

**AL AKHAWAYN UNIVERSITY**

**PSY1301**

**INTRODUCTION TO PSYCHOLOGY**

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**LEARNING**

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# UNLEARNED BEHAVIORS

## Instincts and Reflexes

Instincts and reflexes are innate behaviors that organisms are born with.

- Help organisms adapt to their environment.

**Reflexes** – motor/neural reactions to a specific stimulus.

- Simpler than instincts.
- Involve activity of specific body parts.
- Involve primitive centers of the CNS (e.g., spinal cord and medulla).
- E.g. Human babies are born with a sucking reflex.

**Instincts** – behaviors triggered by a broader range of events (e.g., aging, change of seasons).

- More complex.
- Involve movement of the organism as a whole (e.g., sexual activity).
- Involve higher brain centers.

# WHAT IS LEARNING?

Learning helps organisms adapt to their environment but learned behaviors **involve change and experience**.

**Learning** – a relatively permanent change in behavior or knowledge that results from experience.

- Involves acquiring skills/knowledge through experience.
- Involves **conscious and unconscious processes**.

**Associative learning** – when an organism makes connections between stimuli or events that occur together in the environment.

There are many approaches to learning. We will look at approaches that are part of behaviorism:

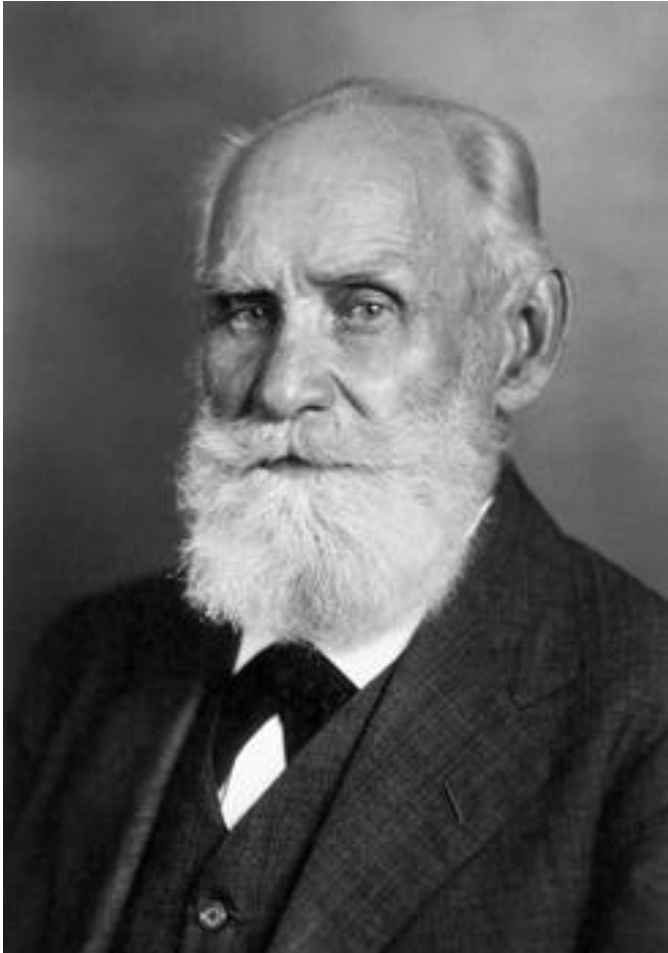
1. Classical conditioning
2. Operant conditioning
3. Observational learning



In operant conditioning, a response is associated with a consequence. This dog has learned that certain behaviors result in receiving a treat.

# CLASSICAL CONDITIONING

Ivan Pavlov's research on the digestive system of dogs unexpectedly led to his discovery of the learning process now known as classical conditioning.



**Classical conditioning** – process by which we learn to associate stimuli and, consequently, to anticipate events.

Pavlov noticed that dogs salivated not only at the taste of food, but also at the footsteps of the lab assistants' footsteps.

He realized that organisms have 2 types of responses to its environment; **unconditioned** (unlearned) responses and **conditioned** (learned) responses.

In the most famous example, dogs were conditioned to associate the sound of a bell with food. When the dogs heard the bell they anticipated food and began to salivate.

So how does classical conditioning occur?

# CLASSICAL CONDITIONING

## Before Conditioning

**Unconditioned stimulus (UCS)** – stimulus that elicits a reflexive response (food).

**Unconditioned response –UCR)** – a natural unlearned reaction to a stimulus (salivation in response to food).

Food (UCS) → Salivation (UCR)

## During Conditioning

**Neutral stimulus (NS)** – stimulus that does not naturally elicit a response (ringing a bell – does not cause salivation by itself prior to conditioning).

- The NS and UCS are paired repeatedly.

Bell (NS) + Food (UCS) → Salivation (UCR)

## After Conditioning

**Conditioned stimulus (CS)** – stimulus that elicits a response after repeatedly being paired with an unconditioned stimulus.

**Conditioned response (CR)** – the behavior caused by the conditioned stimulus.

Bell (CS) → Salivation (CR)

# CLASSICAL CONDITIONING

Dog salivates (UCR) in response to food (UCS).

Before Conditioning



Dog does not salivate in response to the bell (NS).

During Conditioning



The bell (NS) and food (UCS) are paired.

After Conditioning



The bell (CS) causes salivation (CS).

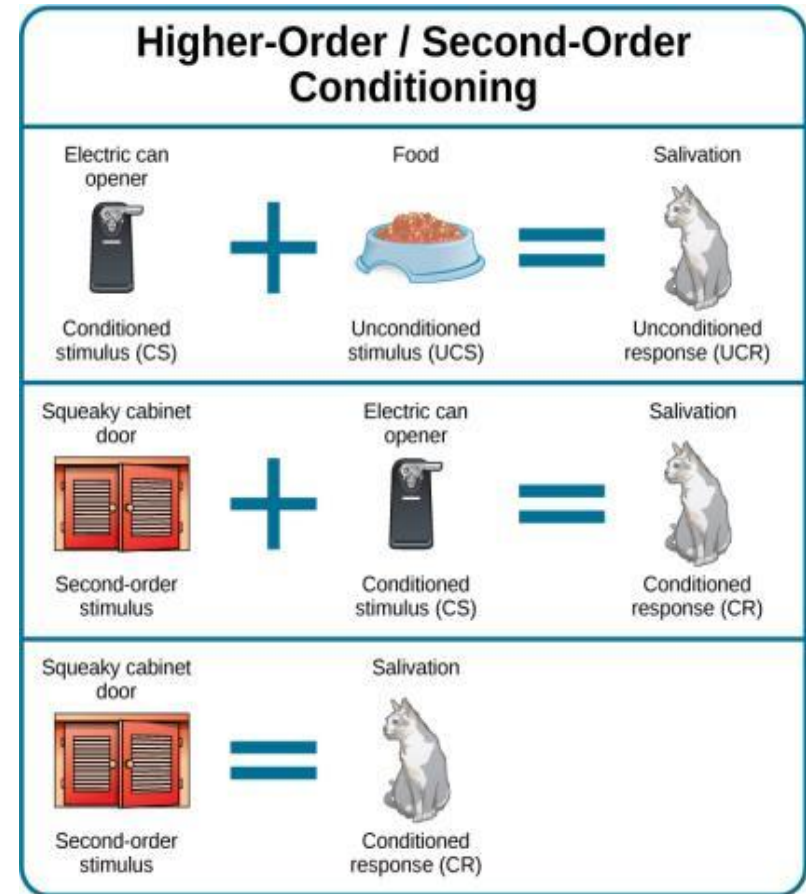
# HIGHER-ORDER CONDITIONING

**Higher-order conditioning** - an established conditioned stimulus is paired with a new neutral stimulus (the second-order stimulus), so that eventually the new stimulus also elicits the conditioned response, without the initial conditioned stimulus being presented.

Example:

1. The cat is conditioned to salivate when it hears the electric can opener.
2. The squeaky cabinet door (second-order stimulus) is paired with the can opener (CS).
3. The cat salivates (CR) when it hears the squeaky cabinet door (CS)

The cat learns to associate the cabinet door with the electric can opener and therefore with food.



# GENERAL PROCESSES IN CLASSICAL CONDITIONING

## Acquisition

**Definition:** Acquisition is the initial learning phase where an organism learns to associate a neutral stimulus (NS) with an unconditioned stimulus (UCS) that naturally elicits a response.

**Example:** In Pavlov's famous experiment, a dog is presented with a sound (the bell), which is initially a neutral stimulus.

## Extinction

**Definition:** Extinction occurs when the conditioned response (CR) decreases or disappears because the unconditioned stimulus (UCS) is no longer paired with the conditioned stimulus (CS).

**Example:** Continuing with Pavlov's dogs, if the sound of the bell is repeatedly presented without the food, the dog will eventually stop salivating in response to the bell.

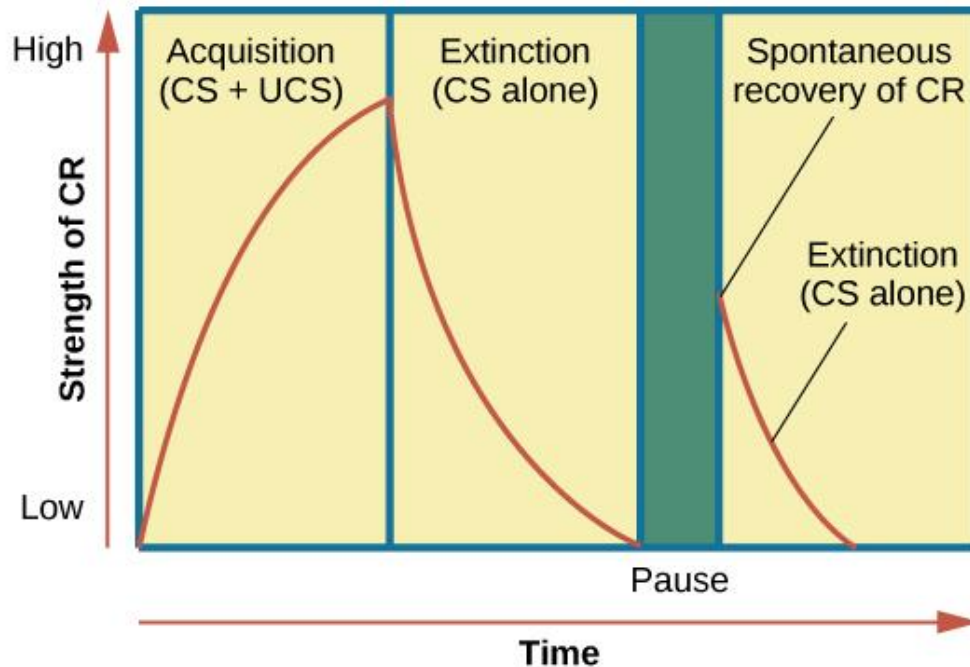
## Spontaneous Recovery

**Definition:** Spontaneous recovery is the reappearance of a previously extinguished conditioned response after a rest period without further conditioning.

**Example:** After some time has passed since the bell was last paired with food, if the bell is sounded again, the dog may once again salivate. This re-emergence of the conditioned response (salivation) indicates spontaneous recovery, even though the association had been extinguished earlier.



# CURVE OF ACQUISITION, EXTINCTION & SPONTANEOUS RECOVERY



The rising curve shows the conditioned response quickly getting stronger through the repeated pairing of the conditioned stimulus and the unconditioned stimulus (acquisition).

Then the curve decreases, which shows how the conditioned response weakens when only the conditioned stimulus is presented (extinction).

After a break or pause from conditioning, the conditioned response reappears (spontaneous recovery).

# DISTINGUISHING BETWEEN STIMULI

Organisms need to be able to distinguish between different stimuli in order to respond appropriately.

## **Stimulus Discrimination**

**Definition:** Stimulus discrimination is the ability of an organism to differentiate between similar stimuli and respond appropriately to each.

**Example:** In the context of Pavlov's experiment, if the dog learns to salivate in response to a specific bell sound that signals food, it can also recognize similar sounds. If another bell rings that doesn't signal food, the dog will not salivate.

## **Stimulus Generalization**

**Definition:** Stimulus generalization occurs when an organism responds to stimuli that are similar to the conditioned stimulus, even if they have not been directly paired with the unconditioned stimulus.

**Example:** If someone develops a fear of a specific type of spider after a negative experience, they might start to feel fear towards all spiders, not just the one they encountered. This broad response to similar stimuli is an example of stimulus generalization, where the learned response (fear) transfers to similar stimuli (other spiders).

## **Habituation**

**Definition:** Habituation is a form of learning where an organism learns to ignore a stimulus that is presented repeatedly without any significant change or consequence.

**Example:** Imagine living near a train track. Initially, the sound of the trains might be disruptive and cause you to pay attention. However, over time, as the trains pass by regularly without causing any harm, you may begin to tune out the noise, becoming less aware of it. This decrease in response to a repeated stimulus is called habituation, as you learn not to focus your attention on something that has become a regular part of your environment.

# BEHAVIORISM



John B. Watson used the principles of classical conditioning in the study of human emotion.

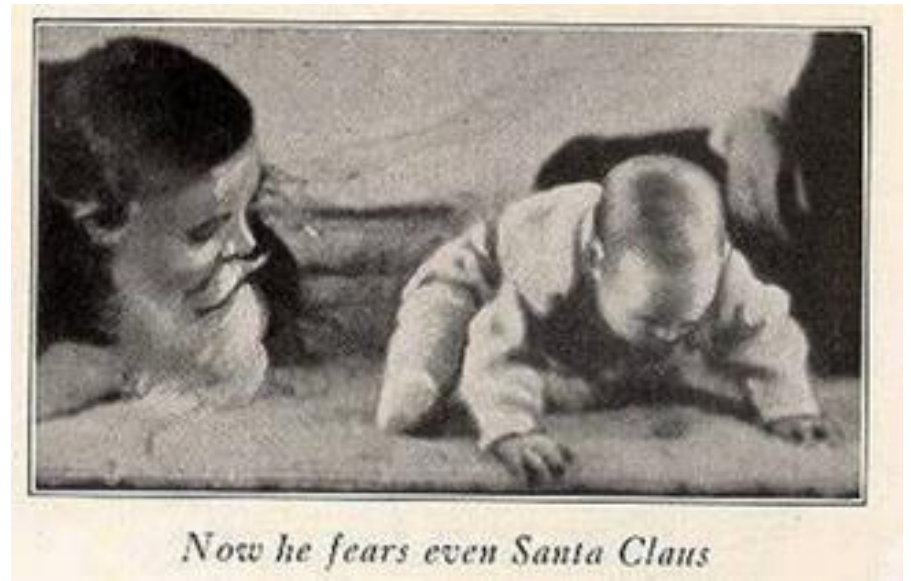
- Believed that all behavior could be studied as a stimulus-response reaction.
- Believed the principles of classical conditioning could be used to condition human emotions.
- Conducted a famous study with "Little Albert".

# LITTLE ALBERT

Watson exposed Little Albert to certain stimuli and conditioned to fear them.

1. Presented with neutral stimuli (rabbit, dog, cotton wool, a white rat etc).
2. Watson then paired these with a loud sound every time Little Albert touched the stimulus that caused him to feel fear.
3. After repeated pairings, Little Albert became fearful of the stimulus alone, such as the white rabbit.

Although initially conditioned to fear specific stimuli, they were all furry and therefore through stimulus generalization, Little Albert came to fear furry things, including Watson in a Santa Claus mask.



# OPERANT CONDITIONING

Operant conditioning is a theory proposed by B.F. Skinner.

In operant conditioning, organisms learn to associate a behavior and its consequences (reinforcement or punishment).

- Based on the law of effect.

Pleasant consequence/desired result → behavior is more likely to occur again.

Unpleasant consequence/undesired result → behavior is less likely to occur again.

- E.g. When we show up to work (behavior), we get paid (pleasant consequence) so we continue to show up to work.

Skinner conducted experiments (mainly with rats and pigeons) to determine how learning occurs through operant conditioning.

## Operant Conditioning Terminology

**Positive** – to add something.

**Negative** – to take something away.

**Reinforcement** – increasing a behavior.

**Punishment** – decreasing a behavior.

# OPERANT CONDITIONING

## **Positive Reinforcement**

**Definition:** Adding a pleasant stimulus to increase a behavior.

**Example:** Giving a dog a treat for sitting on command encourages it to sit again.

## **Negative Reinforcement**

**Definition:** Removing an unpleasant stimulus to increase a behavior.

**Example:** Turning off a loud alarm when a child gets out of bed encourages them to wake up on time.

## **Positive Punishment**

**Definition:** Adding an unpleasant stimulus to decrease a behavior.

**Example:** Scolding a child for drawing on the walls discourages that behavior.

## **Negative Punishment**

**Definition:** Removing a pleasant stimulus to decrease a behavior.

**Example:** Taking away a teenager's video game privileges for missing curfew discourages them from being late.

# CLASSICAL VS OPERANT CONDITIONING

## Classical and Operant Conditioning Compared

	Classical Conditioning	Operant Conditioning
Conditioning approach	An <b>unconditioned</b> stimulus (such as food) is paired with a neutral stimulus (such as a bell). The neutral stimulus eventually becomes the conditioned stimulus, which brings about the <b>conditioned</b> response (salivation).	The target behavior is followed by <b>reinforcement or punishment</b> to either strengthen or weaken it, so that the learner is more likely to exhibit the desired behavior in the future.
Stimulus timing	The stimulus occurs immediately <b>before</b> the response.	The stimulus (either reinforcement or punishment) occurs soon <b>after</b> the response.

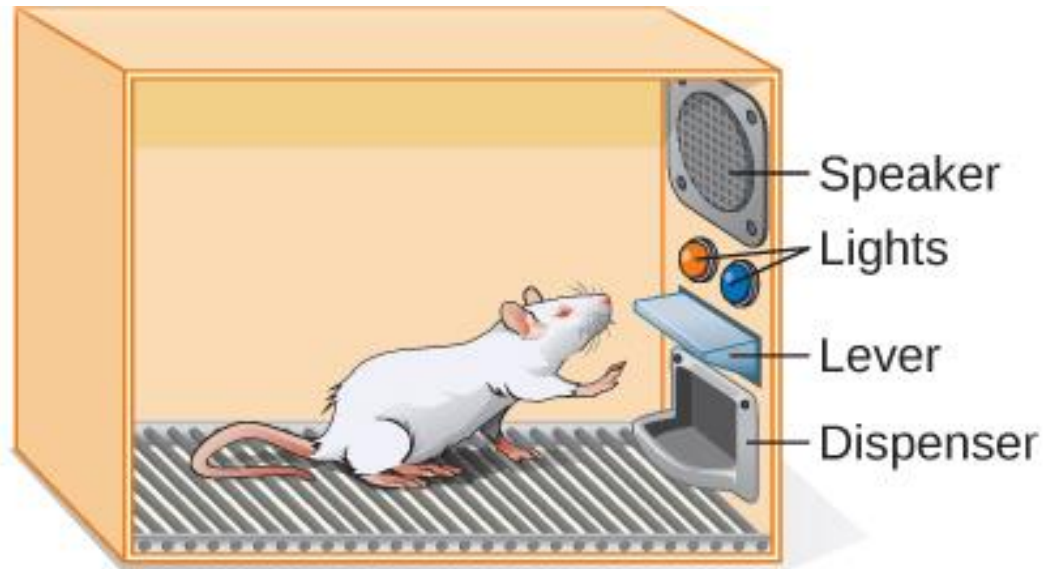
# THE SKINNER BOX

To study operant conditioning, Skinner placed animals inside an operant conditioning chamber (Skinner box) containing a lever that when pressed causes food to be dispensed as a reward.

- a) B.F. Skinner
- b) A Skinner box



(a)



(b)



# REINFORCEMENT

**Positive reinforcement** – something is added to increase the likelihood of a behavior.

Everyday examples:

- High grades
- Paychecks
- Praise

**Negative reinforcement** – something is removed to increase the likelihood of a behavior.

Everyday examples:

- The beeping sound that will only go away when you put your seatbelt on.



Sticker charts are a form of positive reinforcement and a tool for behavior modification. Once this little girl earns a certain number of stickers for demonstrating a desired behavior, she will be rewarded with a trip to the ice cream parlor.

# PUNISHMENT

## Positive Punishment

**Def:** Adding an unpleasant stimulus to decrease a behavior.

**Ex:** Scolding a child for drawing on the walls discourages that behavior.

## Negative Punishment

**Def:** Removing a pleasant stimulus to decrease a behavior.

**Ex:** A student is repeatedly disruptive in class, so the teacher removes their opportunity to participate in a class field trip. The removal of the field trip (a pleasant stimulus) is intended to decrease the disruptive behavior.



(a)



(b)

# SHAPING

Shaping is a technique used in operant conditioning to teach complex behaviors gradually. Instead of waiting for the final desired behavior to occur, you reward small steps that lead closer to the target behavior.

The process works by breaking the behavior into smaller, manageable parts.

At first, you reward any action that is somewhat similar to what you're trying to teach.

Once that is mastered, you raise the standard and only reward behaviors that are even closer to the final goal. Gradually, you continue this process, rewarding actions that increasingly resemble the target behavior until the full behavior is learned.

This method is particularly effective for teaching behaviors that are too complex to learn all at once, and it's often used by animal trainers to teach animals a series of actions.

In summary:

1. Reward any behavior that is slightly similar to the goal.
2. Gradually stop rewarding earlier behaviors and start reinforcing ones that are closer to the final goal.
3. Keep adjusting the standard until only the exact desired behavior is rewarded.

# Improving Focused Study Time

**Goal:** To study for 2 hours without distractions.

**Steps for Shaping Your Study Habit:**

**First Step: Start Small**

Begin by studying for just 15 minutes without any distractions (no phone, social media, etc.).

**Reinforcement:** After successfully studying for 15 minutes, take a short break or reward yourself with something small, like a snack.

**Second Step: Increase Time Gradually**

Once you are able to consistently study for 15 minutes, increase your study time to 30 minutes.

**Reinforcement:** After completing the 30-minute session, reward yourself again with something enjoyable, like watching a 10-minute video.

**Third Step: Continue to Raise the Standard**

When studying for 30 minutes becomes easy, move to 45 minutes or 1 hour of focused study time.

**Reinforcement:** After completing the longer session, give yourself a more substantial reward, like an extended break, a walk, or a favorite activity.

**Final Step: Achieve the Full Goal**

Continue increasing the study time incrementally (1 hour, 1.5 hours) until you can study for the full 2 hours without distractions.

**Final Reinforcement:** After completing 2 hours of focused study, reward yourself with something significant, like a fun activity or a nice meal.

# PRIMARY & SECONDARY REINFORCERS

Rewards to reinforce behavior can come in many forms (praise, stickers, money, toys etc).

**Primary reinforcers** - those that have innate reinforcing qualities (e.g. food, water, sleep, sex, pleasure). The value of these reinforcers does not need to be learned.

**Secondary reinforcers** – those that have no inherent value. Their value is learnt and becomes reinforcing when linked with a primary reinforcer.

- Ex: Money is only reinforcing when it can be used to buy other things such as things that satisfy basic needs (food).
- Grades themselves have no inherent value, but they become highly reinforcing because they are associated with rewards such as praise from teachers or parents, academic recognition, scholarships, or future career opportunities.

# REINFORCEMENT SCHEDULES

The best way to teach a behavior is through **positive reinforcement**, but there are different ways to apply it:

- 1. Continuous Reinforcement:** The person or animal gets a reward every time they perform the desired behavior. This is the fastest way to teach a new behavior. For example, a dog gets a treat every time it sits on command. Timing is key—the treat must come immediately after the dog sits so it connects the action with the reward. However, if you stop giving treats suddenly, the behavior may stop too.
- 2. Partial Reinforcement:** After the behavior is learned, rewards are given only some of the time, not every time the behavior is shown. This keeps the behavior going longer. There are different types of partial reinforcement schedules used to maintain the behavior.

# PARTIAL REINFORCEMENT SCALES

- **Fixed:** The number of responses or time between rewards stays the same.
- **Variable:** The number of responses or time between rewards changes each time.
- **Interval:** The schedule is based on **time** between rewards.
- **Ratio:** The schedule is based on the **number of responses** between rewards.

## Types of Reinforcement Schedules:

1. **Fixed Interval:** Rewards come after a set amount of time (e.g., a patient takes pain medication every 4 hours).
2. **Variable Interval:** Rewards come after varying amounts of time (e.g., checking your email or Facebook at random times).
3. **Fixed Ratio:** Rewards come after a set number of responses (e.g., a factory worker gets paid after making 10 items).
4. **Variable Ratio:** Rewards come after an unpredictable number of responses (e.g., A salesperson who gets a bonus after making a sale, but the number of sales required for the next bonus is unpredictable. Sometimes it takes 3 sales, other times it might take 7.).

# COGNITION & LATENT LEARNING

Research conducted by Edward C. Tolman found that learning could still occur without reinforcement. This introduced the idea that there is a cognitive aspect to learning.

While studying rats he found that if he put them in a maze to learn their way through it, they would eventually form a cognitive map of it.

**Cognitive map** – a mental picture of the layout an environment.

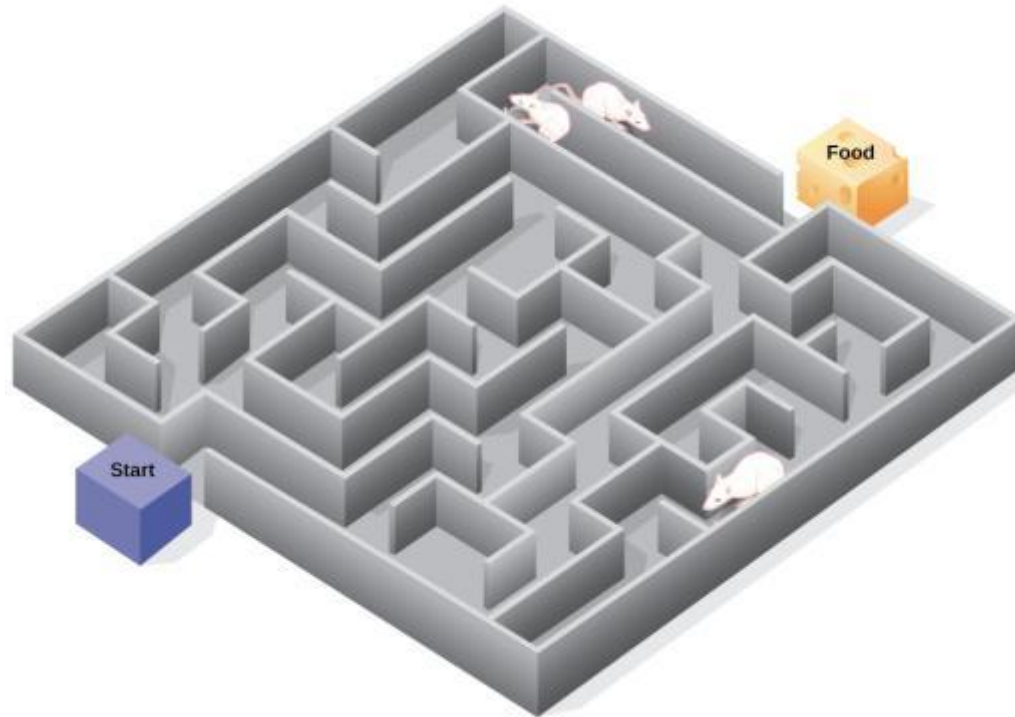
After 10 sessions in the maze without food as reinforcement, food was placed at the exit and the rats were able to very quickly exit the maze showing that they had learned the way out. This is called latent learning.

**Latent learning** – learning that occurs but is not observable in behavior until there is a reason to demonstrate it.

- Children may learn behaviors from their parents that they do not demonstrate until they are older.
- A child may learn the route to school from watching his parent drive there but will not demonstrate this until they can drive themselves or have to get there by bike, walking etc.



# COGNITIVE MAPS



Psychologist Edward Tolman found that rats use cognitive maps to navigate through a maze. Have you ever worked your way through various levels on a video game? You learned when to turn left or right, move up or down. In that case you were relying on a cognitive map, just like the rats in a maze.

# OBSERVATIONAL LEARNING (MODELING)

**Observational learning** – learning by watching others and then imitating.

**Model** - the individual performing the imitated behavior.



This spider monkey learned to drink water from a plastic bottle by seeing the behavior modeled by a human.

# OBSERVATIONAL LEARNING



(a)



(b)

Figure 13.17

- (a) Yoga students learn by observation as their yoga instructor demonstrates the correct stance and movement for her students (live model).
- (b) Models don't have to be present for learning to occur: through symbolic modeling, this child can learn a behavior by watching someone demonstrate it on television.

# SOCIAL LEARNING THEORY

In order to explain how learning occurred without external reinforcement, Albert Bandura proposed social learning theory.

He believed that observational learning involved more than just imitation and that internal mental states must be involved.

## Steps in the Modeling Process

1. **Attention** – focus on the behavior.
2. **Retention** – remember what you observed.
3. **Reproduction** – be able to perform the behavior.
4. **Motivation** – must want to copy the behavior.

Motivation depends on what happened to the model.

**Vicarious reinforcement** – process where the observer sees the model rewarded, making the observer more likely to imitate the model's behavior.

**Vicarious punishment** – process where the observer sees the model punished, making the observer less likely to imitate the model's behavior.

# BANDURA'S BOBO DOLL EXPERIMENT

In a famous study known as the Bobo doll experiment, Bandura studied modeling of aggressive and violent behaviors.

- Children observed adults act aggressively towards a 5 foot Bobo doll.
- The adult was then either punished, praised or ignored for their behavior.
- The children were then given the opportunity to play with the Bobo doll.
- If the child had seen the adult punished, they were less likely to act aggressively towards the doll.
- If the child had seen the adult praised or ignored, they were more likely to imitate the adult.

Bandura concluded that children watch and learn from the adults around them which can have both prosocial and antisocial consequences.

[Bandura's Bobo Doll Experiment Explained | How Children Learn Aggression | Social Learning Theory \(youtube.com\)](#)  
[Bandura - bobo doll experiment \(youtube.com\)](#)





# CAN VIDEO GAMES MAKE US VIOLENT?



Psychological researchers study this topic and suggest that there is a correlation between watching violence and aggression in children.