Vidya Prasarak Mandal's
K. G. Joshi College of Arts and
N. G. Bedekar College of Commerce, Thane.

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UNIT 3

LEARNING

F.Y.BA

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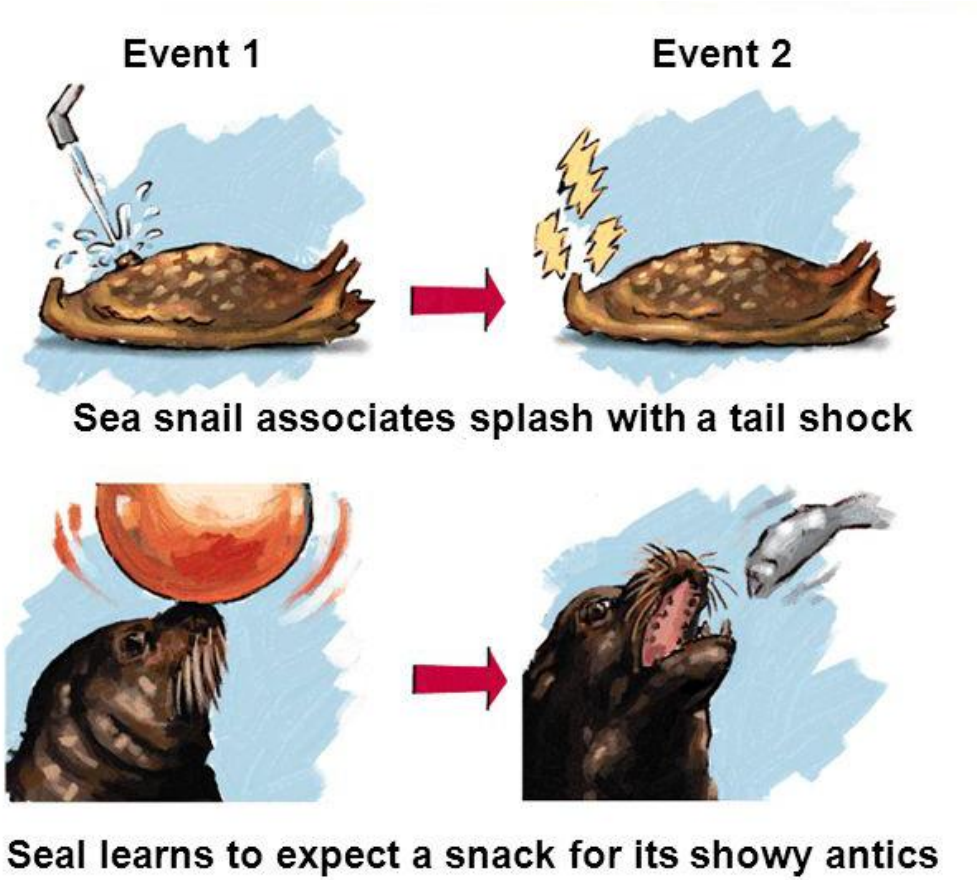
Definition

Learning is the process of acquiring new and relatively enduring information or behaviours.

Learning in animals

1) Associative learning



Learning that certain events occur together. The events maybe two stimuli (as in classical conditioning) or a response and it's consequences (as in operant conditioning)

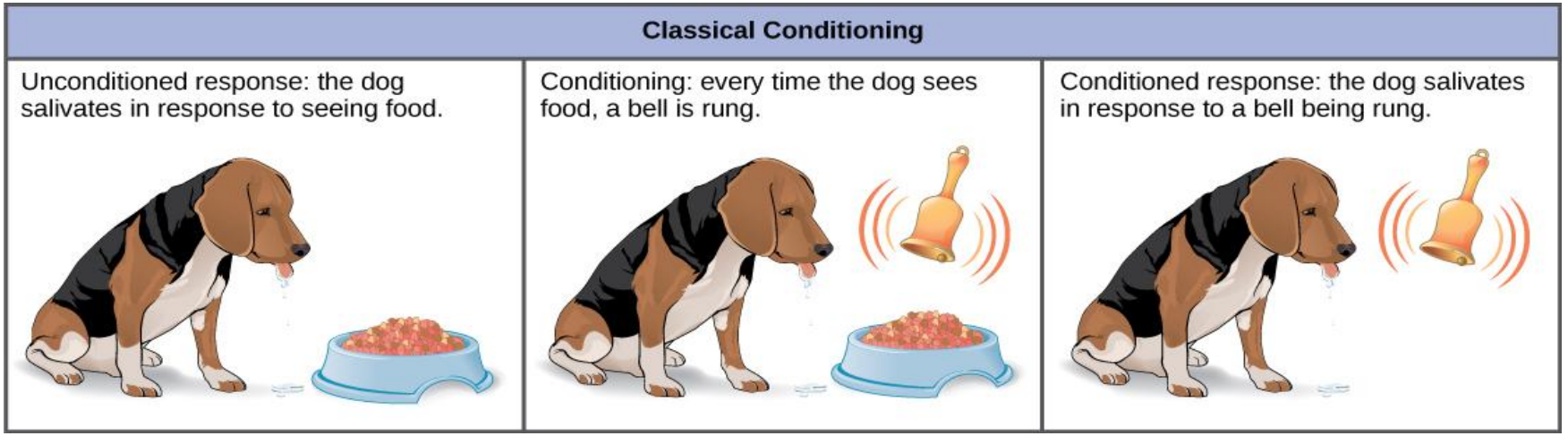
2) Cognitive learning

The acquisition of mental information, whether by observing events, by watching others, or through language.

Classical conditioning

Definition :

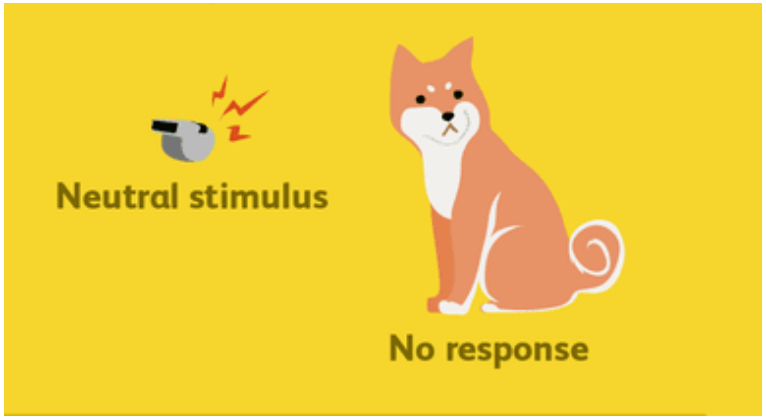
A type of learning in which one learns to link two or more stimuli and anticipate events.



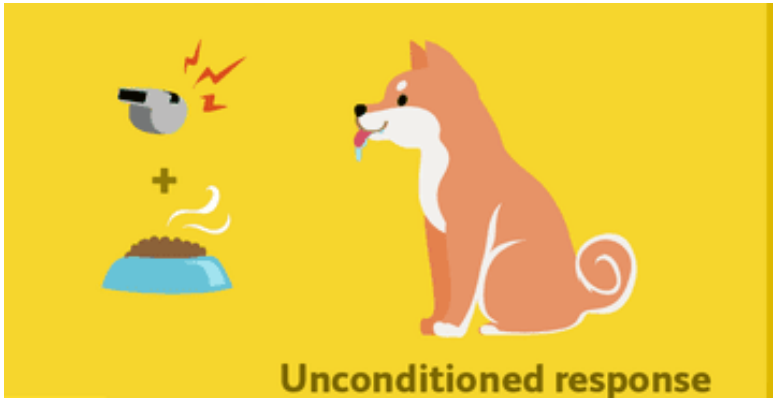
Ivan Pavlov experiment

Pavlov presented a neutral stimulus (a tone) just before an unconditioned stimulus (food in mouth). The neutral stimulus then became a conditioned stimulus (a tone), producing a conditioned response (salivation).

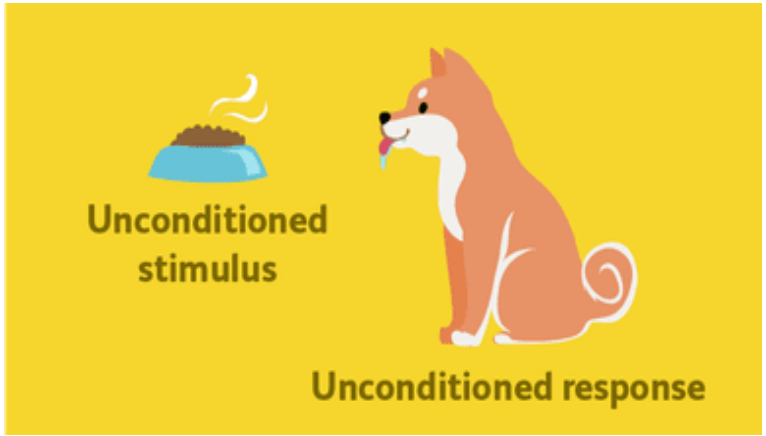
Neutral stimulus – In classical conditioning, a stimulus that elicits no response before conditioning.



Unconditioned response(UR) –An unlearned , naturally occurring response (such as salivation) to an Unconditioned stimulus (such as food in the mouth).



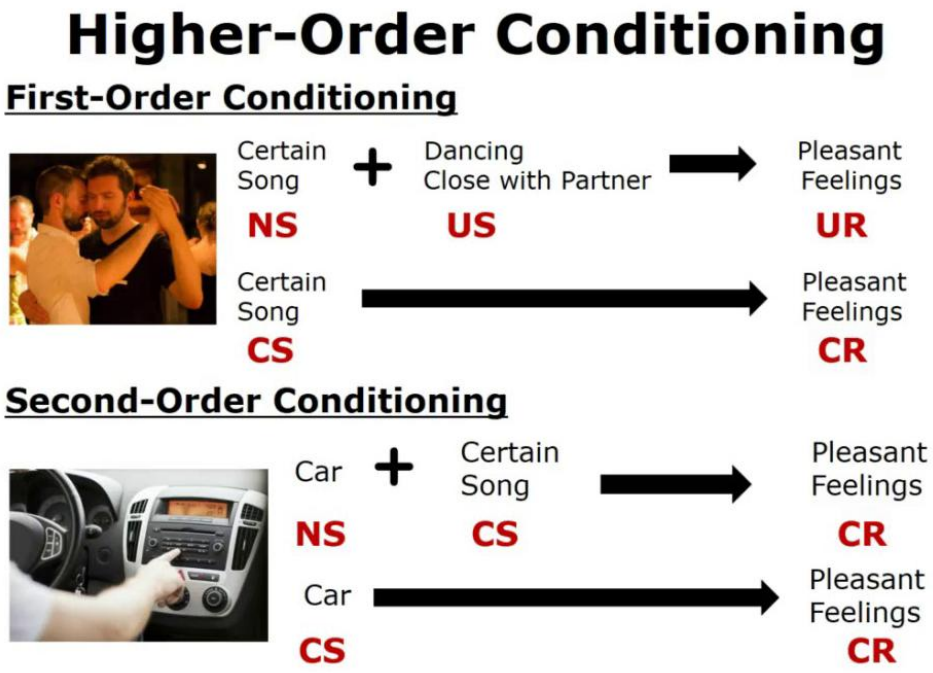
Unconditioned stimulus (US)- a stimulus that unconditionally – naturally and automatically- triggers a response(UR).



Conditioned response(CR) - A learned response to a previously neutral (but now conditioned) stimulus (CS).

Conditioned stimulus(CS) - An originally irrelevant stimulus that, after association with an Unconditioned stimulus (US), comes to trigger a conditioned response (CR).

Acquisition - In classical conditioning, the initial stage, when one links a neutral stimulus and an Unconditioned stimulus so that the neutral stimulus begins triggering the conditioned response. In operant conditioning, the strengthening of a reinforced response. For eg. The tone is linked to salivation.

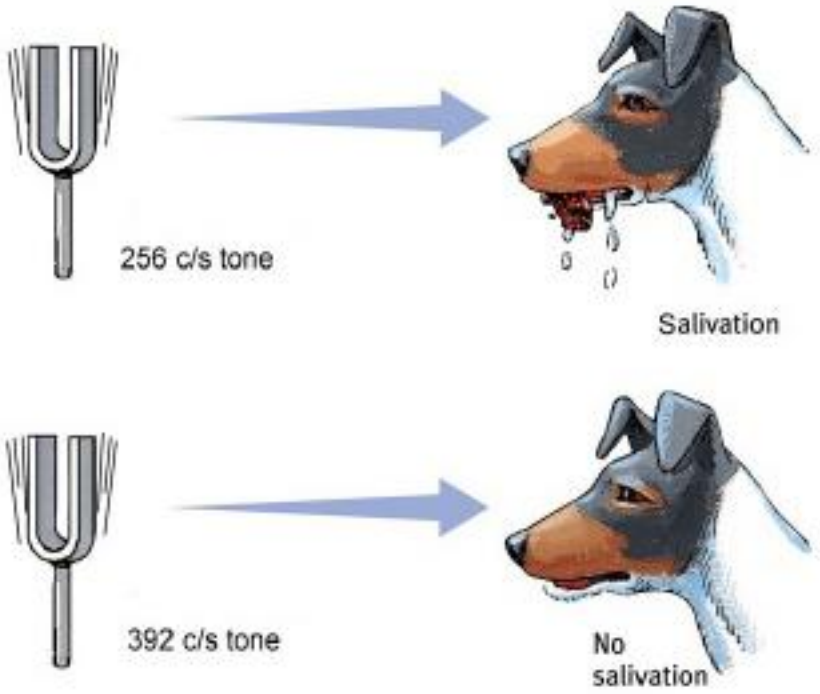


Higher order conditioning – A procedure in which the conditioned stimulus in one conditioning experience is paired with a new neutral stimulus, creating a second (often weaker) conditioned stimulus. For eg. An animal that has learnt that a tone predicts food might then learn that a light predicts the tone and begin responding to the light alone. (Also called second order conditioning)

Extinction – The diminishing of a conditioned response, occurs in classical conditioning when an Unconditioned stimulus does not follow a conditioned stimulus, occurs in operant conditioning when a response is no longer reinforced. Eg. After a few times when the tone is presented not following it with food, the conditioned response of salivation is weakened.

Spontaneous recovery – The re-appearance, after a pause, of an extinguished conditioned response. Eg. When presented again with a tone followed by food the conditioned response of salivating can be recovered.

Generalisation - The tendency to respond likewise to stimuli similar to the CS is called generalisation. Eg. Toddlers taught to fear moving cars also become afraid of moving trucks and motorcycles.



Discrimination – The learned ability to distinguish between a conditioned stimulus (which predicts the US) and other irrelevant stimuli is called discrimination. Eg. Confronted by a guard dog one's heart might race; confronted by a guide dog, it probably will not.

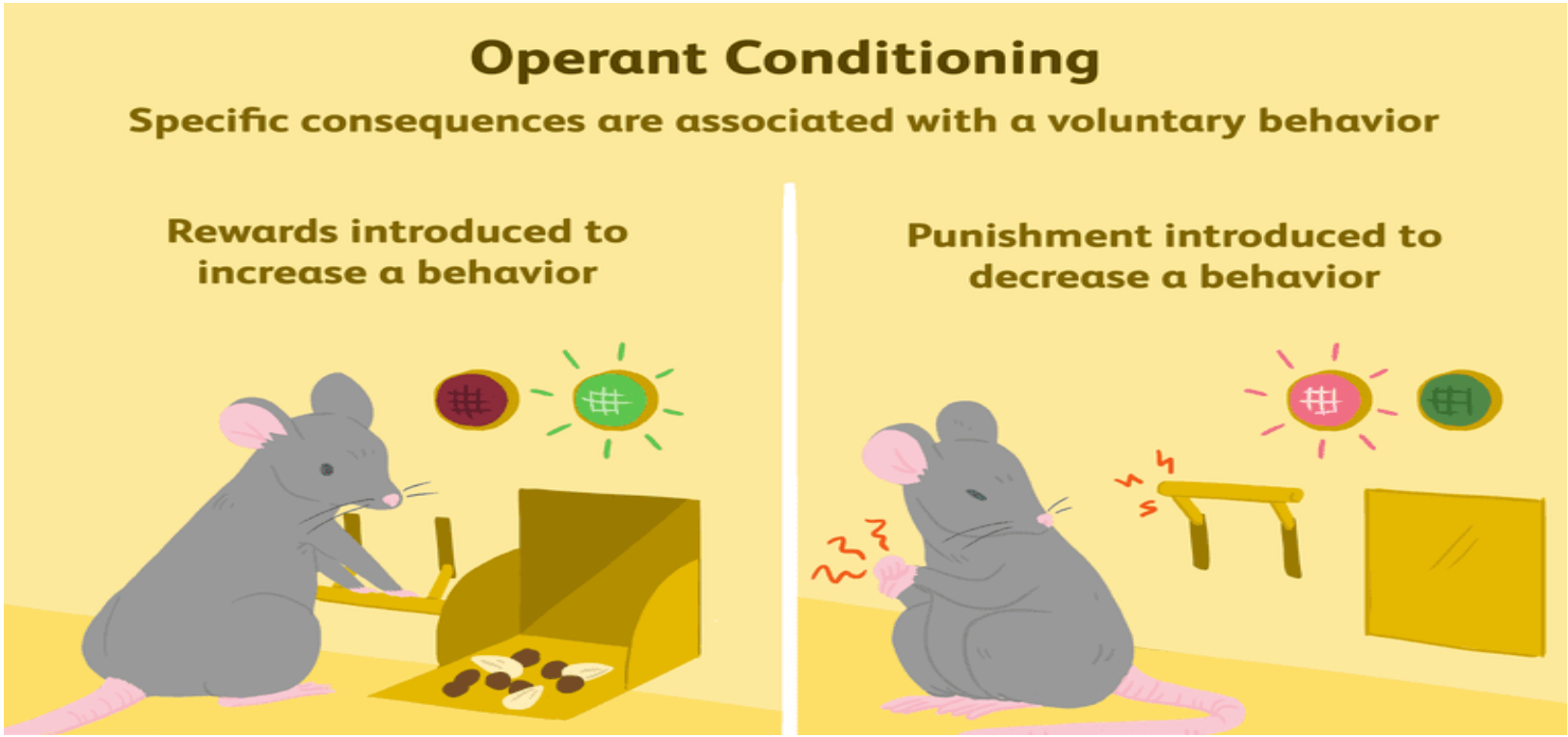
Applications of classical conditioning

1) Former drug users often feel a craving when they are again in the drug -using context - with people or in places they associate with previous highs. Thus, drug counsellors advise addicts to steer clear of people and setting that may trigger these cravings.

2) Also works on the body's disease fighting immune system. When a particular taste accompanies a drug that influences immune responses, the taste by itself may come to produce an immune response.

Operant conditioning

Definition – A type of learning in which behaviour is strengthened if followed by a reinforcer or diminished if followed by a punisher.



Thorndike used a fish reward to entice cats to find their way out of a puzzle box through a series of manoeuvres. The cat's performance tended to improve with successive trials , illustrating Thorndike's law of effect; which states that, behaviours followed by favourable consequences become more likely, and that behaviours followed by unfavourable consequences becomes less likely.

Skinner's Experiment

Skinner designed an operant chamber, popularly known as a Skinner box. The box has a bar (a lever) that an animal presses – or a key (a disc) the animal pecks – to release a reward of food or water. It also has a device that records these responses. This design creates a stage on which rats and others animals act out Skinner's concept of reinforcement : any event that strengthens (increases the frequency of) a preceding response.

Shaping behaviour

1 If you are trying to teach your dog to surf, you first reward the dog for approaching the surfboard.

2 Then you reward the dog for getting on the surfboard and standing there.

3 Then you reward the dog for continuing to stand on the board as the waves move it.

4 As the dog learns what behavior is being reinforced, it eventually learns to produce the desired behavior: surfing!

Shaping – An operant conditioning procedure in which reinforcers guide behaviour toward closer and closer approximations of the desired behaviour.

Operant conditioning term	Description	Examples
Positive reinforcement	Add a desirable stimulus	Pet a dog that comes when you call it; pay the person who paints your house.
Negative reinforcement	Remove a aversive stimulus	Take painkillers to end pain; fastening seat belt to end loud beeping.

Types of reinforces

Primary reinforcers – An innately reinforcing stimulus, such as one that satisfies a biological need.

Secondary reinforcers – (conditioned reinforcer) a stimulus that gains it's reinforcing power through its association with a primary reinforcer.

Immediate reinforcers – If food presented immediately then response strengthened, if delayed no behaviour learnt

Delayed reinforcers – unlike rats, humans respond to delayed reinforcer; eg. The paycheck at the end of the week, good grade at the end of the semester etc.


REINFORCEMENT
PUNISHMENT

Reinforcement schedules

Definition – A pattern that defines how often a desired response will be reinforced.

1) Fixed -ratio schedule : In operant conditioning, a reinforcement schedule that reinforces a response only after a specified number of responses.

2) Variable – ratio schedule : Reinforces a response after an unpredictable number of responses.

3) Fixed – interval schedule : Reinforces a response only after a specified time has elapsed.

4) Variable – interval schedule : Reinforces a response at unpredictable time intervals.

Punishment

An event that tends to decrease the behaviour that it follows.

Type of Punisher	Description	Possible Examples
Positive Punishment	Administer an aversive stimulus	Spray water on a barking dog; give a traffic ticket for speeding.
Negative Punishment	Withdraw a rewarding stimulus	Take away a teen's driving privileges; revoke a library card for non payment of fines.

Principles of Punishment

1) Punished behaviour is suppressed not forgotten.
If the parents swats the child for his swearing, the behaviour might stop from immediate reoccurrence but it is not completely eliminated.

2) Punishment teaches discrimination among situations.
When Punished by a parent the child may learn it's not okay to swear around the house but otherwise it's acceptable.

3) Punishment can teach fear.
A punished child may associate fear not only with the undesirable behaviour but also with the person who delivered the punishment or the place it occurred.

4) Physical punishment may increase aggression by modeling aggression as a way to cope with problems.
Studies find that spanked children are at increased risk of aggression.

Application of Operant conditioning

At School; Computer assisted learning:
Computers have helped realize Skinner's goal of individually paced instruction with immediate feedback.

In Sports; The key to shaping behaviour in athletic performance, as elsewhere, is first reinforcing small successes and then gradually increasing the challenge.

Comparison of Classical and Operant Conditioning

	Classical conditioning	Operant conditioning
Basic idea	Organism associates events.	Organism associates behaviour and resulting events.
Response	Involuntary, automatic.	Voluntary, operates on environment.
Acquisition	Associating events, NS is paired with US and becomes CS.	Associating response with a consequence (reinforced or a punisher)
Extinction	CR decreases when CS us repeatedly presented alone.	Responding decreases when reinforcement stops.
Spontaneous recovery	The reappearance, after a rest period, of an extinguished CR.	The reappearance, after a rest period, of an extinguished response.
Generalization	The tendency to respond to stimuli similar to the CS.	Organism's response to similar stimuli is also reinforced.
Discrimination	The learned ability to distinguish between a CS and other stimuli that do not signal a US.	Organism learns that certain responses, but not others, will be reinforced.

Learning by Observation

•Humans learn without direct experience, by watching and imitating others. For ex. We learn our native languages and various other specific behaviours by observing and imitating others, a process called Modeling.

•The BOBO DOLL experiment by Albert Bandura -

Pre-school children saw an adult becoming violent with the Bobo doll in an experimental setup, after which they too learnt the observed violent behaviour. Another group which was not exposed to the adult model did not show any significant change.

Bandura suggests that – by watching a model, people experience vicarious reinforcement and vicarious punishment and learn to anticipate a behaviour's consequences in situations like those we are observing.

Mirrors and Imitation in the Brain

Mirror Neurons provide a neural basis for everyday imitation and observation learning. For ex. When a monkey grapes, holds or tears something, these neurons fire. And they like wise fire when the monkey observes another doing so. When one monkey sees, its neurons mirror what another monkey does.

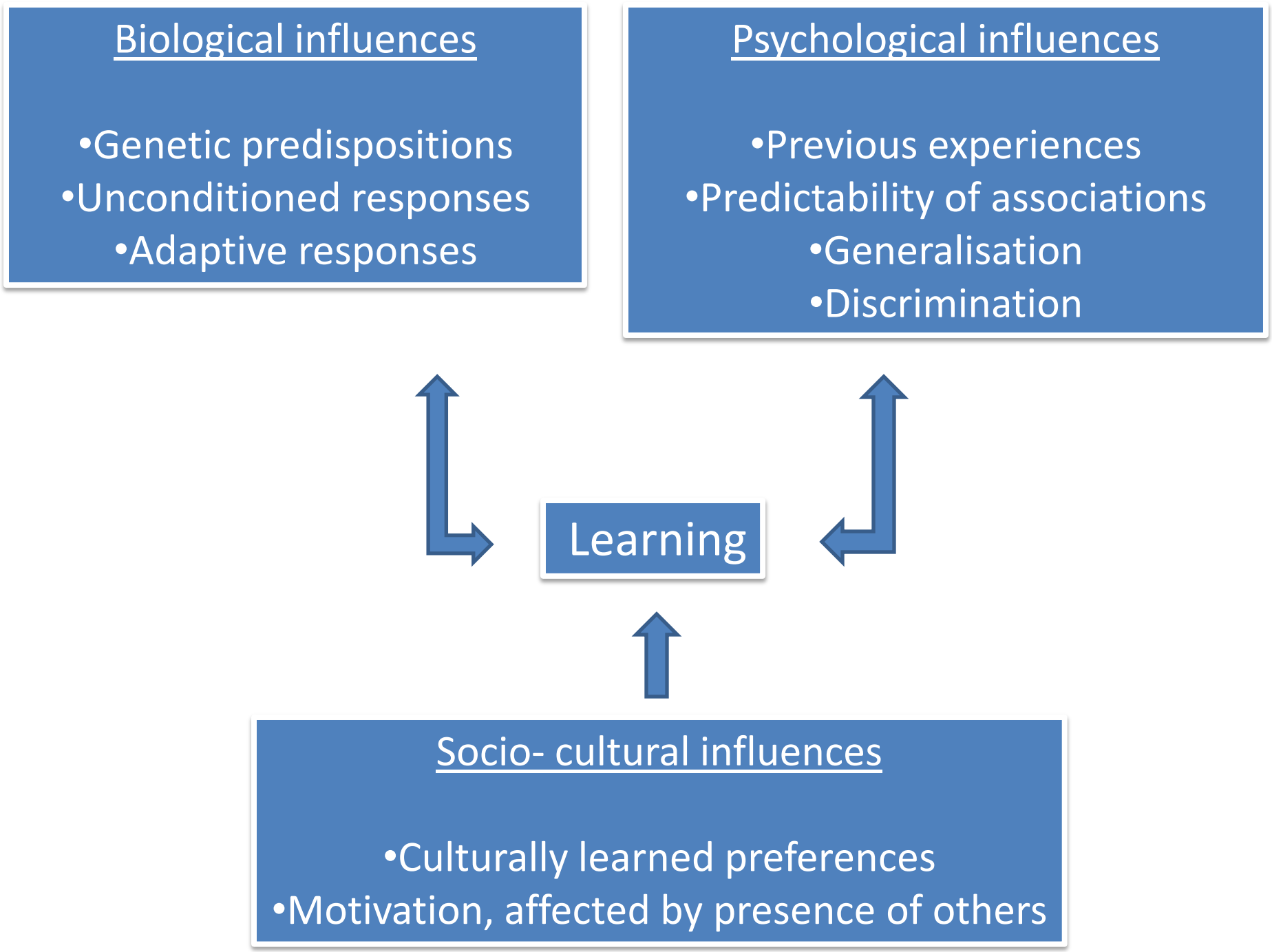
Application of Observational learning

- Pro-social Effects

Many business organizations effectively use behavior modeling to help new employees learn communications, sales, and customer service skills. Trainees get these skills faster when they are able to observe the skills being modeled effectively by experienced workers (or actors simulating them)

- Antisocial Effects

Abusive parents might have aggressive children, and many men who beat their wives had wife battering fathers.


Biological influences
•Genetic predispositions
•Unconditioned responses
•Adaptive responses
Psychological influences
•Previous experiences
•Predictability of associations
•Generalisation
•Discrimination
Learning
Socio- cultural influences
•Culturally learned preferences
•Motivation, affected by presence of others

LETS LEARN MORE...