

# Learning

Chapter Six Notes

# True or False?

Put on a half-sheet of paper:

1. \_\_\_\_\_ Conditioning means learning.
2. \_\_\_\_\_ B.F. Skinner is responsible for the dog/drool experiment.
3. \_\_\_\_\_ The experiment was an example of operant conditioning.
4. \_\_\_\_\_ Generalization refers to a generic response to a stimulus.

# How do we learn?

- We learn from experience
  - Watson & Locke
  - B.F. Skinner
- We learn in three ways:
  - Non-associative learning
  - Associative learning
  - Learning by watching others

# Types of Learning

## Types of learning

### Non-associative

Learning about a stimulus, such as a sight or a sound, in the external world.

#### Habituation

When our behavioral response to a stimulus decreases.

#### Sensitization

When our behavioral response to a stimulus increases.

### Associative

Learning the relationship between two pieces of information.

#### Classical conditioning

When we learn that a stimulus predicts another stimulus.

#### Operant conditioning

When we learn that a behavior leads to a certain outcome.

### Watching others

Learning by watching how others behave.

#### Observational learning

When we learn or change a behavior after watching a person engage in that behavior.

#### Modeling

Imitating a behavior seen in others.

#### Vicarious conditioning

Learning to engage in a behavior or not, after seeing others being rewarded or punished for performing that action.

# In your notebook...

Think about songs that trigger memories from your life.

How did you make the association?

Does the song or sound produce a specific emotion?

# Conditioning

- A stimulus produces a reaction , or response from a person or animal.
  - Hearing a song
  - Favorite food
  - A certain smell

# Classical Conditioning

## Ivan Pavlov's Dogs

- Dogs learned to associate one thing with another when food is involved.



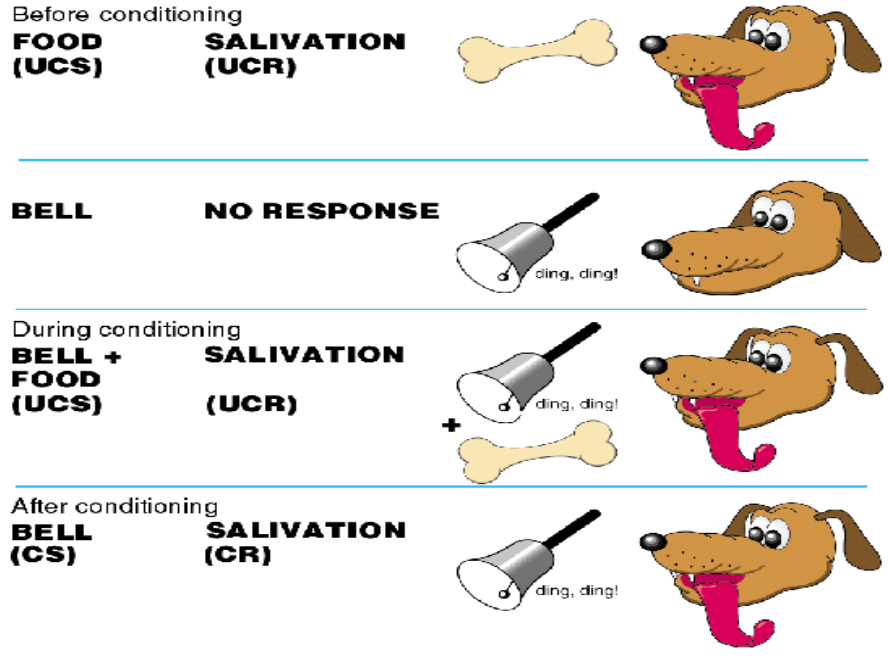
# US, UR, CR, and CS: Letters of Learning

- Unconditioned stimulus (US) – causes automatic response
- Unconditioned response (UR) – automatic response
- Conditioned response (CR) – learned response
- Conditioned stimulus (CS) – associated energy



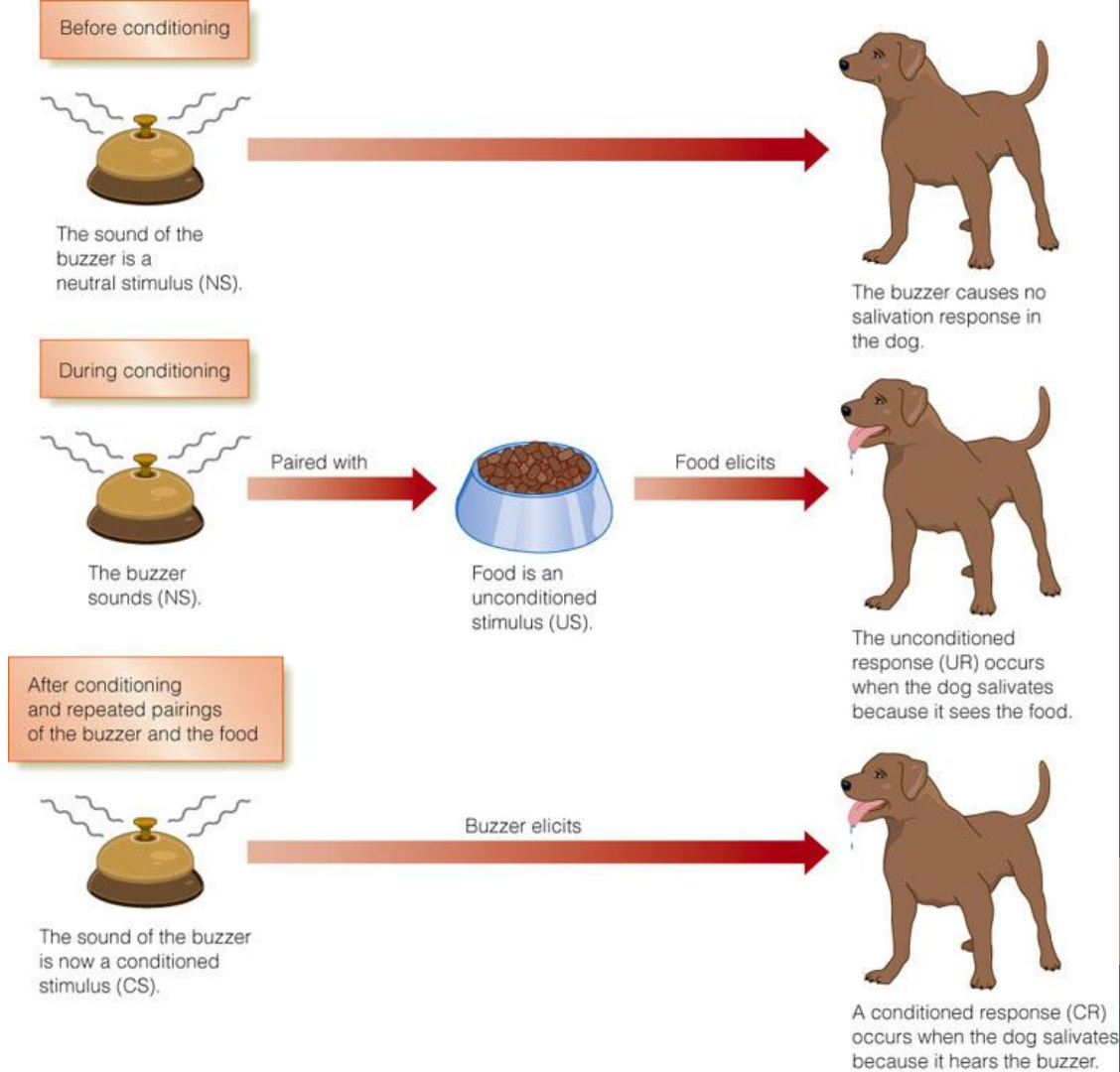
# Classical Conditioning

Ivan Pavlov's *method of conditioning* in which associations are made between a natural stimulus and a learned, neutral stimulus.



# Classical Conditioning

## Conditioning Dwight



# Generalization and Discrimination

Ivan Pavlov conditioned dogs to drool when rubbed; they then also drooled when scratched.

**Generalization** refers to the tendency to have conditioned responses triggered by related stimuli.



MORE stuff makes you drool.

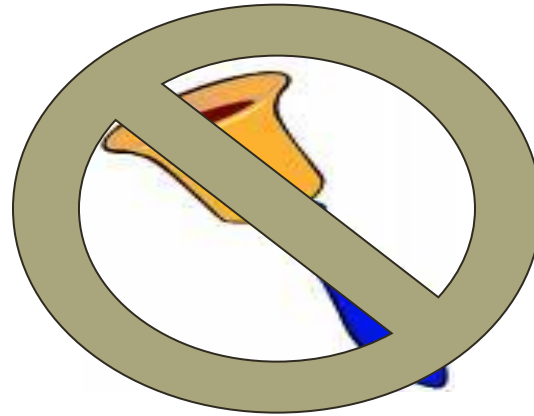
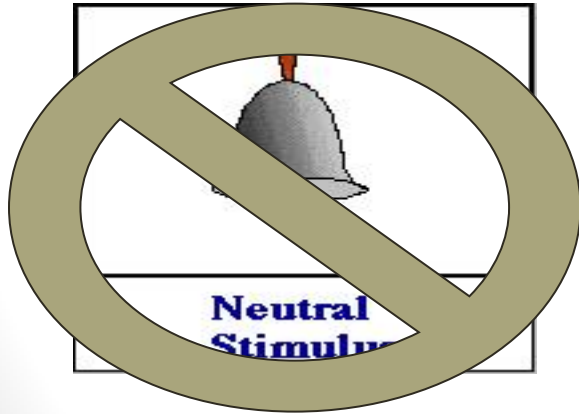
Ivan Pavlov conditioned dogs to drool at bells of a certain pitch; slightly different pitches did not trigger drooling.

**Discrimination** refers to the learned ability to only respond to a specific stimuli, preventing generalization.

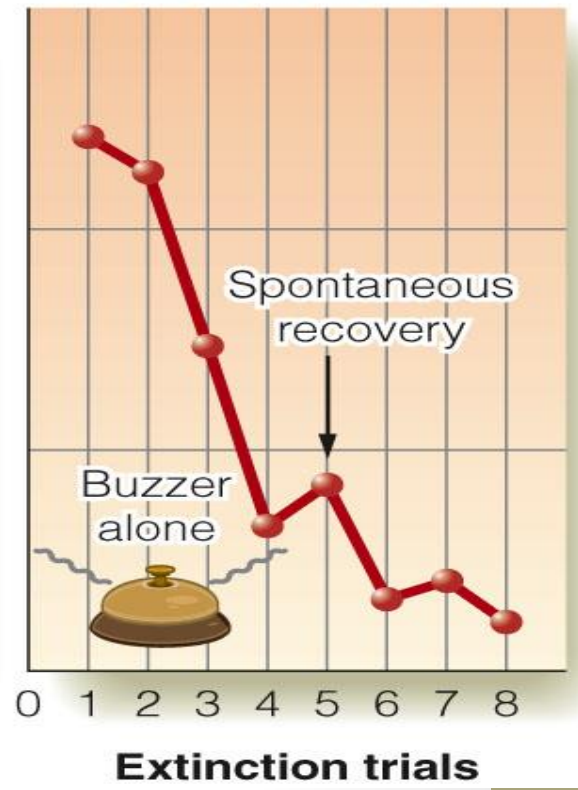
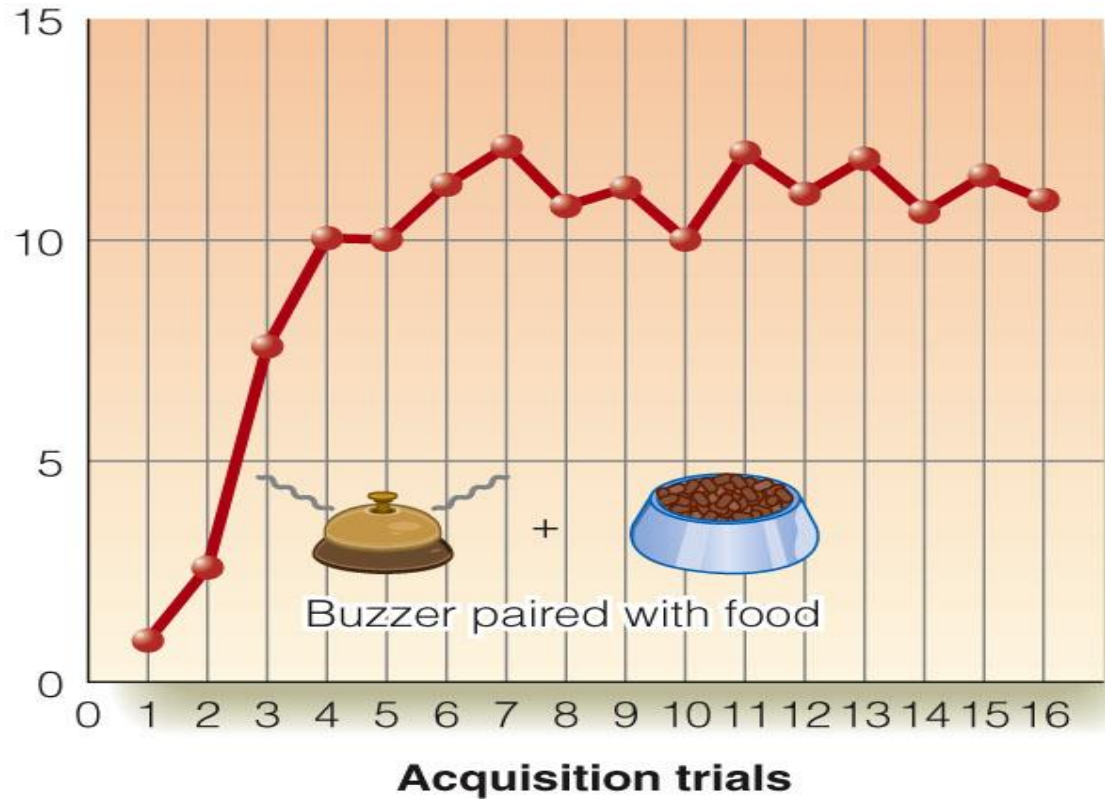


LESS stuff makes you drool.

**Extinction** the gradual loss of an association over time.  
The conditioned response (CR) will gradually die out.



Strength of conditioned response (salivation)



# Food and Classical Conditioning

Taste-aversion - associating a (smell, taste, sound, or sight) with getting sick and thereafter avoiding that particular (smell, taste, sound, or sight) in the future.

- Helps rats learn not to eat poison.

**Figure 9.3**

## **Examples of Common Conditioned Responses**

If you have pets and feed them canned food, what happens when you use the can opener? The animals may come running even when you are opening a can of peas. *Why do you feel distress at the mere sight of flashing police lights?*

CS	CR	US	UR
Dentist/ sound of drill	Tension	Drill	Tension
Product (soda pop)	Favorable feeling	Catchy jingle or slogan	Favorable feeling
Flashing police car lights	Distress	Speeding ticket	Distress

# Taste Aversion

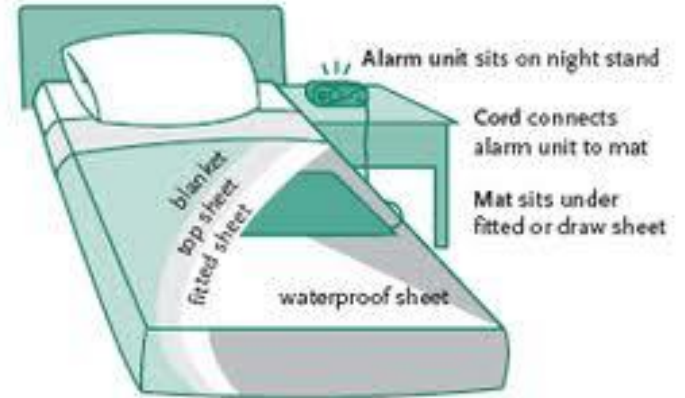
- Have you ever eaten a food that made you sick? What was it?
- A learned avoidance of a particular food.

Not just for dogs!



# Applications of CC

- Flooding and Systematic Desensitization
- Counterconditioning
  - Pleasant & fear paired
- Bell-and-Pad Method for Bed-Wetting





# Little Albert Experiment

USC:

UCR:

NS:

CS:

CR:

## Associative Learning:

# Operant Conditioning

- Child associates his “response” (behavior) with consequences.
- Child learns to repeat behaviors (saying “please”) which were followed by desirable results (cookie).
- Child learns to avoid behaviors (yelling “gimme!”) which were followed by undesirable results (scolding or loss of dessert).

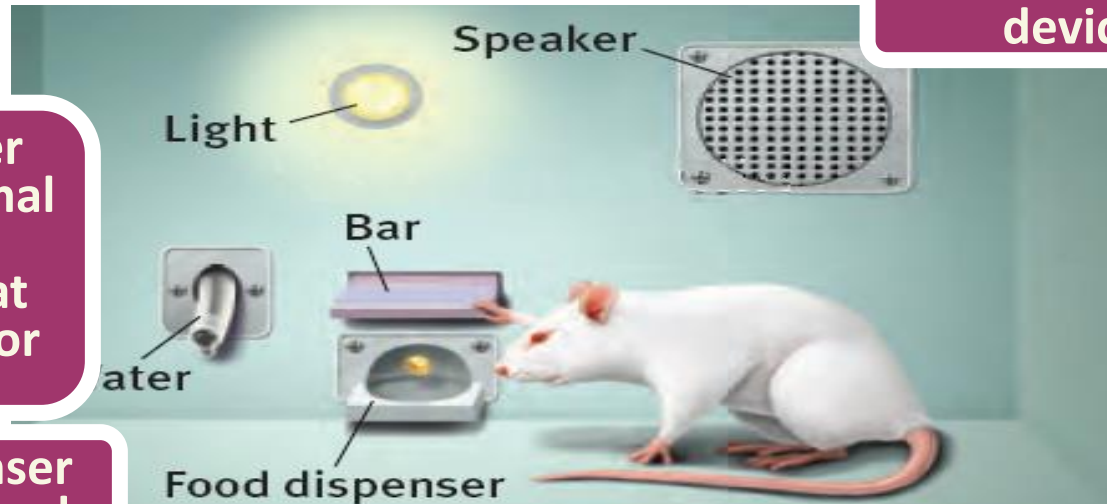


# B.F. Skinner: The Operant Chamber

- B. F. Skinner - more controlled methods of studying conditioning.
- The operant chamber called “the Skinner box.”

Bar or lever that an animal presses, randomly at first, later for reward

Food/water dispenser to provide the reward



Recording device

# Reinforcement

- **Reinforcement** *anything that makes a behavior more likely to recur.*
  - Positive (adding) reinforcement: **adding** something desirable (e.g., warmth)
  - Negative (taking away) reinforcement: **ending** something unpleasant (e.g., the cold)



*This meerkat has just completed a task out in the cold*

*For the meerkat, this warm light is desirable.*

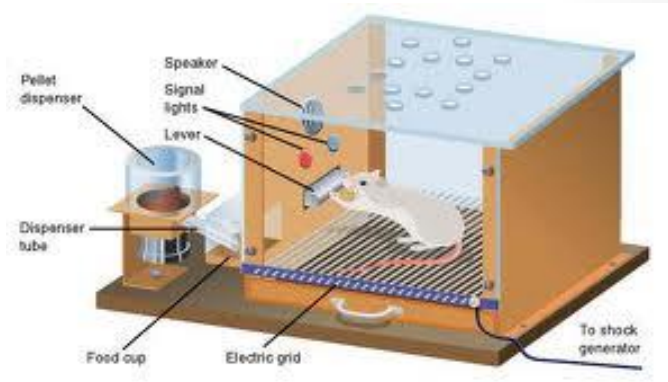
# Skinner in the Modern World

- Operant Conditioning with Sheldon Cooper



# Reinforcement

- Skinner Box
  - A rat, deprived of food, presses a lever and food pellets drop into the box.
  - The rat begins to press the lever more frequently
  - Reinforcement has occurred.



# REVIEW: Positive and Negative Reinforcement

- Positive reinforcement
  - leads to something pleasant
- Negative reinforcement
  - rewarded by the \_\_\_\_\_ of something unpleasant
- **Negative reinforcement is not \_\_\_\_\_**
  - Remember that reinforcement \_\_\_\_\_ **behavior**

**Reinforcement** is something that follows a response and strengthens the tendency to repeat that response

## **PRIMARY & SECONDARY REINFORCERS**

**Primary reinforcement** is something that is necessary for **survival**. Ex: food or water



**Secondary reinforcement** is a stimulus that we have learned to **value** (linked to a primary reinforcer)





# Positive and Negative Punishment

- **Punishment** - unpleasant consequence that leads to a decrease in behavior
- Positive punishment
  - **Addition** of something unpleasant that **decreases behavior**
- Negative punishment
  - **Removal** of something pleasant that **decreases behavior**



# Fill in the chart below:

Operant Conditioning	OUTCOME (Favorable/unfavorable)	BEHAVIOR (increases/decreases)
Positive Reinforcement		
Negative Reinforcement		
Positive Punishment		
Negative Punishment		

# Punishment from a Psychologists Point of View

- Does not teach acceptable behavior
- Only works with consistency
- Severely punished people tend to flee situation
- Creates anger and hostility
- If not understood, punishment can have broader psychological effects.
- Might be used to solve problems (hitting leads to hitting)
- Might become a learned response for attention.

# You Don't Need to Hit Children



# ATB: Vocabulary Matching

1. \_\_\_\_ Continuous reinforcement
  2. \_\_\_\_ Partial reinforcement
  3. \_\_\_\_ Shaping
  4. \_\_\_\_ Latent learning
  5. \_\_\_\_ Observational learning
- a. Learning that is “hidden”
  - b. Acquiring knowledge by watching others
  - c. Reinforcement every time it occurs
  - d. Behaviors not reinforced every time they occur
  - e. Teaching complex behavior step by step

# Schedules of Reinforcement

When and how often reinforcement occurs.

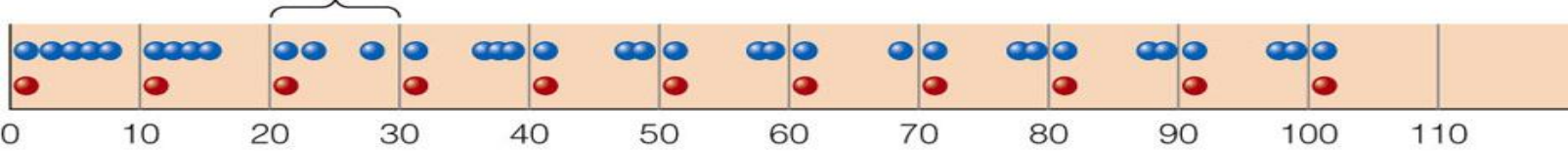
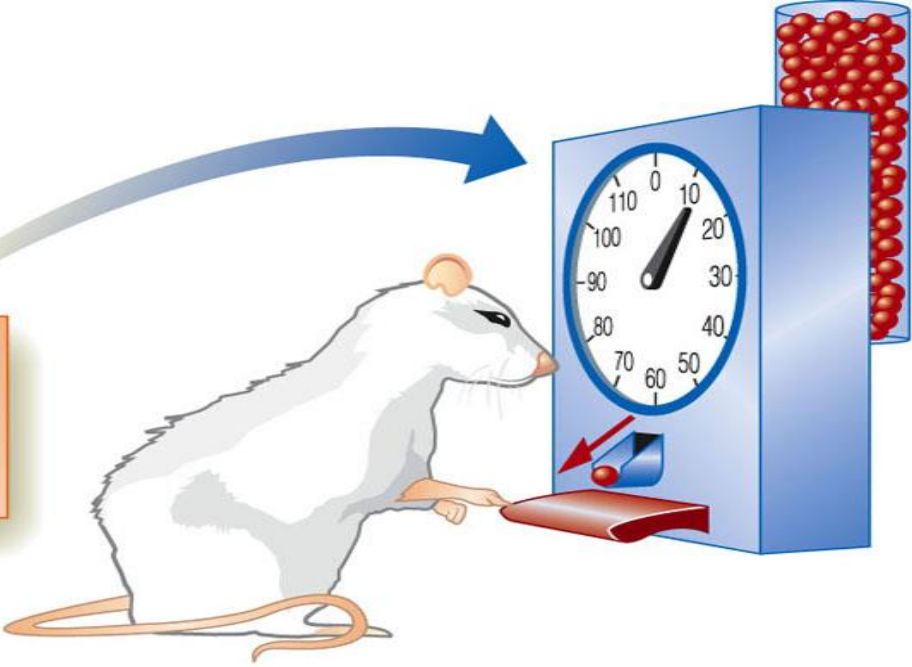
- **Continuous reinforcement** – behavior is rewarded each time exhibited
  - Simplest
  - Not always feasible
  - More vulnerable to extinction
- **Partial reinforcement** – reward behavior only some of the time
  - Last longer
  - Ratio and interval

# Interval Schedules of Reinforcement

- **Fixed interval schedule**
  - Behavior rewarded once some interval of time has passed
  - Example – studying for Friday quizzes
- **Variable interval schedule**
  - Similar to variable ratio, but interval varies
  - Produces steady rates of responding (pop quizzes)
  - Most resistant to extinction

Intervals determine persistence and effort toward certain tasks.

This timer will allow the rat to get only one pellet in a 10-minute interval—no matter how often the rat presses the bar.



Time (minutes)

- = Bar presses
- = Reward given for the bar press



# Ratio Schedules

- (1:1) – one response : one reinforcement
- (5:1) – response must occur five times : one reinforcement
- **Fixed Ratio Schedule** – reinforcement happens after a **fixed** number of correct responses.
  - Free coffee after 10 purchases.
- **Variable Ratio Schedule** – reinforcement after a variable number of correct responses.
  - Number changes (rat – 5, 8, 13 times before gets food)
  - Casino



# Operant Conditioning: Extinction

- If rat presses the lever repeatedly and no food comes, behavior will become extinct.
- Studying will lose reinforcement value if not working.

Extinction Graph



# Applications of Operant Conditioning

- **Shaping** – teaching complex behaviors in which one first reinforces steps in the right direction.
  - Learning to ride a bike
- **Programmed Learning** – any task can be broken into steps
  - Frame
- **Classroom Discipline** - if misbehavior is ignored, it will become extinct
  - Time-out

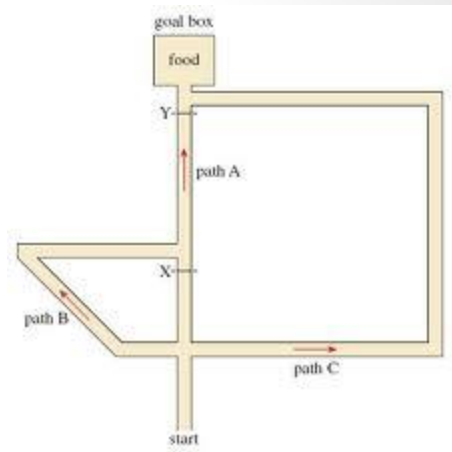
# Classical vs. Operant Conditioning

Classical conditioning	Operant conditioning
A signal is placed before a reflex	A reinforcing or punishing stimulus is given after a behavior
Developed in Russia	Developed in U.S.
Known as "Pavlovian"	Known as "Skinnerian"
Also called "respondent conditioning"	Also called "instrumental conditioning"
Works with involuntary behavior	Works with voluntary behavior
Behavior is said to be "elicited"	Behavior is said to be "emitted"
Typified by Pavlov's dog	Typified by Skinner Box

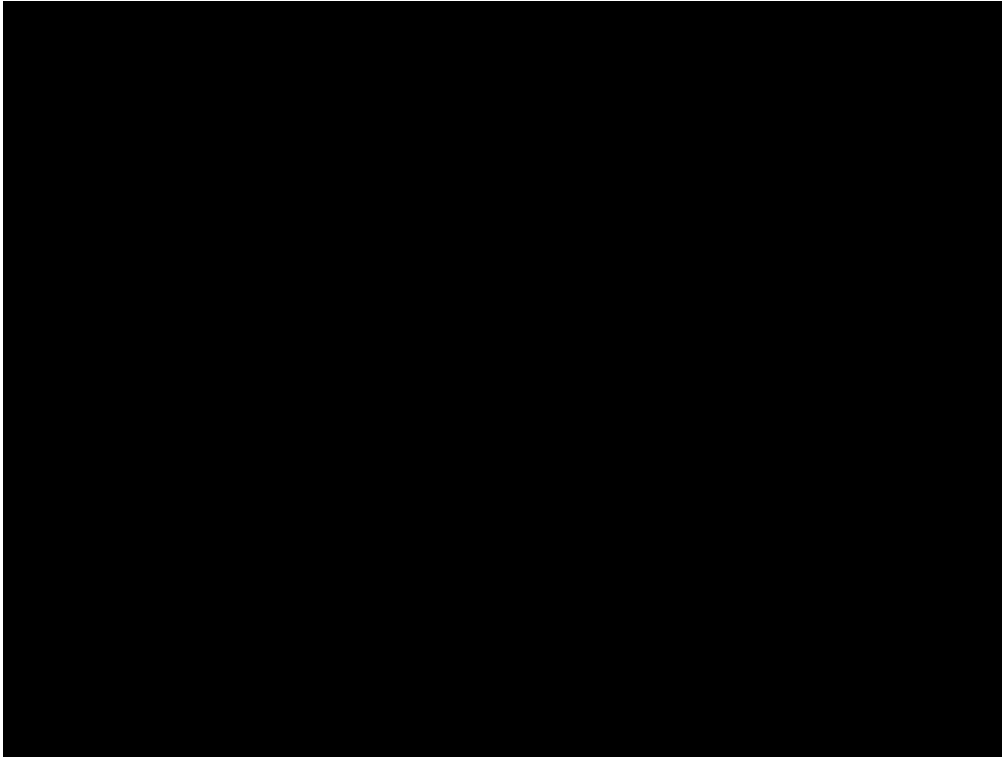


# Latent Learning

- Learning is purposeful, not mechanical
- **Latent**
  - E.C. Tolman – learning occurs **without** reinforcement
  - We learn even when unrewarded (cognitive mapping)
  - Sometimes learning is hidden, or “**latent,**” until needed



# Social Learning Theory



Albert Bandura  
(American)

\* knowledge  
acquired by  
**observing** and  
imitating others.



# Modeling



# Neuroplasticity

- Creating new pathways in the brain





# Insight



Wolfgang Kohler  
(German)

Experiment:  
chimpanzees and  
a banana



\*Insight occurs when one suddenly realizes how to solve a problem.

# PQ4R Method

- Francis P. Robinson
- Six steps
  - Preview
  - Question
  - Read
  - Reflect
  - Recite
  - Review