# Lemonade Conditioning Story:

**Only** take a **lick right after** I say **Pavlov**. Have your fingers at the ready.

The whole idea of classical conditioning started with a Russian scientist, **Ivan Pavlov**, which was studying the eating habits of dogs (exciting stuff). **Pavlov** was a physiologist and **Pavlov's** dogs are like the Beatles of psychology. Let me start by telling you how **Pavlov** discovered classical conditioning, then I will break it down (like MC Hammer- now where is he today?).

So **Ivan Pavlov** was examining the digestive habits of dogs when he noticed some pretty interesting (what we would think of as obvious) things. **Pavlov** knew that food in his dogs' mouth caused the dogs to salivate. Dogs can't help but to salivate when they are eating, it is one of those unlearned or automatic responses (try eating a peanut butter and fluff sandwich without drooling). Now every time **Pavlov** opened up **Pavlov's** cabinet to get the dog's food, the cabinet door made a creaking sound. One day, **Pavlov** opened the cabinet (it made the sound) and **Pavlov** noticed that his dogs were salivating without the food. Were the dogs learning?

**Pavlov** decided to test it out. **Pavlov** had a tuning fork (but let's call it a bell because I have never actually seen a tuning fork up close) and **Pavlov** rang the bell for the dogs. The dogs looked at **Pavlov** weirdly and did not salivate. The bell, at this moment is a **neutral stimulus**, because it did nothing to the dogs. **Pavlov** then rang the bell and then gave the dogs food (and they would salivate). **Pavlov** did this many, many times; rang the bell and gave the dogs food (and they would salivate). One day **Pavlov** rang the bell but did not give the dogs food. What do you think happened? **Pavlov's** dogs salivated. The dogs have learned to link the sound of the bell with the food. **Pavlov** kept ringing the bell and the dogs kept salivating. But after a while **Pavlov's** dogs stopped salivating to the bell if they did not get any food over a long period of time (they have unlearned to associate food and the bell). This is how classical conditioning was started. Let's delve into this....

OK, it is first important to know that classical conditioning is a form of **passive learning**, which means that the student (in Ivan's case the dogs) have no clue and require no effort to learn- it happens automatically (unlike learning this chapter which requires some effort). The first thing you need in order to classically condition someone is an **unconditional stimulus (UCS)** and **unconditional response (UCR).** These words may seem complicated, but the idea is really simple. A UCS is anything that automatically causes some kind of unlearned response. The best example for a UCS is any type of drug. If I give you a tranquilizer you are going to get tired. You do not have to learn to get tired, your body does it automatically, without any learning at all. A UCR is just the response to the UCS or in the case of the tranquilizer, the UCR is you getting tired. Think of some UCS-UCR relationships- cocaine (UCS) alertness (UCR), alcohol (UCS) depressive effects (UCR), electric shock (UCS) pain (UCR), food (UCS) salivation (UCR). Once you understand the concept of the UCS and UCR, the rest is easy (well not really- but I hope you feel good about yourself).

The whole object in classical conditioning is to get your subject to learn to associate something (it really could be anything) with the UCS. In Pavlov's experiment the UCS was the food and the UCR was the salivation. Pavlov took a bell, which at first meant nothing to the dogs (neutral stimulus), and after many repetitions conditioned the dogs to associate the bell with the food. Now here is the important part. Each time Pavlov gives the dog food after the bell, the bell remains a neutral stimulus. Once Pavlov rings the bell and does NOT give the food and the dogs salivate, the bell becomes what we call a **conditioned stimulus (CS)** and the salivation becomes a **conditioned response (CR).** They are called conditioned because conditioned means learned and the dogs have learned to link the bell and the food together, it is NOT unlearned or unconditional.

Let's use a different example. Let's say you wanted to become a vegetarian and no longer eat meat. So you go buy some really powerful laxatives that cause abdominal pain and cramping. The laxatives are the UCS and the cramping and pain are the UCR- think about it, do you have to learn to have diarrhea after taking a laxative- no, it is an unlearned response- it is unconditional. Meat is a neutral stimulus to you at first. Now you take some laxatives and then some meat and what's going to happen? You are going to cramp. You do this every day over a period of weeks.

Every time you do this, the laxative remains the UCS, the meat neutral and the cramping the UCR. The VERY first time you eat meat WITHOUT the laxative, but still cramp- the meat becomes the CS and the cramping the CR. If the laxative is given, the cramping must be the UCR because it is caused by the laxative. But if the laxative is not present then the cramping is caused by the fact that we linked meat with the laxative and becomes the CR.

Now where does the learning/conditioning actually take place? Pavlov knew that the moment that you link the laxative with the meat, the bell with the food or the UCS with the CS, learning has taken place. He termed the linking of the UCS and the CS, **acquisition**, and is the goal of classical conditioning. Now if I stop giving myself a laxative I will still feel the cramping effects for a while when I eat meat, but will it last forever? Probably not. The moment I no longer cramp when eating meat, or no longer associate the UCS with the CS, I have experienced **extinction**. Extinction will always occur if the UCS is not brought back into the equation every once and awhile.

Once I experience extinction, I will start eating meat a lot because I am no longer cramping (or associating the meat with the laxative). However, Pavlov discovered that even after extinction, acquisition can come back at random times even years later; a term called **spontaneous recovery**. Now let's say I have linked together laxatives and meat (acquisition has occurred) and I eat a meat tasting soy product. If the soy is really close to tasting like meat then I may experience what Pavlov called **generalization**, and cramp from the soy. **Generalization** is when a stimuli is so close to the CS that it still causes the CR. If I eat a peanut butter sandwich, which is really different than meat, I will probably not cramp because my body will not mistake the sandwich for meat, a term Pavlov called **discrimination**.

## Scheduling the CS and UCS

Ok, so now we kind of know what classical conditioning is, but how do you time the UCS and the CS, or in Pavlov's example, the bell and the food.

- ***Delayed Conditioning***: Present the CS (Bell) first and while the bell is still ringing give the UCS (food). This is the fastest way to get acquisition.
- ***Trace Conditioning***: Present the CS (Bell), followed by a short break, then present the UCS (food).
- ***Simultaneous Conditioning***: CS (bell) and UCS (food) are presented at the same time.
- ***Backward Conditioning***: UCS (food) is presented first and is followed by the CS (bell). This methods kind of sucks.

Try conditioning your own dog and see what happens after numerous trials. Look for when acquisition and extinction occur.

## Classical Conditioning and Psychology

Pavlov was not a psychologist and limited his studies to animals. It was not until American psychologist ***John Watson*** conducted his studies on a baby orphan named Albert that classical conditioning was used to actually change a human's behavior. Watson took a pudgy little orphan, Albert, and gave Albert a pet white rat. Albert loved the rat and spent much of the day cuddling with it. Then Watson banged some loud pots in back of Albert and the loud noise made Albert cry. The loud noise in the UCS and Albert's fear is the UCR. Watson then brought out the rat and banged the pots as Albert reached for the rat.

After many trials Albert began to associate the rat with the loud banging (acquisition). Then Watson would bring in the rat without the loud banging. Predictable, Albert started to cry when he saw the white rat because he associated it with the loud noises. Albert also cried when Watson brought in a white bunny or anything that resembled the rat (generalization). Watson actually created a phobia in a human using classical conditioning techniques. The sad part of this story is that Albert was adopted before Watson had a chance to recondition him. Somewhere out there, there is an 88 year old man who is really scared of rats.

Want to see the actually Baby Albert footage?

## Classical Conditioning and Taste Aversions

When I was about four years old my brother shoved a spoonful of butter into my mouth. Before my brother did this I liked butter on food (not spoonful's). A short time later I became incredible ill and threw up the butter and bile all night long. To this day I still gag when I think about butter for too long. A well know researcher, **Garcia**, discovered that taste aversions are an evolutionary example of classical conditioning that has helped us survive. Unlike other forms of classical conditioning, when the UCS is nausea, it needs only one trial and can last for years. Our bodies seem to have a knack for remembering really unusual tasting foods compiled with feeling nausea.

# Classical Conditioning and Therapy

We use Classical Conditioning in modern day therapy in two very distinct ways.

1. ***Aversive Conditioning***: Aversive conditioning is usually used to stop a particular behavior. The process involves pairing a habit a person wishes to break, such as smoking or bed-wetting, with an unpleasant stimulus such as electric shock or nausea. If I wanted to stop Shanikwa from smoking I could shock her every time she smokes. The shock is the UCS and the pain is the UCR. Once the smoking becomes associated with the electric shock (acquisition), Shanikwa will experience pain when she smokes, even without the shock. Thus the smoking will become the CS and the pain the CR (but only if the shock is no longer given).
2. ***Systematic Desensitization***: Systematic Desensitization was developed by Joseph Wolpe and is a process that involves teaching the client to replace feelings of anxiety with relaxation. It works great with phobias. If Akira has a horrific phobia of spiders, the therapist will teach Akira relaxation techniques (or give Akira a magical feel good drug). Slowly spiders are introduced to Akira. First maybe just a picture, then one in a cage, then one outside of a cage etc... The goal is to get Akira to associate spiders with the drugs or relaxation techniques. Eventually, seeing a spider will cause Akira to relax (in theory).

Most of the time, systematic desensitization occurs gradually, but some therapists use a technique called ***implosive therapy***. Here they throw Akira in a room with thousands of spiders with the idea that if they face their fear and survive, they will realize their fear is irrational. This technique often produces a lot of anxiety.

Taken from: http://www.appsychology.com/Book/Behavior/classical_conditioning.htm