

Chapter 5

Learning

Outline

- I. What Is Learning?
 - A. **Learning** is demonstrated by a relatively permanent change in behavior that occurs as the result of practice or experience.
 1. Learning cannot be observed directly.
 2. Only overt behavior can be measured.
 3. Learned changes are neither fleeting nor cyclical.
 4. Learned changes are due to experience, not maturation or adaptation.
 - B. Conditioning and learning are not technically synonymous, but the most basic types of learning will be called conditioning in this text.
 - C. Organisms can learn maladaptive habits as easily as positive, adaptive ones.
- II. The Basics of Classical Conditioning
 - A. Ivan Pavlov was a Russian physiologist who won a Nobel Prize in 1904 for his study of the processes of digestion.
 1. Pavlov focused on the salivation reflex in dogs.
 2. Every time Pavlov presented food powder to dogs, they would reflexively salivate.
 - B. Pavlov noticed that his dogs began salivating before the food was put in their mouths.
 1. The dogs would salivate at the sight of the food or at the sight of the assistant who delivered the food.
 2. This phenomenon is called classical conditioning.
 - C. **Classical conditioning** is a learning process in which a neutral stimulus is paired with a stimulus that elicits an unconditioned response. After conditioning, the conditioned stimulus alone elicits a conditioned response.
 1. If food powder is presented to a dog, salivation results.
 2. The stimulus (food powder) is an **unconditioned stimulus (UCS)**, which reflexively and reliably elicits a response.
 3. Salivation is an **unconditioned response (UCR)**, which is reliably and reflexively elicited by a stimulus.
 4. A neutral stimulus (such as a tone) produces a minimal response or a response of no particular interest.
 - a. An **orienting reflex** is a simple, unlearned response of attending to a new or unusual stimulus.
 - b. **Habituation** is a form of learning in which an organism comes to ignore a stimulus of little or no consequence.
 5. When the dog learns not to orient toward the tone, the experiment begins.
 6. A **conditioned stimulus (CS)** in classical conditioning is when an originally neutral stimulus (such as a tone) when paired with a UCS (food powder), evokes a new response (salivation).
 - a. Each pairing is called a trial.
 - b. The **conditioned response (CR)** is the learned response (such as salivation in response to a tone) evoked by the CS after conditioning.
 7. The term “conditioned” indicates the learned component of classical conditioning.
 8. “Unconditioned” means that there is no learning involved.

9. The CR and UCR are not identical.
 - a. The CR is usually weaker than the UCR, regardless of the number of pairings.
 - b. It is best to present the CS, followed shortly (within a second or so) by the UCS.
 - c. Pavlovian conditioning is basically a matter of “ding-food-slobber.”

III. Processes and Phenomena of Classical Conditioning

- A. The stage of classical conditioning during which the CS and UCS are paired and the strength of the CR increases is called **acquisition**.
- B. **Extinction** is the process in which the strength of a CR decreases with repeated presentations of the CS alone (without the UCS).
- C. **Spontaneous recovery** occurs after extinction and following a rest interval.
 1. If the CS is then paired with the UCS, the strength of the CR increases and is called relearning.
 2. If the CS is presented without the UCS, the strength of the CR diminishes as it did during extinction.
- D. **Generalization** is a process by which a conditioned response is elicited by stimuli different from, but similar to, the CS.
- E. **Discrimination** learning is the phenomenon in classical conditioning in which an organism learns to make a response to only one CS, but not to other CSs.

IV. The Significance of Classical Conditioning

- A. A significant aspect of classical conditioning is its role in the development of emotional responses to stimuli in the environment.
- B. The case of “Little Albert” provides a good model for the classical conditioning of emotional responses.
 1. The project was conducted by John Watson and Rosalie Rayner at Johns Hopkins.
 2. At first, a white rat was a neutral stimulus” for Albert, eliciting no sign of fear.
 3. As the rat was handed to Albert a very loud noise was made.
 4. A sudden loud noise is an unconditioned stimulus for fear.
 5. After just one (or, perhaps, a few) pairing, Albert showed fear of the rat.
 6. Albert’s mother removed Albert from the experiment before the fear could be counter-conditioned.
 7. Several have questioned the ethics of the Little Albert demonstration.

V. An Application: Treating Fear with Classical Conditioning

- A. Mary Cover Jones (1924) made one of the earliest attempts to apply classical conditioning to the elimination of a fear.
- B. Over 30 years later, a technique called systematic desensitization was introduced by Joseph Wolpe to treat phobic disorders—an intense, irrational fear of an object or event that leads a person to avoid contact with it.
- C. There are three stages of systematic desensitization.
 1. First, the therapist trains the person to relax.
 2. An anxiety hierarchy is constructed, listing in order stimuli that gradually decrease in their ability to elicit anxiety.
 3. The person relaxes, thinks about the least anxious stimulus on the list, and continues to proceed to the next highest, etc.
- D. **Counterconditioning** refers to the process of learning a new response to replace an old one.
 1. A person cannot be relaxed and anxious at the same time.
 2. This process works best for fears or anxieties associated with specific, easily identifiable stimuli.

VI. Classical Conditioning’s Role in Drug Addiction

- A. With continued use of a drug, *tolerance* may develop such that more and more drug is required to achieve the same (desired) effect.

- B. Tolerance may be a biological phenomenon, but it also may be a classically conditioned response.
 1. Aspects of the environment become stimuli that produce a classically-conditioned reaction that leads to tolerance.
 2. In a new environment the same amount of drug—without the conditioned tolerance cues—can lead to overdose.

VII. Can Any Stimulus Serve as a CS?

- A. Although Pavlov thought otherwise, research suggests that one cannot pair just any stimulus with an unconditioned stimulus and expect conditioning to result.
- B. Effective CSs provide information about the environment (e.g., when a bell rings, food is likely to appear).
- C. Some responses are simply more likely to be associated with some stimuli than with others (e.g., pleasant feelings of a vacation with memories of a sunset at the beach).

VIII. Must the CS-UCS Interval Be Brief?

- A. Pavlov thought so, and in most cases a brief interval *is* best
- B. The formation of aversions to certain tastes demonstrates that the interval between the CS and UCS may be hours long rather than seconds.
- C. A related issue illustrates that it is biologically adaptive for an organism to learn based on one encounter not to eat things that make it ill.

IX. The Basics of Operant Conditioning

- A. **Operant conditioning** changes the rate or probability of responses on the basis of the consequences that result from those responses.
- B. Thorndike's **law of effect** claims that responses that lead to a "satisfying state of affairs" tend to be repeated; responses that do not lead to a satisfying state of affairs tend not to be repeated.
- C. As Skinner put it, operant conditioning shows us that behaviors are controlled by their consequences.

X. Demonstrating Operant Conditioning

- A. B.F. Skinner built a special *operant chamber* that some have called a "Skinner box."
 1. In the box, food pellets can be dispensed through a tube into the food cup when a lever or bar is pressed.
 2. The base rate of responding refers to the number of times a rat will press the lever as it is exploring its environment before the food dispenser is activated.
- B. As predicted by Thorndike's law of effect, the rate of the lever pressing will increase when food appears after a lever press.
- C. The learning that occurred was in the rate of the response, not its nature.

XI. The Course of Conditioning

- A. **Shaping** reinforces *successive approximations* of the response you want to condition.
- B. **Acquisition** is the process in operant conditioning in which the rate of a reinforced response increases.
- C. **Extinction** refers to the decrease in the rate of a response as reinforcers are withheld.
- D. The return of an extinguished response following a rest interval is called **spontaneous recovery**.
 1. If reinforcement is withheld, extinction occurs.
 2. If reinforcement is used, reacquisition occurs.

XII. Generalization and Discrimination

- A. **Generalization** is the process in which responses conditioned in the presence of a specific stimulus appear in the presence of other, similar, stimuli.
- B. **Discrimination** training occurs when responses made to appropriate stimuli are reinforced, and responses to inappropriate stimuli are ignored or extinguished.

1. It is largely a matter of *differential reinforcement*.
2. Learning when it is okay to do something and when it is not is an example of discrimination learning.

XIII. Reinforcement

- A. **Reinforcement** is a process that increases the rate, or probability, of the response it follows.
- B. A **reinforcer** is the actual stimulus used in the process of reinforcement that increases the probability or strength of a response
- C. If a stimulus presented after a response increases the strength of that response, then that stimulus is a reinforcer regardless of its nature.
- D. What will or will not be reinforcing is sensitive to individual differences and to cultural influences, and has nothing to do with the intent of the person delivering the stimulus

XIV. Primary and Secondary Reinforcers

- A. A **primary reinforcer** is a stimulus (usually biologically or physiologically based) that increases the rate of a response with no previous experience or learning required.
- B. A **secondary reinforcer** may be referred to as conditioned, acquired, or learned; it increases the rate of a response because of an association with other reinforcers.
 1. Money, praise, high letter grades, and promotions are examples.
 2. Contingency contracting involves a token economy system that provides secondary reinforcers for appropriate behaviors.
 3. Bribery involves contracting to reward someone to do something that both parties view as inappropriate.

XV. Positive and Negative Reinforcers

- A. A **positive reinforcer** is a stimulus given to an organism after a response is made that increases or maintains the rate of response.
- B. A **negative reinforcer** is a stimulus that increases or maintains the rate of a response that precedes its removal.
- C. **Escape conditioning**—learning to get out of an unpleasant or painful situation once in it—is an example of negative reinforcement because the satisfying state of affairs earned by the learner is pain taken away, not a reward given.
- D. **Avoidance conditioning**—learning not to get into an unpleasant or painful situation before it occurs—is also an example of negative reinforcement.
 1. If a signal precedes a shock, an animal will learn to respond to the signal to avoid the shock (a negative reinforcer).
 2. If there is no way to avoid or escape from a painful stimulus an animal may display **learned helplessness** and stop even trying to avoid or escape from it.

XVI. Schedules of Reinforcement.

- A. The procedure of reinforcing each and every response after it occurs is called a **continuous reinforcement (CRF) schedule**.
 1. Earning a reinforcer after each response may reduce the effectiveness of that reinforcer.
 2. Responses acquired under a CRF schedule tend to extinguish very quickly.
- B. A **partial reinforcement schedule** reinforces a response less frequently than every time it occurs.
 1. With a **fixed-ratio schedule (FR)**, one establishes a ratio of reinforcers to responses (e.g., one reinforcer after every five responses).
 2. With a **fixed-interval schedule (FI)**, time is divided into set, fixed intervals, and a reinforcer is delivered when the next response occurs.
 3. With a **variable-ratio schedule (VR)**, one varies the ratio of reinforcers to responses, but maintains a given ratio as an average.
 4. A **variable-interval schedule (VI)** calls for a reinforcer at the first response after a time interval whose length is randomly varied.
 5. These schedules are occasionally called *intermittent schedules of reinforcement*.

- C. The **partial reinforcement effect** refers to the phenomenon that a behavior maintained on a partial schedule of reinforcement is more resistant to extinction than one maintained on CRF.
- D. No matter how they are scheduled, reinforcers should come immediately after the desired response is made.

XVII. Can Any Behavior Be Operantly Conditioned?

- A. With patience, nearly any behavior can be operantly conditioned to change its rate of occurrence.
- B. As the Brelands demonstrated, however, if an animal is trained to do something that is not natural to that animal, its behaviors will revert rather quickly to their normal pattern, a phenomenon called **instinctive drift**.

XVIII. Punishment

- A. Punishment occurs when a stimulus delivered to an organism decreases the rate, or probability, of a response that preceded it.
 - 1. It is delivered after a response has been made with the intention of reducing the rate of the response.
 - 2. Punishment is usually in some way hurtful or painful, either physically or psychologically.
 - 3. The distinction between a punisher and a negative reinforcer is in the timing of the stimulus, whether it is administered or removed, and its effect on behavior.
- B. Noting the effect on behavior is the only way to determine if a response is punishing.
- C. **Punishment** can be an impressive modifier of behavior.
 - 1. To be effective, it should be delivered immediately after the response.
 - 2. It needs to be administered consistently.
 - 3. Punishment may decrease overall behavior levels.
 - 4. When responses are punished, alternatives should be introduced, that is punishing a response conveys no information about what alternative response might be acceptable.
- D. As punishment, **spanking** is physically non-injurious, intended to modify behavior, and is administered with an open hand to the extremities or buttocks.
 - 1. Spanking or hitting a child has several negative consequences, including the fact that it provides a model of aggressive behavior.
 - 2. It is probably best to search for other means of punishing a child.
 - 3. An occasional spanking is not likely to have seriously detrimental effects.

XIX. Cognitive Approaches to Learning

- A. **Cognitive approaches** to learning accent changes that occur in an organism's system of mental representations of itself and its world.
- B. Cognitive learning involves the acquisition of knowledge or understanding and need not be reflected in behavior.

XX. Latent Learning and Cognitive Maps

- A. In experiments with rats, Tolman and Honzik demonstrated latent learning.
 - 1. **Latent learning** is hidden learning that is not demonstrated in performance until it is reinforced.
 - 2. Although rats learned their ways around a complicated maze, they made no effort to move through it efficiently until there was reason (a food reward) to do so.
 - 3. Tolman believed that the rats formed a **cognitive map** or mental representation of their physical environment.
- B. Humans and other animals demonstrate latent learning and the formation of cognitive maps.

XXI. Social Learning and Modeling

- A. Albert Bandura's **social learning theory** refers to the idea that learning often takes place through observation and imitation of models.
 - 1. It is social because it is learned from others.

2. It is cognitive because what is learned through observations or modeling are changes in cognitions and may never be expressed in behavior.
- B. There are three possible outcomes associated with learning from the behavior of others.
 1. A person can learn a new behavior.
 2. A person can inhibit a behavior if the model is seen punished for it.
 3. A person can disinhibit a behavior after watching a model, thus performing behaviors that had previously been inhibited (reduced in frequency of occurrence).
 - C. The classic study of observational learning was reported in 1963 by Bandura, Ross, and Ross.
 1. This study involved children observing an adult model behave aggressively toward a plastic “Bobo” doll toy.
 2. The children who had seen the aggressive behaviors of the model were more aggressive in their play than were the children in the control group who did not have the observational experience.
 - D. **Vicarious reinforcement** leads to acquisition of new behaviors or disinhibition of behavior.
 - E. **Vicarious punishment** leads to inhibition of behavior.
 - F. There is now little doubt that children can and do acquire aggressive/violent behaviors simply by watching television and playing video games.
 - G. Learning through observation and imitation is a common form of human learning.

XXII. SPOTLIGHT: Ethnic Differences in Learning Styles

- A. There are many ways of describing learning styles.
 1. They may be defined as unique learning preferences for perceiving, conceptualizing and problem-solving that students bring to the classroom.
 2. Once established, learning styles are quite stable.
- B. Your text uses a system of learning styles that has three dimensions
 1. *Perceptual modalities* focus on how students process information through their senses.
 2. *Information processing* focuses on how students organize, interpret, and retain information.
 3. *Personality patterns* involve basic beliefs, values, feelings—those aspects of self that the student brings to class.
- C. If only in the most general terms, there seem to be differences in preferences of learning styles that vary as a function of ethnic group membership.
 1. Caucasian American students of European ancestry tend to be *field-independent* learners, while Hispanic Americans, Native Americans, and African Americans tend to be *field-dependent*.
 2. Hispanic students are field-dependent, group-oriented, cooperative learners, with needs for feedback and concrete—as opposed to abstract learning experiences.
 3. African American students prefer visually presented materials and tend to be holistic, doing well in cooperative, group-learning activities.
 4. Asian American students tend use logical, sequential reasoning, like to work on their own and tend to base decisions more on reasoning than feelings.
 5. Native American students have not been studied in much detail, but they seem to prefer a holistic approach to learning, learn well from examples and demonstrations, and spend much less time talking than watching and listening.

Practice Test Questions

Multiple Choice

- To say that learning is “demonstrated” by changes in behavior is to suggest that
 - a. if we cannot remember something, we did not learn it in the first place.
 - b. some changes in behavior do not last very long, or are cyclical.
 - c. the only way we can be sure if people have learned anything is to ask them if they have.
 - d. learning is an internal process inferred from performance.
- As Pavlov noted, when a dog is first brought to the laboratory and stood on a table, and a bell is sounded, the first thing that we will notice is
 - a. an orienting reflex.
 - b. an unconditioned stimulus.
 - c. habituation or acclimation.
 - d. no response from the dog.
- In the Pavlovian example of classical conditioning, the UCR was _____ and the CR was _____.
 - a. a bell; salivation
 - b. food powder; salivation
 - c. a bell; food powder
 - d. salivation; salivation
- If we were to demonstrate spontaneous recovery in a classical conditioning procedure, it would occur following extinction and
 - a. the introduction of a new stimulus, similar to the CS.
 - b. a period of re-pairing the CS and the UCS.
 - c. a rest interval.
 - d. the UCS.
- Which process is virtually the opposite of generalization?
 - a. discrimination
 - b. reinforcement
 - c. acquisition
 - d. habituation
- We say that systematic desensitization is an application of classical conditioning. If this is so, what serves as the UCR at the beginning of treatment?
 - a. an irrational fear
 - b. an object or event that causes fear
 - c. a state of calm or relaxation
 - d. an object or event that causes calm or relaxation
- Classical conditioning may be relevant in drug addiction in what sense?
 - a. Some drug addicts really know that they should stop using, but don't know how.
 - b. The environment in which drugs are taken can be conditioned to increase tolerance.
 - c. Which drug an addict takes depends upon which produces the most reinforcement.
 - d. No matter what a user does, some drugs are more addictive than others.
- A stimulus will most effectively serve as a CS if
 - a. it is repeatedly presented after the presentation of the UCS.
 - b. it naturally produces an orienting reflex.
 - c. its presentation reliably predicts the UCS.
 - d. it is repeatedly paired with the appropriate CR.

9. In demonstrating taste aversions, the UCS will be
 a. a feeling of nausea or stomach pain.
 b. some food with a distinctive taste.
 c. any agent that naturally causes nausea or stomach pain.
 d. behaviors that allow the organism to avoid certain tastes.
10. The basic thrust, or premise, of operant conditioning is that
 a. under the proper circumstances, any organism can learn to make any response.
 b. organisms only learn responses that are in their own best interest.
 c. behaviors are shaped or controlled by their consequences.
 d. people learn only if they really want to.
11. If operant conditioning is successful, what is most likely to be changed?
 a. the rate or probability of a response
 b. cognitive representations within the organism
 c. the stimuli that produced the learned response
 d. the strength or nature of a response
12. A rat in an operant chamber is given a pellet of food each time it presses a lever. After 100 pellets have been provided for lever pressing, the rat no longer gets any pellets when it presses the lever. What is most likely to occur next?
 a. The lever-pressing response will extinguish.
 b. The rat will become frustrated, anxious, and aggressive.
 c. The rat will continue to press the lever at the same rate.
 d. The rat's operant rate will spontaneously recover.
13. You want to reinforce Mickey for hanging his coat in the closet, but he never does so. He simply drops his coat on the floor as he walks through the door. Which of these procedures would be most effective now?
 a. physical punishment
 b. discrimination learning
 c. shaping
 d. negative reinforcement
14. In operant conditioning, discrimination training is most a matter of
 a. learning right from wrong.
 b. discovering the differences between reinforcement and punishment.
 c. differential reinforcement.
 d. extinction followed by spontaneous recovery.
15. Primary reinforcers are
 a. learned.
 b. conditioned.
 c. acquired.
 d. biologically-based.
16. The major difference between positive and negative reinforcement is whether
 a. something is given or taken away
 b. rates of responses go up or down
 c. responses are rewarded or punished
 d. reinforcers are innate or learned
17. Which of the following provides the best example of NEGATIVE reinforcement?
 a. paying Billy a dollar for each "A" or "B" on his report card
 b. having a root canal procedure to ease the pain of a severe toothache
 c. spanking Amy for playing with the water in the toilet bowl
 d. using a token economy to modify the behaviors of a severely retard child
18. Using each of the following reinforcement schedules, different rats are trained to press levers at the same high rate. The lever pressing of rats trained on a _____ reinforcement schedule will now extinguish most quickly.
 a. continuous
 b. fixed ratio
 c. fixed-interval
 d. variable interval

19. Which statement concerning punishment is most justified?
 a. Because it creates anxiety, it should never be used with children.
 b. Physical punishment is more effective than psychological punishment.
 c. Punishment is really only effective if it has been threatened repeatedly.
 d. Punishment decreases the rate of the responses that it follows.
20. In general, cognitive approaches to learning tend to emphasize
 a. the interaction of genetics and experience.
 b. knowing ahead of time what will serve as a reinforcer.
 c. changes inside the organism that may not be reflected in behavior.
 d. the role of learning in the acquisition of emotions.
21. If learning is “latent,” it is, by definition,
 a. of no real value to the organism.
 b. not (yet) reflected in behavior.
 c. learned, but not remembered.
 d. displayed only in social situations.
22. When birds bury seeds for use in the winter months,
 a. they generally have no idea where to find them when the need arises.
 b. they hide so many seeds that they cannot fail to find at least a few to get by on.
 c. they form a cognitive map and actually remember where the seeds are hidden.
 d. the birds leave little “markers” on the ground to guide their search in winter.
23. Which of the following does your text offer as an example of social learning theory at work?
 a. “how-to-do-it” programs on PBS television
 b. Head Start preschool programs
 c. college programs for returning adult students
 d. software programs for word processing.
24. Of the following, what is it that makes Bandura’s social learning theory social?
 a. the fact that it is a very cognitive approach to learning
 b. the concepts of vicarious reinforcement or punishment
 c. the requirement that learning be the result of practice or experience
 d. the fact that it can only be found in humans and not in nonhumans

True/False

1. ___ True ___ False Ivan Pavlov won a Nobel Prize for Psychology in 1902.
2. ___ True ___ False In a demonstration of classical conditioning, the first response a subject is likely to make is an orienting reflex.
3. ___ True ___ False Emotional responses that have been classically conditioned will not extinguish, no matter how many times the CS is presented alone.
4. ___ True ___ False Because of discrimination training, a child bitten by a German Shepard dog may become frightened of a cocker spaniel.
5. ___ True ___ False The strength of the UCR sets limits on the strength of the CR.
6. ___ True ___ False Skinner stated the Law of Effect after observing rats (and pigeons) in his operant chambers.
7. ___ True ___ False Shaping is an operant conditioning technique accomplished by the method of successive approximations.
8. ___ True ___ False You may be punishing responses even though you are intending to reinforce them.
9. ___ True ___ False Everything else being equal, negative reinforcement is a good thing to happen to you.
10. ___ True ___ False Because it requires a certain amount of intelligence, only humans are capable of forming cognitive maps.
11. ___ True ___ False Children are more likely to imitate the behaviors of persons who are reinforced for their behaviors than they are to imitate the behaviors of persons who are punished for their behaviors.
12. ___ True ___ False To say that a learner has a “field-dependent style” is to suggest that such a learner prefers learning situations that are outdoors and not in a standard classroom

Key Terms and Concepts

learning _____

classical conditioning _____

unconditioned stimulus _____

unconditioned response _____

orienting reflex _____

habituation _____

conditioned stimulus _____

conditioned response _____

acquisition _____

extinction _____

spontaneous recovery _____

stimulus generalization _____

discrimination learning _____

phobic disorder _____

counter-conditioning _____

systematic desensitization _____

operant _____

operant conditioning _____

law of effect _____

shaping _____

extinction _____

reinforcement _____

reinforcer _____

primary reinforcer _____

secondary reinforcer _____

positive reinforcer _____

negative reinforcer _____

escape conditioning _____

avoidance conditioning _____

learned helplessness _____

continuous reinforcement (CRF) schedule _____

partial reinforcement schedule _____

fixed ratio (FI) schedule _____

fixed interval (FI) schedule _____

variable ratio (VR) schedule _____

variable interval (VI) schedule _____

partial reinforcement effect _____

instinctive drift _____

punishment _____

spanking _____

latent learning _____

cognitive map _____

social learning theory _____

vicarious reinforcement or punishment _____

Answers to Practice Test Questions

Multiple Choice

1. **d** Alternative **a** is simply not true. Alternatives **b** and **c** may be true, but are not related to the word “demonstrated,” which makes **d** the correct choice.
2. **a** The very first thing that will happen is that a bell will be sounded and, reflexively, the dog will orient toward it.
3. **d** Actually, because the bell and the food powder in the first three alternatives are stimuli and not responses, the only possible answer here is the last alternative.
4. **c** Spontaneous recovery is the reappearance of a conditioned response following extinction and immediately after a rest interval.
5. **a** By definition, discrimination conditioning is usually used to offset the effects of the opposite process of generalization.
6. **a** This is a tough one. The person comes to desensitization with a (learned) irrational fear, which now acts *as if it were* a UCR to be replaced with a newly acquired CR of relaxation. All of that means that the first alternative here is the best one.
7. **b** Although some of the other alternatives may be true, the second is the only one that has to do with classical conditioning. Because of this phenomenon, taking the same amount of drug in a new (unconditioned) environment can cause an overdose.
8. **c** Pavlov did not recognize this reality, but we now know that a stimulus will serve as an effective CS only if it signals or predicts the occurrence of the UCS that follows it.
9. **c** Alternatives **a** and **d** are responses and, thus, cannot be a UCS. The food, originally neutral, is the CS, and anything that causes nausea or stomach pain acts as the UCS.
10. **c** I doubt that many psychologists would even agree with the statements made in alternatives **a**, **b**, and **d**, which makes the third alternative the correct choice here.
11. **a** The relatively permanent change in behavior that occurs as a result of operant conditioning is a change in the rate or probability of a response.
12. **a** This is a wordy item, but the most likely thing to happen is that the rat’s rate of lever pressing will decrease, which is indicative of extinction.
13. **c** If Mickey doesn’t do what you want him to do, there will be nothing for you to reinforce, so in this situation, you will have to try shaping first.
14. **c** Because we reinforce some stimuli and not others, we say that discrimination training is a matter of differential reinforcement.
15. **d** Actually, the first three alternatives all say pretty much the same thing, which is a major clue that the answer is the last alternative. “Primary” as a descriptor in psychology often refers to something that is based in evolution, biology, or physiology.
16. **a** Positive reinforcers are given to organisms after an appropriate response, while negative reinforcement involves taking away something (that is usually unpleasant or painful).
17. **b** Because the root canal procedure takes away the pain of the toothache, the end result is very reinforcing (how reinforcing depends on how painful the toothache was). The reinforcement here is negative reinforcement.
18. **a** Responses learned under a continuous reinforcement schedule will extinguish more quickly than those learned under any other type of reinforcement schedule.
19. **d** Actually, the first three alternatives are each quite false. The only thing that we can say for sure is that punishment decreases response rates—by definition.
20. **c** Cognitive approaches emphasize cognitions, cleverly enough. That means that they focus on changes inside the organism that may or may not be evidenced in overt behavior.
21. **b** “Latent” means “hidden from view,” or “not presently observable.” Hence, the second alternative is the best choice.
22. **c** This seems strange, but, in fact, birds can (and do) create incredibly elaborate cognitive maps of their territories in which they bury their seeds for future use.

23. **a** Maybe it's just me, but I think that all those PBS television shows that are aimed at teaching us how to do all sorts of things—from tuning car engines, to installing a deck, to upholstering furniture and making quilts—follow the lead of social learning theory, in a “see how I do it, then try it yourself” sort of way.
24. **b** Vicarious reinforcement and vicarious punishment deal with the consequences of observing someone else being reinforced or punished and are, therefore, social concepts.

True/False

1. **F** I really like this item (and I have used it in several upper-division classes, but not in the beginning course). It is false for two reasons. Pavlov won his prize in 1904, not 1902, but that's pretty picky. There is no Nobel Prize for psychology—Pavlov's was in medicine.
2. **T** Yes, this is the first response, which needs to be habituated before actual conditioning begins.
3. **F** Some particularly strong emotional responses may take quite a while to extinguish, but eventually they will.
4. **F** Bitten by a German Shepard dog, a child may very well become frightened by a cocker spaniel, but the process involved is not discrimination, but generalization, nearly the opposite.
5. **T** This is true. Remember: no matter how many times the CS and UCS are paired, the CR is never quite as strong as the UCR was at the start.
6. **F** Actually, it was Thorndike who stated the Law of Effect after observing his cats in a puzzle box.
7. **T** This statement is true by definition—“shaping” and “successive approximations” are nearly synonymous terms.
8. **T** It is important to remember that the intention of the person doing the reinforcing (or the punishing) is quite irrelevant in operant conditioning. What matters is the effect that one's actions have on the behavior of the “learner,” which makes this statement true.
9. **T** Because negative reinforcement involves the removal of some noxious, unpleasant, painful stimulus and results in the increase of one's rate of responding, it is surely a good thing to have happen to you.
10. **F** You didn't fall for this one, did you? Remember, Tolman first demonstrated cognitive maps in rats. As it happens, it is very easy to generate human examples, but the point is that this phenomenon is not restricted to humans.
11. **T** They certainly are.
12. **F** Sometimes questions show up that are just so silly, it causes a slight problem. In this context, field-dependent refers to students who are people-oriented, intuitive, holistic and tends to remember material in a social context.

A Few Flash Card Possibilities for Chapter 5

(Remember: The best flash cards are those you make yourself.)

LEARNING	change in behavior that occurs as the result of practice or experience
CLASSICAL CONDITIONING	learning in which an originally neutral stimulus comes to elicit a new response
ACQUISITION	process in operant conditioning in which the rate of reinforced responses increases
COUNTER CONDITIONING	technique in which a new response is acquired to replace an old learned one
PHOBIA	an intense irrational fear that prompts avoidance behaviors
OPERANT CONDITIONING	a procedure that changes the rate or the probability of a response on the basis of the consequences that result from that response
LAW OF EFFECT	Thorndike's law: responses leading to a satisfying state of affairs tend to be repeated; those that do not, are not
SHAPING	reinforcing successive approximations of a response you want to condition
EXTINCTION	the decrease in the rate of a response as reinforcers are withheld
SOCIAL LEARNING THEORY	the position that learning takes place through the observation and imitation of others (models)
COGNITIVE MAP	a mental representation of the learning situation or of the physical environment

EXPERIENCING PSYCHOLOGY

Playing Pigeon: A Shaping Exercise

This activity works best in small groups—it’s nearly a party game. The point is to select one “player” to be your pigeon. The others in the group are to shape the behavior of the pigeon by using positive verbal reinforcers, such as “good,” or “right” as the pigeon successively approximates the desired behavior. Desired behaviors for your pigeon might include such things as:

- Sit on the floor.
- Put your thumb in your mouth.
- Scratch your right leg.
- Put your hands over your ears.
- Stand on a chair.
- Take off your left shoe.
- Pull on your hair.
- Sit down and cross your legs.
- Clap your hands.
- Spin around in a circle (twice).

Obviously, the “shapers” must know the goal behavior, but the pigeon must not. When you begin, the pigeon should start emitting behaviors, and the group should begin to shape the pigeon’s behaviors toward the goal (the target behavior). Make sure that the pigeon receives no feedback other than the verbal reinforcer. See how long it takes to shape your pigeon. Anything less than 5 minutes is good.

Once your group has had some success shaping behaviors by using positive reinforcers, try to shape one of the above behaviors using punishers, that is, by saying, “bad” or “no!” This is more difficult, isn’t it? Can you make any progress in 5 minutes?

Using the Internet to Expand Your Appreciation of Psychology

1. THE BASICS AND PROCESSES OF CLASSICAL CONDITIONING (pp. 159-163)

A point we make early in Chapter Five is the over-riding importance of learning (and, of course, memory). The Internet can be useful for broadening perspectives in two directions. There is a wealth of historical background information, and there is a range of materials on contemporary investigations of the process.

<http://nobelprize.org/medicine/laureates/1904/pavlov-bio.html>

(this site provides a wealth of information, including a very nice biography, a copy of the speech given at the presentation and a copy of Pavlov's Noble Lecture on "Physiology of Digestion." There is more—a game, teaching a dog to drool, and a wonderful link to the Pavlov Institute of Physiology of the Russian Academy of Sciences.)

<http://www.ivanpavlov.com>

(a brief biography and links to translations of 23 of Pavlov's lectures)

<http://evolution.massey.ac.nz/lecture9/lect900.htm>

(a simply wonderful essay/lecture on all matters of things related to classical conditioning—with some internal links to click [although a few are no longer available, give it a try anyway])

2. THE SIGNIFICANCE OF CLASSICAL CONDITIONING (pp. 164-168)

If classical conditioning were somehow relevant only to the salivation reflex of dogs, it is unlikely that we would be discussing him or his work in a beginning psychology class. No, the importance of Pavlov and the significance of classical conditioning lay in the wide range of applications that can be found in everyday living.

<http://psychclassics.yorku.ca/Watson/emotion.htm>

(a copy of the 1920 *Journal of Experimental Psychology* article by John Watson and Rosalie Rayner on their work with Little Albert)

<http://httpprints.yorku.ca/archive/00000198/01/BHARRIS.HTM>

(a copy of a critical reappraisal of the Little Albert story and how it has been reported over the years—a 1979 *American Psychologist* article, “Whatever happened to Little Albert,” by Dr. Ben Harris of Vassar College)

<http://www.phobialist.com/treat.html>

(a brief piece on treating phobias and classical conditioning)

<http://www.guidetopsychology.com/sysden.htm>

(as nice a summary of self-administered systematic desensitization as you will find)

3. THE BASICS OF OPERANT CONDITIONING AND REINFORCEMENT (pp. 169-174)

We now turn to Thorndike and the Law of Effect, Skinner and the operant chamber, Tolman and latent learning, and Bandura and social learning theory. A search of the Internet for any of these is richly rewarded. (A search for “operant conditioning” at Google yielded over 50,000 websites.) Those listed below are—as always—just a sample, but a sample that provides good information as well as direct links to more.

<http://www.psy.pdx.edu/PsiCafe/KeyTheorists/Thorndike.htm>

(A generous offering of the “Psi Café,” here you will find information about E. L. Thorndike, his research, his puzzle boxes, and his laws of learning. There are links to Thorndike’s own writings and, significantly, to pieces that are critical of Thorndike’s approach to learning.)

<http://www.wagntrain.com/OC>

(a slight diversion from the academic—a website called “An Animal Trainer’s Introduction to Conditioning.” The emphasis here is practical and the focus is on positive reinforcement and shaping.)

<http://www.bfskinner.org>

(a website hosted by the B. F. Skinner Foundation presents an overview—albeit rather non-critical—of everything Skinnerian, with several great links)

<http://ww2.lafayette.edu/~allanr/autobio.html>

(“B. F. Skinner ... A Brief Autobiography”)

<http://psychclassics.yorku.ca/Skinner/Theories>

(a copy of Skinner’s classic: “Are Theories of Learning Necessary?”—1950)

<http://www.mcli.dist.maricopa.edu/proj/nru>

(If you are having trouble with “negative reinforcement,” you are not alone. Visit this website, titled “*negative reinforcement university*.”)

<http://chiron.valdosta.edu/whuitt/col/behsys/operant.html>

(on operant conditioning in general, but particularly good on reinforcement schedules)

4. PUNISHMENT (pp. 183-185)

Using punishment as a means of behavioral control is one of the least understood issues in psychology. The use of reinforcers and punishers falls under the heading of operant conditioning. There surely are times when the use of punishment may be justified, but how punishers are usually (or at least often) used in real life seldom meets the criteria for their effective use. Maybe the Internet can shed some light on the matter.

<http://www.apa.org/releases/spanking.html>

(an article from the APA website)

<http://www.stopspanking.com>

<http://www.neverhitachild.org>

(The titles give away the gist of these websites, and you can guess the point of view. Neither is terribly even-handed, but both provide some good links.)

<http://cms.psychologytoday.com/articles/pto-20021002-000031.html>

(an article from Psychology Today magazine on this issue of spanking)

5. COGNITIVE APPROACHES TO SIMPLE LEARNING (pp. 185-189)

Both classical and operant conditioning may be referred to as “behavioral” approaches to learning, because the end result is some observable change in overt behavior, be it salivating, pecking a disk, pressing a lever, or driving a car. However, the “relatively permanent change” that takes place in a great deal of learning does not have as its immediate consequence any change in overt behavior at all. What changes as a result of experience or practice in this case is the state of an organism’s cognitions, its ideas, beliefs, knowledge, if you will.

<http://psychclassics.yorku.ca/Tolman/formula.htm>

(from Tolman himself in a 1922 article, “A New Formula for Behaviorism”)

<http://tip.psychology.org/bandura.html>

(a site that provides a nice summary of Bandura’s theories, a bibliography, and links to much, much more)

<http://www.muskingum.edu/~psych/psycweb/history/bandura.htm>

(a very nice site on Bandura and his work)