How do we Learn?

Chapter 6 Learning

CLASS OBJECTIVES:

- What is learning?
- What is Classical Conditioning?

How do you know you’ve learned something?
Can our beliefs and attitudes be a result of learning?

Learning

- *Learning* is a relatively permanent change in an organism due to experience.
  - The process by which we acquire new knowledge
  - Psychologists agree that most behaviors are learned.

Learning is an internal process so we must study the results.

How can we measure learning?
Many principles of learning are based on the idea of conditioning...

What does it mean to be conditioned?

**Conditioning** refers to a procedure where associations and responses to stimuli are learned.

- **Conditioning** is just another word for learning!

In the process of conditioning there is always a cause and effect pattern

- A **stimulus** is an event that has an impact on an organism
  - *(CAUSE)*

- A **response** is a reaction of an organism
  - *(EFFECT)*
For every stimulus there is a response

- Stimulus (Cause)
- Response (Effect)

You get an A on the exam

We are all conditioned in some way

- Conditioned behaviors appear so automatically that they look like reflexes.
  - Conditioned behaviors are similar to reflexes because they are also involuntary.

How are you conditioned?
**Classical Conditioning**

- Classical conditioning is one of the simplest forms of learning.
  - Ivan Pavlov

- Pavlov’s research was simple - to teach a dog to salivate in response to a bell.

**Conditioning is synonymous with learning**

- Pavlov called a stimulus that elicits a response without conditioning an *unconditioned stimulus* (UCS).

- The unconditioned stimulus *naturally* produces a reflex

**Who likes CANDY?**

Volunteers Please?
Classical Conditioning

- In classical conditioning, a neutral stimulus is paired repeatedly with an UCS.

- After a series of paired associations, the neutral stimulus will produce a similar or identical response.
  - Usually a light or bell is used.

- The neutral stimulus will become the conditioned stimulus.

Unconditioned

- An unconditioned stimulus (UCS) is presented with a neutral stimulus repeatedly.
  - For every stimulus, there is a response.

- An unconditioned response (UCR) is an unlearned response to an unconditioned stimulus.
  - It is an involuntary reflex that occurs without learning.
What will the response be?

Food + Bell → Salivation

UCR Neutral UCR

After the repeated pairings LEARNING occurs

- Dog associated the bell with food; now the bell is a *conditioned stimulus* because salivation occurs as a result of learning.

- Bell → Salivation

CS → What kind of response?
Dog associated the bell with food - now the bell is a **conditioned stimulus**, because salivation occurs as a result of **learning**.

**Bell**  
**Salivation**

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**Classical Conditioning**

- A conditioned stimulus (CS) will **always** produce a **Conditioned Response** (CR).

- For example: the salivation is a learned response to the sound of the bell.

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**Let’s Review**

**During training:**

- Neutral Stimulus: **BELL**
- Unconditioned Stimulus: **Food**
- Unconditioned Response: **Salivation**

**After training:**

- Conditioned Stimulus: **BELL**
- Conditioned Response: **Salivation**
Did you get it?
Test your understanding about conditioning!

Identify the US, UR, CS and CR for each of the following examples.

Identify the US, UR, CS, and CR

1. Alexander is four years old. One night his parents decided to light a fire in the family room fireplace. A burning ember jumped out of the fireplace and landed on Alexander’s leg, creating a nasty burn. He cried because the burn hurt. A week later, when Alexander’s parents started to light another fire in the fireplace, Alexander began to cry.

   - UCS –
   - UCR –
   - CS –
   - CR –

Identify the US, UR, CS, and CR

2. Bianca’s mom followed the same routine before serving dinner – she would put ice in the glasses and then call “come and get it, dinner’s ready.” Immediately upon hearing those words, Bianca would quickly run down the stairs. After a while, Bianca would come running down the stairs when she heard the ice hitting the glasses.

   - UCS –
   - UCR –
   - CS –
   - CR –
Identify the US, UR, CS, and CR

- Marco is driving to work during a heavy snowstorm when the brake lights on the car ahead of him come on. He hits his breaks but is unable to avoid hitting the car. He is badly shaken up in the accident. The next time he is driving in the snow he notices that he tenses up every time he sees brake lights come one ahead of him.
  - UCS –
  - UCR –
  - CS –
  - CR –

What do you think would happen if Pavlov rang the bell each day, but never followed it with food?

The dog would **learn** to not salivate!

- **Extinction** will occur...
- Present the conditioned stimulus repeatedly without the unconditioned stimulus
  - This gradually reduces the probability that the conditioned response will occur
Extinction *IS NOT* forgetting!
Extinction is new learning not unlearning

How would you Help Emily?

- Whenever Emily smells *Polo* cologne she thinks of her boyfriend, James, and gets excited to see him.

- Well, unfortunately, Emily and James broke up. Emily no longer wants to think of James when she smells *Polo* cologne. What can we do to help her out?

Spontaneous Recovery

- The temporary return of an extinguished response after a delay
  - Requires no additional pairings, just the passage of time.
Back to Emily

- With our help Emily stopped thinking about James when she smelled Polo cologne... because of our knowledge of extinction.

- HOWEVER... Six months later, while walking through the cologne department at Macy's, Emily smells Polo cologne and immediately thinks of James...
  - this is spontaneous recovery

Can Emotions be Conditioned?

YES... Classical Conditioning occurs everyday in humans.

Human Conditioning

- Watson and Rayner (1920) conditioned an 11-month-old infant named Albert – this became known as the "Baby Albert experiments"

- Through the process of Classical Conditioning Baby Albert was conditioned to fear... a lot.
  - This experiment is now considered unethical
Baby Albert was initially conditioned to fear white rats, but the fears were expanded to include:

- Rabbits, dogs, fire, monkeys, Santa clause masks, white hair, men with beards, cotton balls, fur

Humans experience conditioned emotional responses, which explains many complex behaviors

Likes, dislikes, prejudices and fears
More Classical Conditioning

- **Stimulus generalization** occurs when the conditioned response transfers or 'spreads' to a new stimuli.
  - Example: fear of blood spreads to other red items

- In **stimulus discrimination**, an organism learns to respond only to a specific stimulus. (The opposite of generalization)
  - Example: Different bell tones (Pavlov)

Have you ever had food poisoning?

How do you feel about that food now?

The Garcia Effect

- The **Garcia effect** is an example of classical conditioning in everyday life.
  - John Garcia (Garcia & Koelling, 1971) gave animals specific foods or drinks. He then induced nausea in the animals. The animals quickly avoided the foods that preceded the nausea

- Many people who have experienced food poisoning can relate to this **stimulus discrimination**!
What's Next?

- Can we learn any other way?
  - Operant conditioning and Social Learning