HOW DO WE LEARN?

OBJECTIVE 1: Define learning, and identify two forms of learning.
1. A relatively permanent change in an organism’s behavior due to experience is called __LEARNING________.
2. More than 200 years ago, philosophers such as John Locke and David Hume argued that an important factor in learning is our tendency to ____ASSOCIATE________ events that occur in sequence. Even simple animals, such as the sea snail Aplysia, can learn simple __ASSOCIATIONS________ between stimuli. This type of learning is called ____ASSOCIATIVE________ __LEARNING________.
3. The type of learning in which the organism learns to associate two stimuli is ____CLASSICAL____ conditioning.
4. The tendency of organisms to associate a response and its consequence forms the basis of ____OPERANT______ conditioning.
5. Complex animals often learn behaviors merely by ____OBSERVING______ others perform them.

OBJECTIVE 2: Define classical conditioning and behaviorism, and describe the basic components of classical conditioning.
1. Classical conditioning was first explored by the Russian physiologist __IVAN PAVLOV__. Early in the twentieth century, psychologist __JOHN WATSON______ urged psychologists to discard references to mental concepts in favor of studying observable behavior. This view, called ____BEHAVIORISM______, influenced American psychology during the first half of that century.
2. In Pavlov’s classic experiment, a tone, or __CONDITIONED___ ___STIMULUS____, is sounded just before food, the __UNCONDITIONED__ ___STIMULUS____, is placed in the animal’s mouth.
3. An animal will salivate when food is placed in its mouth. This salivation is called the __UNCONDITIONED___ __RESPONSE____.
4. Eventually, the dogs in Pavlov’s experiment would salivate on hearing the tone. This salivation is called the __CONDITIONED___ ___RESPONSE____.

OBJECTIVE 3: Describe the timing requirements for the initial learning of a stimulus-response relationship.
5. The initial learning of a conditioned response is called __ACQUISITION_____. For many conditioning situations, the optimal interval between a neutral stimulus and the US is __ONE-HALF___ __SECOND_____.
6. When the US is presented prior to a neutral stimulus, conditioning ____DOES NOT_____ (does/does not) occur.

OBJECTIVE 4: Summarize the process of extinction, spontaneous recovery, generalization, and discrimination.
9. If a CS is repeatedly presented without the US, ____EXTINCTION____ soon occurs; that is, the CR diminishes.
10. Following a rest, however, the CR reappears in response to the CS; this phenomenon is called ____SPONTANEOUS____ ____RECOVERY_____.
11. Subjects often respond to a similar stimulus as they would to the original CS. This phenomenon is called ____GENERALIZATION_____.

OBJECTIVE 5: Discuss the survival value of generalization and discrimination.
12. Subjects can also be trained not to respond to ____SIMILAR______ stimuli. This learned ability is called ____DISCRIMINATION_____.
13. Being able to recognize differences among stimuli has ____SURVIVAL______ value because it lets us limit our learned responses to appropriate stimuli.

OBJECTIVE 6: Discuss the importance of cognitive processes in classical conditioning.
14. The early behaviorists believed that to understand behavior in various organisms, any presumption of ____COGNITION______ was unnecessary.
15. Experiments by Rescorla and Wagner demonstrate that a CS must reliably ____PREDICT______ the US for an association to develop and, more generally, that ____COGNITIVE______ processes play a role in conditioning. It is as if the animal learns to ____EXPECT______ that the US will occur.
16. The importance of cognitive processes in human conditioning is demonstrated by the failure of classical conditioning as a treatment for ___ALCOHOLISM______.

OBJECTIVE 7: Describe some of the ways that biological predispositions can affect learning by classical conditioning.

17. Some psychologists once believed that any natural _____RESPONSE______ could be conditioned to any neutral _____STIMULUS______.

18. Garcia discovered that rats would associate _____SICKNESS______ with taste but not with other stimuli. Garcia found that taste-aversion conditioning _____WOULD________ (would/would not) occur when the delay between the CS and US was more than an hour.

19. Results such as these demonstrate that the principles of learning are constrained by the _____BIOLOGICAL________ predispositions of each animal species and that they help each species _____ADAPT________ to its environment. They also demonstrate the importance of different _____LEVELS________ OF _____ANALYSIS______ in understanding complex phenomena.

OBJECTIVE 8: Summarize Pavlov's contribution to our understanding of learning.

20. Classical conditioning is one way that virtually all organisms learn to _____ADAPT______ to their environment.

21. Another aspect of Pavlov's legacy is that he showed how a process such as learning could be studied _____OBJECTIVELY______.

Explain why the study of classical conditioning is important.

CLASICAL CONDITIONING LED TO THE DISCOVERY OF GENERAL PRINCIPLES OF LEARNING THAT ARE THE SAME FOR ALL SPECIES TESTED, INCLUDING HUMANS. CLASICAL CONDITIONING ALSO PROVIDED AN EXAMPLE TO THE YOUNG FIELD OF PSYCHOLOGY OF HOW COMPLEX, INTERNAL PROCESSES COULD BE STUDIED OBJECTIVELY. IN ADDITION, CLASSICAL CONDITIONING HAS PROVEN TO HAVE MANY HELPFUL APPLICATIONS TO HUMAN HEALTH AND WELL-BEING.

OBJECTIVE 9: Describe some uses of classical conditioning to improve human health and well-being.

22. Through classical conditioning, drug users often develop a _____CRAVING______ when they encounter _____CUES______ associated with previous highs.

23. Research studies demonstrate that the body’s immune system _____CAN_____ (can/cannot) be classically conditioned.

Describe the Watson and Rayner experiment.

IN WATSON AND RAYNER'S EXPERIMENT, CLASSICAL CONDITIONING WAS USED TO CONDITION FEAR OF A RAT IN ALBERT, AN 11-MONTH OLD INFANT. WHEN ALBERT TOUCHED THE WHITE RAT (NEUTRAL STIMULUS), A LOUD NOISE (UNCONDITIONED STIMULUS) WAS SOUNDED. AFTER SEVERAL PAIRINGS OF THE RAT WITH THE NOISE, ALBERT BEGAN CRYING AT THE MERE SIGHT OF THE RAT. THE RAT HAD BECOME A CONDITIONED STIMULUS, TRIGGERING A CONDITIONED RESPONSE OF FEAR.

OPERANT CONDITIONING

OBJECTIVE 10: Identify the two major characteristics that distinguish classical conditioning from operant conditioning.

1. Classical conditioning associates _____NEUTRAL______ stimuli with stimuli that trigger responses that are _____AUTOMATIC______. Thus, in the form of conditioning, the organism _____DOES NOT______ (does/does not) control the responses.

2. The reflexive responses of classical conditioning involve _____RESPONDENT______ behavior.

3. In contrast, behavior that is more spontaneous and that is influenced by its consequences is called _____OPERANT______ behavior.

OBJECTIVE 11: State Thorndike’s law of effect, and explain its connection to Skinner’s research on operant conditioning.

4. B.F. Skinner used Thorndike’s _____LAW______ _____OF_____ _____EFFECT_____ as a starting point in developing a “behavioral technology.” This principle states that _____REWARDED______ behavior is likely to _____RECUR_____.

5. Skinner designed an apparatus, called the _____SKINNER_____ _____BOX_____ to investigate learning in animals.

OBJECTIVE 12: Describe the shaping procedure, and explain how it can increase our understanding of what animals and babies can discriminate.

6. The procedure in which a person teaches an animal to perform an intricate behavior by building up to it in small steps is called ____SHAPING___. This method involves reinforcing successive ____APPROXIMATIONS____ of the desired behavior.

7. In experiments to determine what an animal can perceive, researchers have found that animals are capable of forming ____CONCEPTS____ and ____DISCRIMINATING____ between stimuli. Similar experiments have been conducted with babies, who also can’t verbalize their responses.

8. A situation, event, or signal that a certain response will be reinforced is a ____DISCRIMINATIVE____ _____STIMULUS______.
OBJECTION 13: Compare positive and negative reinforcement, and give one example each of a primary reinforcer, a conditioned reinforcer, an immediate reinforcer and a delayed reinforcer.

9. An event that increases the frequency of a preceding response is a ___REINFORCER___.

10. A stimulus that strengthens a response by presenting a typically pleasurable stimulus after a response is a ___POSITIVE___ ___REINFORCER___.

11. A stimulus that strengthens a response by reducing or removing an aversive (unpleasant) stimulus is a ___NEGATIVE___ ___REINFORCER___.

12. Reinforcers, such as food and shock, that are related to basic needs and therefore do not rely on learning are called ___PRIMARY___ ___REINFORCER___. Reinforcers that must be conditioned and therefore derive their power through association are called ___CONDITIONED___ ___REINFORCER___.

13. Children who are able to delay gratification tend to become ___MORE____ (more/less) socially competent and high achieving as they mature.

14. Immediate reinforcement _______IS_______ (is/is not) more effective than its alternative, ___DELAYED______ reinforcement. This explains in part the difficulty that _____DRUG______ users have in quitting their habits, as well as the tendency of some teens to engage in risky ___UNPROTECTED____ ___SEX______.

OBJECTION 14: Discuss the strengths and weaknesses of continuous and partial (intermittent) reinforcement schedules, and identify four schedules of partial reinforcement.

15. The procedure involving reinforcement of each and every response is called ___CONTINUOUS___ ___REINFORCEMENT_____. Under these conditions, learning is ___RAPID______ (rapid/slow). When this type of reinforcement is discontinued, extinction is ___RAPID______ (rapid/slow).

16. The procedure in which responses are reinforced only part of the time is called ___PARTIAL(INTERMITTENT)___ reinforcement. Under these conditions, learning is generally ___SLOWER______ (faster/slower) than it is with continuous reinforcement. Behavior reinforced in this manner is ___VERY______ (very/not very) resistant to extinction.

17. When behavior is reinforced after a set number of responses, a ___FIXED_____ ___RATIO____ schedule is in effect.

18. Three-year old Yusef knows that if he cries when he wants a treat, his mother will sometimes give in. When, as in this case, reinforcement occurs after an unpredictable number of responses, a ___VARIABLE_______ ___RATIO______ schedule is being used.

19. Reinforcement of the first response after a set interval of time defines the ___FIXED_____ ___INTERVAL____ schedule. An example of this schedule is ___CHECKING THE MAIL AS DELIVERY TIME APPROACHES_____.

20. When the first response after varying amounts of time is reinforced, a ___VARIABLE___ ___INTERVAL____ schedule is in effect.

Describe the typical patterns of response under fixed-interval, fixed-ratio, variable-interval, and variable-ratio schedules of reinforcement.

FOLLOWING REINFORCEMENT ON A FIXED-INTERVAL SCHEDULE, THERE IS A PAUSE IN RESPONDING AND THEN AN INCREASING RATE OF RESPONSE AS TIME FOR THE NEXT REINFORCEMENT DRAW NEAR. ON A FIXED-RATIO SCHEDULE THERE ALSO IS A POST-REINFORCEMENT PAUSE, FOLLOWED, HOWEVER, BY A RETURN TO A CONSISTENT, HIGH RATE OF RESPONSE. BOTH KINDS OF VARIABLE SCHEDULES PRODUCE STEADIER RATES OF RESPONSE, WITHOUT THE PAUSES ASSOCIATED WITH FIXED SCHEDULES. IN GENERAL, SCHEDULES LINKED TO RESPONSES PRODUCE HIGHER RESPONSE RATES AND VARIABLE SCHEDULES PRODUCE MORE CONSISTENT RESPONDING THAN THE RELATED FIXED SCHEDULES.

OBJECTION 15: Discuss the ways negative punishment, positive punishment, and negative reinforcement differ, and list some drawbacks of punishment as a behavior control technique.

21. An aversive consequence that decreases the likelihood of the behavior that preceded it is called ___PUNISHMENT____. If an aversive stimulus is administered, it is called ___POSITIVE___ ___PUNISHMENT____. If a desirable stimulus is withdrawn, it is called ___NEGATIVE___ ___PUNISHMENT____.

22. Because punished behavior is merely ___SUPPRESSED___, it may reappear.

23. Punishment can also lead to ____FEAR____ and a sense of helplessness, as well as to the association of the aversive event with ____THE PERSON WHO ADMINISTERED IT____.

24. Punishment also often increases ___AGGRESSIVENESS____ and does not guide the individual toward more desirable behavior.

OBJECTION 16: Explain how latent learning and the effect of external rewards demonstrate that cognitive processing is an important part of learning.

25. Skinner and other behaviorists resisted the growing belief that expectations, perceptions, and other ___COGNITIVE___ processes have a valid place in the science of psychology.

26. When a well-learned route in a maze is blocked, rats sometimes choose an alternative route, acting as if they
were consulting a COGNITIVE MAP.

27. Animals may learn from experience even when reinforcement is not available. When learning is not apparent until reinforcement has been provided, LATENT LEARNING is said to have occurred.

28. Excessive rewards may undermine INTRINSIC MOTIVATION, which is the desire to perform a behavior for its own sake. The motivation to seek external rewards and avoid punishment is called EXTRINSIC MOTIVATION.

OBJECTIVE 17: Explain how biological predispositions place limits on what can be achieved through operant conditioning.

29. Operant conditioning IS (is/is not) constrained by an animal’s biological predispositions.

30. For instance, with animals it is difficult to use food as a REINFORCER to SHAPE behaviors that are not naturally associated with FOOD.

31. Biological constraints predispose organisms to learn associations that are naturally ADAPTIVE. When animals revert to their biologically predisposed patterns, they are exhibiting what is called INSTINCTIVE DRIFT.

OBJECTIVE 18: Describe the controversy over Skinner’s views of human nature.

32. Skinner’s views were controversial because he insisted that EXTERNAL influences, rather than INTERNAL THOUGHTS and FEELINGS, shape behavior.

33. Skinner also advocated the use of OPERANT principles to influence people in ways that promote more desirable BEHAVIOR.

34. Skinner’s critics argued that he DEHUMANIZED people by neglecting their personal FREEDOM and by seeking to CONTROL their actions.

OBJECTIVE 19: Describe some ways to apply operant conditioning principles at school, in sports, at work, and at home.

35. The use of teaching machines and programmed textbooks was an early application of the operant conditioning procedure of SHAPING to education. On-line TESTING systems, software that is INTERACTIVE, and WEB-based learning are newer examples of this application of operant principles. Reinforcement principles can also be used to enhance ATHLETIC abilities by shaping successive approximations of new skills.

36. In boosting productivity in the workplace, positive reinforcement is MORE (more/less) effective when applied to specific behaviors than when given to reward general merit and when the desired performance is well defined and ACHIEVABLE. For such behaviors, immediate reinforcement is MORE (more/no more) effective than delayed reinforcement.

37. Many economists and psychologists believe that people’s spending behavior is controlled by its consequences (its COSTS and BENEFITS).

38. In using operant conditioning to change your own behavior, you would follow these four steps:
   a. STATE YOUR GOAL
   b. MONITOR THE BEHAVIOR (WHEN AND WHERE IT OCCURS)
   c. REINFORCE THE DESIRED BEHAVIOR
   d. REDUCE THE INCENTIVES TO PERFORM THE UNDESIRABLE BEHAVIOR

OBJECTIVE 20: Identify the major similarities and differences between classical and operant conditioning.

39. Classical conditioning and operant conditioning are both forms of ASSOCIATIVE LEARNING.

40. Both types of conditioning involve similar processes of ACQUISITION, EXTINCTION, SPONTANEOUS RECOVERY, GENERALIZATION, and DISCRIMINATION.

41. Classical and operant conditioning are both subject to the influences of COGNITIVE processes and BIOLOGICAL predispositions.

42. Through classical conditioning, an organism associates different STIMULI that it does not CONTROL and responds AUTOMATICALLY.

43. Through operant conditioning, an organism associates its OPERANT BEHAVIORS with their CONSEQUENCES.

LEARNING BY OBSERVATION

OBJECTIVE 21: Describe the process of observational learning, and explain the importance of discovery and mirror neurons.

1. Learning by observing and imitating others is called MODELING, or OBSERVATIONAL LEARNING. This form of learning OCCURS (occurs/does not occur) in species other than our own.

2. Neuroscientists have found MIRROR neurons in the brain’s FRONTAL lobe that provide a neural basis for OBSERVATIONAL learning. These neurons have been observed to fire when monkeys perform a simple task and when they OBSERVE OTHER MONKEYS PERFORMING THE SAME TASK. This type of neuron HAS (has/has not) been found in human brains.
3. By age ___9 MONTHS___, infants will imitate novel play behaviors. By age ___14 MONTHS___, they will imitate acts modeled on television.

**OBJECTIVE 22:** Describe Bandura’s findings on what determines whether we will imitate a model.

4. The psychologist best known for research on observational learning is ___BANDURA___.

5. In one experiment, the child who viewed an adult punch an inflatable doll played ____MORE____ (more/less) aggressively than the child who had not observed the adult.

6. Bandura believes people imitate a model because of ____REWARDS____ and ____PUNISHMENT____, those received by the model as well as by imitators.

7. These results may help explain why ___ABUSIVE___ parents might have ___AGGRESSIVE___ children. However, ___GENETIC___ factors may also be involved.

**OBJECTIVE 23:** Discuss the impact of prosocial modeling.

8. Children will also model positive, or ___PROSOCIAL___, behaviors.

9. Models are most effective when they are perceived as ___SIMILAR____, ____SUCCESSFUL____, or ___ADMIRABLE____. Models are also most effective when their words and actions are ____CONSISTENT___.

**OBJECTIVE 24:** Explain why correlations cannot prove that watching violent TV causes violent behavior, and cite some experimental evidence that helps demonstrate a cause-effect link.

10. Children in developed countries spend more time ____WATCHING____ ____TELEVISION___ than they spend in school.

11. Compared to real-world crimes, television depicts a much higher percentage of crimes as being ____VIOLENT___ in nature.

12. Correlational studies ___LINK___ (link/do not link) watching television violence with violent behavior.

13. The more hours children spend watching violent programs, the more at risk they are for ____AGGRESSION___ and ____CRIME___ as teens and adults.

14. Correlation does not prove ___CAUSATION___. Most researchers believe that watching violence on television ____DOES____ (does/does not) lead to aggressive behavior.

15. The violence effect stems from several factors, including ____IMITATION____ of observed aggression and the tendency of prolonged exposure to violence to ____DESENSITIZE___ viewers.