

# Effects of Biology and Cognition, and Learning by Observation

## MODULE OVERVIEW

Module 22 begins with a discussion of two important issues relevant to an organism's ability to learn. These include the ways in which learning is constrained by a species' biological predispositions and the role of cognitive processes in conditioning.

The module then covers observational learning, in which we learn by observing and imitating others. Although the basic forms of learning—classical and operant conditioning—account for much of human behavior, we also learn indirectly, by observing other people.

NOTE: Answer guidelines for all Module 22 questions begin on page 201.

## MODULE REVIEW

First, skim each section, noting headings and bold-face items. After you have read the section, review each objective by answering the fill-in and essay-type questions that follow it. In some cases, Study Tips explain how best to learn a difficult concept and Applications help you to know how well you understand the material. As you proceed, evaluate your performance by consulting the answers beginning on page 201. Do not continue with the next section until you understand each answer. If you need to, review or reread the section in the textbook before continuing.

### Biological Constraints on Conditioning

**Objective 22-1:** Explain how biological constraints affect classical and operant conditioning.

1. Some psychologists once believed that any natural \_\_\_\_\_ could be conditioned to any neutral \_\_\_\_\_.

2. Garcia discovered that rats would associate \_\_\_\_\_ with taste but not with other stimuli.
3. Garcia found that taste-aversion conditioning \_\_\_\_\_ (would/would not) occur when the delay between the CS and the US was more than an hour. Conditioning is speedier, stronger, and more durable when the CS is \_\_\_\_\_ relevant.
4. Results such as these demonstrate that the principles of learning are constrained by the \_\_\_\_\_ predispositions of each animal species and that they help each species \_\_\_\_\_ to its environment. They also demonstrate the importance of different \_\_\_\_\_ in understanding complex phenomena.
5. Operant conditioning \_\_\_\_\_ (is/is not) constrained by an animal's biological predispositions.
6. For instance, with animals it is difficult to use food as a \_\_\_\_\_ to \_\_\_\_\_ behaviors that are not naturally associated with \_\_\_\_\_.
7. Biological constraints predispose organisms to learn associations that are naturally \_\_\_\_\_. When animals revert to their biologically predisposed patterns, they are exhibiting what is called \_\_\_\_\_.

## APPLICATIONS:

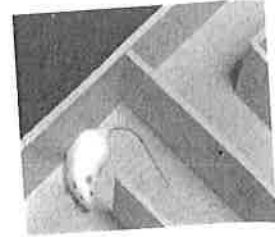
8. A pigeon can easily be taught to flap its wings to avoid shock but not for food reinforcement. According to the text, this is most likely so because
- pigeons are biologically predisposed to flap their wings to escape aversive events and to use their beaks to obtain food.
  - shock is a more motivating stimulus for birds than food is.
  - hungry animals have difficulty delaying their eating long enough to learn any new skill.
  - of all of these reasons.
9. Last evening May-Ling ate her first cheeseburger and french fries at an American fast-food restaurant. A few hours later she became ill. It can be expected that May-Ling will
- develop an aversion to the sight of a cheeseburger and french fries.
  - develop an aversion to the taste of a cheeseburger and french fries.
  - not associate her illness with the food she ate.
  - associate her sickness with something she experienced immediately before she became ill.

## Cognition's Influences on Conditioning

**Objective 22-2:** Explain how cognitive processes affect classical and operant conditioning.

10. The early behaviorists believed that to understand behavior in various organisms, any presumption of \_\_\_\_\_ was unnecessary.
11. We now know that we can acquire mental information that guides our behavior through \_\_\_\_\_.
12. Experiments by Rescorla and Wagner demonstrate that a CS must reliably \_\_\_\_\_ the US for an association to develop and, more generally, that \_\_\_\_\_ processes play a role in conditioning. It is as if the animal learns to \_\_\_\_\_ that the US will occur.
13. The importance of cognitive processes in human conditioning is demonstrated by the failure of classical conditioning as a treatment for \_\_\_\_\_.
14. Skinner and other behaviorists resisted the growing belief that expectations, perceptions, and other \_\_\_\_\_ processes have a valid place in the science of psychology.

15. When a well-learned route in a maze is blocked, rats sometimes choose an alternative route, acting as if they were consulting a \_\_\_\_\_.



16. Animals may learn from experience even when reinforcement is not available. When learning is not apparent until reinforcement has been provided, \_\_\_\_\_ is said to have occurred.
17. Excessive rewards may undermine \_\_\_\_\_,

which is the desire to perform a behavior for its own sake. The motivation to seek external rewards and avoid punishment is called \_\_\_\_\_.

## APPLICATIONS:

18. After discovering that her usual route home was closed due to road repairs, Sharetta used her knowledge of the city and sense of direction to find an alternative route. This is an example of
- latent learning.
  - observational learning.
  - shaping.
  - using a cognitive map.
19. Two rats are independently placed in a maze. One rat is rewarded with food in the goal box. The other receives no food reward. On a later trial, food is placed in the goal box for the "unrewarded" rat. What can you say about the rat's behavior on that trial?
- The "unrewarded" rat will run to the goal box just as quickly as the rewarded rat.
  - The rat will wander around the maze and never find the food reward.
  - The rat will find the food reward, but it will take much longer than the rewarded rat.
  - The rat will not even try to find the food reward.
20. Nancy decided to take introductory psychology because she has always been interested in human behavior. Jack enrolled in the same course because he thought it would be easy. Nancy's behavior was motivated by \_\_\_\_\_, Jack's by \_\_\_\_\_.
- extrinsic motivation; intrinsic motivation
  - intrinsic motivation; extrinsic motivation
  - drives; incentives
  - incentives; drives

## Learning

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## Learning by Observation

**Objective 22-3:** Describe the process of observational learning, and explain how some scientists believe it is enabled by mirror neurons.

21. Learning by observing and imitating others is called \_\_\_\_\_, or \_\_\_\_\_. This form of learning \_\_\_\_\_ (occurs/ does not occur) in species other than our own.
22. The psychologist best known for research on observational learning is \_\_\_\_\_.
23. In one experiment, the child who viewed an adult punch an inflatable doll played \_\_\_\_\_ (more/less) aggressively than the child who had not observed the adult.
24. Bandura believes people imitate a model because of \_\_\_\_\_ and \_\_\_\_\_, those received by the model as well as by imitators.
25. Models are most effective when they are perceived as \_\_\_\_\_, or \_\_\_\_\_. Models are also most effective when their words and actions are \_\_\_\_\_.
26. Neuroscientists have found \_\_\_\_\_ neurons in the brain's \_\_\_\_\_ lobe that provide a neural basis for \_\_\_\_\_ learning. These neurons have been observed to fire when monkeys perform a simple task and when they \_\_\_\_\_. This type of neuron \_\_\_\_\_ (has/has not) been found in human brains.
27. By age \_\_\_\_\_, infants will imitate novel various novel gestures. By age \_\_\_\_\_, they will imitate acts modeled on television. Children's brains enable their \_\_\_\_\_ and their \_\_\_\_\_.

**APPLICATIONS:** Children—and, of course, adults—learn a great deal by watching other people. Depending on the models, the behavior they learn may be good or bad.

28. During holiday breaks Lionel watches wrestling, which \_\_\_\_\_ his aggressive

tendencies. His brother Michael won't watch the wrestling because he feels the pain of the choke hold, for example, as reflected in his brain's \_\_\_\_\_.

Instead, Michael spends time with Grandma, who cooks for the poor during the holiday season, helping Michael to learn \_\_\_\_\_ behavior.

29. Mrs. Ramirez often tells her children that it is important to buckle their seat belts while riding in the car, but she rarely does so herself. Her children will probably learn to
  - a. use their seat belts and tell others it is important to do so.
  - b. use their seat belts but not tell others it is important to do so.
  - c. tell others it is important to use seat belts but rarely use them themselves.
  - d. neither tell others that seat belts are important nor use them.
30. After watching coverage of the Olympics on television recently, Lynn and Susan have been staging their own "summer games." Which of the following best accounts for their behavior?
  - a. classical conditioning
  - b. observational learning
  - c. latent learning
  - d. shaping

**Objective 22-4:** Discuss the impact of prosocial modeling and of antisocial modeling.

31. Children will model positive, or \_\_\_\_\_, behaviors.
32. Children will also model negative, or \_\_\_\_\_, behaviors. This may help explain why \_\_\_\_\_ parents might have \_\_\_\_\_ children. However, \_\_\_\_\_ factors may also be involved.
33. Children in developed countries spend more time \_\_\_\_\_ than they spend in school.
34. Compared with the real world, television depicts a much higher percentage of crimes as being \_\_\_\_\_ in nature.

35. (Thinking Critically) Correlational studies \_\_\_\_\_ (link/do not link) watching television violence with violent behavior.
36. (Thinking Critically) The more hours children spend watching violent programs, the more at risk they are for \_\_\_\_\_ and \_\_\_\_\_ as teens and adults.
37. (Thinking Critically) Correlation does not prove \_\_\_\_\_. Most researchers believe that watching violence on television \_\_\_\_\_ (does/does not) lead to aggressive behavior.
38. (Thinking Critically) The violence-viewing effect stems from several factors, including \_\_\_\_\_ of observed aggression and the tendency of prolonged exposure to violence to \_\_\_\_\_ viewers.
4. Learning by imitating others' behaviors is called \_\_\_\_\_ learning. The researcher best known for studying this type of learning is \_\_\_\_\_.  
 a. secondary; Skinner  
 b. observational; Bandura  
 c. secondary; Pavlov  
 d. observational; Watson
5. Classical conditioning experiments by Rescorla and Wagner demonstrate that an important factor in conditioning is  
 a. the research participant's age.  
 b. the strength of the stimuli.  
 c. the predictability of an association.  
 d. the similarity of stimuli.
6. Mirror neurons are found in the brain's \_\_\_\_\_ and are believed by some scientists to be the neural basis for \_\_\_\_\_.  
 a. frontal lobe; observational learning  
 b. frontal lobe; classical conditioning  
 c. temporal lobe; operant conditioning  
 d. temporal lobe; observational learning

## PROGRESS TEST

### Multiple-Choice Questions

Circle your answers to the following questions and check them with the answers beginning on page 202. If your answer is incorrect, read the explanation for why it is incorrect and then consult the text.

- Learning is best defined as
  - any behavior produced by an organism without being provoked.
  - a change in the behavior of an organism.
  - a relatively permanent change in the behavior of an organism due to experience.
  - behavior based on operant rather than respondent conditioning.
- Cognitive processes are
  - unimportant in classical and operant conditioning.
  - important in both classical and operant conditioning.
  - more important in classical than in operant conditioning.
  - more important in operant than in classical conditioning.
- In Garcia and Koelling's studies of taste-aversion learning, rats learned to associate
  - taste with electric shock.
  - sights and sounds with sickness.
  - taste with sickness.
  - taste and sounds with electric shock.
- In promoting observational learning, the most effective models are those that we perceive as
  - similar to ourselves.
  - respected and admired.
  - successful.
  - having any of these characteristics.
- A cognitive map is a
  - mental representation of one's environment.
  - sequence of thought processes leading from one idea to another.
  - set of instructions detailing the most effective means of teaching a particular concept.
  - biological predisposition to learn a particular skill.
- After exploring a complicated maze for several days, a rat subsequently ran the maze with very few errors when food was placed in the goal box for the first time. This performance illustrates
  - classical conditioning.
  - discrimination learning.
  - observational learning.
  - latent learning.
- Experiments on taste-aversion learning demonstrate that
  - for the conditioning of certain stimuli, the US need not immediately follow the CS.
  - any perceivable stimulus can become a CS.
  - all animals are biologically primed to associate illness with the taste of a tainted food.
  - all of these statements are true.