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

- *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 → Response
- (Cause) (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

Unconditioned Stimulus
Food → Unconditioned Response
Salivation

Neutral Stimulus:
BELL → Response:
NOTHING

Classical Conditioning

- 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

UCS 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

CS → Conditioned Response (CR)

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.

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

- 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

- 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

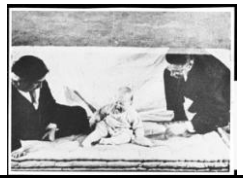
- The temporary return of an extinguished response after a delay
  - Requires no additional pairings , just the passage of time.

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.

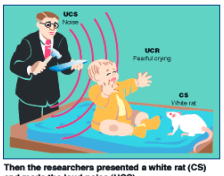


Human Conditioning

- 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

▶ Classical Conditioning and Little Albert

Initially, Little Albert did not show a fear of animals, but he did exhibit fear if a loud noise was made behind his back (a hammer striking a steel bar).



Then the researchers presented a white rat (CS) and made the loud noise (UCS).

After five presentations of the CS and UCS, Albert developed a phobia of rats—he began whimpering and withdrawing (the conditioned emotional response) and trying to avoid the rat. After two more presentations of CS and UCS, he immediately began crying on seeing the rat. "He . . . fell over on his left side, raised himself . . . and began to crawl away so rapidly that he was caught with difficulty before reaching the edge of the table" (Watson and Raynor, 1920, p. 5).

Baby Albert-Conditioned FEAR

- 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