of positive reinforcement training, involves an acoustical cue for clear communication to mark the exact moment a correct behavior is performed in addition to a motivating reward. In this study, in October 2015, the efficiency of clicker training was examined by training two dogs two service behaviors, namely picking up a wallet and retrieving a medicine bag, to evaluate the frequency of correct behaviors as well as the amount of time it took to accomplish a complete behavior chain. For this purpose, an alternating treatment design was used with both a daily baseline and an intervention condition in rotating order for two weeks. As a result of clicker training, one dog completed all four steps of his behavior during the intervention and the second dog completing two of the four steps of her behavior during the intervention. Clicker training proved to be an effective positive reinforcement technique in training service behaviors to dogs. Some recommendations for future research would be to include a higher number of dogs in the experiment, and to have the experimenter(s) engage in formal clicker training preparation or guidance of accurate implementation of the training technique from a professional.
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Chapter 1

Introduction

The development of humans and animals offers a unique situation; no other species have evolved together with humans to the same degree as dogs. When humans survived off tactics for hunting and gathering food, we began to co-exist with dogs for mutual benefit (Udell, 2008). Dogs were chosen to aid with functions of survival by retrieving on a hunt or guarding livestock and people from other predators. As humans became more civilized, so did their relationship with dogs. Dogs were welcomed into homes as prime companions and the establishment of a superior bond ensued (Breen & Modiano, 2008).

Dogs still reign as “man’s best friend” for more reasons than companionship and have qualities of protection and assistance as well. A combination of exceptional abilities and an instinctive drive to please have enabled dogs to be trained to assist the blind, help the deaf and hard of hearing, detect abnormal glucose levels for diabetics (Wells, 2008), predict seizures (Strong, 1999), and even detect the scent of cancer cells in humans (Willis, 2004). While many other animals offer companionship, no other animal compares to the dedication and work ethic dogs provide to humans.

Service dogs are not all alike. There is an array of different levels and terms used to describe the training or purpose of each service dog type. The largest variation is between family pets and dogs that are specially trained to assist individuals with one or more disability. Family pets are referred to as companion animals, while specially trained dogs of service are titled assistance dogs (ADs). The type of ADs that people are most familiar with are guide dogs (GDs), which are trained to assist someone who is
blind or visually impaired. There are also hearing dogs (HDs) that help individuals who are deaf or hard of hearing, and service dogs (SDs) who support people with mobility impairments (Sachs-Ericsson, Hansen, & Fitzgerald, 2002).

The motive behind matching trained ADs with individuals is to relinquish day-to-day disabling conditions related to health, mobility, employment, social interaction, and mood, as well as different settings including their home, a store, or at a friend’s house (Sachs-Ericsson, Hansen, & Fitzgerald, 2002). Depending on the disability of a person who has a service dog, the dog may be expected to travel to every place the owner ventures.

Aside from the obvious requirement to be well-socialized, service dogs need to have an even temperament in case there is an accident or something becomes aversive in their environment. A dog that shows any signs of aggression will not qualify for service dog certification. Any dogs with apparent behavioral problems, such as territorial aggression or noticeable fear, are not considered for service dog training (Weiss, 2002).

The rules carry through all stages of training to ensure the dog remains calm no matter what happens to them or their owner. Moreover, the process of training should not create any type of discomfort or anxiety for service dogs because this could risk an unhealthy association with the important job they are preparing for once they earn their certification. Because the dogs are expected to stay even-tempered regardless of their surroundings, a solid foundation that is anxiety-free should be laid from the beginning within the parameters of training. The positive impact of clicker training offers unique advantages for training services dogs for their important job.
Clicker Training

The process of dog training has advanced over the last few generations and many adjustments have been made. Previous to most of the current training approaches, training styles generally revolved around punishment-based methods. Contemporary dog trainers successfully use reward-based methods. Among the reward-based methods, clicker training is the fastest growing and it implements the principles of operant conditioning by using positive reinforcement with desired behaviors (Fields-Babineau, 2006). “Operant behavior is any behavior whose future frequency is determined primarily by its history of consequences” (Cooper, Heron & Heward, 2007, p. 31). Also, “Operant conditioning refers to the process and selective effects of consequences on behavior” (Cooper, Heron & Heward, 2007, p. 33).

In regards to clicker training, the acoustical cue of the clicker is used as a bridge between a command and the reinforcer. The acoustical cue becomes a conditioned reinforcer. In other words, the audible click begins as a neutral stimulus, but once paired with reinforcers, such as food items, it quickly becomes a conditioned stimulus. “The reward can be food, a toy, touch, or any number of other actions” (Fields-Babineau, 2006, p. 5). The repetition of such operant behavior and the given reinforcer result in a formation of “habit” in the animal undergoing training.

The clicker itself is a small, hand-held device made out of plastic or metal. It is usually square or oval with a button that rises from the center. The button makes the clicking sound when pressed down and released back up again. The movement elicits an acoustical cue from the press and release movement of the button. The sound is similar to the way a heartbeat is heard from the opening and closing of the valves – together they
Clicker Training with dogs

The general notion of clicker training revolves around the idea of reinforcing behaviors instead of using punishment. Dogs are more comfortable because no possibility of punishment occurs. As mentioned previously, service dogs need to be calm and comfortable in order to fill that supportive role for their owners. “Punishment-based training has been shown to cause stress, suffering, fearfulness, to be associated with higher levels of reported behavioral problems, specifically aggression to dogs and to people, increased excitability and distraction” (Rooney, 2011, p. 170).

Clicker training zeroes in on only changing the behavior without any force to change the animal. It delivers a strong and immediate consequence. “Once understood, the method is fast, easy and, best of all, positive” (Fields-Babineau, 2006, p. 2). Because the clicker’s sound avoids any emotional baggage, it keeps training consistent. Despite a
trainer’s mood, there will be no change in voice level to tamper with the dog’s learning history, thereby keeping all signaling clean cut and precise throughout the entire process.

Miriam Fields-Babineua, a professional dog trainer, encourages clicker training by saying, “Once you understand how to use a clicker, it proves more efficient than using your voice. That’s because your voice is always in use. This isn’t a bad thing, because you will need to use varying tones and specific words to communicate with your dog. However, since your voice is a constant sound in your dog’s life, it doesn’t offer a distinctive sound to reinforce a good response. This is important, because Teddy [the dog] will be less confused if he receives notice of a good behavior the moment it occurs. Telling him ‘good boy’ as he moves away from doing something you want only rewards him for moving away, not for doing what you had requested” (Fields-Babineau, 2006, p. 5).

The acoustical cue notifies a dog the exact moment he or she achieves the desired command, making the communication more efficient. The cue from a clicker is also more precise than the time that passes with multiple words such as, “Good boy, Max.” Timing is critical. A dog could be engaging in multiple behaviors at the same time such as jumping, barking, rolling around, sitting, and a click during such a time could mark the wrong behavior. Giving vocal praise through the use of words may not clearly communicate the exact moment and exact behavior a trainer had intended. Not only does vocal praise risk missing the correct behavior to reward, but it may also reinforce the wrong behavior at the same time. Vocal praise may also create more confusion for the dog in the process of learning (Fields-Babineau, 2006).

In simple steps, clicker training is used to train a dog to do a certain behavior
(Fields-Babineau, 2006). The following steps demonstrate clicker training:

1. **Present a stimulus.** A stimulus is something that will grab your dog’s attention. A piece of food or a toy is a stimulus. To make the entire process easy, I use the stimulus as a lure. Once Teddy understands that you’re holding something he wants, you can make him do anything. Your hand will become the stimulus, because it holds the lure.

2. **As soon as Teddy pays attention to the stimulus and performs the correct action,** click the clicker and praise.

3. **Give Teddy the reward.**

The present study seeks to examine the efficiency of clicker training to dog’s service dog behaviors. The experimental questions are:

- What is the frequency of correctly executed behaviors?

- What is the duration of time it takes for the dogs to learn the entire behavior chain?
Chapter 2

Review of the Literature

While there are benefits to reward-based training methods, many trainers are reluctant to give up their preference of punishment-based training methods, including those who train service dogs. However, punishment-based methods cause aversive effects and elicit anxiety behaviors in dogs who are leading a life of support and working to serve humans in need. Among non-punishment based methods, clicker training is gaining popularity not only in the world of training animals of many species (Gillis, Janes and Kaufman, 2012), but also in other areas of behavior training including human beings (e.g., TAGteach; Persicke, Jackson, & Adams, 2014). Below is a review of peer-reviewed studies that have examined clicker training for different species.

The present review located articles through a computerized search of the Google Scholar databases. Descriptors and all possible key words included were clicker training, positive training, positive reinforcement training, dog training, alternative dog training. A search of identified articles and pertinent literature reviews (Gillis, Janes & Kaufman, 2012; Ferguson & Rosales-Ruiz, 2001; Hockenhull and Creighton, 2010; Cornu, Cancel-Tassin, Onder, Girarder, & Cussenot, 2011; Willis, S. Church, Guest, Cook, McCarthy, Bransbury, M. Church, & J Church, 2004; Rudnicka, Walczak, Kowalkowski, Jezierski, & Buszewski, 2014; Mancini, Harris, Aengenheister, & Guest, 2015; Fugazza & Miklósi, 2014, 2015; Hazel, Dwyer & Ryan, 2015; Williams, Friend, Nevill & Archer, 2004; Smith & Davis, 2008; Langbein, Siebert, Nuernberg, & Manteuffel, 2007) followed the computerized search. An advanced search of the electronic database generated 552 articles, 13 of which met criteria inclusion.
Articles had to meet all of the following criteria for acceptance in the review:

1. Appeared in a peer-reviewed journal article.

2. Directly measured the effects of at least one independent variable involving clicker training on a primary dependent variable of a specific and measurable learned behavior. Therefore, the review’s focus remained solely on the effect of clicker training on specific behaviors. Articles were excluded and not considered to meet criteria if they did not include clicker training or used robots as their subjects.

3. Used an experimental design.

4. Included live animals of various species including dogs, chickens, horses, monkeys, and so on.

In 2012, Gillis, Janes and Kaufman (2012) investigated the efficiency of positive reinforcement training using a clicker on 14 squirrel monkeys. The majority of the monkeys, 10 out of 14, developed proficiency on four tasks of increasing difficulty: target touching, hand sitting, restraint training, and injection training in 50 to 70 days. After the intervention, it took 1.25 minutes for each monkey to be weighed and administer an injection; a third of the time compared to untrained monkeys. In the study, clicker training was shown to successfully improve behavior and reactivity in voluntary desired acts.

Working with large animals, such as horses, provides a different set of challenges as opposed to working with squirrel monkeys. One of the major concerns is safety for both the animals and trainers. Ferguson and Rosales-Ruiz (2001) conducted a study to develop an effective and efficient method for loading horses into a trailer using positive
reinforcement principles including target training and shaping. The study was conducted in a natural setting using five quarter horse mares who had previously been loaded into trailers with aversive stimulation. For the study, successive approximations of behavior and inappropriate behaviors were the dependent variables. Once the horses were trained to approach a target, they were able to follow the target through various locations inside of the trailer for smoother and safer loading. After the target training, inappropriate behaviors immediately dropped to zero and each horse completed the shaping sequence. Generalization of behaviors to novel conditions was successful when tested using a different trainer and trailer.

People have anecdotally credited hand-feeding horses for the development of unwanted oral investigation behaviors in horses, which deters people for attempting to use clicker training. Hockenhull and Creighton (2010) performed a study that examined associations between five common oral investigation and the practices of hand-feeding with clicker training. The source of data collected was a sample of UK leisure horse owners using two self-administered Internet surveys. Ninety-one percent of respondents stated they hand-feeding their horses and the behavior was linked to three of the five oral investigation behaviors: licking hands \((P = 0.006)\), gently searching clothing \((P < 0.001)\) and roughly searching clothing \((P = 0.003)\). Nipping hands and biting clothes were not linked to hand-feeding which suggests the origination of the unwanted oral investigation behaviors is developed from other routines. Additionally, 14% of the participants used clicker training techniques and their horses were not associated with any of the five oral investigative behaviors.
In 2011, Cornu, Cancel-Tassin, Onder, Girarder, and Cussenot (2011) tested the ability of a German Malinois to detect prostate cancer through urine. The Malinois shepherd was trained with clicker training with a learning phase and training period of twenty-four months then tested in a double-blind procedure. During testing, the dog would be presented with six samples; only one urine sample would contain cancer while the other five were controls. The dog correctly selected the cancer samples in thirty out of thirty-three samples. Out of the three incorrectly labeled samples, one patient was biopsied again and diagnosed with prostate cancer.

Similarly in 2004, Willis, Church, Guest, Cook, McCarthy, Bransbury, Church, and Church (2004) conducted a study to determine if dogs could identify people with bladder cancer based on the scent of their urine better than chance alone would suffice. The dog’s detection skills were molded through clicker training and were taught to lie down by the sample emitting the odor or bladder cancer. The experimenters would place one cancer sample among six control samples for the testing, the same ration as the training period. The dogs correctly identified the bladder cancer urine samples 22 out of 54 incidences.

Rudnicka, Walczak, Kowalkowski, Jezierski, and Buszewski (2014) performed a study with the purpose of analyzing volatile organic compounds (VOCs) in biological samples, namely, exhaled air. The exhaled air was acquired from one hundred and eight patients with lung cancer, one hundred and twenty one healthy volunteers, and twenty-four people with other lung diseases. The second goal of the study was including trained dogs in the detection of the same breath samples as a gas chromatography-mass
spectrometry GC-MS evaluation. Two male, German Shepard mixes were taught scent detection with clicker training and completed the study with an 86% accuracy result.

Mancini, Harris, Aengenheister, and Guest (2015) zeroed in on the progress of the British charity called Medical Detection Dogs (MDD). The charity trains their dogs to identify the odor of volatile organic compounds from cancer cells in biological samples such as urine, sweat, or breath. Canine behavioral specialists used clicker training to teach these dogs to signal back to the trainers when they detect a certain odor marker. A heavy focus for MDD is the communication between the dogs and their trainers. The dogs are trained to communicate with their trainers by exhibiting stereotypic behaviors such as sitting down in front of the positive sample. MDD concentrates on teaching the dogs to signal when a sample is positive as well as give a response when the sample is negative but have not established a way to translate when a dog has encountered a nuance in between. Despite being unsure of the dogs’ expression for the situations, clicker training was used to communicate to the dogs when they were demonstrating a desired behavior. The canine behavior specialists used shaping to click and reinforce the dogs small movements towards the distinct samples to reliably signaling to the odor with various behaviors.

Fugazza and Miklósi (2014) explored a comparison between a method of training called ‘Do as I do,’ that relies on social learning, with shaping/clicker training that relies on individual learning with operant conditioning. They controlled for the comparability of the subject’s previous training experiences by testing experienced dog-owner duos that had already earned certificates in either method of training. Each group was asked to train three different novel actions: simple, complex and sequence of two actions. Each
level of novel action training occurred in separate sessions using the method of training in which they had received certification. The owners were given fifteen minutes per novel action to train their dogs to perform a predetermined action. Latency was used to measure the first occurrence of the predetermined action and the number of dyads that were successful within the 15 minutes. There was not a significant difference between the two training methods for the measurement of the simple actions, but the subjects using the Do as I do method outdid the dyads using shaping/clicker training regarding the complex and sequence of two actions.

A year later, Fugazza and Miklósi (2015) performed a similar experiment to again investigating the efficiency of the Do as I do training method by comparing it to shaping/clicker training. The experimenters decided they would teach the dogs both a body movement and an object-related action. To measure progress, the experimenters used the number of successful dog-trainer pairs, experienced with either method, that achieved five performances in a row of a predetermined action within thirty minutes and the latency of the fifth action. The experimenters also assessed how the training methods effected the dog’s memory of the trained action and its verbal cue in different contexts. Results show that the Do as I do method is more effective than shaping/clicker training for teaching dogs object-related actions within a short time period and proposes that it could be applied for training body-movements. Social learning showed to improve dogs’ memory and generalization of a learned action and verbal cue.

Hazel, Dwyer and Ryan (2015) suggest people’s attitudes towards particular animals revolve around their perceived level of intelligence and ability to experience emotional states. The Hazel et al. study took form in a practical class for undergraduate
students who took a survey before and after clicker training chickens. The survey was aimed at uncovering whether student’s attitude towards the chickens changed after familiarizing themselves with the higher than expected level of intelligence of the chickens as well as organization of knowing which students had prior exposure to chickens, training experience or gender. The authors discovered more positive attitudes towards animals along with greater consideration to the welfare, care and treatment of the animals.

Hazel et al. was the first study to examine the link between training animals and a greater recognition of the cognitive abilities of the animal(s). After the clicker training class, students agreed more that chickens are easy to teach tricks to, intelligent and have individual personalities. The students also disagreed more that the chickens are difficult to train and are slow learners. Additionally, the post survey revealed that students were more likely to believe chickens experience boredom, frustration and happiness. Not only did the study results promote more positive attitudes about the animals, but it encouraged people to avoid using punishment-based training methods and to keep frustration out of the equation when working with animals.

There were a number of studies that compared the efficacy of clicker training, using an auditory cue plus food reward, to solely food rewards. Williams, Friend, Nevill and Archer (2004) applied the laws of operant conditioning to sixty horses, assigning each horse to one of six reinforcement protocols. The reinforcement protocols were separated by groupings of the reinforcements distributed (primary versus primary plus secondary), schedule of reinforcement (continuous versus variable ration), and reinforcers used during extinction (none or secondary). The experimenters found little
differences ($P \geq 0.11$) between horses that were given a secondary reinforce (click) followed by the primary reinforce (food) and those horses which received only the primary reinforcer in the number of trials required to train the horses to touch a plastic cone with their nose. The distinction was about the same ($P \geq 0.12$) between the two groups of horses in regards to the number of trials to extinction. The experimenter’s conclusion there was no difference for the amount of training necessary to learn the operant task or the task’s resistance to extinction between receiving a secondary reinforce followed by a primary reinforcer versus only receiving a primary reinforcer.

In 2008, Smith and Davis (2008) taught 35 basenjis to touch a cone with their nose. To reach predetermined criteria, dogs first advanced through training trials where correct responses were followed immediately with either a click plus food (clicker group) or only food (control group). Next, the dogs experienced strengthening trials where they received the identical reinforcement protocol as the training trials but the nose-touching behavior was variably reinforced. Lastly, the dogs progressed extinction trials where neither group received food but dogs in the clicker group continued to receive a click for nose-touches. The experimenters found that the two groups showed similar results ($P > 0.05$ for all) for the number of trials or time required to meet training or strengthening criteria. But the clicker group necessitated significantly more trials and more time to reach extinction.

Langbein, Siebert, Nuernberg, and Manteuffel (2007) chose to study how an acoustical secondary reinforcer impacts group-housed dwarf goats on voluntary, self-controlled visual discrimination learning of two-dimensional shapes. A computer-controlled learning device was integrated into the housing enclosures of the animals to
conduct the learning tests. The screens showed shapes using a four-choice design. The primary reinforcer was drinking water. The control group used only the primary reinforce and consisted of five goats. The sound group held a total of six goats and received the acoustical secondary reinforcement along with the drinking water as a reward. The experimenters did not use a traditional clicker but instead used a signal from the computer that was considered in an appropriate decibel range for the goats. Experimenters revealed a weak impact of secondary reinforcement on daily learning success (P=0.07) but not on the number of trials necessary to reach learning criterion for the first test when examining the recall of shapes learned six weeks earlier. When learning a new set of shapes, there was a significant influence of secondary reinforcement on daily learning success on trials to criterion. Goats in the sound group needed less time and fewer trials to reach learning criterion compared to the goats in the control group. The outcome proposes that acoustical secondary reinforcement support visual discrimination learning of dwarf goats, especially when the task is new.

As shown in the review, clicker training has improved reactivity with voluntary acts, along with less abnormal behaviors, resulting in stress release and increase in prosocial behavior. Having such benefits, clicker training for companion dogs is gaining popularity among dog owners. However, there has not been much extensive research conducted on its effectiveness to the knowledge of the experimenter, especially with regards to clicker training with service dogs. Thus, the present study was designed to examine the efficiency of clicker training for service dog behavior.
Chapter 3

Methods

Participants

The first dog, JoJo, was a two and a half year-old female boxer and pitbull terrier. JoJo lived in a house located in rural central Pennsylvania with few nearby houses and only one neighboring dog. She had experienced basic obedience training at the home the previous year with a trainer. In her training, JoJo was considered receptive to instruction although the home-owners did not hold a strict adherence to the training or skills taught. The exact times of morning meals were dependent on the daily work schedules of the household couple. The wife worked part time and fed JoJo on the same early morning schedule.

The second dog was, Kobe, a six-year old golden retriever-cocker spaniel mix. The family acquired Kobe when he was between 8 and 9 weeks old and used their own means of informal training at home to teach him basic obedience. They considered Kobe to be extremely food driven and easy to please, making him highly trainable. His feeding schedule was usually at 7:30 a.m. and then again around 6 p.m. so the sessions were set around these times to avoid satiation of food. Neither dog had received any training that related to clicker training or service dog behaviors prior to the intervention which made the intervention novel. Kobe was the only dog in the home.

Setting

The intervention with JoJo took place in an empty room 15 by 20 feet located on the first floor at the house where the dogs resided. It was the spare bedroom at the end of a hallway. The hallway had a door at the front that was shut and the bedroom door was
also closed so there were no other animals immediately close to the room during data collection. The room had wooden flooring and blank, white walls and no extraneous objects to serve as distractions outside of a bed, nightstand, and reclining chair. The tablet was set on top of the footstool of the reclining chair for data collection as well as the clicker, the experimenter’s phone to time each interval, and the chicken pieces and bag that they were held in on the experimenter’s waist. Although they were separated, there were three other dogs in the home at the time of the study.

For Kobe’s intervention, the sessions took place in a side playroom. The space used was approximately 20 by 30 feet. The room was located on the first floor of the house next to the mudroom, laundry and garage. During the intervention, the family remained upstairs in the main part of the house. The room was lined with toys on one wall, and couch, night stand and play pen on the other. His feeding schedule was usually at 7:30 a.m. and then again around 6 p.m. so these sessions were also set around these times to avoid satiation of food. Kobe is the only dog in the home. Included items in the room were the Verizon Ellipsis 7 tablet so it could record the procedures completed with each dog, the clicker, the experimenter’s phone to time each interval, the chicken pieces and bag that they were held in on the experimenter’s waist.

**Dependent Variable**

The dependent variable in this study was the frequency of correct behaviors. The experimenter gave a command to the dogs and observed their behavior. The experimenter assessed the time it took for the dogs to do the behavior correctly and recorded exactly how long it took the dogs to perform each step. Each target behavior was broken down into steps to account for a more sensitive measure. The behavior was
recorded and timed cumulatively.

**Independent Variable**

The independent variable was clicker training. Clicker training uses an audible cue to mark when a behavior is correctly performed. The behavior and cue is immediately followed by a reinforcer. The reinforcer for the intervention was food, specifically small pieces of chicken. If the dogs exhibit an error or any behavior other than the target behavior, that behavior was ignored. At no time was any vocal praise given.

**Experimental Design**

An alternating treatment design (Cooper, Heron, & Heward, 2007) was used to uncover the effects of clicker training on the frequency of correct behaviors for service dog training behaviors. During the intervention, the conditions were altered daily. The two conditions that were altered were baseline and the clicker training intervention. The baseline and intervention conditions were counterbalanced to minimize multitreatment interference effects. Each participant was evaluated using a one minute assessment timing. During the study, the conditions were alternated daily over a one week period.

“An alternating treatment design is characterized by the rapid alternation of two or more distinct treatments (i.e., independent variables) while their effects on the target behavior (i.e., dependent variable) are measured” (Cooper, 2007, p. 188). An alternating treatment design avoids unfavorable aspects such as sequence effects or an extended period of time necessary to demonstrate differential effects. “Sequence effects are the effects on a subject’s behavior in a given condition that are the result of the subject’s experience with a prior condition” (Cooper, 2007, p. 182).
Procedures

Each dog was worked with one-on-one with the experimenter. During the intervention, the conditions were alternated daily. Each day, both dogs were exposed to a baseline and an intervention condition. The conditions were counterbalanced to control for order effects. For example, on day one, JoJo was given a command to pick up a dropped wallet (i.e., baseline condition) first. Then she received the clicker training intervention to retrieve a medicine bag second. On day one for Kobe, he was given the command to retrieve a medicine bag for the baseline condition first. Then Kobe was trained to pick up a dropped wallet via the clicker training intervention. On day two, the dogs had the same baseline and intervention conditions but received them in reversed order. Therefore, on day two JoJo and Kobe were given the clicker training intervention first and then the baseline condition.

Behavior training was done through a series of five trials a day with each condition. Each individual trial would last one minute. There were a total of five trials, each one minute long, which accumulated to five minutes for each condition. The two conditions combined, baseline and intervention, amounted to ten minutes a day. The behavior acquisition was measured according to the dog’s progress through both behavior’s successive approximations. The behavior was considered completed once the last successive approximation of the behavior chain was learned.

Pre-Assessment

The experimenter spent the first day testing the dogs on each command to see if they knew any of the behaviors scheduled for intervention. As a pretest, the dogs were taken into their separate rooms used for data collection and were asked to perform the
service behaviors on command. Each dog was given the commands, “Pick up the wallet” and “Get the medicine (bag).” Neither of the dogs showed any behavior indicating they had learned these behaviors previously. The pre-assessment demonstrated the dogs had no prior training with the service traits.

**Baseline**

For the baseline condition, JoJo was assigned the behavior of picking up a dropped wallet while Kobe had the focus of retrieving a medicine bag. The dogs were taken into their separate room for data collection. They were each given the command without any further words or movements as encouragement. There was no intervention in the baseline that would lead the dogs to any certain behaviors or reinforcement. An upper limit of 15 seconds was used when the dogs did not exhibit any behavior. After 15 seconds without the appearance of the target behavior or successive approximations, the experimenter ended the session and the dog was given free time to play or relax.

**Intervention**

During the intervention condition, JoJo was trained to retrieve a medicine bag and Kobe was trained to pick up a dropped wallet. In the intervention condition, clicker training was used to shape the behavior. The command initiated the behavior and the clicker training was used to shape the dog’s behavior. The experimenter trained different behaviors for clicker training in order to demonstrate that it was the intervention, and not the specific behavior, that was responsible for the behavior change.

During the intervention, the dogs were free to move around the room as they please without a leash. The experimenter would begin video recording at this time and continued until the last session was complete. The food was kept in a bag attached to the
experimenter’s waist for convenience. The clicker was held in the dominant hand to ensure that the most precise communication was executed while food rewards were given to the dog with the non-dominant hand immediately following the sound of the clicker. Between each one and two minute session, the experimenter would set the clicker and bag of rewards down and allow the dog free time for one minute. At the end of each trial, the experimenter would take off and set down the bag of chicken and clicker during free time until the next trial began.

During free time the dogs were not given any commands, food, or interaction regarding play. Play was not incorporated to avoid distraction when beginning the next session. The experimenter remained neutral but the dogs were allowed to do any behavior including laying down, walking, sitting, smelling the room, or anything that was not considered destructive. If the dog approached the experimenter during the breaks for attention, petting was viable and encouraged for a positive associating with training.

**Generalization of Behaviors**

Baer, Wolf, and Risley (as cited in Bear, Wolf & Risley, 1968, p, 96) describe *generality of behavior change* as, “A behavior change may be said to have generality if it proves durable over time, if it appears in a wide variety of possible environments, or if it spreads to a wide variety of related behaviors” (Cooper, Heron, & Heward, p. 615). At the end of this intervention, a generalization test was conducted to observe if the dogs would perform the taught behaviors in a new environment. Thus, after the intervention was completed, each dog was taken to another room and was asked to perform the same behaviors taught in the intervention to see if they could be done on command in a new context.
**Accuracy**

When referring to the context of measurements, the concept of accuracy reveals an examination of an observed value and it’s comparison to the true state, or value, as it exists in nature (Cooper, 2007). Accuracy is an indication of a valid measurement practice. To ensure that integrity and precision were upheld during data collection, the intervention was video recorded from the initial pre-assessment to the last segment of training for continuous measurement. Each session was video recorded with a Verizon Ellipsis 7 tablet. Video recording procedures enabled a complete review of data collection each day and set up an easy system for an observer to reliably check for accuracy. After data collection, the experimenter sent an independent observer the videos from that day. The observer scored assessments for both the baseline and intervention conditions.

Prior to data collection, the observer was briefed on the process of clicker training. The observer was also trained on how to count successive approximations for the behaviors, as well as the ending goal of performance via sample videos. While watching the videos, the observer was asked to identify successive approximations of the behaviors and the number of times accomplished by the dog. The observer was given a pre-test on collecting data based on videos of similar dog training sessions for approval before being introduced to the actual data from the intervention. The observer was required to score with at least 95% accuracy.

**Procedural Integrity**

Fidelity of treatment was observed by using a checklist of procedures during 100% of intervention sessions via video recording. The fidelity checklist was a configuration of
the key behavior steps recognized in the baseline and intervention conditions (Appendix A). An observer reviewed the videos with the checklist to ensure consistency with applying the methods outline and procedure section. The results from the independent observer authorized that the experimenter followed the steps with 100% accuracy.
Chapter 4

Results

The complete behavior was successfully learned by one of the two dogs included in the experiment within the two-week time frame. Kobe successfully achieved the behavior within thirteen days of the intervention. JoJo achieved two of the four task criteria over fourteen days of the intervention. One day was missed between the thirteenth and fourteenth days which accumulated to a fifteen day time frame. After missing one day, the experimenter returned and followed the same intervention and baseline condition patterns for JoJo and performed a generalization test with Kobe.

**Figure 3.** Kobe and JoJo’s daily progress through the intervention condition with five, two-minute trails per day with the exception of day one and two consisting of five one-minute trials.

By day one of the intervention, both dogs were approaching the object and
experimenter after the conditioning phase. The dogs appeared eager to follow the experimenter and behave. Both Kobe and JoJo performed *Step One: Walk toward the wallet / shelf*. JoJo also responded consistently to shaping and was reinforced for looking in the direction of the object, *Step two: moving head towards the object*. By day three, Kobe had also reached this point by dropping his head towards the ground, coming closer to the wallet. For these first few days, Kobe exhibited some repeated behaviors during baseline, like lying down and dropping his head. Kobe would often echo the behaviors from the intervention that were earning him rewards. After 10-20 seconds of no reward, he would lie down or walk away. JoJo began by sitting and watching the experimenter. She would remain sitting for thirty seconds without any movement besides looking around until the experimenter would end the trial.

By the second day both dogs were responding adequately to the routine with more behaviors during the intervention condition. The experimenter continued shaping both dog’s behavior and within the next few days was reinforcing head movements closer to the objects and eventually making contact.

Kobe was laying down consistently by day three and intermittently touching the wallet with his head. On day six, he was deliberately and consistently touching the wallet with his muzzle. For JoJo, day six was the first day she made contact with the bag. By day seven she was repeatedly touching the bag with her muzzle through every session.

After the dogs were making physical contact with the objects, variability of behaviors began to rise. When raising criteria, the previous behavior checkpoints no longer received a reinforcer and were put on extinction. The newest behavior response of the checkpoints became the threshold for reinforcement. The next step for reinforcement
was to click and reward when only the mouth would touch the bag, versus the nose or

**JoJo's Baseline and Intervention Conditions**

![Graph showing JoJo's Baseline and Intervention Conditions]

**Figure 4.** JoJo’s Shaping of Behavior through the Intervention and Baseline conditions.

**Kobe's Baseline and Intervention Conditions**

![Graph showing Kobe's Baseline and Intervention Conditions]

**Figure 5.** Kobe’s shaped behavior through the Intervention and Baseline conditions.
entire muzzle. JoJo had been rewarded for too long of a period for touching her muzzle to the bag so when she was rewarded for only nose contact, her number of behaviors plummeted. Her behavior of touching the bag with her entire muzzle was put on extinction and she began eliciting new behaviors. When JoJo did not receive a reinforcer for touching the bag with her entire muzzle, she would make contact with her paw, whine, or touch the bag in different locations. JoJo would touch the bag in different places right in a row, she would intermittently touch with solely her nose and her behavior was reinforced. But instead of directly touching the bag with solely her nose more often, she continued to touch the bag in multiple places when the click and the reinforcer was withheld.

JoJo’s behavior was a direct reflection of the behaviors that the experimenter was clicking and rewarding. This means that JoJo’s behavior was a direct reflection of the environmental arrangements of the experimenter. The timing of the clicks and rewards given to JoJo molded her behavior and eventually led to variability. JoJo’s variability of behavior may have been occurring because she was following the clicks but the experimenter had incorrectly shaped her progress of behaviors.

To combat the variability and encourage JoJo to exhibit more behaviors, the experimenter followed a five second click rule. The rule meant that JoJo would receive a click and reward at least every five seconds to continue reinforcement regardless if her behaviors were progressing to remaining at a standstill. The purpose was to encourage JoJo to continue performing behaviors instead of increasing the duration between each evoked behavior. Although the rule kept JoJo more engaged, the experimenter was unsuccessful at further shaping her progress in the two week period.
On day nine, Kobe began biting the wallet and picking it up a few inches from the ground. Within the five trials that day, he was pushing the wallet around, making almost every point of contact with his mouth, curling his lips back and opening his mouth onto the wallet. At this point, the experimenter was providing reinforcement with multiple pieces of chicken at one time. Kobe began moving the wallet with his teeth and moved to picking it up an inch or two off the ground. JoJo began touching the wallet reliably with her mouth but would fall back into variability every time criteria was raised.

Kobe then began lifting the wallet up in a seated position. The experimenter had to withhold the reinforcer until he would hold the wallet for a second or two before dropping it to consume the chicken. Kobe’s behavior was then shaped to pick up the wallet and bring it right to the experimenter’s hand. By day thirteen, Kobe was repeatedly and reliably picking up the dropped wallet and placing it directly into the unmoving hand of the experimenter. JoJo never progressed to biting the wallet. She continued touching the wallet with her nose, mouth, paw or refraining from eliciting behaviors for up to five seconds at a time.

On the last day of data collection, JoJo remained at the same point of progress. Kobe was given a generalization test in another room without the clicker or food rewards for a two-minute trial. He repeatedly picked up the wallet and placed it in the experimenter’s hand for the first minute and a half without hesitation. For approximately twenty seconds, Kobe took the wallet and walked off with it to lay down. He then returned and brought it back to the experimenter and performed the behavior until the trial ended.

A differential effect is seen between the baseline and intervention conditions in the
alternating treatment design. As seen in Figures 4 and 5, there is a clear distinction between the steps of behavior learned in the intervention conditions versus zero progress of behavior in the baseline conditions. For the intervention condition, both dogs learn to perform their behaviors through the clicker training. While in the baseline condition, neither dog advances to the first step of the baseline behavior.
Chapter 5

Discussion

The current study examined how clicker training helped two dogs develop service dog behaviors. The study asked two experimental questions: what is the frequency of correctly executed behaviors and what is the duration of time it takes to learn the entire behavior chain? The alternating treatment design showcased the distinction between the absence of progress in the baseline condition and the intervention condition that presented clicker training; which displayed the number of correct behaviors executed within a two week period for each dog. The progress of behaviors resulted in complete behavior acquisition for one dog and two out of the four steps of behavior for the second dog. Both dogs were generally progressing at the same pace for the first two steps of behavior within the first week. The experimenter was unsuccessful in shaping the rest of the behavior chain with JoJo in the available time, but was able to shape Kobe’s complete acquisition of behavior.

As indicated by the literature, this study showed that dogs who are learning service commands would benefit from an intervention that was based on positive reinforcement, clear communication from shaping, and a method that encouraged consistent exhibition of behaviors without any form of reprimand through clicker training. Some studies such as Smith and Davis (2008) have compared the use of the audible secondary reinforcement of clicker training combined with a food reward to the sole use of food as a primary reinforcement and have found minimal differences in the time of behavior acquisition. However, it is worth noting that a food reward alone would be enough when motivating dogs or other animals to learn simple behavior chains and all
such studies comparing the two methods have revolved around perceivably broad behaviors that did not require detailed movement.

The advantage that clicker training holds may be seen more clearly with specific behavior changes; behaviors in which minor details in movement are important. More complex and detailed behaviors require clear communication regarding the exact time of the precise changes in shaping. An example of a specific and small change in movement would be training a service dog to remove a person’s socks delicately and without biting down on the foot. Such behavior is very different from teaching a dog to touch a cone with their nose or jumping into the back of a car on command.

Limitations

While the present study was the first of its kind to examine the effects of clicker training on the acquisition of service dog behaviors, it was not without limitations. Due to limited resources such as no funding, short span of time to collect data, and a narrow pool of available dogs in the area who matched the general temperament and age expectation of a service dog, only two dogs were available to include. Another limitation was that this study did not include a daily, separate assessment of behaviors to measure without the clicker or rewards. Lastly, this study did not test for discrimination with the use of other various objects to discern if the dogs learned to pick up the particular object (e.g. wallet or bag) out of a mix of other options.

Future Research

For future research, the present study suggests involving a trainer experienced with clicker training to either teach or perform the intervention. The experimenter in the current study only experienced a weekend of instruction and skill development for clicker
training. Also, behaviors to be shaped for examination may be a better fit if they do not require the dog to maintain the object in their mouth if they are learning with clicker training for the first time. The added an extra challenge with the dogs because the dogs were eager to open their mouth to consume the chicken and would drop the object as quickly as possible, so they need to be taught to hold the object for a longer duration of time. This step could add more time compared to a behavior that does not rely on the dogs to hold an object in their mouth for an extended period of time or for the next step in a behavior chain.

Another suggestion for better implementation of future research is to use dry food as reward. Chicken was a worthwhile choice that the dogs enjoyed through the entire study, but it was difficult to dispense frequently and quickly. One reason was because pieces would stick together in the bag or to the experimenter’s fingers, which prevented the experimenter from giving the reward after the click as quickly as preferred. Extra pieces of chicken would also occasionally drop to the ground when handing out a reward. Then the dogs would consume the fallen piece off the floor and sniff the ground for more possible fragments of chicken. The experimenter would have to wait until the dogs were finished searching the floor before continuing so time was recurrently lost to this. A different motivating treat that is dry may be a better option. Despite these limitations, this study was a good example of showing the effectiveness of clicker training for service dogs.
Appendix A

Fidelity Checklist

Date: ____/____/_____

Procedural Integrity

Baseline

☐ One dog was worked with at a time.

☐ One dog was taken into a separate room away from other dogs, animals or people other than the trainer in order to cut down on possible distraction.

☐ A timer was set for a one or two minute interval.

☐ The command was vocally given to the dog.

☐ The experimenter observed the dog’s behavior.

Intervention

☐ One dog was worked with at a time.

☐ One dog was taken into a separate room.

☐ A timer was set for a one or two minute trial.

☐ The dog was reinforced each time they made a successive approximation to the target behavior.

☐ When the dog performed the correct movement, immediately click and reward the dog with food.

☐ After the one or two minute clicker training session ended the dog was given free time.
Appendix B

Steps of behaviors:

Retrieving A Bag Of Medicine From A Shelf / Across The Room

☐ Dog walking toward the shelf
☐ Dog moves head towards the bag
☐ Dog picks up the bag
☐ Dog brings the bag back to the experimenter

Picking Up A Dropped Wallet

☐ Dog walks toward the wallet
☐ Dog moves head to wallet (looking and / or smelling)
☐ Dog picks up the wallet
☐ Gives the wallet to the experimenter
Appendix C

Institutional Animal Care and Use Committee (IACUC)
The Office for Research Protections
The 330 Building, Suite 205
University Park, PA 16802 | 814-865-1775 | ORProtections@psu.edu

Submitted by: Jodie D’Onofrio
Date Submitted: June 15, 2015 1:15:37 PM
Date: June 30, 2015
IACUC#: 46497 (Research)
PI: Richard M Kubina, Jr.

Study Title

1> Please provide the project title (PLEASE NOTE: If this project is / will be externally funded, the
title should match the title of your grant).
   Clicker Training for Service Dogs.

2> Type of eSubmission
   New

Select the Study Location

3> Where will the project be conducted?
   [X] Penn State, University Park Campus

Protocol Subclass

4> This project should be classified as what type of protocol?
   [X] Research

Home Department for Study

5> Department where research is being conducted or if a student study, the department overseeing this
   research study.
   Educational Psychology, Counseling and Special Education (UNIVERSITY PARK)

Principal Investigator

6> Principal Investigator
   Kubina, Jr., Richard M

Admin Contact

7> Do you wish to add an administrative contact to this protocol?

NOTE: Individuals listed as administrative contacts are assumed not to have any contact with animals
or non-fixed animal tissues. If an individual serves in a dual role of providing administrative
support and will have contact with animals or non-fixed animal tissues, they should also be
listed here as the Administrative Contact and then later as research support when prompted in
the electronic application.
[X] Yes, and the Administrative Contact will handle animals or non-fixed animal tissues

8> Administrative Contact for this Submission
D’Onofrio, Jodie Marie

Funding Source

9> Have you, or are you in the process of submitting a grant application to an external or internal funding source to acquire financial resources to support this project?
[X] No (funding is provided through PSU (e.g., Department, Start-up Funds, etc.)

Click here to upload your grant application, if applicable

10> Please confirm the following:
[X] Yes, adequate funding is available to me for the procurement and care of the animals to be used in this project.

Project Abstract

11> Please provide a clear and concise abstract/description of the procedures involving the use of animals. This abstract/description should be brief and easily understood by all members of the committee (including non-scientists). You will be asked to provide the details of this animal use in other sections of the eSubmission protocol. DO NOT SIMPLY COPY AND PASTE INFORMATION FROM THE GRANT APPLICATION.
The procedures are based on the ideas of Applied Behavior Analysis and I will scientifically train dogs through the use of Clicker Training. This pilot study will aim at scientifically training dogs via Clicker Training and Correction-based methods. Correction-Based training, as the name conveys, relies on an array of physical or vocal corrections. While Clicker training gives provides an acoustical cue when the dog has accomplished the correct behavior and immediately receives a positive reward (usually food, sometimes a ball depending on the dog). dog’s motivation and preference. The dog learns to associate the sound of the clicker with rewards and praise.

Through Clicker Training, I am going to teach the dog some of the behaviors that are primarily beneficial for Service Dog training. The task efficiency of the two methods will be to bridge the use of a laser pointer with the command to pick up objects. This is important for anyone living with chronic pain, or has fallen and is now stranded in that spot, or is in a wheelchair and either cannot reach or has dropped something. The hope is that once the dog learns to pick up what the laser pointer is shining on, the person will not need to teach the dog names for every individual object. The dog will eventually generalize any object with simply the laser tested and compared in terms of the speed of behavior acquisition.

12> The Guide for the Care and Use of Laboratory Animals, 8th Edition requires an evaluation of the scientific merit of the protocol as it relates to the welfare and use of the animals. In order to fulfill this requirement, please provide the reason for the project, and describe how it will benefit human/animal health, the advancement of knowledge, and/or society.
Service dog training plays a huge role in the world of people with disabilities. These dogs reinstate a sense of independence and confidence for the individuals with disabilities to stay active in the
world that may not be there without their company. This type of work is important for anyone living with chronic pain, or has fallen and is now stranded in that spot, or is in a wheelchair and either cannot reach or has dropped something. This will advance knowledge by using Clicker Training in a controlled setting and studying the methods and . Unfortunately, a huge percent of these trainers are still using punishment-based methods. Although there is a growing amount of time needed to accomplish the goal behavior.research on the anxiety and discomfort punishment-based methods elicit in the dogs, the old methods still remain at service dog training facilities. The purpose of this study is to show the efficiency of clicker training to promote a change for improved training styles and convince dog trainers this is a better option in all areas, if the research shows so. While the number of dogs being trained in this study is a limitation, it will hopefully set the stage for further research that have additional temporal and financial resources.

**Vertebrate Animals**

13> Please list all species of animals that will be used in this project and complete the table.

<table>
<thead>
<tr>
<th>Species (Common Name)</th>
<th>Source of the Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dogs American Pit Bull Terrier mix, Beagle/ Hound mix.</td>
<td>Privately owned animals</td>
</tr>
</tbody>
</table>

If any species listed in the table above are mutant or transgenic animals, please complete the table below:

<table>
<thead>
<tr>
<th>Species</th>
<th>Strain Name</th>
<th>Phenotype (e.g. SCID severe combined Immuno-deficient)</th>
</tr>
</thead>
</table>

**14> Privately Owned Research Animals**

<table>
<thead>
<tr>
<th>Species</th>
<th>Owner</th>
<th>Veterinarian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dogs</td>
<td>Laura Val Velsor</td>
<td>Dr. Joan Ritchie</td>
</tr>
<tr>
<td></td>
<td>265 Maurer Lane, Julian, Pa 16844</td>
<td>1335 North Atherton Street, State College, Pa 16803</td>
</tr>
<tr>
<td></td>
<td>610-841-6625</td>
<td>814-231-2666</td>
</tr>
</tbody>
</table>

**Procedures Selection**

15> Review the procedures list and indicate whether they will be performed on the study by checking yes or no. Additional questions will appear on subsequent screens based on "yes" responses to provide detail about the procedure.

- [ ] Wildlife will be trapped or captured
- [ ] Animals will be euthanized
- [ ] Blood will be collected
- [ ] Animals will be anesthetized or sedated
- [ ] Survival surgery will be conducted
- [ ] Non-survival surgery will be conducted
- [ ] Substances other than anesthetics, sedatives and/or analgesics (e.g. nonhazardous chemicals or biologicals) will be administered
- [ ] Animals will be physically restrained for a period greater than 15 minutes
- [X] Behavior studies will be conducted
- [ ] Hazardous agents (chemical and/or biological (e.g., tumor cell)) will be administered to animals
- [ ] Radioactive agents will be administered to animals
- [ ] Animals will be housed in non-standard conditions, for example:
  - special caging such as hanging wire cages or metabolism cages
- working with biohazards
- radioisotopes
- altered schedule for care
- housing species singly and without enrichment
- housing species singly due to research requirements

[ ] Diets will be altered (e.g., high-fat, low-iron)
[ ] Animals will be deprived of food for any period of time
[ ] Animals will be deprived of water for any period of time
[ ] Animals will receive either gamma or X-rays in an irradiator
[ ] Lasers will be involved in animal related procedures.
[ ] A paralytic agent (e.g., pancuronium, succinylcholine, vecuronium, tubocurarine, etc.) will be used as required in combination with anesthetics
[ ] Complete or incomplete Freund's adjuvant will be used
[ ] Procedures (e.g., sample collection, observation, gavage, tagging, radio collars, ear punch, ear tags, tattoos, weighing and transporting animals) other than those checked elsewhere on this page will be conducted on live animals

Behavior Studies
16> You indicated this project will include the use of behavior studies. Please name and describe each behavior study in the table below.

<table>
<thead>
<tr>
<th>Species</th>
<th>Age</th>
<th>Behavior Study 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dogs</td>
<td>1.5 yrs old</td>
<td>Clicker Training</td>
</tr>
</tbody>
</table>

Please describe Behavior Study #1 Below
Clicker Training uses an acoustical cue, or "click", to tell a dog when they have done something correctly. The click is partnered with other positive rewards such as food or praise so the dog learns to associate them together. This ensures that the dogs knows a click equals reward and that they have done something correctly. Then the use of Clicker Training creates an efficient and scientific foundation for further training.

Animal Numbers
17> List the TOTAL number of animals anticipated to be used for this project (please complete the table below) by clicking the add/edit numbers button next to the species listed in the table below.

<table>
<thead>
<tr>
<th>Species (Common Name)</th>
<th>Strain (if applicable)</th>
<th>Total Number Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dogs</td>
<td>Pittbull/Boxer/Hound mix, Beagle/Hound mix.</td>
<td>2</td>
</tr>
</tbody>
</table>

18> Regarding your animal needs (from the Vertebrate Animals section), please complete the table below by clicking the edit button next to the species listed in the table below.

<table>
<thead>
<tr>
<th>Species (Common Name)</th>
<th>Source of the Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dogs</td>
<td>Privately owned animals</td>
</tr>
</tbody>
</table>

Why are you using this particular species?
Without funding, I do not have access to already trained service dogs and these are the species I have access to use. Moreover, I am using these species because they are both a good size in terms of the job at hand (service training), they are intelligent, and eager to please.

19> The number of animals used for research should produce statistically valid data. Please indicate below if the number of animals requested will allow for the collection of this statistically valid
data.
[X] No
If no, please explain:
This study is not aimed for statistical generalization or publication, as indicated in the abstract.

Experimental Design

20>Describe the details of your experimental design. This design should include the total number of experiments, the experimental groups, the number of animals needed per group and the comparison to be made. Your description should be written so that both scientific and nonscientific members of the committee will understand it.

The purpose of this pilot study is to emphasize test the efficiency and positive impact clicker training that "clicker training" has on dogs as well as their owners or trainers alike. The science of clicker training will be applied to training service dogs for people with disabilities. Each command that the dog dogs will learn will be taught through stages of shaping the behavior. The design for this case study pilot will include only one dog and one experiment two dogs and two experiments with a control phase and an intervention phase.

The initial phase will implement conduct basic correction-based dog training that is used by most people with both dogs. Corrections will be vocal direction and will include physical prompts toward the final goal behavior. (e.g., picking up a dropped item). Correct behaviors will be rewarded with food along the way. After a few days with multiple trials within each daily visit and once a recognizable trend has revealed itself, data collection will be calculated and graphed.

In the second week, clicker training will be introduced for a conditioning period to teach the dog dogs that the clicker is an acoustical cue that results in a food reward. This can be done quickly within a half hour time period. Then a second service trait of similar demand level will be taught to the dog dogs using clicker training. Clicker training does not need corrections because the dog is naturally active and working for the click to know when they have elicited the correct behavior to earn their food reward. This makes the process of learning much more fun for both parties the dog because the dogs remain motivated and happy without the interruption of corrections.

In the final stage, the results of the correction-based method will be compared with the clicker training method. Here the data will showcase if either method is more efficient.

21> If not already described above, provide justification of the approximate numbers of animals to be used. For some projects, a statistical method of justification (e.g., power analysis) may be appropriate.

This is only a pilot study considering the scarcity of works in this area, i.e., comparing clicker training with an alternative training method. Thus, only two dogs will be used. I am aware that this is a limitation of my study.

Distress / Pain

22> Will any of the experimental procedures described in this protocol result in more than momentary pain and/or distress as determined in consultation with a veterinarian at the respective campus?

No

23> In the table below, identify each of the procedures you plan to conduct by pain Category.
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Species</th>
<th>Pain Category</th>
<th>Total Animals for whom this is the highest pain category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior Training</td>
<td>Dogs</td>
<td>Cat C - Slight or momentary pain or distress</td>
<td>1</td>
</tr>
</tbody>
</table>

**Animal Disposition**

24> What will be the disposition of the animals when this project is complete? Check all that apply.

- [ ] The animals will be euthanized according to the procedures described in this protocol and disposed of according to approved institutional procedures.
- [ ] The animals will be transferred back to a PSU herd/flock (e.g., dairy herd).
- [X] The animals will remain with their owners.
- [ ] The animals will be processed for commercial purposes.
- [ ] The animals will be transferred to another approved protocol held by this investigator.

*(If known, please provide the protocol number to which they will be transferred.)*

- [ ] The animals will be transferred to another approved protocol held by another investigator.

*(If known, please provide the protocol number to which they will be transferred.)*

- [ ] Other (please describe below)

Please describe the other disposition.

**Procedure and Housing Locations**

25> Will animal-related procedures be conducted outside of areas that are under the direct supervision of the Animal Resource Program (at UP), the Department of Comparative Medicine (at Penn State Hershey), or the Department of Animal Sciences within the College of Agriculture (at UP)?

Yes

26> Identify the locations where animal-related procedures will be conducted outside of areas that are under the direct supervision of the Animal Resource Program (at UP) or the Department of Comparative Medicine (at Penn State Hershey).

<table>
<thead>
<tr>
<th>Procedure (e.g., survival surgery, non-survival surgery, behavior testing, euthanasia)</th>
<th>Species</th>
<th>Building/Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior Testing</td>
<td>Dogs</td>
<td>265 Maurer Lane, Julian Pa, 16844</td>
</tr>
</tbody>
</table>

27> Identify the locations, if any, where animals will be housed for periods of greater than 12 hours outside of areas that are under the direct supervision of the Animal Resource Program (at UP) or the Department of Comparative Medicine (at Penn State Hershey).

<table>
<thead>
<tr>
<th>Housing Only</th>
<th>Species</th>
<th>Building/Room</th>
</tr>
</thead>
</table>

**Technical Services**

28> Will a person (e.g., University Veterinarian, Veterinary or Animal Care Technician) other than an
individual who is associated with your research/teaching activities and who is not listed as one of the personnel on this submission, be expected to provide technical services (e.g., nail trimming, non-routine husbandry, etc.) beyond routine care?

No

**Other Institutions**

29> Is another institution or PSU campus involved in this project?

No

**Other Personnel**

30> Personnel Detail

<table>
<thead>
<tr>
<th>PSU User ID</th>
<th>Name</th>
<th>Department Affiliation</th>
<th>Role in this study</th>
<th>Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>rmk11</td>
<td>Kubina, Jr., Richard M</td>
<td>Educational Psychology, Counseling and Special Education (UNIVERSITY PARK)</td>
<td>Principal Investigator</td>
<td>06/15/2015</td>
</tr>
<tr>
<td>jmd5499</td>
<td>D'Onofrio, Jodie Marie</td>
<td>Educational Psychology, Counseling and Special Education (UNIVERSITY PARK)</td>
<td>Administrative Support</td>
<td>06/15/2015</td>
</tr>
</tbody>
</table>

**Kubina, Jr., Richard M (Principal Investigator)**

- PSU User ID: rmk11
- Phone: 814 863 2400
- Email: rmk11@psu.edu
- Email Notifications: Yes
- PSU Person Type: Faculty
- Dept: Educational Psychology, Counseling and Special Education (UNIVERSITY PARK)
- Address 1: 209 Cedar Building
- City, State, Zip: University Park, PA 16802

**D'Onofrio, Jodie Marie (Administrative Support)**

- PSU User ID: jmd5499
- Email: jmd5499@gmail.com
- Email Notifications: No
- PSU Person Type: Graduate Student
- Dept: Educational Psychology, Counseling and Special Education (UNIVERSITY PARK)
- Address 1: Address not provided/not in directory
- Address 2: 
Procedures and Training

31> The table that follows is pre-populated with the procedures you indicated would be conducted as part of this protocol. For each procedure in the table, please edit the information to indicate which personnel are performing which procedures, the level of experience (e.g., proficient - five years experience with this procedure) and information about how they were trained.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Personnel who will perform this procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clicker Training</td>
<td>D’Onofrio, Jodie Marie (imd5499)</td>
</tr>
<tr>
<td>Describe the level of experience of the personnel performing the procedures (e.g., 8 years of experience in performing vasectomies on mice).</td>
<td></td>
</tr>
<tr>
<td>Over 1 year of experience in performing clicker training with animals.</td>
<td></td>
</tr>
<tr>
<td>Please describe the type of training the personnel performing the procedures has received and who provided that training (e.g., Hands on training with supervision by Dr. Charles Jones, DVM).</td>
<td></td>
</tr>
<tr>
<td>Hands on training with supervision by Terry Ryan, world renowned behaviorist and dog trainer.</td>
<td></td>
</tr>
</tbody>
</table>

32> Please confirm that you understand all personnel listed in this submission must complete the IACUC Basic Training and the Occupational Health and Safety Training before the protocol can be approved by the IACUC.

NOTE: If you are maintaining a herd or a flock, the only training requirement is the Occupational Health and Safety Training.

• For researchers at Penn State Hershey’s College of Medicine, training information can be accessed on Infonet at:
  IACUC: http://infonet.hmc.psu.edu/iacuc/training/aalasinstructions.pdf
  OHSP: http://infonet.hmc.psu.edu/iacuc

• For all other Penn State researchers, training information can be accessed on the ORP website at: http://www.research.psu.edu/orp/animals/trainings

[X] YES

Assurances

33> Please check all to confirm the following statements are true.

[X] For protocols that involve research, I have determined that the proposed research does not unnecessarily duplicate previous research conducted by myself or others.

[X] I assure that all staff, faculty, and students involved with this project are qualified or will be trained to conduct the described animal use procedures in a humane and scientific manner.

[X] If this project is funded by extramural sources, I assure that this application accurately reflects all procedures involving animal subjects described in the proposal to the noted funding agency.

[X] I will obtain review and approval from the IACUC before initiating any changes to the approved protocol.

[X] I will notify the IACUC regarding any unexpected study results that impact the welfare of the animals. Any unanticipated pain or distress, morbidity or mortality will be reported to a veterinarian and the IACUC.

[X] I will maintain appropriate animal records (e.g., census, health, veterinary care, euthanasia, surgery, diagnostic anesthesia, etc.)

[X] All applicable rules and regulations regarding radiation protections, biosafety, recombinant issues, etc. have been addressed in the preparation of this application and the appropriate
reviews have been initiated.

[X] I will do everything in my power to safeguard the health and well-being of each animal under this protocol.

Note on Uploads

On the next screen, an opportunity will be available to upload documentation related to this IACUC eSubmission. That screen includes some basic instructions on how to upload documents and the types of documents that can be uploaded. This screen provides basic information about the types of documents you may wish to upload.

The below list contains examples of documents that may need to be uploaded (this is not an inclusive or required list and is protocol dependent):

- Grant application
- Chemical Hazard Form (specific to Hershey protocols)
- Radio Isotope Form (specific to Hershey protocols)
- Biosafety form (specific to Hershey protocols)
- OHSP form (specific to Hershey protocols)
- AAALAS Learning Library confirmation (specific to Hershey protocols)
- MSDS form
- AAPHIS permits
- Animal/Biohazard form

(NOTE: This form is required for protocols reviewed by the UP IACUC involving infecting animals with any viable organism or involving animals, caging, or bedding material contaminated with hazardous materials that will pose a risk to personnel caring for or working with the animals.

Principal Investigators must contact Dr. Jeffery Dodds, D.V.M. at (814) 865-1495 or jwd12@psu.edu prior to completing this form. This document must be prepared in consultation with Dr. Dodds. It must also be approved by Dr. Dodds before it can be submitted to the IACUC for review.)

- DEA registration
- PA Game Commission permit

Document Upload

REVIEW - REQUEST INFO
Document 1001 Received 06/30/2015 09:45:09 AM - Returned for Additional Information

SUBMISSION FORMS
Document 1001 Received 06/17/2015 09:28:26 AM - Application Auto-generated by eSubmission Approval
References


