

CHAPTER SEVEN: Learning and Conditioning

STUDY GUIDE

LEARNING OBJECTIVES

- Identify the two types of conditioning shown by behaviorists to explain human behavior.
- List and explain the four components of classical conditioning.
- List and explain the four principles of classical conditioning.
- Compare the traditional and recent views of how associations are formed between unconditioned and conditioned stimuli.
- Describe both the impact of classical conditioning on everyday life and the therapeutic technique of counter conditioning.
- Compare and contrast the principles of operant and classical conditioning.
- List and explain the three types of consequences a response can lead to and distinguish between positive and negative reinforcement and primary and secondary reinforcement.
- Describe shaping, extinction, stimulus generalization and stimulus discrimination in operant conditioning.
- Distinguish between continuous and intermittent schedules of reinforcement and describe the four types of intermittent reinforcement schedules.
- Describe how superstitions might be learned according to operant conditioning.
- List and discuss six limitations of punishment as a way of controlling behavior and state a more effective strategy.
- Distinguish between intrinsic and extrinsic reinforcers, and discuss the effects of extrinsic reinforcers on motivation. Describe how extrinsic reinforcers should be used.
- Explain social-cognitive theories and compare them to conditioning models of learning.

- Compare and contrast cognitive approaches and behavioral approaches.

CHAPTER SEVEN SUMMARY

This chapter explores how we learn to make permanent changes in our behaviors due to experience. You will explore two (2) broad types of learning; conditioning models and social-cognitive models. Both conditioning models suggest that learning is acquired through simple stimulus-response associations without the involvement of mental processes. Classical conditioning explains how we learn involuntary behaviors, such as fears and preferences. Operant conditioning explains how we learn complex behaviors because of favorable or unfavorable consequences of our actions. These consequences can take the form of positive reinforcement, negative reinforcement, or punishment. In addition, when reinforcement is not continuous (intermittent), the schedules of reinforcement may vary (i.e., fixed ratio, variable ratio, fixed interval, variable interval). Biological limitations to conditioning also are discussed. Social-cognitive theories expand behavioral principles to recognize the role that mental processes play in the acquisition of new behaviors. Observational learning and latent learning are two social-cognitive theories of learning.

I. INTRODUCTION TO LEARNING

A. Definitions

1. Learning – any relatively permanent change in behavior that occurs because of experience
2. Behaviorism - the school of psychology that accounts for behavior in terms of observable events, without reference to mental entities
Conditioning - a basic kind of learning that involves associations between environmental stimuli and responses

B. Two types of conditioning: classical and operant

C. Other approaches to learning

1. Social-cognitive learning theories hold that mental processes must be included in theories of human learning
2. Learning is not so much a change in behavior, but a change in knowledge that has the potential for affecting behavior

II. CLASSICAL CONDITIONING - began with the research of Ivan Pavlov

A. New Reflexes from old. Terminology

1. Unconditioned stimulus (US) - thing that elicits an automatic response
2. Unconditioned response (UR) - response that is automatically produced
3. Conditioned stimulus (CS) - when an initially neutral stimulus comes to elicit a conditioned response after being paired with a US
4. Conditioned response (CR) - response that is elicited by a CS
5. Classical conditioning - procedure by which a neutral stimulus is normally paired with a US and the neutral stimulus becomes a CS, which elicits a CR that is similar to the original unlearned one

B. Principles of classical conditioning

1. Extinction - repeating the conditioned stimulus without the stimulus, and the conditioned response disappears
2. Spontaneous recovery
3. Higher-order conditioning - a neutral stimulus can become a conditioned stimulus by being paired with an already established conditioned stimulus
4. Stimulus generalization - after a stimulus becomes a conditioned stimulus for some response, other, similar stimuli may produce the same reaction
5. Stimulus discrimination - different responses are triggered by stimuli that resemble the conditioned stimulus in some way

C. What is learned in classical conditioning?

1. The stimulus to be conditioned should precede the unconditioned stimulus because the CS serves as a signal for the US
2. Many psychologists say that the learner learns information that is more than an association between two stimuli; that the CS predicts the US
3. Organism are information seeker that form a representation of the world

III. CLASSICAL CONDITIONING (REAL LIFE APPLICATIONS).

- A. Learning to like - conditioning positive emotions (e.g., used in advertising)
- B. Learning to fear - conditioning negative emotions
 - 1. Humans biologically primed to learn some fears and tastes more easily than others
 - 2. Phobias (irrational fears) are learned through conditioning and unlearned through counter-conditioning
- C. Reacting to medical treatments may generalize to a range of other stimuli

IV. OPERANT CONDITIONING

- A. Introduction
 - 1. Behavior becomes more or less likely, depending on its consequences; emphasis is on environmental consequences
 - 2. Classical conditioning involves reflexive responses, operant conditioning shapes complex, voluntary responses
- B. The consequences of behavior
 - 1. The sooner a consequence follows a response, the greater its effect
 - 2. Primary and secondary reinforcers and punishers - can be very powerful
 - a. Primary reinforcers satisfy physiological needs
 - b. Primary punishers are inherently unpleasant
 - c. Secondary reinforcers (and punishers) are reinforcing (and punishing) through association with other (primary) reinforcers
 - 3. Positive and negative reinforcers and punishers
 - a. Positive reinforcement - something pleasant follows a response; negative reinforcement - something unpleasant is removed
 - b. Positive punishment - something unpleasant occurs; negative punishment - something pleasant is removed

C. Principles of operant conditioning

1. Extinction - learned response weakens when the reinforcer is removed
2. Spontaneous recovery - the return of a response that has been extinguished
3. Stimulus generalization - a response occurs to stimuli that resemble the stimuli present during the original learning
4. Stimulus discrimination - the ability to distinguish between similar stimuli and responding only to the one that results in the reinforcer
5. Discriminative stimulus signals whether a response will payoff
6. Learning on Schedule - the pattern of delivery of reinforcements
 - a. Partial or intermittent schedules - reinforcing only some responses which can result in learning superstitious behaviors
 - (1) Fixed-ratio schedules
 - (2) Variable-ratio schedules
 - (3) Fixed-interval schedules
 - (4) Variable-interval schedules
 - b. For a response to persist, it should be reinforced intermittently, which will make the response more difficult to extinguish
7. Shaping - gradually reinforcing responses that are more similar to the desired response (successive approximations to the desired response)
8. Biological limits on learning - limitations of genetic predispositions and physical characteristics, instinctive drift

V. OPERANT CONDITIONING (REAL LIFE APPLICATIONS)

- A. General problems - if reinforcers, punishers, and discriminative stimuli in life remain the same, it is difficult to change behaviors
- B. Behavior modification - operant conditioning programs used in real life
- C. The pros and cons of punishment
 - 1. When punishment works - for behaviors that can't be ignored or rewarded; with some criminals (consistency matters more than severity)
 - 2. When punishment fails
 - a. Punishment is often administered inappropriately or mindlessly
 - b. The recipient often responds with anxiety, fear or rage
 - c. Effects can be temporary; may depend on punisher being present
 - d. Most misbehavior is hard to punish immediately
 - e. Punishment conveys little information about desired behavior
 - f. A punishment may be reinforcing because it brings attention
 - 3. Alternatives to punishment - avoid abuse, give information about desirable behavior, try extinction, and reinforce the alternate behaviors
- D. The problem with reward
 - 1. Misuses of reward - rewards must be tied to the desired behavior
 - 2. Why rewards can backfire - people work for intrinsic as well as extrinsic reinforcement and extrinsic reinforcers can interfere with intrinsic motivation

VI. LEARNING AND THE MIND

- A. Latent learning
 - 1. Tolman and Honzik's experiment with latent learning
 - 2. Learning can occur even when there is no immediate response and when there is no obvious reinforcement
- B. Introduction to social-cognitive theories
 - 1. Added higher-level cognitive processes to the idea of how people learn
 - 2. Humans have attitudes, beliefs, and expectations that affect how they acquire information, make decisions, and reason
- C. Learning by observing - called observational learning

1. Vicarious conditioning occurs from observing a model
2. Supported by Bandura's studies with children learning social behaviors
3. The case of media violence

CHAPTER TEN: Memory

STUDY GUIDE

LEARNING OBJECTIVES

- Discuss the reconstructive nature of memory and the implications for legal cases.
- Compare recognition, recall, priming, relearning, and explicit and implicit memory.
- Describe the "three-box model" of memory and explain its components.
- Describe the parallel distributed processing model of memory.
- Discuss the role of sensory memory.
- Describe the processes and limitations of short-term memory (STM).
- Describe the characteristics of long-term memory (LTM), and explain how information is organized.
- Distinguish among procedural, declarative, semantic, and episodic memories.
- Explain the limitations of the three-box model in accounting for the serial position effect.
- Describe techniques for keeping information in short-term memory and for transferring information to long-term memory.
- Summarize current findings about the physiological processes involved in memory.
- List and discuss theories of why forgetting occurs, including childhood amnesia.
- Describe the relationship between a person's "life story" and actual memories.

CHAPTER TEN SUMMARY

This chapter examines the nature of memory. Memory does not record events like a video camera to play in the future. Memories incorporate outside information into one's recollections so that what we recall is a reconstruction of events and not necessarily a memory of them. Memory is tested using recall, retrieval, and relearning methods. There are two prominent models of memory: the information-processing model, which compares memory processes to computer processes, and the parallel-distributed processing model, which states that knowledge is represented as connections among thousands of processing units operating in parallel. The three-box model, an information-processing model, suggests that there are three types of memory: sensory memory, short-term memory, and long-term memory. Psychologists are interested in knowing what kinds of brain changes take place when we store information. Research examines memory and its relationship to neurons, brain structures, and hormones. There are several different theories that explain why we forget. They include decay theory, replacement theory, interference theory, repression, cue-dependent forgetting, and theories about childhood amnesia.

I. RECONSTRUCTING THE PAST

- A. Memory is the capacity to retain and retrieve information
- B. Reconstructing the past - memory is a reconstructive process
- C. The fading flashbulb - memories of dramatic (even positive) events can be inaccurate over time
- D. The conditions of confabulation
 - 1. The person has thought about the imagined event many times
 - 2. The image of the event contains a lot of details
 - 3. The event is easy to imagine
 - 4. The person focuses on his or her emotional reactions to the event

II. MEMORY AND THE POWER OF SUGGESTION

- A. The eyewitness on trial
 - 1. People fill in missing pieces from memories, which can lead to errors
 - 2. Errors especially likely when ethnicity of suspect differs from witness
 - 3. The power of suggestion - way a question is asked or the more often a story is told can influence what and how much is recalled
- B. Children's testimony - children are most suggestible when there is pressure to conform to expectations, and when they want to please the interviewer

III. IN PURSUIT OF MEMORY

A. Measuring memory

1. Explicit memory is conscious recollection
2. Two ways of measuring explicit memory: recall and recognition
3. Implicit memory is unconscious retention in memory

B. Models of memory

1. Three-box model (information-processing)
 - a. Sensory memory - retains information for a second or two
 - b. Short-term memory (STM) - holds limited amount for 30 seconds
 - c. Long- term memory (LTM) - accounts for longer storage
2. Parallel distributed processing (connectionist) model
 - a. Information is processed simultaneously, or in parallel
 - b. Considers knowledge to be connections among thousands of units

IV. THE THREE-BOX MODEL

A. Sensory memory: fleeting impressions

1. Includes separate memory subsystems for each of the senses
2. Pattern recognition compares a stimulus to information already contained in long-term memory; it then goes to short-term memory or it vanishes

B. Short-term memory: memory's scratch pad

1. Holds information up to about 30 seconds as an encoded representation
2. Working memory - holds information retrieved from long-term memory for temporary use
3. The leaky bucket - holds seven (plus or minus two) chunks of information

C. Long-term memory: final destination - capacity is unlimited

1. Organization in long-term memory
 - a. Information is organized by semantic categories
 - b. Network models - contents is a network of interrelated concepts
2. The contents of long-term memory
 - a. Procedural memories - knowing how
 - b. Declarative memories - knowing that
3. From short-term to long-term memory - three-box model has been used to explain the serial position effect

V. THE BIOLOGY OF MEMORY

A. Changes in neurons and synapses

1. In STM, changes within neurons temporarily alter neurotransmitter release
2. LTM changes involve permanent structural changes in the brain

B. Locating memories

1. Areas in frontal lobes very active during short-term memory tasks
2. Formation of declarative memories involve hippocampus
3. Procedural memories involve the cerebellum
4. Different brain involvement for implicit and explicit memory tasks
5. A memory is a cluster of information distributed across areas of the brain

C. Hormones and memory

1. The adrenalin connection - hormones released during stress enhance memory, but high levels interfere with ordinary learning
2. Sweet memories - the effect of these hormones may be due to glucose

VI. HOW WE REMEMBER

A. Effective encoding

1. Some encoding is effortless; some is effortful
2. Rehearsal - review or practice of material while you are learning it
 - a. Maintenance rehearsal- maintains information in STM only
 - b. Elaborative rehearsal - associating new information with stored knowledge
3. Deep processing - processing of meaning

B. Mnemonics - strategies for encoding, storing and retaining information

VII. HOW WE FORGET

- A. The decay theory - memories fade with time; does not apply well to LTM
- B. Replacement - new information wipes out old information
- C. Interference - retroactive interference (new information interferes with old) or proactive interference (old information interferes with new)
- D. Cue-dependent forgetting - forgetting due to lack of retrieval cues
- E. Repression - Freud said painful memories are blocked from consciousness . This is known as “psychogenic amnesia”.

VIII. AUTOBIOGRAPHICAL MEMORIES: OUR PAST

A. Childhood amnesia: the missing years

1. May occur because brain areas involved in formation or storage of events are not well developed until a few years after birth
2. Cognitive explanations have also been offered - lack of a sense of self, differences between early and later cognitive schemas, impoverished encoding, a focus on routine

B. Memory and narrative: the stories of our lives

1. Narratives are a unifying theme to organize the events of our lives
2. Themes serve as a cognitive schema that guides what we remember
3. Reminiscence bump - tendency to recall certain periods and not others

IX. MEMORY AND MYTH

- A. Unreliable memories are those from the first years of life, those that become increasingly unlikely, and those that result from suggestive techniques
- B. Memories are most reliable when there is corroborating evidence, other signs of trauma, and they are recalled without pressure from others