

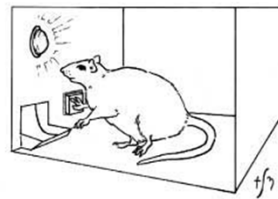
Learning Processes: Operant Conditioning

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Learning Goals

- Principles of operant conditioning
 - Explain examples of Positive Reinforcement, Negative Reinforcement, Positive Punishment, and Negative Punishment
 - Explain reinforcement schedules
- Applications of operant conditioning

Operant Conditioning B.F. Skinner



Operant Conditioning

- **Law of effect:** Voluntary responses followed by positive outcomes are repeated while those followed by negative outcomes are not
- **Operant Conditioning:** Learn to behave in ways that result in reinforcement

Operant Conditioning

- **Reinforcement:** Increase likelihood of a behavior
 - **Positive Reinforcement:** Strengthens behavior by presenting a pleasant stimulus
 - **Negative Reinforcement:** Strengthens behavior by removing an unpleasant stimulus
- **Punishment:** Decrease likelihood of behavior
 - **Positive Punishment:** Weakens behavior through presentation of unpleasant stimulus
 - **Negative Punishment:** Weakens behavior through removing a pleasant stimulus

Operant Conditioning

		Behavior (Response)	
		Reinforcement: Repeat Behavior	Punishment: Behavior Ends
Outcome (Stimulus)	Positive: Presentation	Positive Reinforcement	Positive Punishment
	Negative: Removal	Negative Reinforcement	Negative Punishment

Operant Conditioning

- **Positive Reinforcement:** Give a sweet to answer a question in class
- **Negative Reinforcement:** Allow a student who earned an A to have a free assignment
- **Positive Punishment:** Children who are late to class have to do frog jumps
- **Negative Punishment:** Remove points for students who cheat

Operant Conditioning

- Examine the behavior:
 - Will the behavior continue? → Reinforcement
 - Will the behavior stop? → Punishment
- Examine how the environment influences behavior:
 - Does the environment give something? → Positive
 - Does the environment take something away? → Negative

Operant Conditioning

Response	→	Stimulus	Type
+ Study	→	Good grade +	Positive Reinforcement
+ Homework	→	Not sweep compound -	Negative Reinforcement
- Disrespect Teacher	→	Sent to headmaster +	Positive Punishment
- Cheat on homework	→	No break-time -	Negative Punishment

Operant Conditioning

1. Students who report late to school do not have to clean the school compound.
2. An employee who reports malpractices receives verbal abuse.
3. An employee who volunteers for a more difficult duty misses out on unexpected "welfare."
4. The crowd cheers when a football player unnecessarily shoves his opponent.

Operant Conditioning

Response (Person)	→	Stimulus (Environment)	Type
+	→	+	Positive Reinforcement
+	→	-	Negative Reinforcement
-	→	+	Positive Punishment
-	→	-	Negative Punishment

Operant Conditioning

Classical Conditioning	Operant Conditioning
<ul style="list-style-type: none"> □ Involuntary Responses □ A conditioned stimulus becomes associated with an unconditioned stimulus that results in a conditioned response □ Law of Association 	<ul style="list-style-type: none"> □ Voluntary Responses □ A behavior (response) is followed by a reinforcer or punishment (stimulus) that influences future behavior □ Law of Effect

Operant Conditioning: Maintaining Behavior

□ Reinforcement schedules

- **Continuous:** Reinforced after every behavior
- **Fixed Interval:** Reinforced after fixed interval of time
- **Variable Interval:** Reinforced after average amount of time
- **Fixed Ratio:** Reinforced after fixed number of responses
- **Variable Ratio:** Reinforced after average number of responses

Operant Conditioning

	Fixed: Consistent	Variable: Irregular
Time	Fixed Interval	Variable Interval
Number of Responses	Fixed Ratio	Variable Ratio

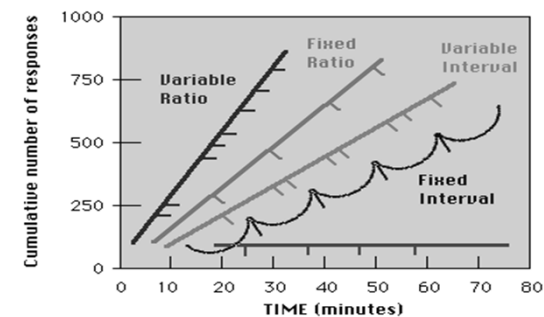
Operant Conditioning: Maintaining Behavior

□ Reinforcing Statistics Learning

- **Fixed Interval:** Test every 3 weeks
- **Variable Interval:** Test about every 3 weeks
- **Fixed Ratio:** Reward after every 10 correct problems
- **Variable Ratio:** Reward after about every 10 correct problems

Operant Conditioning: Maintaining Behavior

SCHEDULES OF REINFORCEMENT



Applications of Operant Conditioning

- ▣ **Shaping:** Procedure in which reinforcements are used to gradually guide an animal or person toward a specific behavior
 - Reward smaller behaviors that lead to a final behavior

Applications of Operant Conditioning

- ▣ **Military Psychology:** Shaping is used to train animals for dangerous military missions
- ▣ **Clinical Psychology:** Reinforcement is used to change undesired behaviors or add more desired behaviors
- ▣ **Educational Psychology:** Teaching machine uses a computer that to reinforce learning through feedback
 - Token reinforcement system is used to help students earn rewards for positive behavior

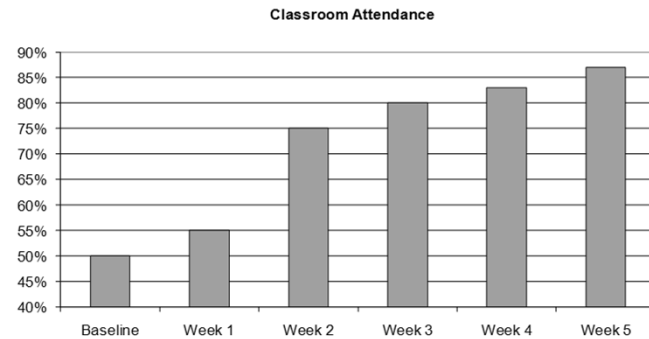
Applications of Operant Conditioning

- ▣ **Applied Behavioral Analysis**
 - Collect baseline data on behavior
 - Set behavioral goals
 - Select procedures for changing behavior
 - ▣ Reinforced desired behavior
 - ▣ Remove reinforcement for unwanted behavior
 - Implement procedures and record results
 - Evaluate progress and revise as necessary

Example of Applied Behavioral Analysis

- ▣ **Class Attendance in a Boarding Secondary School**
 - **Baseline Data:**
 - ▣ Students attend 50% of classes
 - **Goal:** Students attend 90% of classes
 - **Procedure:** Students will receive a coupon for skipping their assigned duty one day for every 20 classes they attend
 - **Record Results**
 - **Evaluate progress:** Great improvement in attendance

Educational Implications



Punishment

- When strong, immediate, and consistent, punishment stops unwanted behaviors
- HOWEVER:
 - Behavior is restrained, but not necessarily extinguished (completely stopped).
 - Does not replace unwanted behaviors with more positive behaviors
 - Stimuli thought to be punishing may turn out to be rewarding
 - Severe punishment can cause fear, anger, and frustration resulting in retaliation or withdrawal

Operant Conditioning in Behavior Modification

- Strengths
 - Effective for short-term behavior modification
 - Straight-forward and easy to implement
- Criticisms
 - Does not address cognitive processes
 - Behavior ends when reinforcement/punishment ends
 - Can hurt intrinsic motivation (interest and enjoyment in activity)