My Science Project

By Sheree Wyard

Introduction

Over the last 6 months I have really learned to value the company of my pet dog even more than before my science project. My name is Sheree Wyard and I am a 16-year-old year-10 student from Australia who has become extremely fascinated with animals and the methods of communication we can use to 'talk' with these wonderful creatures. Recently I had to think of a science project for school, which carried a high weight for my overall science mark for the school year. My mum suggested that I study why teardrops are salty…hmmm sounds interesting, but my aunty suggested that I begin to study animal behaviour…well you can probably guess what I did!

I have a 1-year-old Jack Russell dog named Chilli and had been training her prior to my science project for eight months. In the past, both my family and myself came to believe that Chilli was stubborn and didn't want to learn anything. Through clicker training we have been proven wrong. Clicker training really is an ideal method to train animals. Prior to my science project I trained Chilli by cueing behaviour and then rewarding her with a small treat after the behaviour was completed, my method of training was missing many things, but an important one was effective communication. How was Chilli supposed to know what behaviour I was happy with?

It was through my Aunty Julie that I learned about clicker training. She has two horses that she has been clicker training for years now. With her horses she proved to me that clicker training is an exceptionally rewarding method of

training for both the animal and the trainer. She has taught me everything I know about animal behaviour and training methods. Julie helped me with this experiment; she let me witness training sessions with her horses and also let me get involved. In preparation for my science project her horses helped me get my timing right with the *'click'* in clicker training, by clicking when the required behaviour was being offered alongside my Aunt at first, and then by myself (then with the treats as well).

After getting involved with the horses I was convinced that teaching Chilli clicker was an ideal science project as it was hands on and helped me learn more about animals. I also chose this experiment because clicker training was going to benefit Chilli's learning and help me to communicate with Chilli effectively.

Throughout my experiment I have learned many new and wonderful things about animal behaviour and I have learnt how to effectively communicate to animals. Of course, I do not speak 'animal' but with clicker training, I have learnt that there is a way to 'speak' with animals without having to learn their language.

Some scientific definitions

During the background work for my experiment, I also had to read about the principles of learning and behaviour. Aunty Julie lent me a number of books and magazines on learning and also on clicker training. My Aunty Julie said that it was not enough that I learnt how to click at the right time, but I had to learn why we click at a certain time, why the animal responds in the way he or she does and principles of shaping are used in clicker how the training (you guessed it, she is a task master!). Before I explain what I did in my science project, I thought I might share some of the important behavioural definitions I have learnt through my research for my experiment; after all, I did allot of reading for it.

Clicker training- is a way of training animals by saying '*YES; you are on the right track'*. It is an ideal method because of its gentle, effective and efficient ways of training all types of animals. During clicker training, the trainer operates a small plastic rectangular prism (called a **clicker),** which contains a small metal strip. When you apply pressure to the metal strip and release the pressure, it reacts, making a clear, decisive '*click*'. Animal trainers pair the clicker with a treat (such as the animals favourite food) as a tool to communicate during clicker training.

Classical conditioning- is a basic form of learning. It's study began with the work of Pavlov, who discovered, amongst other things that there are naturally occurring behaviours that seem to be built into animals. For example, when you place food near a dog, the dog salivates. Pavlov found that if you present the food and ring a bell at the same time (each time), the dog associates the bell with food. Pavlov found that if you do this often enough the dog would salivate at the sound of the bell. This is what is called *learning an association*. In other words, for the dog, the sound of the bell meant food is coming.

Operant conditioning- is when an animal learns from its surrounding environment and responds to that environment in some special way. For example; we have learnt to act on our environment when we want to get into the classroom; we press a lever, which opens the door, which allows us to enter the classroom. We have learnt that the way to get to the classroom is to open the door.

Clicker training seems to be a combination of classical and operant conditioning. By it's very nature, it is a method of positive reinforcement. We pair a *click* with a treat when teaching behaviour, just like Pavlov did with his dogs and the bell. The click means *yes* or *good*' and is said to be a much faster marker than using words to reinforce the behaviour. A marker, by the way, is something that identifies the behaviour we want to increase. In clicker training the marker is the *click*.

I also learnt that there are four general ways of teaching and learning. The following table taken from Mr. Domjan's book explains what they are:

Name	Response	Result & Example
Positive Reinforcement	Giving something that the animal likes for the behaviour	Increases the times the behaviour will occur. *For example Click and Treat for behaviour.*
Positive Punishment	Giving something that the animal does not like for the behaviour	Decreases the times the behaviour will occur. *For example a smack when the animal jumps on the lounge.*
Negative Reinforcement	Taking something away if the animal performs the behaviour	Increases the times the behaviour will occur. *For example placing pressure on the animal's bottom to get him to sit. After the animal sits, the pressure is taken away.*
Negative Punishment	Taking something away to prevent the behaviour occurring again.	Decreases the times the behaviour will occur. *For example when a child is grounded for coming home late from a party. Another example might be the use of an electric fence to stop a horse going over the boundary.*

Aims-
In my science project, I had three aims:

1. To see if clicker training is an easy training method for a kid to use.
2. To see whether an animal could learn a specific behaviour in a short space of time.
3. To see if clicker training produces reliability and consistency in behaviours.

To fulfil these I wanted to see if I could teach Chilli to touch an object set on the deck of my house.

History-

Before I conducted my experiment, Chilli had never been exposed to clicker training. For the previous eight months I had been training Chilli to respond to cues and commands, rewarding her with a small sample of food after she correctly completed the behaviour I asked for. Her training sessions were no longer than a half an hour as I believed that she had a short attention span and she seemed to show me that she was reluctant to learn new behaviours.

I observed that Chilli was not responding to the commands on my cue and I believed that she found training a chore that wasn't to be enjoyed. She was not alert or trust-worthy of her trainer (me) even after a long and persistent length of time.

Method-

Instruments-

I began my experiment by using an orange witches hat as an intruding, unfamiliar object in Chilli's environment.

My second tool was the food. This food was used as the primary reinforcer; a primary reinforcer is something that Chilli will automatically find reinforcing. I used a special treat; *Friskies Chocolate bites* that Chilli has not worked to receive before. I selected this treat for the experiment because it was in small bite sizes so Chilli could quickly chew the food and not be distracted from the training session.

My third tool was the clicker. In this experiment I paired the primary reinforcer (food) together with *click*. This sound will become the secondary reinforcer; which is something that Chilli will find rewarding when she understands that *click* means treat.

Procedure-

Stage one-

In this stage my aim was to find out whether Chilli would touch the cone naturally without any training (without a click and treat). I placed an orange cone in the deck area of my house. Firstly I thought about what Chilli would do prior to training the behaviour-smell the ground, jump on me, run away, touch the cone or totally ignore the cone. Chilli was directed to the cone. During this stage the number of times Chilli approached or touched the cone was recorded.

Stage two-

During the second stage of the experiment my aim was to teach Chilli to touch the cone and to begin to communicate with her through the *click*. The way I did this was each time Chilli approached the cone, sniffed the cone, or touched the cone; she would get a click and then a treat.

Stage three-

For the third stage of the experiment I did a further trial after Chilli learnt the behaviour of touching the cone in the same location as the base stage.

Stage four-

For the fourth stage, I changed the cone's position to the other end of the deck. My aim at this stage was to see if Chilli had confidently learned the behaviour of touching the cone, when the cone was placed a different location.

I chose to record in one-minute intervals in order to show when learning took place. I also used an assistant (my mum) to video record the full experiment.

Results-

Stage 1-

This was the base stage (minute one) and this stage only lasted for one minute, as Chilli quickly became bored with the cone and left the area. During this stage Chilli approached the cone once, sniffed the cone once and touched the cone once.

Stage 2-

This was the stage where I started to teach Chilli to touch the cone. It took the next nine to 10 minutes for this to be learned by Chilli.

Each time Chilli approached the cone I clicked and treated. At around the sixth minute, I did not click an approach to the cone, but waited for something more like a touch before I clicked. This is called shaping the behaviour and is used to teach Chilli that I want something *more* than approaching the cone as the behaviour.

During this stage Chilli often approached the cone but seemed more interested in touching my finger when I physically directed her to touch the cone *(touch)*. At the eight minute I moved my finger away from the cone and waited for her to touch and she immediately touched my finger (I learned how easy it was to have a miscommunication here). But she did 'get' it when I hid my finger from her. She looked around and then 'touched' the cone with her nose. YES! I also noticed that during the 10th minute, after Chilli heard the *click*, she would sit and wait for her treat. At this time she became more alert.

Stage 3-

This was the stage where I wanted to test whether Chilli really had learned the behaviour of touching the cone. From the 10th minute Chilli appeared to be consistently touching the cone when directed.

After Chilli had learned to touch the cone, I was not reinforcing the approaches as I was constantly tying to increase the intensity of the touch.
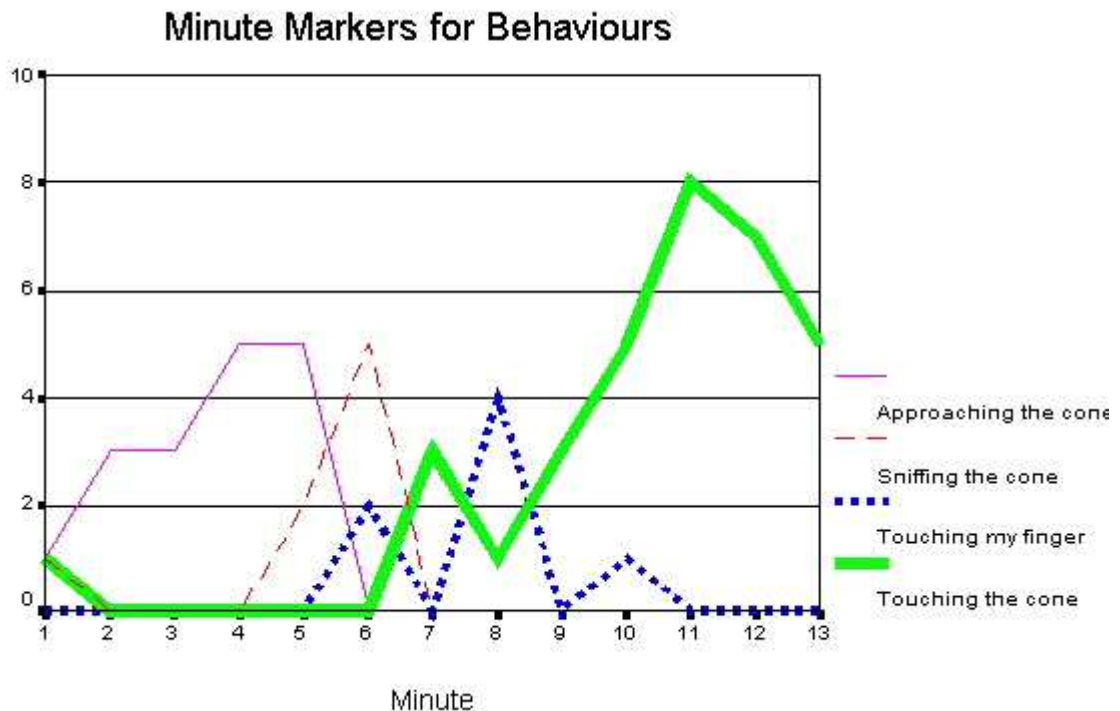

Stage 4-
This was when I changed the cones position to the other end of the deck. At the

12th and 13th minute Chilli was consistently looking for the cone in order to touch it.

The experimental stages can be shown graphically in the following chart:

Conclusion-

Through this experiment I have gained knowledge on how to train my animal with a positive and responsive method. I have also learned more about the behaviour of my animal and how to communicate with her in an effective way. I discovered that clicker training is fast and it produced reliability and consistency in behaviour. My aims have been achieved.

Since this experiment, I have replaced my old methods of training and found that training sessions do not have to be as long as they used to be. Through clicker training, Chilli has achieved goals that I didn't think she could reach. I have been training her to jump over high bars, respond to hand signals, roll over, lye down, sit, come and touch the palm of peoples' hands. The world of clicker training has truly opened Chilli's eyes and she is excited about learning new things as I myself am excited abut teaching her!

The future-

This experiment has really opened up my thinking and I have developed passions for animals and training. As I am a coast girl, I have always found water animals intriguing; through this experiment I have discovered a dream profession that I didn't even know existed; marine mammal training. Once I finish my schooling, my dream is to go into this field of work with marine mammals.

PS. my aunty wanted me to also tell you that I got the highest mark in my class for my experiment and since then I have buckled down at school and am taking classes seriously and I am especially enjoying Maths and Science. I think that clicker has taught me that I am capable of doing things for myself and I am really proud of this. Now when I have achieved something (like getting the solution to a hard maths question) I hear *click* in my head! Decisions about what to do at university (or even go to university) drag a kid down sometimes and can be very bewildering for a 16 year old. But now I have something to aim for and I guarantee for the next two years at high school I am going to try hard so I can get into university and aim to be a behavioural psychologist and marine mammal trainer. Even if I decide to do something else with my life, I am now going to be able to have my options open to me because I am definitely going to university.

Sheree

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Acknowledgements