Chapter Six
LEARNING THROUGH CONDITIONING

Review of Key Ideas

CLASSICAL CONDITIONING

1. Describe Pavlov’s demonstration of classical conditioning and the key elements in this form of learning.

1-1. Classical conditioning is a type of learning that occurs when two stimuli are paired or associated closely in time. In Pavlov’s initial demonstration, the two stimuli were a bell and _____________.

1-2. The response to one of the two stimuli occurs naturally and does not have to be learned or acquired through conditioning. This “unlearned” stimulus, in this case the food, is technically known as the _____________.

1-3. The other stimulus is said to be neutral in the sense that it does not initially produce a response. When a response to this neutral stimulus is acquired or learned, the technical name for it is the ___________. In Pavlov’s initial study, the conditioned stimulus was the sound of a _____________.

1-4. The unconditioned stimulus in Pavlov’s original study was the ___________, and the conditioned stimulus was the ___________. Salivation to the meat powder is known as the _____________. Salivation to the bell is termed the _____________.

1-5. Label the parts of the classical conditioning sequence. Place the commonly used abbreviations for these terms in the parentheses.

(a) meat: ___________________________ (c) bell: ___________________________

(b) salivation to meat: ___________________________ (d) salivation to bell: ___________________________
2. Discuss how classical conditioning may shape phobias and physiological processes, including sexual arousal.

2-1. The kids in the neighborhood where I (R.S.) grew up used to dig tunnels in a neighbor’s backyard. One day, someone got stuck in the tunnel and couldn’t get out. Eventually he got out, but after that he didn’t want to play in tunnels again. To this day, that person still has an intense fear, not only of tunnels, but of closed-in spaces in general. Label the parts of the classical conditioning process involved in the acquisition of the phobia of closed-in spaces. Use the abbreviations CS, CR, UCS, and UCR. (Hint: Even though “getting stuck” certainly involves a behavior or response, it also has stimulus components.)

getting stuck
fear produced by getting stuck
tunnels and closed-in spaces
fear of tunnels and closed-in spaces

2-2. The individual described above had developed an intense fear or phobia, acquired in part through the process of ________________ conditioning. Other emotions can be conditioned as well. For example, the smell of smoke and Beemans gum described in your text, the playing of “our song,” and the sight of one’s home after a long absence could all produce a pleasant emotional response (or perhaps a slightly weepy, sentimental feeling). Such smells, sounds, or sights would be considered ________________ stimuli.

2-3. Similarly, certain physiological responses can be conditioned. Label the parts of the conditioning process in the study on immunosuppression in rats described in the text. (Use the abbreviations CS, CR, UCS, and UCR.)

the immunosuppressive drug
unusual taste
decreased antibody production produced by the drug
decreased antibody production produced by the taste

2-4. Evidently sexual arousal can be classically conditioned as well. Subjects in the featured study were 29 adult male Japanese ________________. Half of the quail copulated with a female quail in a distinctive, white-painted chamber with a mesh floor; this group was the (experimental/control group). For the remaining half, the control group, copulation took place in their home cages.

2-5. In classical conditioning language, the conditioned stimulus (CS) in this study was the (distinctive chamber/home cage/female quail). The unconditioned stimulus (UCS) was the (distinctive chamber/home cage/female quail). The unconditioned response (UCR) would be arousal to the female quail; the conditioned response (CR) would be the additional or enhanced arousal to the painted chamber.
4. Describe the processes of generalization and discrimination, and summarize the classic study of Little Albert.

4-1. With regard to the case of Little Albert:
(a) What was the CS?

(b) The UCS?

4-2. Albert was also afraid of white dogs and white rabbits. What is the name of the process that resulted in his acquisition of these additional fear responses?

4-3. Why would Albert be more likely to develop a fear of a white rabbit, say, than a white car or a dark horse?

4-4. The more similar the stimuli are to the CS, the more likely the organism will ________ from the CS to the other stimuli. The less similar the stimuli are to the CS, the more likely the organism is to ________ them from the CS.

4-5. Casey (R. S’s cat, now deceased) salivated when she heard the sound of food being dumped into her bowl. The process by which this salivary response was learned is ___________ conditioning. The food is a(an) (CS/UCS/CR/UCR). The sound of the food is a(an) (CS/UCS/CR/UCR). Salivation to the sound is a(an) (CS/UCS/CR/UCR).

4-6. Pets are also likely to salivate when they hear other, similar sounds, like bags rustling in the kitchen or dishes being pulled from the cupboard. Salivation to these other sounds represents stimulus _________.

4-7. With continued training, in which food is paired only with the sound of food entering the bowl and not with the other sounds, the animal will learn to salivate only to the rattling bowl. The process of learning to respond only to one particular stimulus, and not to a range of similar stimuli, is termed _________.

5. Explain what happens in higher-order conditioning.

5-1. Suppose that a bell and meat powder are paired, as in the original Pavlovian study. At some point, a conditioned salivary response will occur to the bell. Suppose that in a new series of trials a clicking sound (a new, neutral stimulus) is paired with the bell. Assuming that the stimuli are potent enough, that the timing is right, and so on, a ___________ response will occur to the clicking sound.
2-6. Results were that during test trials in the distinctive chamber (with the terrycloth, artificial female), quail in the experimental condition released more ________________ than did quail in the control group. Release of the additional semen was attributed to classical conditioning. The enhanced arousal produced by the special chamber would be considered the ________________ response.

2-7. Probably in humans, as in quail, stimuli routinely paired with sex (e.g., lingerie, dim lighting) become ________________ stimuli for sexual arousal. One implication of this study for evolutionary theory is that the capacity for classical conditioning, in this case conditioning of sexual arousal, has ________________ value for a species. Conditioned arousal produces more sperm, which enhances the likelihood of fertilization and the passing on of one’s genes.

3. Describe the classical conditioning phenomena of acquisition, extinction, and spontaneous recovery.

3-1. Acquisition of a conditioned response occurs when the CS and UCS are contiguous, or paired. Not all pairings result in conditioning, however. What characteristics of a CS are more likely to produce acquisition of a CR?

3-2. Acquisition refers to the formation of a conditioned response. What is the term that refers to the weakening or disappearance of a CR? ________________

3-3. Extinction in classical conditioning occurs when the ________________ stimulus is presented alone, without the ________________ stimulus.

3-4. After CRs are extinguished they may reappear, even without further conditioning.

(a) For example, after extinction of a response, a dog may again show the conditioned response (e.g., salivation to a bell) when returned to the apparatus in which it was originally conditioned. What is the name of this type of “reappearance” of the CR? ________________

(b) When, or under what circumstance, is spontaneous recovery likely to occur?

(c) If an animal is extinguished in a different environment from the one in which conditioning took place, it is likely to again show a CR when returned to the original environment. What is the name of this effect? ________________
5-2. The process described above, in which a stimulus that previously functioned as a conditioned stimulus was used as an unconditioned stimulus, is known as ________________ conditioning.

5-3. In our example, in which the clicking sound and bell were paired, which stimulus acted as the UCS?

OPERANT CONDITIONING

6. Discuss the nature of operant responding in comparison to the types of responding typically governed by classical conditioning.

6-1. A major feature of Pavlovian or classical conditioning is that conditioned responses occur when two stimuli are paired or associated. For example, when a sound and food are paired together, a conditioned salivary response occurs to the ________________.

6-2. In contrast, in operant conditioning, learning or conditioning occurs from stimuli that (precede/follow) the response, the stimuli that are the “payoff” or ________________ of that particular behavior.

6-3. Learning theorists originally supposed that the two types of conditioning controlled different types of responses: that classical conditioning controlled reflexive or (voluntary/involuntary) responses (such as salivation or leg flexion), while operant conditioning controlled voluntary responses. While this distinction holds up (all of the time/much of the time), it is now clear that the only absolute distinction is in terms of procedure.

7. Describe Thorndike’s work, and explain his law of effect.

7-1. E. L. Thorndike’s pioneering work on what he referred to as ________________ learning provided the foundation for Skinner’s ________________ conditioning.

7-2. According to Thorndike’s law of ________________, if a response leads to a satisfying effect in the presence of a stimulus, the association between the stimulus and response is strengthened. Thorndike’s law of effect is similar to Skinner’s concept of reinforcement: both emphasize the ________________ of behavior.

8. Describe Skinner’s principle of reinforcement and the prototype experimental procedures used in studies of operant conditioning.

8-1. A reinforcer is a stimulus or event that (1) is presented after a response and that (2) increases the tendency for the response to be repeated. Apply that definition to this example: Grundoon, a captive monkey, occasionally swings on a bar in his cage. Suppose that at some point Grundoon’s trainers decide to give him a spoonful of applesauce whenever he swings. Is the applesauce a reinforcer? In terms of the definition above, how do you know that applesauce is a reinforcer?
8-2. The trainers switch to vinegar. Grundoon, an unusual primate, swings quite frequently when this behavior is followed by vinegar. Is vinegar a reinforcer here? How do you know?

8-3. The trainers try another approach. They present Grundoon with fresh fruit *just before* they think he is likely to jump. It so happens that Grundoon’s rate of jumping does increase. Is the fruit a reinforcer here? Why or why not?

8-4. The prototypical apparatus used in operant conditioning studies is the operant chamber, better known as the ______________. On one wall of the chamber is mounted a manipulandum, a device that makes for an easily discernible response. For rats, the manipulandum is usually a small _______________; for pigeons, the device is a ______________ that the bird learns to peck.

8-5. A press of the lever or peck at the disk may produce a reinforcer, generally a small bit of food dispensed into the food cup mounted to one side or below the manipulandum. Each of these responses is recorded on a ______________, a device that creates a graphic record of the number of responses per unit time.

8-6. The cumulative recorder records the *rate* of the behavior, that is, the number of ____________ made per unit ______________.

8-7. Below is a highly stylized version of a cumulative record. About how many responses were made during the first 40 seconds? ______________. Which section of the graph (a, b, c, d, or e) has the steepest slope? ______________. Which section of the graph illustrates the fastest rate of responding? ______________. About how many responses were made between the 40th and 70th seconds? ______________.
9. Describe the operant conditioning phenomena of acquisition, shaping, and extinction.

9-1. Acquisition refers to the formation of new responses. In classical conditioning, acquisition occurs through a simple pairing of the CS and UCS. In operant conditioning, acquisition usually involves the procedure known as ________________.

9-2. What is shaping? When is it used?

9-3. Extinction in classical conditioning involves removing the UCS while still presenting the CS.

(a) What is the extinction procedure in operant conditioning?

(b) What is the effect of extinction on behavior (response rate)?

(c) What does the term resistance to extinction mean?

10. Explain how stimuli govern operant behavior and how generalization and discrimination occur in operant conditioning.

10-1. Suppose that a rat has been shaped so that when it presses a lever it receives a food pellet. With further training, the rat may respond only when a light (or sound, etc.) in the chamber is on and not when it is off. The food pellet (which follows the response) is a ________________. The light (which precedes the response) is a ________________ stimulus.

10-2. Reinforcers occur (after/before) the response occurs. Discriminative stimuli occur ________________ the response occurs.

10-3. To create a discriminative stimulus, one reinforces a response only in the presence of a particular stimulus and not in its absence. In time, that stimulus will gain control of the response: animals will tend to emit the response only if the discriminative stimulus is (present/absent) and not if it is ________________. 
10-4. For example, rats can be trained to press a lever when a light comes on and not to press when the light is off. Lever presses that occur when the light is on are followed by a food pellet; those that occur in the dark are not. Label each component of this operant-conditioning process by placing the appropriate letters in the blanks below.

____ light  a. discriminative stimulus
____ lever press  b. response
____ food  c. reinforcer

10-5. "Heel Fido!" says Ralph. Fido runs to Ralph's side. Fido gets a pat on the head. Label the parts of the operant conditioning sequence by placing the appropriate letters in the blanks. (To avoid confusion, the behavior or response of interest in this example is already labeled.)

____ "Heel Fido!"  a. discriminative stimulus
____ Fido gets a pat on the head.  b. response
____ Fido runs to Ralph's side.  c. reinforcer

10-6. Phyllis will lend money to Ralph, but only after Ralph promises to pay her back. Ralph is also careful to thank Phyllis for her help. The behavior we are looking at here is Phyllis's lending behavior.

____ "Thank you very much, Phyllis."
____ Phyllis lends.
____ "I promise I'll pay you back."

a. discriminative stimulus  b. response  c. reinforcer

10-7. Generalization occurs in operant as well as classical conditioning. For example, when I put dishes in the sink, our cat would run to her bowl looking for food. In technical terms, our cat between the sound of food dropping in her bowl and the similar sound of dishes going into the sink. Despite the fact that food does not follow the sound of clattering dishes, our cat did not learn to between the sounds in our kitchen.

11. Discuss the role of delayed reinforcement and conditioned reinforcement in operant conditioning.

11-1. People who smoke like to smoke. Giving up the habit, however, also has its rewards. Given the information about delay of reinforcement, why is the behavior of giving up smoking so difficult to acquire?

11-2. Define the following:

(a) Primary reinforcer:

(b) Secondary or conditioned reinforcer:
12. Identify various types of schedules of reinforcement, and discuss their typical effects on responding.

12-1. Schedules of reinforcement are either continuous or intermittent. If reinforcers follow each response, the schedule is referred to as a/an \underline{\hspace{5cm}}-reinforcement schedule, abbreviated CRF. If reinforcers only follow some responses and not others (e.g., FR, VR), or occur as a function of the passage of time (e.g., FI, VI), the schedule is referred to as a/an \underline{\hspace{5cm}} schedule.

12-2. Identify the following schedules of reinforcement by placing the appropriate abbreviations in the blanks: continuous reinforcement (CRF), fixed ratio (FR), variable ratio (VR), fixed interval (FI), variable interval (VI).

\begin{itemize}
  \item A pigeon is reinforced whenever it has pecked a disk exactly 20 times.
  \item A pigeon is reinforced for pecking a disk, on the average, 20 times.
  \item A rat is always reinforced for the first response that follows a two-minute interval.
  \item A slot machine delivers a payoff, on the average, after every 10th pull of the lever.
  \item Every time the pigeon pecks a disk, it receives a pellet of food.
  \item A rat is reinforced, on the average, for the first response following a two-minute interval.
  \item A pig is reinforced for the first response after 30 seconds, then for the first response after 42 seconds, then for the first response after 5 seconds, and so on.
  \item Every two weeks Ralph picks up his payroll check at the office.
  \item A rat is reinforced after the 73rd response, then after the 22nd response, then after the 51st response, and so on.
\end{itemize}

12-3. Resistance to extinction refers to the extent to which responses occur during a period of extinction. What is the general effect of the intermittent schedules of reinforcement on resistance to extinction?

12-4. In terms of the effect on rate of responding, what is the general difference between the ratio schedules (FR and VR) and the interval schedules (FI and VI)?

12-5. In terms of the effect on pattern of responding, what is the general difference between fixed schedules and variable schedules?
13. Explain how operant psychologists study choice, and summarize what they have learned.

13-1. We make choices. Animals make choices also—for example, whether to seek shelter in a tree or on the ground. In operant theory, choice depends on the payoff or ____________ available for a particular behavior.

13-2. To study choice behavior psychologists use two or more reinforcement schedules that operate simultaneously, so-called ____________ schedules of reinforcement.

13-3. For example, a pigeon might have the choice between pecking Disk A or Disk B. Suppose the two choices were set up on VI schedules, so that Disk A would reinforce the animal once every minute and Disk B once every two minutes. Which disk would the animal tend to choose more frequently, A or B?

13-4. How much more frequently would the animal press disk A? It turns out that the animals will tend to match the rate of responding to the rate of available reinforcement. This is known as the ____________ law. For example, if the animal is able to obtain twice as many reinforcers on Disk A as Disk B in a period of time, it will tend to make about twice as many responses on Disk ___. In other words, about two-thirds of the animal’s responses per unit time will be on Disk A and one-third on Disk B.

13-5. The matching process isn’t exact, but it is surprisingly close. Somehow, by using matching, animals are able to make choices that approximate optimal choices. In this way, many animals are able to maximize nutrition gained in relation to energy expended, the major principle of optimal ____________ theory. Clearly, being able to differentiate reinforcement in this way has ____________ value for a species.

14. Explain the distinction between positive and negative reinforcement.

14-1. Some Skinner boxes may be set up so that a moderate electric shock can be delivered to the feet of the animal through the floor of the box. Suppose that whenever the animal presses the bar, the shock is turned off for a period of time. Will the lever-pressing behavior be strengthened or weakened?

14-2. By definition, what effect does reinforcement have on behavior? What is the effect of positive reinforcement on behavior? Negative reinforcement?

14-3. With positive reinforcement, a stimulus is presented after the response. What is the procedure with negative reinforcement?
15. Describe and distinguish between escape learning and avoidance learning.

15-1. Review the section on escape and avoidance learning. In escape learning, the animal first experiences the aversive stimulus and then makes a response that escapes it. In avoidance learning, the animal responds to a cue that permits it to respond before the aversive stimulus is delivered, thereby avoiding it altogether. Label the following examples E for escape and A for avoidance.

- The weather has changed, and Fred is getting cold. He goes inside.
- Little Sandra rapidly removes her hand from the hot stove.
- A cue light comes on in a shuttle box. The rat rapidly runs to the other chamber.
- Randolph has been told that he will be mugged if he goes outside, so he stays inside.
- Sue has learned some new verbal behavior. If she simply says, “No, I don’t want that” shortly after a salesman starts his pitch, the salesman will stop bothering her.
- Alice sees Ruppert in the distance. If Ruppert sees her he will ask for her course notes, which she doesn’t want to lend him. She heads in the other direction.

15-2. What is the major difference between escape learning and avoidance learning?

16. Explain two-process theory and the role of negative reinforcement in avoidance behavior.

16-1. Once avoidance learning is established, the organism may never experience the aversive stimulus. For example, when a rat in a shuttle box runs to the other chamber, it never experiences shock. So, why doesn’t the jumping response gradually extinguish? One explanation is that the rat isn’t just avoiding the shock, it is also escaping something, the internal aversive stimulus of classically conditioned

16-2. According to two-process theory, fear of the cue stimulus is acquired through (classical/operant) conditioning, the association of the stimulus and shock. The running behavior, on the other hand, is maintained by (classical/operant) conditioning, escape from the conditioned fear.

16-3. Escape increases the strength of a response through (negative/positive) reinforcement. The reason that phobic responses are particularly resistant to extinction is because each time an avoidance response is made, the internal ____________ stimulus is reduced. For example, when people avoid contact with things that they are afraid of (e.g., spiders, elevators, airplanes), they are ________________ reinforced by the removal of conditioned fear.
17. Describe punishment and its effects.

17-1. Punishment involves \textit{weakening} a response by presenting an aversive stimulus after the response has occurred. Review the concepts of reinforcement and punishment by labeling each of the following with one of these terms: \textit{positive reinforcement}, \textit{negative reinforcement}, or \textit{punishment}.

(a) A stimulus is \textit{presented} after the response; response rate \textit{increases}:

(b) A stimulus is \textit{presented} after the response; response rate \textit{decreases}:

(c) A stimulus is \textit{removed} after the response; response rate \textit{increases}:

17-2. Response rate \textit{increases}. Which of the following procedures may have been used?

a. positive reinforcement
b. negative reinforcement
c. punishment
d. either a or b above

17-3. Response rate \textit{decreases}. Which of the following procedures may have been used?

a. positive reinforcement
b. negative reinforcement
c. punishment
d. either b or c above

17-4. When a rat presses a bar in an operant chamber, the electric shock stops. Bar pressing increases. What procedure has been used?

a. positive reinforcement
b. negative reinforcement
c. punishment
d. extinction

17-5. Whenever the dog ran after a car, his master immediately threw a bucket of water on him. The dog stopped running after cars. What procedure was used?

a. positive reinforcement
b. negative reinforcement
c. punishment
d. extinction

17-6. When Randolph stepped out in his new outfit, everyone stared. If Randolph tends \textit{not} to wear this outfit in the future, what has occurred?

a. positive reinforcement
b. negative reinforcement
c. punishment
d. extinction
The use of punishment as a disciplinary procedure for children has drawbacks. For example, punishment may produce fear, anger, resentment, or some other strong, undesirable ____________ toward the parent. Children who are physically punished also tend to engage in more ____________ behavior, an effect that seems to carry over into their adult lives.

When punishment is used, the text suggests the following guidelines: (a) Apply punishment (immediately/after a delay). (b) Use a level of punishment that is (severe/least severe) to be effective. (c) Punish the behavior consistently (each time/only occasionally) when it occurs. (d) When administering punishment, (explain/do not explain) why it is being given. (e) In general, when employing punishment, try to use (physical punishment/withdrawal of privileges).

CHANGING DIRECTIONS IN THE STUDY OF CONDITIONING

18. Discuss the phenomena of instinctive drift, conditioned taste aversion, and preparedness.

18-1. What is instinctive drift?

18-2. Why was the occurrence of instinctive drift surprising to operant psychologists? Discuss this question in terms of the supposed generality of the laws of learning.

18-3. What is conditioned taste aversion?

18-4. Why is the occurrence of conditioned taste aversion surprising? Discuss this question in terms of classical conditioning relating to: (1) CS-UCS delays and (2) the sense of taste compared with other senses.

18-5. Preparedness is Seligman’s idea that there are species-specific tendencies to be conditioned in some ways and not in others. Both of the findings discussed above, the phenomena of ____________________ and ____________________, involve the concept of ____________________.

18-6. People are much more likely to die in a car than in an airplane, but phobias related to flying are much more common than phobias about driving. Why is that the case? Try to account for this oddity using Seligman’s notion of preparedness.
19. Explain the evolutionary perspective on learning.

19-1. Psychologists used to believe that there were highly general “laws” of learning. More recently, studies like those just referred to and the developing field of evolutionary psychology, indicate that there probably (are/are not) principles of learning that apply to all species.

19-2. Instead, the new viewpoint emerging among psychologists is that ways of learning have evolved along different paths in different species, so that classical and operant conditioning, for example, are to some extent (universal/specific-specific). Finding food, avoiding predators, and reproducing allow a species to survive, but the ways of learning that accomplish these outcomes depend on the ______________ value of these processes.

20. Describe research on signal relations and response-outcome relations, and explain their theoretical importance.

20-1. In the example of the signal relations study described, the number of conditioning trials in which CS and UCS were paired was the same for two groups, 20 trials. The difference between the two treatment groups was that for one group the (CS/UCS) was presented alone for an additional series of 20 trials.

20-2. Theorists originally assumed that classical conditioning is an automatic, reflexive phenomenon that does not depend at all on higher mental processes. If that actually were true, then what should have been the effect of presenting the UCS alone for additional trials? Remember that both groups received exactly the same number of conditioning trials (CS-UCS pairings).
   a. Extinction would occur.
   b. The UCS-alone trials would weaken conditioning.
   c. The UCS-alone trials would have no effect on conditioning.

20-3. In fact, what did occur in the signal relations studies?
   a. Extinction.
   b. The UCS-alone trials weakened conditioning.
   c. The UCS-alone trials had no effect on conditioning.
20-4. These results suggest that the CS signals the occurrence of the UCS, and that additional trials with the UCS alone weaken the ________________ value of the CS. What is surprising about these results? Rather than being an automatic, mechanical process, these studies suggest that classical conditioning involves ________________ processes.

20-5. Response-outcome relations refers to the connection between an operant response and its consequences. For example, for a rat in a Skinner box, the relationship between the lever press (the response) and the food pellet (the outcome) is this: the rat gets the food only if it presses the lever. In other words, the reinforcer is (contingent/not contingent) on the response.

20-6. But does the animal “know” the connection between the response and reinforcer, or is the connection stamped in automatically? That is the crux of the response-outcome relations issue. Evidence suggests that:
   a. reinforcement and punishment are relatively automatic, mindless processes
   b. cognition is not involved in an organism’s responding in an operant chamber
   c. humans and other animals actively try to figure out the contingencies, the relationship between response and outcome

20-7. Thus, research on signal relations and response-outcome relations has forced the development of new theories that emphasize a much more ________________ explanation of conditioning, an explanation in which organisms actively attempt to detect the relationship between their behaviors and environmental events.

20-8. Why are the signal relations studies in classical conditioning and response-outcome relations studies in operant conditioning surprising and of theoretical importance?

OBSERVATIONAL LEARNING

21. Discuss the nature and importance of observational learning.

21-1. Observational learning occurs when an organism learns by observing others, who are called ________________. This type of learning occurs in (humans/animals/both).

21-2. Why is the concept of observational learning so important? For one thing, the idea was surprising to theorists who assumed that all learning could be accounted for by operant and classical conditioning. For another, it extends classical and operant conditioning to include not only direct experience but ________________ or vicarious experience. We learn not only when we behave but when we ________________ the behavior of others.
21-3. Bandura’s theory has helped explain some puzzling aspects of conditioning in human behavior. For example, what happens when parents physically punish aggressive behavior in their children? While punishment by definition (increases/decreases) the behavior it follows, a parent using physical punishment also serves as a ____________ for aggressiveness. In this way, events intended to decrease aggression may, in the longer run, ________________ aggression through the process of ________________ learning.

22. List the basic processes in observational learning, and discuss Bandura’s view on whether reinforcement affects learning or performance.

22-1. In the space below, list and define the four processes that Bandura has identified as crucial components of observational learning. The first letter of each concept is listed at the left.

A __________________________;
R __________________________;
R __________________________;
M __________________________;

22-2. Is reinforcement essential for learning? Many learning theorists used to think so, but in Bandura’s view reinforcement is essential only for (learning/performance). Bandura asserts that we may learn, without being reinforced, simply by ________________ the behavior of a model, but we are unlikely to perform the response unless we are ________________ for doing so.

PUTTING IT IN PERSPECTIVE

23. Explain how the chapter highlighted two of the text’s unifying themes.

23-1. Skinner emphasized the importance of environmental events (reinforcers, punishers, discriminative stimuli, schedules of reinforcement) as the determinants of behavior. One of our unifying themes, however, is that heredity and environment interact. In support of this theme, list the names of three phenomena that show that biology has a powerful effect on conditioning.

23-2. The second theme well illustrated in this chapter is that psychology evolves in a sociohistorical context. Discuss one concept from operant psychology that appears to have influenced our everyday lives.
PERSONAL APPLICATION • ACHIEVING SELF-CONTROL THROUGH BEHAVIOR MODIFICATION

24. Describe how to specify your target behavior and gather baseline data for a self-modification program.

24-1. What behavior do you want to change? The question sounds simple, but the task of defining a behavior is often quite tricky.

24-2. The behavior that you select must be defined in terms of observable events, so that you will know if and when it changes. For example, for the problem of anger control, which of the following would be the most directly observable definition of "anger?"
   a. inner turmoil
   b. intense hostility
   c. loud voice and clenched fists

24-3. Once you specify the target behavior, you must gather data on your behavior prior to the intervention. At this time you should also keep track of events that precede the target behavior, the events, and also the positive and negative reinforcers that follow it, the of your behavior.

25. Discuss your options for increasing or decreasing a response in designing a self-modification program.

25-1. To increase a target behavior, you would use . The reinforcer (can/can not) be something that you already are receiving. For example, you probably already watch TV, go to movies, or buy things for yourself, so you could make one of these events on an increased frequency of the target behavior.

25-2. You would specify exactly what behavioral goals must be met before you receive the reinforcer; that is, you would arrange the . If your goal is to increase studying, you might specify that TV watching for one hour is on having studied for two hours.

25-3. Or, you might specify that for each hour you studied you would earn points that could be “spent” for watching TV, going to movies, talking with friends, and so on. This type of arrangement is referred to as a economy.

25-4. A fairly obvious way to decrease a target behavior is to use . The problem with this approach is that it is difficult to follow through with self-punishment. So, there are two guidelines to keep in mind when using punishment in a self-control program: (1) Use punishment only in conjunction with reinforcement; and (2) use a relatively punishment that you, or perhaps a third party, will be able to administer.
25-5. It is also possible to use reinforcement to decrease behavior. For example, if you want to gradually reduce the amount that you smoke, you could reinforce yourself whenever you smoke fewer than a particular number of cigarettes per day. Paradoxically, you are using __________________ to decrease behavior.

25-6. For some situations you may be able to identify events that reliably precede the behaviors you are trying to stop. For example, for some people smoking is at least under partial control by certain types of social events. So, one strategy for decreasing a behavior is to identify, and then avoid, the (antecedent/consequent) events that may control the behavior.

26. **Discuss how to execute, evaluate, and end a self-modification program.**

26-1. Successful execution of the program depends on several factors. To avoid cheating, try creating a formal, written, behavioral _________________. Or, make an arrangement so that (only you/someone else) delivers the reinforcers and punishments.

26-2. If your program isn't working, some small revision may turn it around. Try increasing the strength of the reinforcer, or else try ________________ the delay between the behavior and delivery of the reinforcer.

26-3. It is generally a good idea to specify in advance the conditions under which you would end the program. You may wish to phase it out by having a/an (gradual/immediate) reduction in the frequency or potency of reinforcers, although for some successful programs the new behaviors become self-maintaining on their own.

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**CRITICAL THINKING APPLICATION • MANIPULATING EMOTIONS: PAVLOV AND PERSUASION**

27. **Describe how classical conditioning is used to manipulate emotions.**

27-1. It is easy to forget that Pavlovian conditioning involves more than salivating dogs. It involves emotion, and in that respect it is important for a range of reactions—from phobias to sexual arousal to the effects of advertising. For practice with conditioning concepts label each of the following:

(a) A glamorous woman is shown entering an automobile. Label each of the following with CS, UCS, CR, and UCR. (Assume, for the sake of this example, that the target audience is initially more attracted to the woman than the car. It could work the other way, too.)

___ the woman
___ the car
___ attraction to the car
___ attraction to the woman
(b) A politician stands in front of an American flag.
What is the CS? ________________
the UCS? ________________
(c) A salesman takes you to lunch.
What is the CS? ________________
The UCS? ________________
The CR? ________________

27-2. Of course, there’s more going on in these examples than just classical conditioning. When we receive a favor, we are not only being conditioned, but may feel obliged to pay back or ____________ the person’s favor.

27-3. While the examples we’ve used involve liking or attraction, other emotions may be conditioned as well—such as feelings of masculinity and femininity. Want to be more masculine? Smoke these cigarettes, ads may suggest. Not that we must be conscious of manipulation attempts, for conditioning (does/does not) seem to require our awareness.

27-4. How do we protect ourselves against attempts to manipulate our emotions? One suggestion from research on persuasion is that merely being ____________ of the pervasiveness of conditioning will by itself provide some protections against manipulation strategies.

Review of Key Terms

<table>
<thead>
<tr>
<th>Acquisition</th>
<th>Fixed-ratio (FR) schedule</th>
<th>Primary reinforcers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antecedents</td>
<td>Higher-order conditioning</td>
<td>Punishment</td>
</tr>
<tr>
<td>Avoidance learning</td>
<td>Instinctive drift</td>
<td>Reinforcement</td>
</tr>
<tr>
<td>Behavioral contract</td>
<td>Instrumental learning</td>
<td>Reinforcement contingencies</td>
</tr>
<tr>
<td>Behavior modification</td>
<td>Intermittent reinforcement</td>
<td>Resistance to extinction</td>
</tr>
<tr>
<td>Classical conditioning</td>
<td>Law of effect</td>
<td>Schedule of reinforcement</td>
</tr>
<tr>
<td>Concurrent schedules of reinforcement</td>
<td>Learning</td>
<td>Secondary reinforcers</td>
</tr>
<tr>
<td>Conditioned reinforcers</td>
<td>Matching law</td>
<td>Shaping</td>
</tr>
<tr>
<td>Conditioned response (CR)</td>
<td>Negative reinforcement</td>
<td>Skinner box</td>
</tr>
<tr>
<td>Conditioned stimulus (CS)</td>
<td>Observational learning</td>
<td>Spontaneous recovery</td>
</tr>
<tr>
<td>Continuous reinforcement</td>
<td>Operant chamber</td>
<td>Stimulus discrimination</td>
</tr>
<tr>
<td>Cumulative recorder</td>
<td>Operant conditioning</td>
<td>Stimulus generalization</td>
</tr>
<tr>
<td>Discriminative stimuli</td>
<td>Optimal foraging theory</td>
<td>Token economy</td>
</tr>
<tr>
<td>Elicit</td>
<td>Partial reinforcement</td>
<td>Trial</td>
</tr>
<tr>
<td>Emit</td>
<td>Pavlovian conditioning</td>
<td>Unconditioned response (UCR)</td>
</tr>
<tr>
<td>Escape learning</td>
<td>Phobias</td>
<td>Unconditioned stimulus (UCS)</td>
</tr>
<tr>
<td>Extinction</td>
<td>Positive reinforcement</td>
<td>Variable-interval (VI) schedule</td>
</tr>
<tr>
<td>Fixed-interval (FI) schedule</td>
<td>Preparedness</td>
<td>Variable-ratio (VR) schedule</td>
</tr>
</tbody>
</table>
1. A relatively durable change in behavior or knowledge that is due to experience.

2. Irrational fears of specific objects or situations.

3. The most common name for a type of learning in which a neutral stimulus acquires the ability to evoke a response that was originally evoked by another stimulus.

4. Another name for classical conditioning, derived from the name of the person who originally discovered the conditioning phenomenon.

5. Two or more reinforcement schedules simultaneously available for two or more different responses.

6. A stimulus that evokes an unconditioned response.

7. The response to an unconditioned stimulus.

8. A previously neutral stimulus that has acquired the capacity to evoke a conditioned response.

9. A learned reaction to a conditioned stimulus that occurs because of previous conditioning.

10. To draw out or bring forth, as in classical conditioning.

11. Any presentation of a stimulus or pair of stimuli in classical conditioning.

12. The formation of a new response tendency.

13. Under concurrent schedules of reinforcement, rate of responding tends to match the rate of reinforcement available on each alternative response.

14. The gradual weakening and disappearance of a conditioned response tendency.

15. The reappearance of an extinguished response after a period of nonexposure to the conditioned stimulus.

16. Occurs when an organism responds to new stimuli that are similar to the stimulus used in conditioning.

17. Occurs when an organism learns not to respond to stimuli that are similar to the stimulus used in conditioning.

18. Occurs when a conditioned stimulus functions as if it were an unconditioned stimulus.

19. This term, introduced by Skinner, refers to learning in which voluntary responses come to be controlled by their consequences.

20. Another name for operant conditioning, this term was introduced earlier by Edward L. Thorndike.

21. Law stating that if a response in the presence of a stimulus leads to satisfying effects, the association between the stimulus and the response is strengthened.

22. Occurs when an event following a response strengthens the tendency to make that response.

23. A standard operant chamber in which an animal's responses are controlled and recorded.

24. Production of voluntary responses in responding in operant conditioning.

25. The circumstances or rules that determine whether responses lead to presentation of reinforcers; or, the relationship between a response and positive consequences.

26. Device that creates a graphic record of operant responding as a function of time.

27. The reinforcement of closer and closer approximations of the desired response.
28. The food-seeking behaviors of many animals maximize nutrition gained in relation to energy expended to locate and eat the foods.

29. Occurs when an organism continues to make a response after delivery of the reinforcer for it has been terminated.

30. Cues that influence operant behavior by indicating the probable consequences (reinforcement or nonreinforcement) of a response.

31. Stimulus events that are inherently reinforcing because they satisfy biological needs.

32. Stimulus events that acquire reinforcing qualities by being associated with primary reinforcers.

33. A specific pattern of presentation of reinforcers over time.

34. Occurs when every instance of a designated response is reinforced.

35. The name for all schedules of reinforcement in which a designated response is reinforced only some of the time.

36. The schedule in which the reinforcer is given after a fixed number of nonreinforced responses.

37. The schedule in which the reinforcer is given after a variable number of nonreinforced responses.

38. The schedule in which the reinforcer is given for the first response that occurs after a fixed time interval has elapsed.

39. The schedule in which the reinforcer is given for the first response that occurs after a variable time interval has elapsed.

40. Occurs when a response is strengthened because it is followed by the arrival of a rewarding (presumably pleasant) stimulus.

41. Occurs when a response is strengthened because it is followed by the removal of an aversive (unpleasant) stimulus.

42. Occurs when an organism engages in a response that brings aversive stimulation to an end.

43. Occurs when an organism engages in a response that prevents aversive stimulation from occurring.

44. Occurs when an event that follows a response weakens or suppresses the tendency to make that response.

45. Occurs when an animal's innate response tendencies interfere with conditioning processes.

46. Occurs when an organism's responding is influenced by the observation of others, who are called models.

47. A systematic approach to changing behavior through the application of the principles of conditioning.

48. Events that typically precede your target behavior and may play a major role in governing your target response; also, another term for discriminative stimuli.

49. A system for distributing symbolic reinforcers that are exchanged later for a variety of genuine reinforcers.

50. A written agreement outlining a promise to adhere to the contingencies of a behavior-modification program.

51. When a designated response is reinforced only some of the time; another name for intermittent reinforcement.

52. Another name for secondary reinforcers.
53. A species-specific predisposition to be conditioned in certain ways and not in others.

54. A small enclosure in which an animal’s responses are recorded and followed by specified consequences; a Skinner box.

Review of Key People

Albert Bandura  Robert Rescorla  E. L. Thorndike
John Garcia  Martin Seligman  John B. Watson
Ivan Pavlov  B. F. Skinner

1. The first to describe the process of classical conditioning.

2. Founded behaviorism; examined the generalization of conditioned fear in a boy known as “Little Albert.”

3. Developed a principle known as the law of effect; coined the term *instrumental learning*.

4. Elaborated the learning process known as operant conditioning; investigated schedules of reinforcement; developed programmed learning.

5. Asserted that environmental stimuli serve as signals and that some stimuli in classical conditioning are better signals than others.

6. Described and extensively investigated the process of observational learning.

7. Discovered that taste aversion was conditioned only through taste and nausea pairings and not through other stimulus pairings, such as taste and shock.

8. Proposed the theory of preparedness, the notion that there are species-specific predispositions to condition to certain stimuli and not to others.

Self-Quiz

1. In Pavlov’s original demonstration of classical conditioning, salivation to the bell was the
   a. conditioned stimulus
   b. conditioned response
   c. unconditioned stimulus
   d. unconditioned response
2. Sally developed a fear of balconies after almost falling from a balcony on a couple of occasions. What was the conditioned response?
   a. the balcony
   b. fear of the balcony
   c. almost falling
   d. fear resulting from almost falling

3. When the UCS is removed and the CS is presented alone for a period of time, what will occur?
   a. classical conditioning
   b. generalization
   c. acquisition
   d. extinction

4. Sally developed a fear of balconies from almost falling. Although she has had no dangerous experiences on bridges, cliffs, or tall buildings, she now fears these stimuli as well. Which of the following is likely to have produced a fear of these other stimuli?
   a. instinctive drift
   b. spontaneous recovery
   c. generalization
   d. discrimination

5. A researcher reinforces closer and closer approximations to a target behavior. What is the name of the procedure she is using?
   a. shaping
   b. classical conditioning
   c. discrimination training
   d. extinction

6. John says, “Please pass the salt.” Ralph passes the salt. “Thank you,” says John. John’s request precedes a behavior (salt passing) that is reinforced (“Thank you”). Thus, the request “Please pass the salt” is a ___ for passing the salt.
   a. discriminative stimulus
   b. response
   c. positive reinforcer
   d. conditioned stimulus (CS)

7. A rat is reinforced for the first lever-pressing response that occurs, on the average, after 60 seconds. Which schedule is the rat on?
   a. FR
   b. VR
   c. FI
   d. VI

8. When the rat presses a lever, the mild electric shock on the cage floor is turned off. What procedure is being used?
   a. punishment
   b. escape
   c. discrimination training
   d. avoidance

9. A cue light comes on in the dog’s shuttle box. It jumps the hurdle to the other side. What procedure is being used?
   a. punishment
   b. escape
   c. discrimination training
   d. avoidance
10. In the two-process explanation of avoidance, the cue stimulus acquires the capacity to elicit fear through the process of
   a. operant conditioning
   b. classical conditioning
   c. generalization
   d. discrimination

11. The contingencies are as follows: if the response occurs, a stimulus is presented; if the response does not occur, the stimulus is not presented. Under this procedure, the strength of the response decreases. What procedure is being used?
   a. positive reinforcement
   b. negative reinforcement
   c. punishment
   d. avoidance training

12. In terms of the traditional view of conditioning, research on conditioned taste aversion was surprising for two major reasons:
   a. there was a long delay between CS and UCS, and cues other than taste did not condition
   b. the dislike of a particular taste was operantly conditioned, and non-taste cues were classically conditioned
   c. conditioning did not occur to taste cues, but conditioning did occur to all other stimuli present when the food was consumed
   d. the sense of taste and smell seem to be relatively weak

13. Animal trainers (the Brelands) trained pigs to put coins in a piggy bank for a food reward. The animals learned the response, but instead of depositing the coins immediately in the bank, the pigs began to toss them in the air, drop them, push them on the ground, and so on. What had occurred that interfered with conditioning?
   a. conditioned taste aversion
   b. blocking
   c. instinctive drift
   d. S & L scandal

14. Which of the following produces strong resistance to extinction?
   a. a continuous reinforcement schedule
   b. an intermittent reinforcement schedule
   c. optimal foraging behavior
   d. discrimination and differentiation

15. Earlier learning viewpoints considered classical and operant conditioning to be automatic processes that did not depend at all on biological or cognitive factors. Research involving which of the following topics cast doubt on this point of view?
   a. signal relations
   b. instinctive drift and conditioned taste aversion
   c. response-outcome relations
   d. all of the above