General Psychology
Psy 100

Learning

What We Will Cover in This Section

- Overview.
- Sensory learning.
- Classical conditioning.
- Operant conditioning.
- Social learning.

What Is Learning?

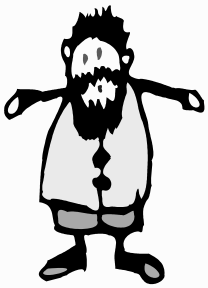
The relatively <u>permanent</u> change in <u>behavior or knowledge</u> due to <u>experience</u> or practice.

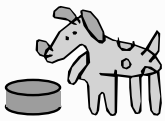
B = f(P :: E)

Sensory Learning

- **Habituation.**
  Learning not to respond to the repeated exposure to some stimulus.
- **Sensitization.**
  Learning to attend or respond to some stimulus after becoming aware of it.

Classical Conditioning





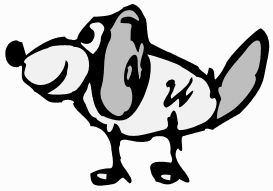
What Is It?

A kind of learning that occurs when

- **a neutral stimulus (A) becomes so strongly associated with another stimulus(B) that causes a reflexive behavior**
- **that A alone causes that behavior.**

Natural Behavior

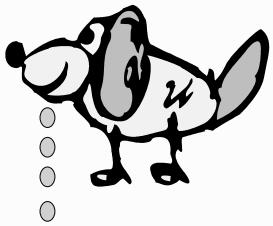
Neutral Stimulus



Natural Behavior

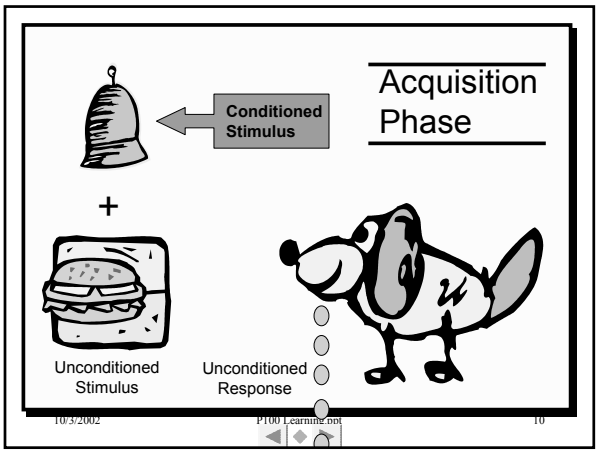
Unconditioned Stimulus

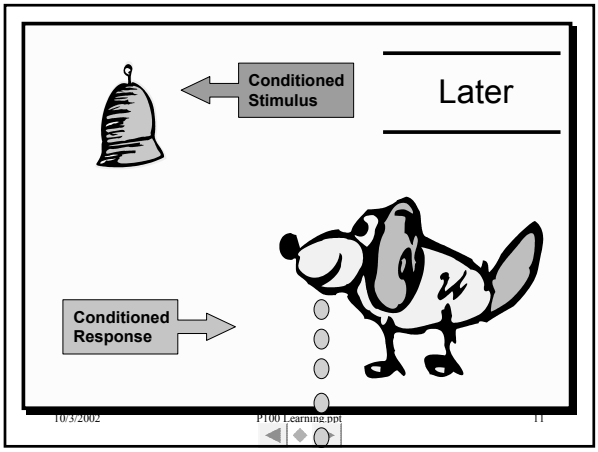
Unconditioned Response



Terms #1

- **Unconditioned Response (UCR)**
  A reflexive or involuntary reaction elicited by some external stimulus.
- **Unconditioned Stimulus (UCS)**
  A stimulus that elicits an innate, involuntary behavior or response without requiring prior learning.

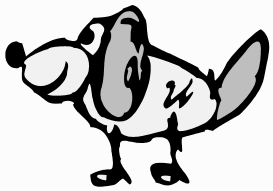




Terms #2

- **Conditioned Stimulus (CS)**
  A previously neutral stimulus that elicits an involuntary response.
- **Conditioned Response (CR)**
  An involuntary (reflexive) elicited by some previously neutral stimulus.

Extinction

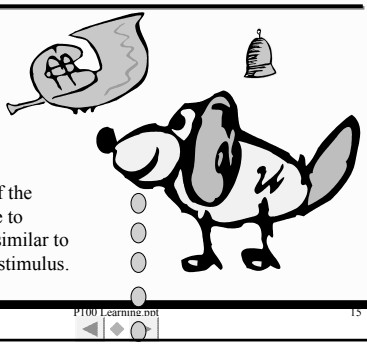


Period during which the CS::UCS relationship is weakened.

Terms #3

- **Acquisition**
  The learning period during which the CS-UCS relationship is learned with the formation of the Conditioned Response.
- **Extinction**
  The weakening or disappearance of a Conditioned Response.

Stimulus Generalization



The extension of the learned response to stimuli that are similar to the conditioned stimulus.

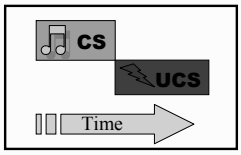
Stimulus Discrimination

A change in responses to one stimulus but not to stimuli that are similar.

CS : UCS Arrangements

Forward Conditioning

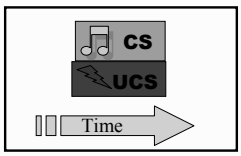
The CS (tone) precedes the UCS (shock).



CS : UCS Arrangements

Simultaneous Conditioning

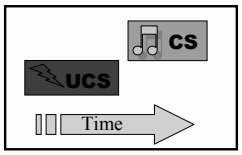
The CS (tone) and the UCS (shock) come and go at the same time.



CS : UCS Arrangements

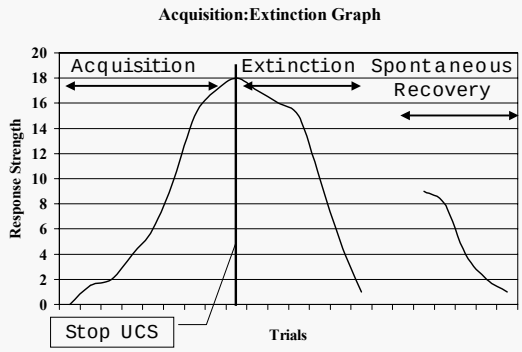
Backward Conditioning

The UCS (shock) precedes the CS (tone).



Five Conditions that Influence Acquisition

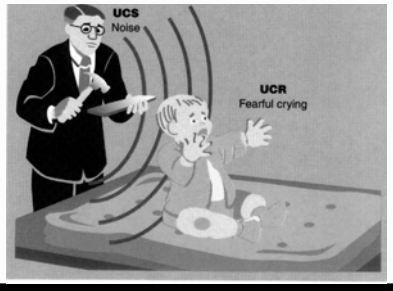
1. **The CS has to be <u>strong</u> and <u>distinctive</u>.**
2. **The <u>CS should precede the UCS</u> for strongest conditioning.**
3. **The CS and UCS should occur <u>close together</u>.**
4. **The <u>frequency</u> of the CS-UCS pairings is important.**
5. **The <u>time interval between</u> the pairings is important.**



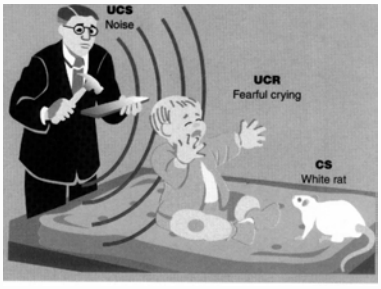
Classical Conditioning: So What?

- **Clinical Psychology.**
  - **Phobias.**
    - **Watson and Little Albert study.**
- **Advertising.**
  - **Sex and product.**
- **Aversion conditioning.**
  - **Coyotes and sheep.**

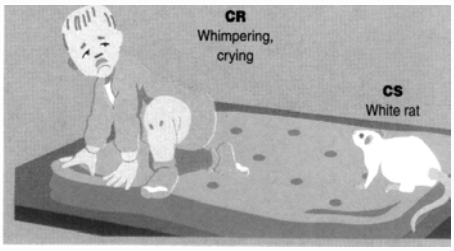
Learning Phobias, Part 1



Learning Phobias, Part 2



Learning Phobias, Part 3



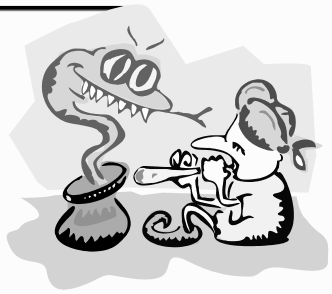
Key Characteristics

- **Learned behavior (*Conditioned Response*) is involuntary.**
- **During learning the triggering stimulus (*Unconditioned Stimulus*) usually occurs *before* the learned behavior.**

Issue

- **Are some responses innate?**
  - **Fear of heights?**
  - **Fear of the dark?**
  - **Pleasure at seeing a nude body?**
- **If so, what survival value might these have?**

Operant Conditioning

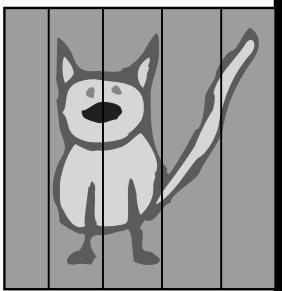


Overview

- **Grew out of reaction to 'hidden events' in psychoanalysis.**
- **We cannot see what goes on inside the 'black box'.**
- **Empirically based.**
- **Focused on individual learning.**
- **All behavior is acquired through experience.**

Thorndike: Law of Effect

Any behavior that is followed by reinforcement is strengthened.



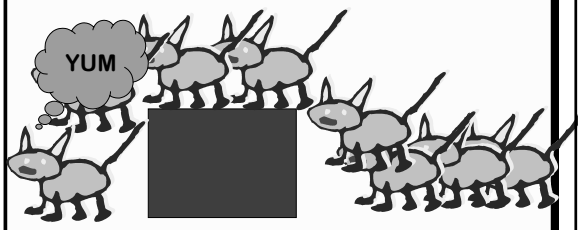
Key Characteristics

- **Focuses on voluntary behavior.**
- **Learned behavior is controlled by its consequences.**
  - **Get good things.**

  - **Minimize bad things.**

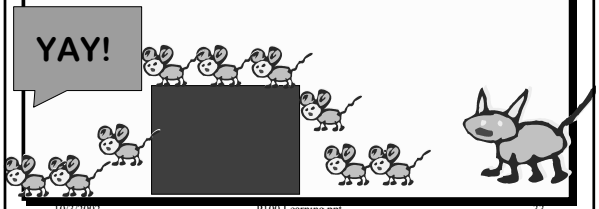
Positive Reinforcement

Behavior that gets something you want.



Negative Reinforcement

Behavior that removes something you don't want.



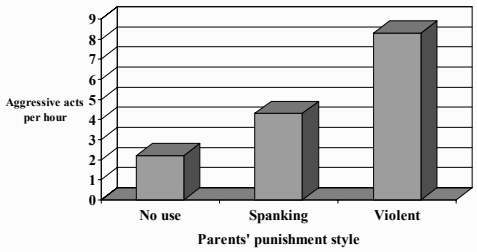
Operant Conditioning Terms #1

- **Discriminative Stimulus.**
  A cue that lets you know that a specific response will lead to the expected reinforcement.
- **Positive Reinforcement.**
  A process in which a reward following a behavior is used to increase or strengthen that behavior.
- **Negative Reinforcement.**
  A process in which a response which prevents an aversive event is strengthened.

Punishment

- ***Removal of something liked or presentation of something disliked.***
  - **Generally leads to suppression of behavior.**
  - **Does NOT lead to forgetting (extinction).**
    - **Examples.**
      - **Speeding tickets.**
      - **Time outs.**

Spare the Rod and Spoil the Child?



When Punishment Works

1. It is swift and brief.
2. Administered immediately after the undesirable behavior.
3. Is limited in intensity.
4. Is response to behavior and not personality.
5. Limited to the situation where the undesirable behavior occurs.
6. Consists of penalties, not pain.

QUESTION

Identify the types of reinforcement for each of the following situations.

- Positive.
- Negative.
- Punishment.

- Complementing someone for good work.
- Getting up to let a dog out of the house because he is whimpering.
- The dog whimpers to get let out of the house.
- You get a speeding ticket.

Other Elements #1

- **Extinction.**
  The weakening or disappearance of a response because it is no longer followed by a reinforcer.
- **Discriminative Stimulus.**
  Stimuli that act as predictors of reinforcement, signaling when particular behaviors will result in reinforcement.

Learning Complex Behavior

- **Shaping**
  Learning a complex behavior by reinforcing closer and closer approximations to the desired behavior.
- **Chaining**
  Linking small behavioral steps to achieve the desired behavior.

Types of Reinforcers

- **Primary Reinforcer**
  - ***Reinforcers that are related to basic survival.***
    - **Food**
    - **Water**
    - **Sex**
- **Secondary Reinforcer**
  - ***Reinforcers that get their value through association with a primary reinforcer.***
    - **Money**
    - **Grades**

Reinforcement Schedules

- **The pattern of delivering or withholding reinforcers.**
  - **Continuous**
    Every appropriate response is reinforced.
  - **Variable**
    Reinforcement is not given after every desired response.

Types of Reinforcement Schedules

	Fixed	Variable
Ratio *After number of responses*	Reinforcer is given after a fixed number of correct responses.	Reinforcer is given after an intermittent number of correct responses.
Interval *After a period of time.*	Reinforcer is made available after a fixed time period.	Reinforcer is made available after an intermittent time period.

Effects of Reinforcement Schedules

- Continuous
  - Leads to fast acquisition.
  - Fast extinction.
- Fixed ratio.
  - Response rate is fast and regular.
  - Resistant to extinction.
- Variable ratio.
  - Response rate is regular and high.
  - Resistant to extinction.
- Fixed Interval.
  - Response drops after reinforcement then increases at the end of the interval.
  - Moderately resistant to extinction.
- Variable interval.
  - Response rate is slow and regular.
  - Very resistant to extinction.

QUESTION

How would you train your dog to bring your slippers from the bedroom to you on the couch.

- Discriminative Stimulus?
- Reinforcement schedules?

Operant Conditioning: So What?

- **Teaching.**
  - **When to give feedback.**
  - **What kinds of feedback to give.**
- **Clinical psychology.**
  - **Learned helplessness.**
  - **Aggression.**

Operant Conditioning: Issues

- **Latent learning.**
  Learning that is not apparent until there is a need for it.
- **Instinctive Drift.**
  Tendency for learned behavior to drift toward instinctual behavior over time.
- **Insight.**
  Kohler's experiments with Sultan.

Animal Cognition

- **Cognitive maps.**
  A mental representation of physical space.

Observational Learning

What is It?

Learning that occurs when our behavior is influenced by the actions of others called models.

QUESTION

Who are the most influential models in your life?

Key Factors in Observational Learning

1. **Attention.**
   We have to focus on what the model did.
2. **Retention.**
   We have to remember what the model did.
3. **Production.**
   We have to have the skills to do what the model did.
4. **Motivation.**
   Will I be reinforced for this behavior?

Observational Learning: So What?

- **Media.**
  - **Violence.**
  - **Sex.**
- **Parenting.**
  - **'Do as I say not as I do.'**
- **Training.**
  - **Positive models.**

Learning Summary		
Type of Learning	**Procedure**	**Result**
Classical Conditioning	Neutral stimulus is ***paired*** with an unconditioned stimulus.	Neutral stimulus becomes conditioned (learned) and elicits the conditioned response.
Operant Conditioning	Behavior is ***followed*** by a consequence (pleasant or unpleasant).	The behavior increases or decreases in frequency.
Observational Learning	An observer ***watches*** a model to learn a behavior.	The observer learns behaviors and imitates them.

THE END
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