LEARNING
Questions To Consider

*How* do people learn behaviors?

*Why* do people learn behaviors?
A first date…

**Learning: The Definition**

- Any relatively permanent change in behavior brought about by experience or practice
Learning

Two Major Perspectives

1. Behaviorism
   • All learning occurs as a result of environmental influences (not the individual’s efforts or choices)
   • The motivation for learning a behavior is to receive a reward or avoid a punishment
   • Only studies observable behaviors

Theories
   • Classical Conditioning
   • Operant Conditioning

Researchers
   • Pavlov
   • Skinner

2. Cognitive Learning Theories
   • Studies the learning that occurs from mental events that take place in the mind

Researchers
   • Tolman
   • Kohler
   • Seligman
   • Bandura
Classical Conditioning

- Learning to make a reflex response to a stimulus (other than the original stimulus that produced the reflex)
- Explains involuntary stimulus-response relationships
Background

Ivan Pavlov became a doctor of Physiology from the Medico-Chirurgical Academy 1897.

For many years Pavlov studied the amount and quality of salivary secretions in relation to the nature of stimulus materials placed in a dog's mouth:

- Edible materials – thick, viscous salivations
- Non-edible materials – very little salivations
- Salty materials – watery salivations
Classical Conditioning

Pavlov
Background

• Eventually Pavlov noticed that the dogs would begin to salivate at the sight of the food dish

• This observation was the genesis of the learning theory of Classical Conditioning
Classical Conditioning

Elements

Memory Mnemonic

Unconditioned = “unlearned”
Conditioned = “learned”
Classical Conditioning

Elements

**Unconditioned Stimulus (UCS)**
- A naturally occurring stimulus that leads to an involuntary (reflex) response
  
  Dog food

**Unconditioned Response (UCR)**
- An involuntary (reflex) response to a naturally occurring stimulus
  
  Salivation

**Neutral Stimulus**
- Stimulus that has no effect on the desired response
  
  Bell ringing (*before* repeatedly pairing it with dog food)

**Conditioned Stimulus (CS)**
- A stimulus that becomes able to produce a learned reflex response by being paired with the original unconditioned stimulus
  
  Bell ringing (*after* repeatedly being paired with dog food)

**Conditioned Response (CR)**
- A learned reflex response to a conditioned stimulus
  
  Salivation (*at the sound of* the bell)

**Acquisition**
- The process of learning a conditioned response
Classical Conditioning

In-Class Example

**Directions To Class**

- The following list of words will be read out loud.
- The teacher will spray the volunteer with water whenever the teacher says the word “CAN” that is written in all caps.
- If the word “can” is written in lower-case letters, the teacher will not spray the volunteer.

**Your Job**

- Pay close attention to the facial reactions of the volunteer as the teacher says the words

**The List**

Cup, can, lime, CAN, dish, girl, chalk, can, dish, CAN, key, screen, ran, CAN, desk, CAN, knob, bag, tape, CAN, dish, clip, CAN, air, ban cheese, can, door, CAN, box, dish, hair, CAN, ring, nail, CAN, boat, cap, dish, CAN, crane, wheel, fire, CAN, dish, king, cape, apple, CAN, dog, blue, can, dish, CAN, take call, brick, pair, CAN, spin, chair, CAN, camp, CAN, dish, CAN, bridge, scale, can, fan, board, cool, three, horn, can, cast, test, CAN, dish, van, cost, bird, CAN, glass, can
Classical Conditioning

In-Class Exercise

**UCS**: Spray of water

**UCR**: Flinching from water

**CS**: The word “can”

**CR**: Flinching from the word “can”
## Classical Conditioning

### Basic Principles For Classical Conditioning To Occur

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<table>
<thead>
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<tbody>
<tr>
<td>1. <strong>CS must come before UCS</strong></td>
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<tr>
<td><em>The bell must be rang before the food is given</em></td>
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<tr>
<td>2. <strong>The CS and the UCS must come very close together</strong></td>
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<td><em>The food need to be presented to the dog in under 5 seconds</em></td>
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<td>3. <strong>The CS must be paired with the UCS many times</strong></td>
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<td><em>Exception: Taste and nausea</em></td>
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<td>4. <strong>The CS must be distinct from other competing stimuli</strong></td>
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<td><em>Routine stimuli would not produce a CR</em></td>
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Other Concepts

**Extinction**
- The disappearance or weakening of a learned response following the removal or absence of the unconditioned stimulus

**Spontaneous Recovery**
- The reappearance of a learned response after extinction has occurred

What does spontaneous recovery tell us about learning?
Can you think of any conditioned responses you might have to any stimuli?
**Definition**

- The learning of voluntary behavior through the effects of consequences (rewards/punishments)

**Involuntary Behavior**

- An automatic behavioral response
  * Blinking eye when a bug flies near it

**Voluntary Behavior**

- A behavior that is deliberately performed
  * Swatting at the gnat

**Law Of Effect**

*(Edward Thorndike)*

- If an action is followed by a pleasurable consequence, it will tend to increase the frequency of a behavior
- If an action is followed by an unpleasant consequence, it will tend to decrease the frequency of a behavior
Comparison

**Classical Conditioning**

**Antecedent:** what comes before an action
- Learning is based on the antecedents of an action

**Operant Conditioning**

**Consequent:** what comes after an action
- Learning is based on the consequent of an action
Operant Conditioning

B. F. Skinner (1904 – 1990)

Renown Behaviorist
• B.F. Skinner was the most famous behaviorist, publishing numerous research studies and even a novel to forward his theories about behavior and learning

Skinner’s Beliefs
• The motivation for all learning is to receive a reward or avoid a punishment (Law of Effect)
• All learning comes from the environment (not the individual)

Skinner’s Research Goals
• To demonstrate that an organism learned as a result of the consequences of an action
**Summary Of The Skinner Box**

- A skinner box was a small cage equipped with a lever.
- The lever had different functions depending on the purpose of the study:
  - Dispense food
  - Cause an electric shock
**Operant Conditioning**

**B.F. Skinner**

**Positive Reinforcement**
- Skinner would place hungry rats into a “Skinner box”
- When rats pressed the lever, a food pellet would be dispensed
- Rats quickly learned to press the lever over and over

**Skinner’s Conclusions**
- The rats “learned” to press the lever because they received a pleasurable consequence directly following the action
**Punishment**

- To demonstrate the effects of punishment the bars of the floor were electrified
- When rats pressed the lever, they would receive a shock
- Rats quickly learned to avoid the lever

**Skinner’s Conclusions**

- The rats “learned” to avoid the lever to avoid the unpleasant consequence (the shock)
Operant Conditioning

The Principles

**Reinforcement**
• Any event or stimulus that when following a response, increases the probability that the response will occur
  * Positive Reinforcement
  * Negative Reinforcement

**Punishment**
• Any event or object that, when following a response, makes that response less likely to happen again
  * Positive Punishment
  * Negative Punishment

**Memory Mnemonics**
Positive = Adding
Negative = Removing
# Operant Conditioning

## The Principles

<table>
<thead>
<tr>
<th></th>
<th>Reinforcement</th>
<th>Punishment</th>
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<tbody>
<tr>
<td><strong>Positive</strong></td>
<td><strong>Adding something valued or enjoyable</strong></td>
<td><strong>Adding something unpleasant</strong></td>
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<td><em>Ex: Getting paid to mow the lawn</em></td>
<td><em>Ex: Getting spanked for disobeying</em></td>
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<tr>
<td><strong>Negative</strong></td>
<td><strong>Removing something that is unpleasant</strong></td>
<td><strong>Removing something that is valued or desirable</strong></td>
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<td><em>Ex: Avoiding a ticket by staying the speed limit</em></td>
<td><em>Ex: Getting grounded for breaking curfew</em></td>
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For each example indicate whether it is an example of Positive Reinforcement or Negative Reinforcement

1. Arnie’s father nags him to wash his car. Arnie hates being nagged, so he washes the car so his father will stop nagging him.

2. Trey learns that talking in a funny voice gets him a lot of attention from his classmates, so now he talks that way often.

3. Allen is a server at a restaurant and always tries to smile and be pleasant because that seems to lead to bigger tips.

4. Li turns her report into her teacher on the day it is due because papers get marked down a letter grade for every day they are late.
For each example indicate whether it is an example of Negative Reinforcement or Negative Punishment

1. Loosing the privilege of driving because you got into too many accidents.
2. Getting a toy taken away because you were using it to hit another child.
3. Stopping at a red light to avoid getting into an accident.
4. Mailing and income tax return by April 15th to avoid paying a penalty
5. Having to lose some of your money to pay the penalty for late tax filing.
6. Obeying a parent before the parent reaches the count of “three” to avoid getting scolded

1. Negative Punishment
2. Negative Punishment
3. Negative Reinforcement
4. Negative Reinforcement
5. Negative Punishment
6. Negative Reinforcement
Effective Principles

**Punishment**

1. Punishment should immediately follow behavior

2. Punishment should be consistent

3. When possible, punishment of wrong behavior should be paired with reinforcement of the correct behavior

**Reinforcement**

**Continuous Reinforcement:**
Reinforcement of each and every correct behavior

- Faster acquisition of behavior
- Behavior extinguishes faster

**Partial Reinforcement Effect:**
A behavior is reinforced after some, but not all correct responses

- Slower acquisition of behavior
- More resistant to extinction
1. Provide an example of a behavior (of someone else) that you would like to modify (e.g., boyfriend/girlfriend, brother/sister, parent, friend, teacher).

2. Explain the new/changed behavior you would like your target to perform (e.g., I would like my boyfriend to do the dishes).

3. Explain how you would use the principles of operant conditioning to perform behavior modification and get your target to change their behavior.
   • Think of the best way to utilize the principles
   • Use specific terms when explaining your methods

On a sheet of paper write the following headings:

Old Behavior

New Behavior

Behavior Modification Technique

* Leave enough room between headings to write as much as you need