



THEORIES OF LEARNING AND THEIR CLINICAL RELEVANCE

CONTENTS

❧ *DEFINITION*

❧ *CLASSICAL CONDITIONING*

❧ *OPERANT CONDITIONING*

❧ *SOCIAL LEARNING*

❧ *CONCLUSION*

DEFINITION

- ∞ **LEARNING**: Relatively permanent **change in behavior and knowledge resulting from repeated practice**, both the environment and the behavior interact to produce the learned change.
- ∞ **CONDITIONING**: That process in which an ineffective object or situation becomes so much effective that it makes hidden response apparent.

LEARNING THEORIES

- ✧ Classical conditioning
- ✧ Operant conditioning
- ✧ Social learning

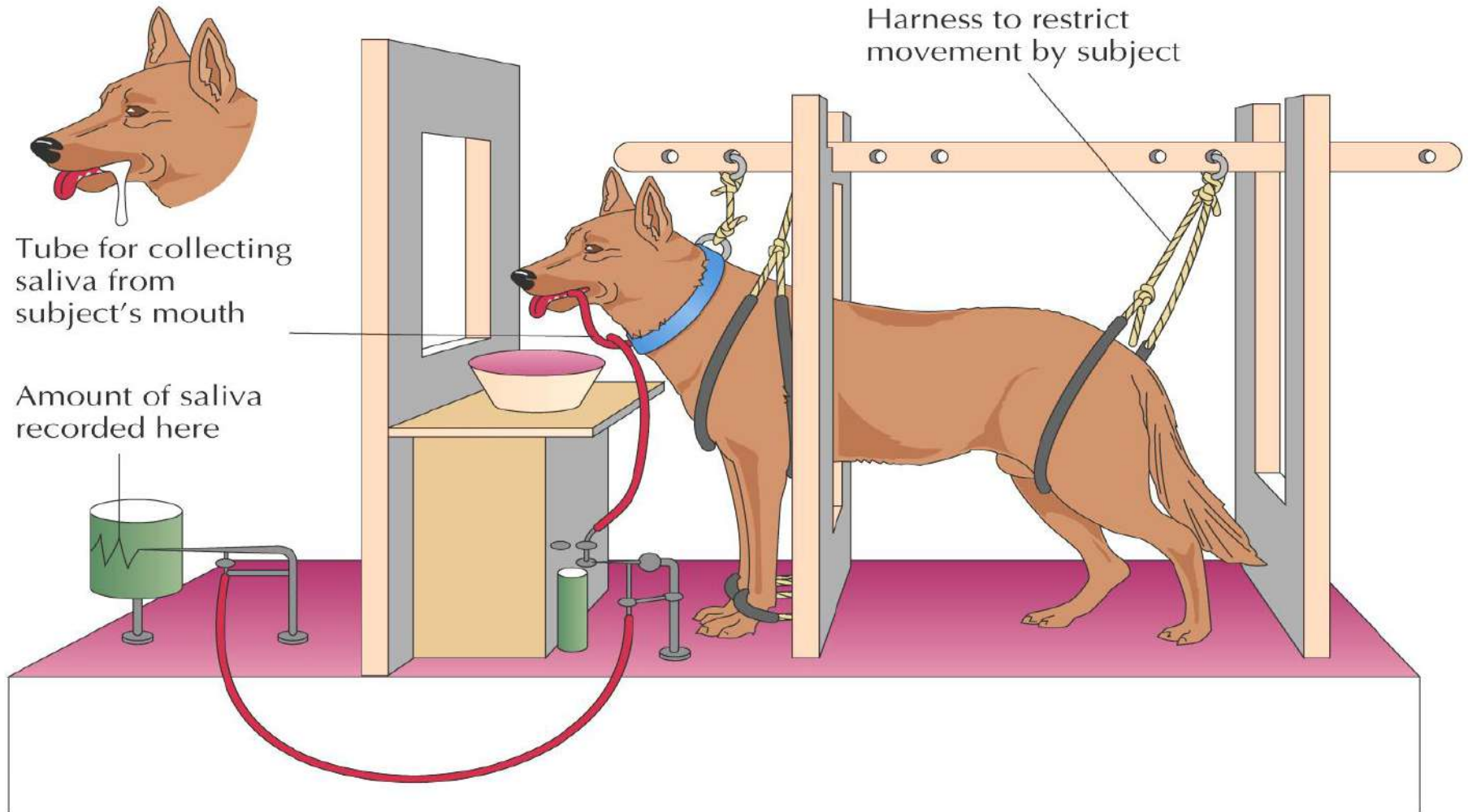
CLASSICAL CONDITIONING

- ✧ Classical conditioning is a type of learning in which a stimulus acquires the capacity to evoke a response, that was originally evoked by another stimulus.
- ✧ First described in 1900 by Ivan Pavlov, also called Pavlovian conditioning.

IVAN PAVLOV -

- ✧ Russian physiologist (1849-1936)
- ✧ Gave classical conditioning theory
- ✧ Won Nobel prize in 1904 for his discovery in digestive system.
- ✧ Classically conditioned dogs using the salivary reflex.

Pavlov's Experiment



At first,

Followed by

Food

Automatically elicits



Conditioned stimulus (CS)

Unconditioned stimulus (UCS)

Unconditioned response (UCR)

After some number of repetitions,



Conditioned stimulus (CS)

Conditioned response (CR)

Process of classical conditioning

∞ *Before conditioning*

The unconditioned stimulus → unconditioned response

The conditioned stimulus → no response

Bell → no response
(CS)

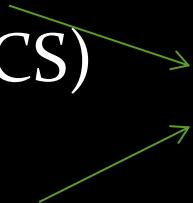
Meat powder → response
(US) salivation

⌘ *During conditioning*

Presentation of bell (CS)

Presentation of food (UCS)
(meat powder)

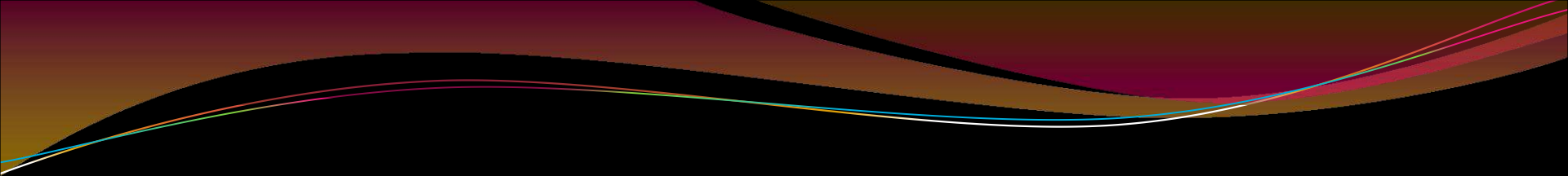
salivation (UCR)



⌘ *After conditioning*

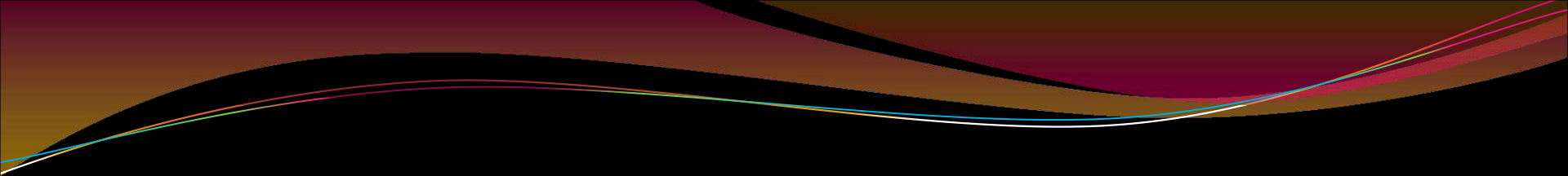
Presentation of bell alone (CS)
salivation (CR)





∞ The conditioned stimulus (CS) is a previously neutral stimulus that has, through conditioning, acquired the capacity to evoke a conditioned response.

∞ The conditioned response (CR) is a learned reaction to a conditioned stimulus that occurs because of previous conditioning.

- 
- ❧ The unconditioned stimulus (US) is a stimulus that evokes an unconditioned response without previous conditioning.
 - ❧ The unconditioned response (UR) is an unlearned reaction to an unconditioned stimulus that occurs without previous conditioning.

Key features of classical conditioning

∞ EXTINCTION

Once the conditioned response has been established presentation of CS alone without the UCS leads to gradual disappearance of the CR .

∞ SPONTANEOUS RECOVERY

If CS is reintroduced after extinction has been produced , the CR reappears but the response is weak and fragile

∞ GENERALIZATION

Refers to tendency to respond to stimuli that are similar to the original CS

∞ DISCRIMINATION

When an organism that has learned a response to specific stimulus does not respond in the same way to new stimuli that are similar to the original stimulus

∞ HIGH ORDER CONDITIONING

After classical conditioning has taken place, the CS can be paired with second CS and after series of trial second CS acquired the conditioning property of US

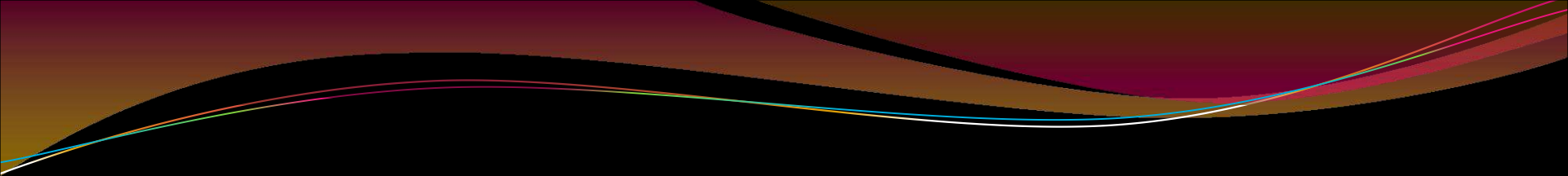
∞ COUNTER CONDITIONING

If established CS is paired with a new CS which elicit the new response that is incompatible with the with old one ,leads to the suppression of original CR.

Conditioning in anxiety disorders

- ✧ Classical fear conditioning can contribute to phobias (in which specific objects may be associated with a traumatic US), as well as other anxiety disorders, such as panic disorder and posttraumatic stress disorder (PTSD).
- ✧ In panic disorder, people who have unexpected panic attacks can become anxious about having another one.
- ✧ In this case, the panic attack (the US or UR) may condition anxiety to the external situation in which it occurs (e.g., a crowded bus)

- ✧ also internal (“interoceptive”) CSs created by early symptoms of the attack (e.g., dizziness or a sudden pounding of the heart).
- ✧ These CSs may then evoke anxiety or panic responses.
- ✧ Panic disorder may begin because external cues associated with panic can arouse anxiety, which may then exacerbate the next unconditional panic attack and/or panic response elicited by an interoceptive CS.

- 
- ❧ Treatment of substance abuse: Cue exposure treatment for alcoholic persons and drug addicts is based on the principle of extinction—the procedure of presenting the conditioned stimulus in the absence of the unconditioned stimulus.
 - ❧ Doing so results in the elimination of the conditioned response when the conditioned stimulus no longer predicts its occurrence.
 - ❧ Thus patients with alcohol dependence are presented with alcohol-related cues such as the sight and the smell of alcohol, which reliably elicit craving, without being allowed to drink alcohol (the unconditioned stimulus).

Application of classical conditioning

- ∞ Flooding
- ∞ Aversion therapy
- ∞ Systemic desensitization

FLOODING

- ✧ Is an exposure therapy that utilizes the extinction process and reduce anxiety.
- ✧ In flooding patient is exposed to fear producing stimuli.
- ✧ Flooding is accompanied by response prevention .
- ✧ Over the time anxious responses are reduced .
- ✧ Flooding can be carried out in vivo or in imagery.

AVERSION THERAPY

- ✧ It involves pairing of an unpleasant or painful stimulus with the target behavior
- ✧ The technique has been employed mainly with substance abuse
- ✧ Smoking is paired with injection which produce nausea and vomiting.

SYSTEMIC DESENSITISATION

- ⌘ Developed by Joseph Wolpe (1958) for the treatment of phobia.
- ⌘ The mechanism underlying it is counter conditioning.
- ⌘ It involves creating a hierarchy.
- ⌘ Progressive deep muscle relaxation is taught.
- ⌘ A state of relaxation is then paired with the presentation of the feared object in gradual fashion using imagery

OPERANT CONDITIONING

- ✧ It is form of learning in which response is controlled by their consequences.
- ✧ First studied by Edward Thorndike
 - law of effect theory, proposed that successful responses, those producing satisfying consequences, were "stamped in" by the experience and thus occurred more frequently.
- ✧ He called this learning as instrumental learning

- ✧ B.F. Skinner elaborated the Law of effect theory .
- ✧ Coined the term Operant .
- ✧ Operant is term used to describe a mechanism by behavior operates on environment
- ✧ In this model behavior is not elicited but occur independently & environment influences whether the behavior is continued or stopped



✧ In his experiment he demonstrated that organisms tend to repeat those response that are followed by favorable consequences

✧ Gave the concept of
Reinforcement
Punishment

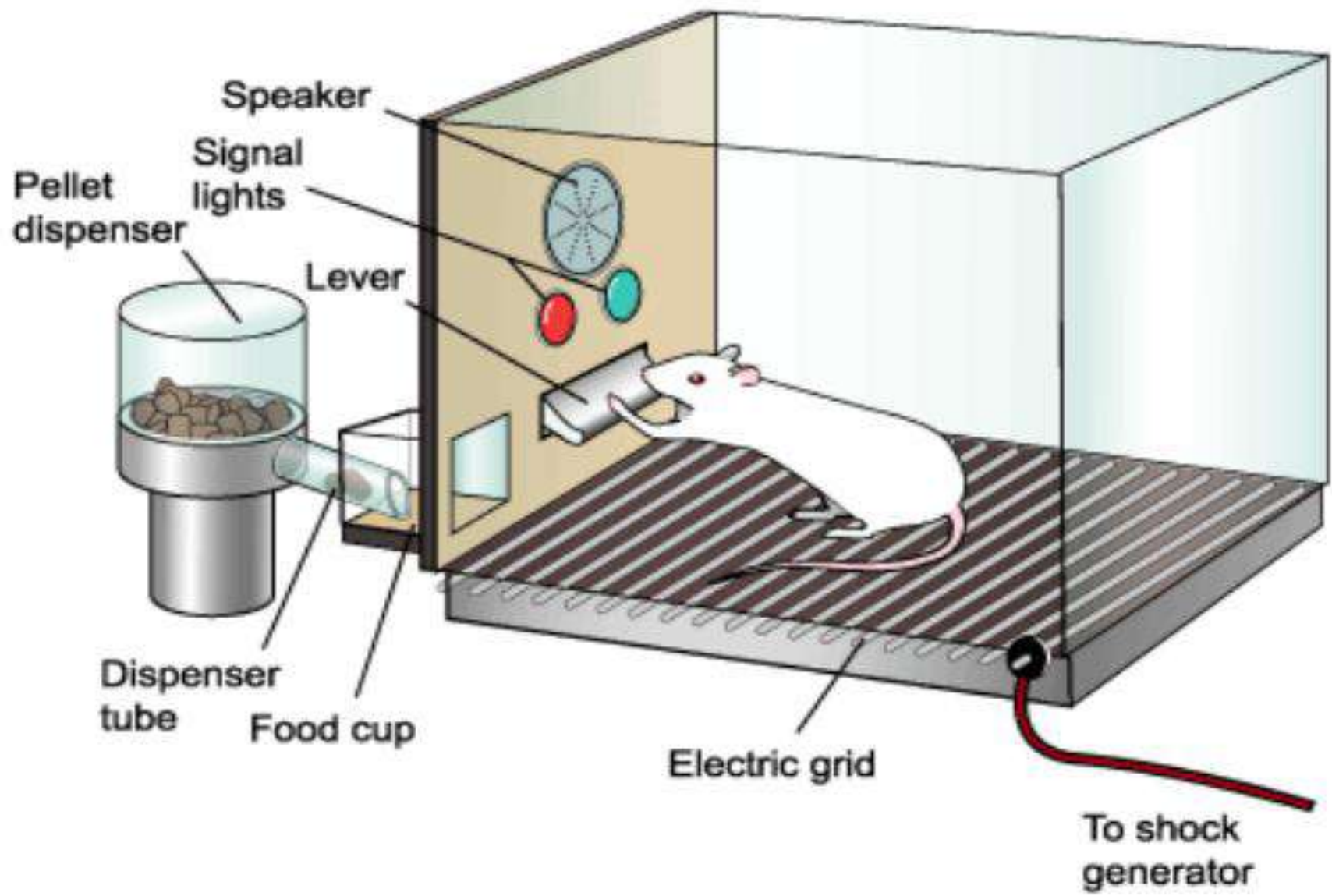
B. F. SKINNER

☞ 1904- 1990

☞ American behaviorist.

☞ Devised a chamber known as Skinner box to study –

☞ Effects of various reinforcement on behavior of animals.



REINFORCEMENT

∞ Process which increases the probability of preceding response.

∞ Two types of reinforcement

Positive reinforcement: strengthen a response by presenting a positive stimulus after a response

Negative reinforcement: strengthens a response by removing an aversive stimulus after a response



⌘ Negative reinforcement occur through

⌘ Postponement of aversive stimuli – *avoidance conditioning*

⌘ Removal of unpleasant stimulus- *escape conditioning*

∞ **REINFORCERS**- Stimulus that increases the probability of behavior that precedes it.

∞ Types Of Reinforcers

PRIMARY REINFORCERS- satisfy biological needs and are inherently rewarding eg. Food and water, present from birth need no conditioning.

SECONDARY REINFORCERS- acquire reinforcing qualities by being associated with primary reinforcers. Eg money, good grades

SCHEDULES OF REINFORCEMENT

Timing is crucial for reinforcement.

Strongest when there is no delay

∞ Continuous reinforcement

∞ Partial reinforcement

1. Fixed ratio
2. Variable ratio
3. Fixed interval schedules
4. Variable interval schedules

FIXED-INTERVAL SCHEDULES: reinforce the first response after a fixed-time interval has elapsed

❧ **FIXED-RATIO SCHEDULES**: reinforce a response after a specified number of non reinforced responses

❧ **VARIABLE-INTERVAL SCHEDULES**: reinforce the first response after a variable-time interval has elapsed

❧ **VARIABLE-RATIO SCHEDULES**: reinforce a response after a variable number of nonreinforced responses

Accidental reinforcement

- ❧ Superstitious behavior: learned because it happened to be followed by a reinforcer, even though this behavior was not the cause of the reinforcer.
- ❧ Instances of accidental reinforcement triggering superstitious behavior is common among people

Punishment

- ✧ The process by which a consequence decreases the probability of the behavior that it follows.
- ✧ To be effective, punishment should be prompt, consistent, explained, nonphysical, and just severe enough to have an impact.

Reinforcement and punishment



Stimulus

Applied (+)

Withdrawn (-)

*Increased
(Reinforcement)*

Positive Reinforcement
Giving a child dessert for eating her vegetables.

Negative Reinforcement
Allowing a child to leave the table for finishing her vegetables.

Behavior

*Decreased
(Punishment)*

Positive Punishment
Scolding a child for disrupting class.

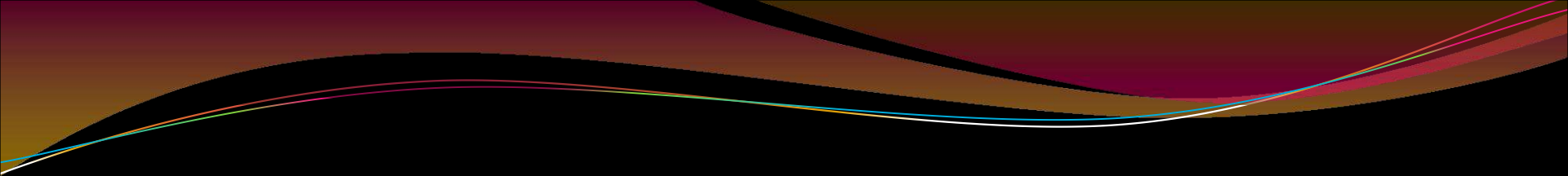
Negative Punishment
Putting a child in "time out" or making her miss recess for disrupting class.

Application of operant conditioning

- ✧ Token economy
- ✧ Star charts
- ✧ Punishment techniques

TOKEN ECONOMY AND STAR CHARTS

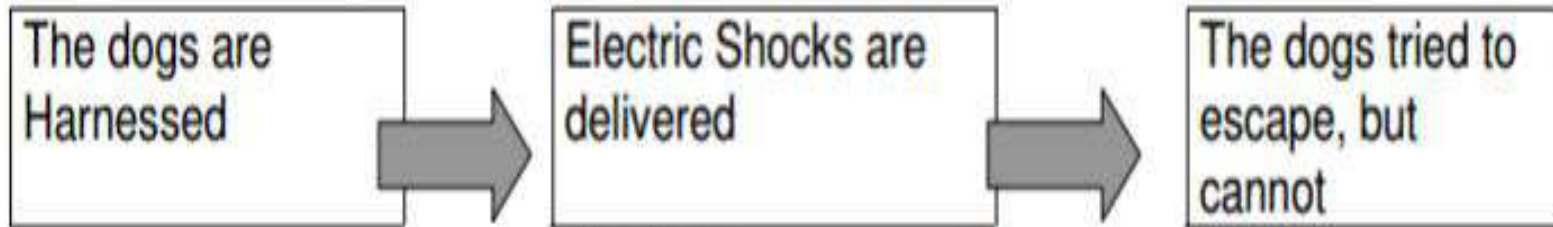
- ⌘ Was introduced by Ayllon and Arzin(1968)
- ⌘ To modify patient behavior in psychiatric ward.
- ⌘ Based on the systematic positive reinforcement of target behavior.

- 
- ❧ Token economy: In this institutionalised patients are given token(desirable items- extra time, tea, eatables) for socially constructive behavior, and are withheld when unwanted behavior is exhibited.
 - ❧ Extinction: Weaken undesired behavior by ignoring it. E.g., A mother ignoring a whining child, or a teacher ignoring a student speaking out of turn

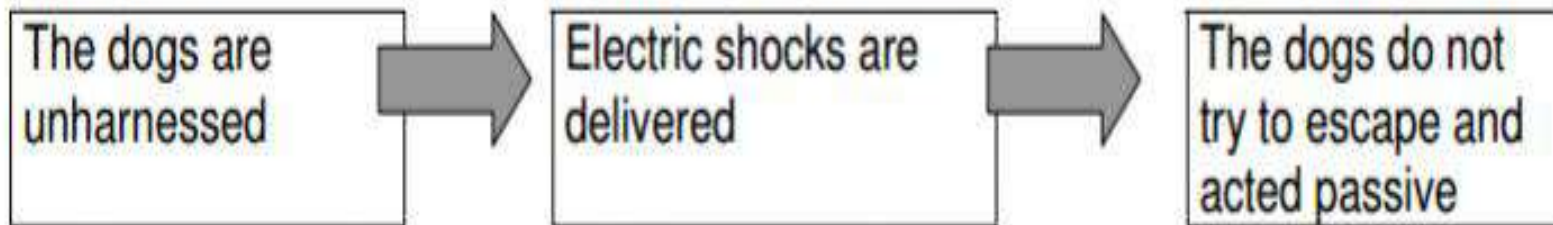
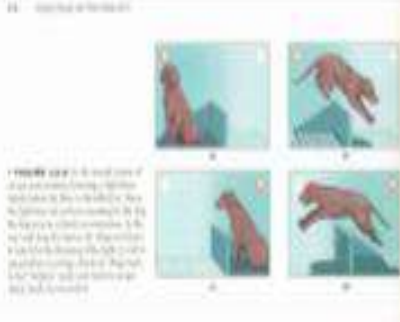
LEARNED HELPLESSNESS

- ✧ Given by Martin Seligman.
- ✧ Concept accidentally discovered while studying about operant conditioning.
- ✧ It is a phenomenon in which repeated exposure to inescapable, uncomfortable or uncontrollable aversive events produce passive behavior.

Learned Helplessness: Martin Seligman and the Dogs:



Then...



Dogs don't try to escape an adverse condition (even when they can) because they have learned in the past that any attempt doesn't help.

Depression and learned helplessness

- ✧ Association of depression and learned helplessness lies in the neurobiological aspect although exact mechanism is not known.
- ✧ Researches have shown that increased serotonin activity in dorsal raphe nucleus plays critical role in learned helplessness

BELL AND PAD TECHNIQUE

- ✧ Effective in the treatment of nocturnal enuresis.
- ✧ The primary behavioral intervention is the bell-and-pad method of conditioning.
- ✧ A pad is placed on the bed, with a wire running to a bell.
- ✧ When the child wets, the moisture completes a circuit in the pad, ringing the bell and waking the child.
- ✧ With repeated use, the child learns to awaken before wetting occurs.

Differences

| <i>Classical conditioning</i> | <i>Operant conditioning</i> |
|--|---|
| <i>Given by Ivan Pavlov</i> | <i>Given by B. F. Skinner</i> |
| <i>Cage without a lever was used for the study.</i> | <i>Cage with a lever was used in the study.</i> |
| <i>Unconditioned and conditioned stimuli are presented to the organism</i> | <i>Reinforcement and punishment are produced by the organism's behavior</i> |
| <i>Behavior that is involuntary eg blinking of eyes salivation knee jerks.</i> | <i>Behavior that is voluntary eg actions thoughts.</i> |
| <i>In absence of key stimuli the behavior does not occur.</i> | <i>In absence of specific stimuli the behavior does occur.</i> |

Classical conditioning

Those events elicit the behavior that is they directly evoke it.

Stimuli type of conditioning

Time interval between CS and UCS is less, conditioning is established earlier. No reinforcement was used

Operant conditioning

Those events control the behavior that is they determine how often the organism emits it.

Response type of conditioning

CS and UCS conditioning is established because Reinforcement is used.

SOCIAL LEARNING

- ✧ The social learning theory proposed by Albert Bandura has become perhaps the most influential theory of learning and development.
- ✧ While rooted in many of the basic concepts of traditional learning theory, Bandura believed that direct reinforcement could not account for all types of learning.
- ✧ Social learning theory relies on role modeling, identification, and human interactions.

❧ *People can learn by observing the behavior of others and the outcomes of those behaviors.*

❧ Bandura identified three basic models of **observational learning**:

❧ A live model, which involves an actual individual demonstrating or acting out a behavior.

❧ A verbal instructional model, which involves descriptions and explanations of a behavior.

❧ A symbolic model, which involves real or fictional characters displaying behaviors in books, films, television programs, or online media.

CONCLUSION

⌘ **Classical conditioning** – *learning by association*

⌘ **Operant conditioning** – *learning by reinforcement and punishment*

⌘ **Social learning** – *learning through observation*

⌘ Most behavior is learned behavior, for animals as well as human beings. If behavior can be learned, it can also be unlearned, so long as the right steps are followed and the right reinforcements or punishments are applied.

REFERENCES

- ❧ KAPLAN & SADOCK'S COMPREHENSIVE TEXTBOOK OF PSYCHIATRY, 9 TH EDN
- ❧ KAPLAN & SADOCK'S SYNOPSIS OF PSYCHIATRY 10 TH ED.
- ❧ INTERNET



THANK YOU