

Chapter 6

Learning: The Behavioral Perspective

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- Can someone have an asthma attack without any particles in the air to trigger it?
- Can an addict die of a heroin overdose even if they've taken the same dose they've always been taking?
- Can advertisers manipulate us into liking their product? How can sex sell?



- Why do chemotherapy patients get sick just by seeing a hospital?
- Why do assault victims who withdraw suffer more distress long term than those who don't withdraw?
- Why does your cat come running to the sound of the can opener?
- All can be explained by classical conditioning



- How does sex help sell pens?

The Environment Shapes Behavior in 2 Ways.

- **Species Adaptation**
 - Characteristics of a species change over time. The environment leads to changes in biology as we saw in natural selection and an evolutionary perspective
 - **Species LEARN how to adapt and change.**
- **Personal Adaptation**
 - Occurs thru the laws of learning (explained next).
 - Past experience helps us to be prepared for the future
 - **Individuals LEARN how to adapt and change.**

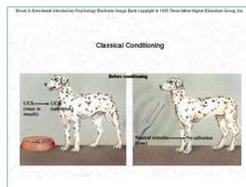
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Classical Conditioning: Unconditioned Reflex

- ♦ Unconditioned stimulus (UCS)

- ♦ Unconditioned response (UCR)

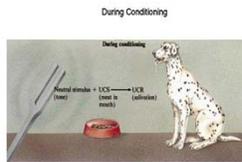
- ♦ Ex: loud noise leads to fear, puff of air in eye leads to blink, food leads to salivation



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Classical Conditioning: Acquisition

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Take a stimulus that gives no response (neutral) and pair it with the unconditioned stimulus (UCS) and if learning occurs, the neutral stimulus becomes a conditioned stimulus and it alone will now elicit the response the UCS automatically does

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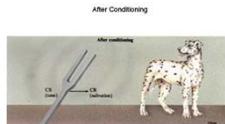
Classical Conditioning: Learned Reflex

♦ **Conditioned Stimulus (CS)**



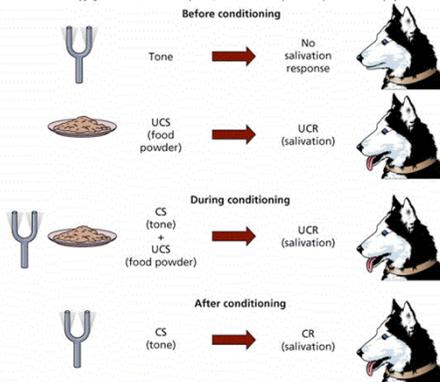
♦ **Conditioned Response (CR)**

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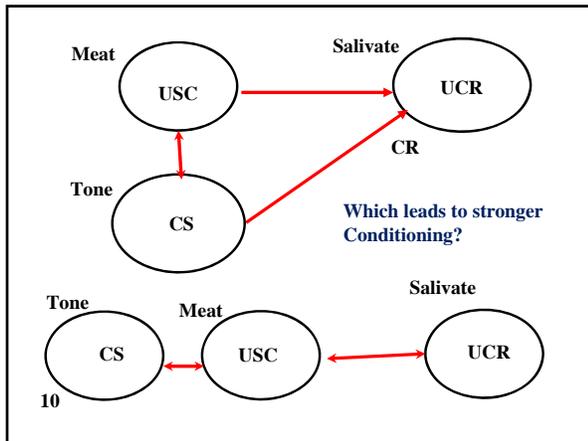


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Classical Conditioning
 Different ways to "pair" US and CS

- ♦ **Forward short-delay pairing**
 - CS appears first and is still on when UCS appears
 - Learning occurs most quickly
- ♦ **Forward trace pairing**
 - CS appears, goes off, and UCS appears

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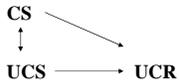
Classical Conditioning

- ♦ **Simultaneous pairing involves presenting the CS and UCS at the same time**
 - Produces less rapid conditioning
- ♦ **Backward pairing involves presenting the CS after the UCS**
 - Produces the slowest learning

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Recent Developments in Behavioral & Cognitive Science

- **Reformulated View of Classical Conditioning**
 - Old view said the pairing of the UCS and CS together in time was necessary for learning
 - Rescorla (1988) claimed what was necessary was that one stimulus give information about the other. Pairing together in time is not sufficient.



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- **Consider the following experiment:**
 - Condition 1: Animal gets tone and shock paired together, but also gets shocks w/o the tone (see A)
 - Condition 2: Animal gets tone and shock paired together as in #1 above, but never gets the shock w/o the tone (see B)
 - Which animals will show conditioning?

A

Tone: ___ T ___ T ___ T ___
 Shock: ___ S ___ S ___ S ___ S ___ S ___

B

Tone: ___ T ___ T ___ T ___
 Shock ___ S ___ S ___ S ___

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2nd Experiment

- 2 groups both get (light + tone) paired with shock to elicit fear. Both groups are tested to see if there is conditioning to the tone only.
- One group had prior training, by having light paired with shock.
- Which group will show conditioning to the tone?

A: (L+T)___ (L+T)___ (L+T)___
 S S S

B:

L ___ L ___ (L+T)___ (L+T)___ (L+T)___
 S ___ S ___ S S S

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- **Conclusion:** Simple pairing of 2 events fails to lead to conditioning. What is important is that one stimulus “gives information” about the other.

• **Real Life Example:** (G = seeing grandma, C = get candy)

A: G G G
 C C C C C C

B: G G G
 C C C

- Which schedule will lead to conditioning? I.e. Which schedule will result in stronger positive feelings upon seeing grandma?
- Answer = B, because grandma is a better predictor or candy in B than in A.

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Classical Conditioning

♦ Extinction occurs when the CS is repeatedly presented without the UCS

- Animal will stop responding
- If you suffer from a phobia you want the fear response to be extinguished.

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More Modern Learning Principles

- “Prepared Learning”
 - We come into the world prepared to be more easily conditioned to some stimuli than to others
 - Example: Why do so many of us fear snakes? We see a lot more car crashes, yet don’t come to fear cars.
 - Answer: We are more “prepared” to fear things that have greater evolutionary significance: snakes, spiders, other animals, and dangerous places.

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Blue Jay getting sick after eating a Monarch Butterfly. She develops a conditioned taste aversion from this one trial and avoids the brightly patterned wings.

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2nd Example of Prepared Learning

Each of the above was used as a CS and paired with shock. Subjects were then tested to see if the CS presented alone could come to elicit fear (CR). The fear response was stronger with some CSs than with others. Which CSs showed the strongest learning?

20 Again, we will learn to fear some stimuli more than others

Classical Conditioning

- ♦ Stimulus Generalization
- ♦ Stimulus Discrimination

- Animal responds to stimuli that are similar to the original CS
- Animal can detect differences between similar stimuli

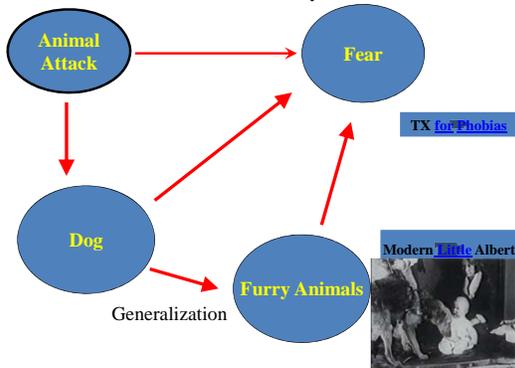
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Attitudes can be Classically Conditioned



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Can Phobias be Classically Conditioned?

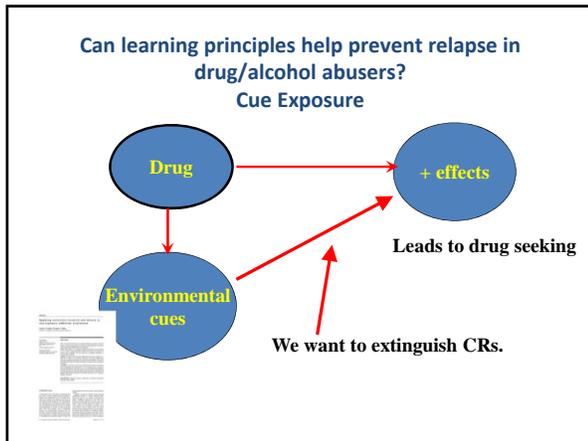


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Can learning principles help us help rape victims from negative feelings/fears?

Effects of Posttraumatic Exposure to Attack Stimuli on Long-Term Recovery of Victims

Abstract: This study examined the effects of posttraumatic exposure to attack stimuli on long-term recovery of victims. Participants were exposed to a video of a simulated rape and then to a video of a simulated rape with a different outcome. Results showed that exposure to the video with a different outcome led to a significant reduction in negative feelings and fears compared to exposure to the video with the same outcome. These findings suggest that learning principles can be used to help rape victims from negative feelings and fears.





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Operant Conditioning

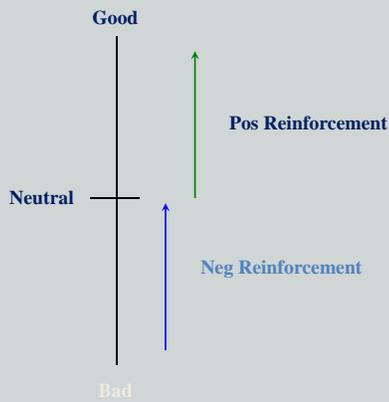
- ♦ Thorndike's Law of Effect
 - A response followed by a satisfying consequence will become more likely to occur
 - A response followed by an unsatisfying consequence will become less likely to occur

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2 Ways to increase a behavior

- **Positive Reinforcement** – when something good follows a behavior, it will more likely be repeated.
- **Negative Reinforcement** – Behavior is more likely to be repeated if the behavior removes an aversive stimulus.

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3 Ways to Decrease an Unwanted Behavior

- **Positive Punishment** – when something bad follows a behavior, the behavior will be less likely in the future.
- **Negative Punishment** – take away something good/positive.
- **Extinction** – Remove the reinforcement that was building up the behavior and the frequency of the behavior will decrease.

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Discriminative Stimulus

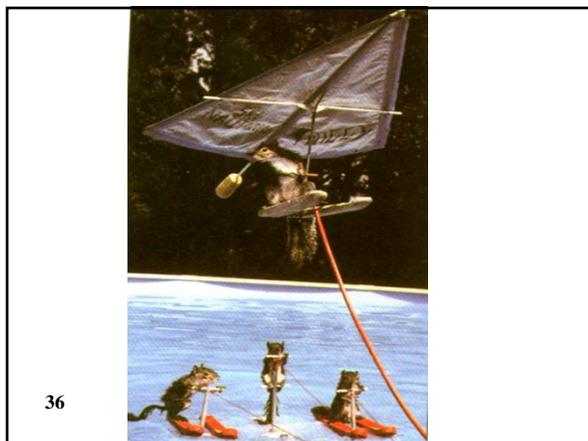
- This is a stimulus that signals that the contingencies are “on” or “off”. It signals that a particular response will lead to the expected consequence.
 - Ex: reinforce a pigeon for pecking with the light on but not when the light is off. The light becomes a discriminative stimulus.

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Operant Conditioning

- ♦ Primary reinforcers
 - Stimuli that satisfy biological needs
- ♦ Secondary reinforcers
 - Stimuli that have an association with primary reinforcers

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Operant Conditioning

♦ Shaping

- Reward the first approximation toward the goal
- Reward the second approximation toward the goal etc.

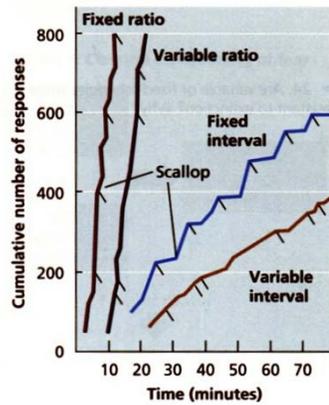


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Operant Conditioning

- Schedules of Partial Reinforcement
 - Can be either
 - Ratio: Based on numbers of responses
 - Interval: 1st response after a certain amount of time reinforced
 - And be either
 - Fixed: Certain number or time interval
 - Variable: Variable number or time interval
 - $2 \times 2 = 4$ possible schedules of partial reinforcement
 - Fixed Ratio or Interval, & Variable Ratio or Interval

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Why are phobias so persistent?

- ♦ **Avoidance Conditioning**
 - The organism learns a response to avoid an aversive stimulus
 - If you were bitten by a dog, you might avoid dogs in the future. The avoidance developed thru classical conditioning
- ♦ **Escape conditioning**
 - Escape behaviors are acquired and maintained through negative reinforcement – running from the dog, never allows the CS-UCS to extinguish.

```
graph LR; Dog((Dog)) --> Fear((Fear)); Bite((Bite)) --> Fear;
```

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**Operant Conditioning:
Human Applications**

- ♦ Token economies
- ♦ Applied behavior analysis
 - ♦ Dr. Dog helps dogs with phobias.

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Steps in a self-regulation program

- ♦ Specify the problem
- ♦ Collect baseline data
- ♦ Identify antecedents and consequences
- ♦ Develop a plan to modify the antecedents and consequences
- ♦ Implement the program and keep measuring behavior

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Observational Learning

- ♦ Learning occurs by observing the behavior of a model
- ♦ Modeling can help organisms learn:
 - Which responses produce positive or negative consequences

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Bobo doll Experiment

- Children watched a man being aggressive to a bobo doll
 - Was reinforced
 - Was punished
 - No consequences
- Children then placed in a room with toys and bobo doll. DV was their level of aggression against the bobo doll.
- Children who saw the model punished performed less aggressive behaviors towards the bobo doll.
- But when all children were asked to reproduce the behaviors they saw the model do, they all could.
- See next slide

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