Cheat Sheet: Learning

Essential Concepts

Learning and Classical Conditioning

- Instincts and reflexes are innate behaviors—they occur naturally and do not involve learning. In contrast, learning is a change in behavior or knowledge that results from experience.
- There are three main types of learning: classical conditioning, operant conditioning, and observational learning. Both classical and operant conditioning are forms of associative learning where associations are made between events that occur together. Observational learning is just as it sounds: learning by observing others.
- Pavlov's pioneering work with dogs contributed greatly to what we know about learning. His experiments explored the type of associative learning we now call classical conditioning.
- In classical conditioning, organisms learn to associate events that repeatedly happen together, and researchers study how a reflexive response to a stimulus can be mapped to a different stimulus—by training an association between the two stimuli. Pavlov's experiments show how stimulus-response bonds are formed.

Processes in Classical Conditioning

- During the acquisition phase of classical conditioning, an organism learns to associate a neutral stimulus with an unconditioned stimulus, leading to the development of a conditioned response.
- Extinction occurs when the conditioned stimulus is repeatedly presented without the unconditioned stimulus, resulting in a decrease in the conditioned response.
- Spontaneous recovery refers to the reemergence of the conditioned response after a rest period. Stimulus discrimination involves responding differently to similar stimuli, while stimulus generalization occurs when the conditioned response is elicited by stimuli that are similar to the conditioned stimulus.

- Watson, the founder of behaviorism, was greatly influenced by Pavlov's work. He tested humans by conditioning fear in an infant known as Little Albert. His findings suggest that classical conditioning can explain how some fears develop.

Operant Conditioning

- Operant conditioning is based on the work of B. F. Skinner. Operant conditioning is a form of learning in which the motivation for a behavior happens after the behavior is demonstrated. An animal or a human receives a consequence after performing a specific behavior.
- The consequence is either a reinforcer or a punisher. All reinforcement (positive or negative) increases the likelihood of a behavioral response. All punishment (positive or negative) decreases the likelihood of a behavioral response.

Reinforcement

- Shaping is a technique used to teach complex behaviors by reinforcing successive approximations of the desired behavior, breaking it down into achievable steps, and gradually reinforcing closer and closer approximations until the target behavior is achieved. It is commonly used in animal training and can also be effective in teaching behaviors to humans, such as children learning to clean their room.
- Reinforcement can be used to promote learning and behavior change in both animals and humans. Primary reinforcers, such as food and water, have innate value, while secondary reinforcers, like praise or tokens, gain their reinforcing qualities by being associated with primary reinforcers.
- Several types of reinforcement schedules are used to reward behavior depending on either a set or variable period of time.
    - Continuous reinforcement involves providing a reinforcer every time a behavior is displayed, making it an effective and quick method for teaching new behaviors.
    - Partial reinforcement involves providing reinforcement intermittently, with various schedules based on fixed or variable criteria such as response number or time intervals.

Other Types of Learning

- Latent learning is a type of learning that is not immediately expressed in behavior and is only demonstrated when there is motivation or a reason to do so, challenging the

principles of behaviorism that emphasized observable responses and immediate reinforcement. It involves the formation of cognitive maps and can be observed in both animals and humans.

- According to Bandura, learning can occur by watching others and then modeling what they do or say. This is known as observational learning.
- There are specific steps in the process of modeling that must be followed if learning is to be successful. These steps include attention, retention, reproduction, and motivation.

Glossary

acquisition

period of initial learning in classical conditioning in which a human or an animal begins to connect a neutral stimulus and an unconditioned stimulus so that the neutral stimulus will begin to elicit the conditioned response

associative learning

form of learning that involves connecting certain stimuli or events that occur together in the environment (classical and operant conditioning)

classical conditioning

learning in which the stimulus or experience occurs before the behavior and then gets paired or associated with the behavior

cognitive map

mental picture of the layout of the environment

conditioned response (CR)

response caused by the conditioned stimulus

conditioned stimulus (CS)

stimulus that elicits a response due to its being paired with an unconditioned stimulus

continuous reinforcement

rewarding a behavior every time it occurs

extinction

decrease in the conditioned response when the unconditioned stimulus is no longer paired with the conditioned stimulus

fixed interval reinforcement schedule

behavior is rewarded after a set amount of time

fixed ratio reinforcement schedule

set number of responses must occur before a behavior is rewarded

habituation

when we learn not to respond to a stimulus that is presented repeatedly without change

higher-order conditioning

(also, second-order conditioning) using a conditioned stimulus to condition a neutral stimulus

instinct

unlearned knowledge, involving complex patterns of behavior; instincts are thought to be more prevalent in lower animals than in humans

latent learning

learning that occurs, but it may not be evident until there is a reason to demonstrate it

law of effect

behavior that is followed by consequences satisfying to the organism will be repeated and behaviors that are followed by unpleasant consequences will be discouraged

learning

change in behavior or knowledge that is the result of experience

model

person who performs a behavior that serves as an example (in observational learning)

negative reinforcement

taking away an undesirable stimulus to increase a behavior

neutral stimulus (NS)

stimulus that does not initially elicit a response

observational learning

type of learning that occurs by watching others

operant conditioning

form of learning in which the stimulus/experience happens after the behavior is demonstrated

positive reinforcement

adding a desirable stimulus to increase a behavior

punishment

implementation of a consequence in order to decrease a behavior

reflex

unlearned, automatic response by an organism to a stimulus in the environment

reinforcement

implementation of a consequence in order to increase a behavior

secondary reinforcer

has no inherent value unto itself and only has reinforcing qualities when linked with something else (e.g., money, gold stars, poker chips)

shaping

rewarding successive approximations toward a target behavior

spontaneous recovery

return of a previously extinguished conditioned response

stimulus discrimination

ability to respond differently to similar stimuli

stimulus generalization

demonstrating the conditioned response to stimuli that are similar to the conditioned stimulus

unconditioned response (UCR)

natural (unlearned) response caused by the unconditioned stimulus

unconditioned stimulus (UCS)

stimulus that elicits a reflexive response

variable interval reinforcement schedule

behavior is rewarded after unpredictable amounts of time have passed

variable ratio reinforcement schedule

number of responses differ before a behavior is rewarded

vicarious punishment

process where the observer sees the model punished, making the observer less likely to imitate the model's behavior

vicarious reinforcement

process where the observer sees the model rewarded, making the observer more likely to imitate the model's behavior