Module 30

Learning by Observation


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Module Learning Objectives

30-1 Describe the process of observational learning, and explain how some scientists believe it is enabled by mirror neurons.

30-2 Discuss the impact of prosocial modeling and of antisocial modeling.

observational learning learning by observing others. Also called *social learning*.

modeling the process of observing and imitating a specific behavior.

AP® Exam Tip

Bandura's Bobo doll experiment is one of the most famous in psychology. It shows up frequently on the AP® exam.

30-1 What is observational learning, and how do some scientists believe it is enabled by mirror neurons?

Cognition is certainly a factor in **observational learning** (also called *social learning*) in which higher animals, especially humans, learn without direct experience, by watching and imitating others. A child who sees his sister burn her fingers on a hot stove learns not to touch it. We learn our native languages and various other specific behaviors by observing and imitating others, a process called **modeling.**

Picture this scene from an experiment by Albert Bandura, the pioneering researcher of observational learning (Bandura et al., 1961): A preschool child works on a drawing. An adult in another part of the room is building with Tinkertoys. As the child watches, the adult gets up and for nearly 10 minutes pounds, kicks, and throws around the room a large inflated Bobo doll, yelling, "Sock him in the nose. . . . Hit him down. . . . Kick him."

The child is then taken to another room filled with appealing toys. Soon the experimenter returns and tells the child she has decided to save these good toys "for the other children." She takes the now-frustrated child to a third room containing a few toys, including a Bobo doll. Left alone, what does the child do?

Albert Bandura "The Bobo doll follows me wherever I go. The photographs are published in every introductory psychology text and virtually every undergraduate takes introductory psychology. I recently checked into a Washington hotel. The clerk at the desk asked, 'Aren't you the psychologist who did the Bobo doll experiment?' I answered, 'I am afraid that will be my legacy.' He replied, 'That deserves an upgrade. I will put you in a suite in the quiet part of the hotel'" (2005).

Compared with children not exposed to the adult model, those who viewed the model's actions were more likely to lash out at the doll. Observing the aggressive outburst apparently lowered their inhibitions. But *something more* was also at work, for the children imitated the very acts they had observed and used the very words they had heard (**FIGURE 30.1**).

That "something more," Bandura suggests, was this: By watching a model, we experience *vicarious reinforcement* or *vicarious punishment,* and we learn to anticipate a behavior's consequences in situations like those we are observing. We are especially likely to learn from people we perceive

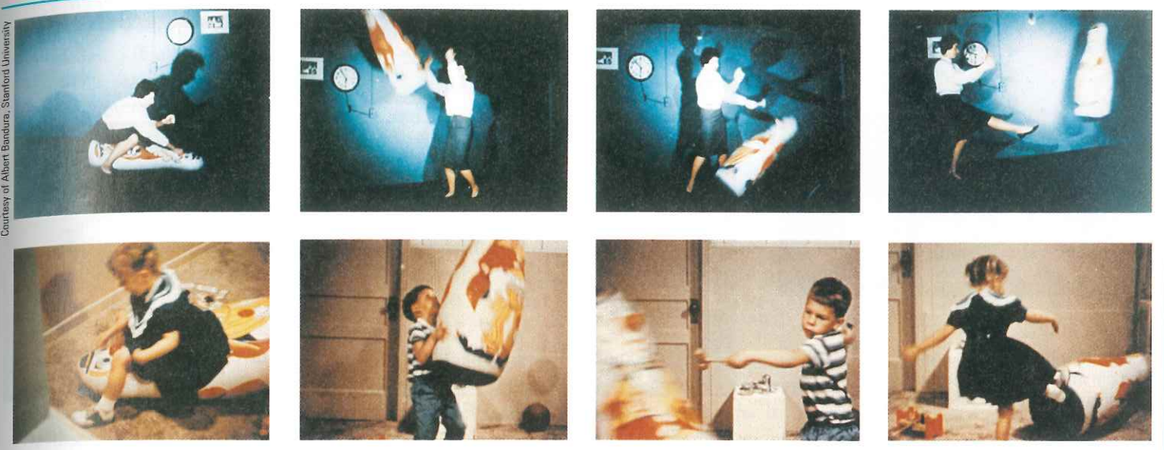

Courtesy of Albert Bandura, Stanford University

Figure 30.1
The famous Bobo doll experiment Notice how the children's actions directly imitate the adult's.

as similar to ourselves, as successful, or as admirable. Functional MRI scans show that when people observe someone winning a reward (and especially when it's someone likable and similar to themselves) their own brain reward systems activate, much as if they themselves had won the reward (Mobbs et al., 2009). When we identify with someone, we experience their outcomes vicariously. Lord Chesterfield (1694–1773) had the idea: "We are, in truth, more than half what we are by imitation."

Mirrors and Imitation in the Brain

On a 1991 hot summer day in Parma, Italy, a lab monkey awaited its researchers' return from lunch. The researchers had implanted wires next to its motor cortex, in a frontal lobe brain region that enabled the monkey to plan and enact movements. The monitoring device would alert the researchers to activity in that region of the monkey's brain. When the monkey moved a peanut into its mouth, for example, the device would buzz. That day, as one of the researchers reentered the lab, ice cream cone in hand, the monkey stared at him. As the researcher raised the cone to lick it, the monkey's monitor buzzed—as if the motionless monkey had itself moved (Blakeslee, 2006; Iacoboni, 2008, 2009).

mirror neurons frontal lobe neurons that some scientists believe fire when performing certain actions or when observing another doing so. The brain's mirroring of another's action may enable imitation and empathy.

The same buzzing had been heard earlier, when the monkey watched humans or other monkeys move peanuts to their mouths. The flabbergasted researchers had, they believed, stumbled onto a previously unknown type of neuron (Rizzolatti et al., 2002, 2006). These presumed **mirror neurons** may provide a neural basis for everyday imitation and observational learning. When a monkey grasps, holds, or tears something, these neurons fire. And they likewise fire when the monkey observes another doing so. When one monkey sees, its neurons mirror what another monkey does.

Imitation is widespread in other species. In one experiment, a monkey watching another selecting certain pictures to gain treats learned to imitate the order of choices (**FIGURE 30.2** on the next page). In other research, rhesus macaque monkeys rarely made up quickly after a fight—unless they grew up with forgiving older macaques. Then, more often than not, their fights, too, were quickly followed by reconciliation (de Waal & Johanowicz, 1993). Rats, pigeons, crows, and gorillas all observe others and learn (Byrne et al., 2011; Dugatkin, 2002).

Mirror neurons at work?

"Your back is killing me!"

Monkey A's screen Monkey B's screen

Figure 30.2
Cognitive imitation Monkey A (far left) watched Monkey B touch four pictures on a display screen in a certain order to gain a banana. Monkey A learned to imitate that order, even when shown the same pictures in a different configuration (Subiaul et al., 2004).

As Module 85 describes, chimpanzees observe and imitate all sorts of novel foraging and tool use behaviors, which are then transmitted from generation to generation within their local culture (Hopper et al., 2008; Whiten et al., 2007).

In humans, imitation is pervasive. Our catchphrases, fashions, ceremonies, foods, traditions, morals, and fads all spread by one person copying another. Imitation shapes even very young humans' behavior (Bates & Byrne, 2010). Shortly after birth, a baby may imitate an adult who sticks out his tongue. By 8 to 16 months, infants imitate various novel gestures (Jones, 2007). By age 12 months (**FIGURE 30.3**), they look where an adult is looking (Meltzoff et al., 2009). And by age 14 months, children imitate acts modeled on TV (Meltzoff, 1988; Meltzoff & Moore, 1989, 1997). Even as 2½-year-olds, when many of their mental abilities are near those of adult chimpanzees, young humans surpass chimps at social tasks such as imitating another's solution to a problem (Herrmann et al., 2007). Children see, children do.

So strong is the human predisposition to learn from watching adults that 2- to 5-year-old children *overimitate*. Whether living in urban Australia or rural Africa, they copy even irrelevant adult actions. Before reaching for a toy in a plastic jar, they will first stroke the jar with a feather if that's what they have observed (Lyons et al., 2007). Or, imitating an adult, they will wave a stick over a box and then use the stick to push on a knob that opens the box—when all they needed to do to open the box was to push on the knob (Nielsen & Tomaselli, 2010).

Humans, like monkeys, have brains that support empathy and imitation. Researchers cannot insert experimental electrodes in human brains, but they can use fMRI scans to see brain activity associated with performing and with observing actions. So, is the human

"Children need models more than they need critics." -Joseph Joubert, *Pensées*, 1842

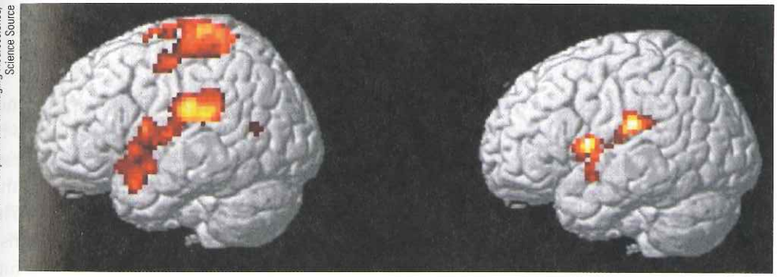
Figure 30.3
Imitation This 12-month-old infant sees an adult look left, and immediately follows her gaze. (From Meltzoff et al., 2009.)

Meltzoff, A. N., Kuhl, P. K., Movellan, J., & Sejnowski, T. J. (2009). Foundations for a new science of learning. Science 325, 284-288.

capacity to simulate another's action and to share in another's experience due to specialized mirror neurons? Or is it due to distributed brain networks? That issue is currently being debated (Gallese et al. 2011; Iacoboni, 2008, 2009; Mukamel et al., 2010). Regardless, children's brains enable their empathy and their ability to infer another's mental state, an ability known as *theory of mind*.

The brain's response to observing others makes emotions contagious. Through its neurological echo, our brain simulates and vicariously experiences what we observe. So real are these mental instant replays that we may misremember an action we have observed as an action we have performed (Lindner et al., 2010). But through these reenactments, we grasp others' states of mind. Observing others' postures, faces, voices, and writing styles, we unconsciously synchronize our own to theirs—which helps us feel what they are feeling (Bernieri et al., 1994; Ireland & Pennebaker, 2010). We find ourselves yawning when they yawn, laughing when they laugh.

When observing movie characters smoking, smokers' brains spontaneously simulate smoking, which helps explain their cravings (Wagner et al., 2011). Seeing a loved one's pain, our faces mirror the other's emotion. But as **FIGURE 30.4** shows, so do our brains. In this fMRI scan, the pain imagined by an empathic romantic partner has triggered some of the same brain activity experienced by the loved one actually having the pain (Singer et al., 2004). Even reading fiction may trigger such activity, as we mentally simulate (and vicariously experience) the experiences described (Mar & Oatley, 2008; Speer et al., 2009). The bottom line: *Brain activity underlies our intensely social nature.*



Pain Empathy

Figure 30.4
Experienced and imagined pain in the brain Brain activity related to actual pain (left) is mirrored in the brain of an observing loved one (right). Empathy in the brain shows up in emotional brain areas, but not in the somatosensory cortex, which receives the physical pain input.

Applications of Observational Learning

30-2 What is the impact of prosocial modeling and of antisocial modeling?

So the big news from Bandura's studies and the mirror-neuron research is that we look, we mentally imitate, and we learn. Models—in our family or neighborhood, or on TV—may have effects, good or bad.

Prosocial Effects

The good news is that **prosocial** (positive, helpful) models can have prosocial effects. Many business organizations effectively use *behavior modeling* to help new employees learn communications, sales, and customer service skills (Taylor et al., 2005). Trainees gain these skills faster when they are able to observe the skills being modeled effectively by experienced workers (or actors simulating them).

prosocial behavior positive, constructive, helpful behavior. The opposite of antisocial behavior.

Zumapress/Newscom

A model caregiver This girl is learning orphan-nursing skills, as well as compassion from her mentor in this Humane Society program. As the sixteenth-century proverb states, "Example is better than precept."

People who exemplify nonviolent, helpful behavior can also prompt similar behavior in others. India's Mahatma Gandhi and America's Martin Luther King, Jr., both drew on the power of modeling, making nonviolent action a powerful force for social change in both countries. Parents are also powerful models. European Christians who risked their lives to rescue Jews from the Nazis usually had a close relationship with at least one parent who modeled a strong moral or humanitarian concern; this was also true for U.S. civil rights activists in the 1960s (London, 1970; Oliner & Oliner, 1988). The observational learning of morality begins early. Socially responsive toddlers who readily imitate their parents tend to become preschoolers with a strong internalized conscience (Forman et al., 2004).

Models are most effective when their actions and words are consistent. Sometimes, however, models say one thing and do another. To encourage children to read, read to them and surround them with books and people who read. To increase the odds that your children will practice your religion, worship and attend religious activities with them. Many parents seem to operate according to the principle "Do as I *say*, not as I do." Experiments suggest that children learn to do both (Rice & Grusec, 1975; Rushton, 1975). Exposed to a hypocrite, they tend to imitate the hypocrisy—by doing what the model did and saying what the model said.

Antisocial Effects

The bad news is that observational learning may have *antisocial effects*. This helps us understand why abusive parents might have aggressive children, and why many men who beat their wives had wife-battering fathers (Stith et al., 2000). Critics note that being aggressive could be passed along by parents' genes. But with monkeys we know it can be environmental. In study after study, young monkeys separated from their mothers and subjected to high levels of aggression grew up to be aggressive themselves (Chamove, 1980). The lessons we learn as children are not easily replaced as adults, and they are sometimes visited on future generations.

TV shows and Internet videos are a powerful source of observational learning. While watching TV and videos, children may "learn" that bullying is an effective way to control others, that free and easy sex brings pleasure without later misery or disease, or that men should be tough and women gentle. And they have ample time to learn such lessons. During their first 18 years, most children in developed countries spend more time watching TV shows than they spend in school. The average teen watches TV shows more than 4 hours a day; the average adult, 3 hours (Robinson & Martin, 2009; Strasburger et al., 2010).

TV-show viewers are learning about life from a rather peculiar storyteller, one that reflects the culture's mythology but not its reality. Between 1998 and 2006, prime-time violence reportedly increased 75 percent (PTC, 2007). If we include cable programming and video rentals, the violence numbers escalate. An analysis of more than 3000 network and cable programs aired during one closely studied year revealed that nearly 6 in 10 featured violence, that 74 percent of the violence went unpunished, that 58 percent did not show the victims' pain, that nearly half the incidents involved "justified" violence, and that nearly half involved an attractive perpetrator. These conditions define the recipe for the *violence-viewing effect* described in many studies (Donnerstein, 1998, 2011). To read more about this effect, see Thinking Critically About: Does Viewing Media Violence Trigger Violent Behavior?

FYI

Screen time's greatest effect may stem from what it displaces. Children and adults who spend several hours a day in front of a screen spend that many fewer hours in other pursuits—talking, studying, playing, reading, or socializing face-to-face with friends. What would you have done with your extra time if you had spent even half as many hours in front of a screen, and how might you therefore be different?

"The problem with television is that the people must sit and keep their eyes glued to a screen: The average American family hasn't time for it. Therefore the showmen are convinced that . . . television will *never* be a serious competitor of [radio] broadcasting."
-*New York Times*, 1939

Thinking Critically About

Does Viewing Media Violence Trigger Violent Behavior?

Was the judge who, in 1993, tried two British 10-year-olds for the murder of a 2-year-old right to suspect that the pair had been influenced by "violent video films"? Were the American media right to wonder if Adam Lanza, the 2012 mass killer of young children and their teachers at Connecticut's Sandy Hook Elementary School, was influenced by his playing of the violent video games found stockpiled in his home? To understand whether violence viewing leads to violent behavior, researchers have done some 600 correlational and experimental studies (Anderson & Gentile, 2008; Comstock, 2008; Murray, 2008).

Correlational studies do support this link:

- In the United States and Canada, homicide rates doubled between 1957 and 1974, just when TV was introduced and spreading. Moreover, census regions with later dates for TV service also had homicide rates that jumped later.
- White South Africans were first introduced to TV in 1975. A similar near-doubling of the homicide rate began after 1975 (Centerwall, 1989).
- Elementary schoolchildren with heavy exposure to media violence (via TV, videos, and video games) tend to get into more fights (**FIGURE 30.5**). As teens, they are at greater risk for violent behavior (Boxer et al., 2009).

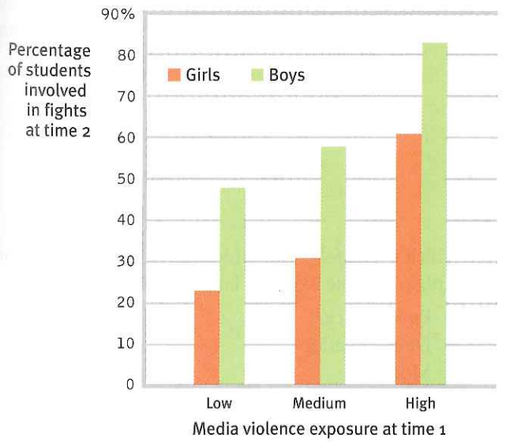
But as we know from Unit II, correlation need not mean causation. So these studies do not prove that viewing violence causes aggression (Freedman, 1988; McGuire, 1986). Maybe aggressive children prefer violent programs. Maybe abused or neglected children are both more aggressive and more often left in front of the TV or computer. Maybe violent programs simply reflect, rather than affect, violent trends.

To pin down causation, psychologists experimented. They randomly assigned some viewers to observe violence and others to watch entertaining nonviolence. Does viewing cruelty prepare people, when irritated, to react more cruelly? To some extent, it does. This is especially so when an attractive person commits seemingly justified, realistic violence that goes unpunished and causes no visible pain or harm (Donnerstein, 1998, 2011).

The violence-viewing effect seems to stem from at least two factors. One is *imitation* (Geen & Thomas, 1986). Children as young as 14 months will imitate acts they observe on TV (Meltzoff & Moore, 1989, 1997). As they watch, their brains simulate the behavior, and after this inner rehearsal they become more likely to act it out. Thus, in one experiment, violent play increased sevenfold immediately after children viewed *Power Rangers* episodes (Boyatzis et al., 1995). As happened in the Bobo doll experiment, children often precisely imitated the models' violent acts—in this case, flying karate kicks.

Prolonged exposure to violence also *desensitizes* viewers. They become more indifferent to it when later viewing a brawl, whether on TV or in real life (Fanti et al., 2009; Rule & Ferguson, 1986). Adult males who spent three evenings watching sexually violent movies became progressively less bothered by the rapes and slashings. Compared with those in a control group, the film watchers later expressed less sympathy for domestic violence victims, and they rated the victims' injuries as less severe (Mullin & Linz, 1995). Likewise, moviegoers were less likely to help an injured woman pick up her crutches if they had just watched a violent rather than a nonviolent movie (Bushman & Anderson, 2009).

Drawing on such findings, the American Academy of Pediatrics (2009) has advised pediatricians that "media violence can contribute to aggressive behavior, desensitization to violence, nightmares, and fear of being harmed." Indeed, an evil psychologist could hardly imagine a better way to make people indifferent to brutality than to expose them to a graded series of scenes, from fights to killings to the mutilations in slasher movies (Donnerstein et al., 1987). Watching cruelty fosters indifference.



Stanislav Solntsev/Getty Images

Figure 30.5 Heavy exposure to media violence predicts future aggressive behavior Researchers studied more than 400 third- to fifth-graders. After controlling for existing differences in hostility and aggression, the researchers reported increased aggression in those heavily exposed to violent TV, videos, and video games (Gentile et al., 2004).

* * *

Our knowledge of learning principles comes from the work of hundreds of investigators. This unit has focused on the ideas of a few pioneers—Ivan Pavlov, John Watson, B. F. Skinner, and Albert Bandura. They illustrate the impact that can result from single-minded devotion to a few well-defined problems and ideas. These researchers defined the issues and impressed on us the importance of learning. As their legacy demonstrates, intellectual history is often made by people who risk going to extremes in pushing ideas to their limits (Simonton, 2000).

Before You Move On

▶ ASK YOURSELF

Who has been a significant role model for you? For whom are you a model?

▶ TEST YOURSELF

Jason's parents and older friends all smoke, but they advise him not to. Juan's parents and friends don't smoke, but they say nothing to deter him from doing so. Will Jason or Juan be more likely to start smoking?

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Module 30 Review

30-1 What is observational learning, and how do some scientists believe it is enabled by mirror neurons?

- In *observational learning*, as we observe and imitate others we learn to anticipate a behavior's consequences, because we experience vicarious reinforcement or vicarious punishment.
- Our brain's frontal lobes have a demonstrated ability to mirror the activity of another's brain. The same areas fire when we perform certain actions (such as responding to pain or moving our mouth to form words), as when we observe someone else performing those actions.

30-2 What is the impact of prosocial modeling and of antisocial modeling?

- Children tend to imitate what a model does and says, whether the behavior being *modeled* is *prosocial* (positive, constructive, and helpful) or antisocial.
- If a model's actions and words are inconsistent, children may imitate the hypocrisy they observe.

Multiple-Choice Questions

1. Bandura's famous Bobo doll experiment is most closely associated with which of the following?

a. Latent learning
b. Classical conditioning
c. Operant conditioning
d. Cognitive maps
e. Observational learning

2. Which of the following processes is the best term for explaining how we learn languages?

a. Biofeedback
b. Discrimination
c. Modeling
d. Insight
e. Creativity

3. Which of the following is the most likely consequence of the brain's tendency to vicariously experience something we observe?

a. Actual physical injury
b. The risk of misremembering our own actions
c. Interference with associative learning
d. The elimination of classically conditioned responses to stimuli
e. A confusion between reinforcers and rewards in an operant conditioning setting

4. When is prosocial modeling most effective?

a. When the model acts in a way consistent with the prosocial lesson
b. When the model verbally emphasizes the prosocial lesson but acts as she chooses
c. When the model is predisposed to the prosocial conduct
d. When the observer has a close personal relationship with the model
e. When the model is well-known

5. Which of the following is the best synonym for social learning?

a. Observational learning
b. Modeling
c. Mirror neuron imitation
d. Prosocial model
e. Imitation

Practice FRQs

1. Explain how Bandura's Bobo doll experiment illustrates each of the following:

- Modeling
- Mirror neurons

Answer

1 point: Modeling can be described as the behavior of the child as he or she imitates the adult.

1 point: Mirror neurons on the child's brain presumably would fire the same way when watching the adult or when imitating the adult's behavior.

2. A young boy is left at home with his older brother while their parents drop off the family car for repairs. While the parents are out, the older brother prepares lunch for the young boy. Then the older brother takes the younger brother outside where he entertains him by building several fires with small twigs. Explain how the older brother's conduct is:

- Prosocial modeling
- Antisocial modeling

(2 points)

Unit VI Review

Key Terms and Concepts to Remember

learning, p. 263
habituation, p. 264
associative learning, p. 264
stimulus, p. 264
cognitive learning, p. 265
classical conditioning, p. 266
behaviorism, p. 266
neutral stimulus (NS), p. 266
unconditioned response (UR), p. 267
unconditioned stimulus (US), p. 267
conditioned response (CR), p. 268
conditioned stimulus (CS), p. 268
acquisition, p. 268
higher-order conditioning, p. 268
extinction, p. 269
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generalization, p. 269
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operant conditioning, p. 275
law of effect, p. 275
operant chamber, p. 276
reinforcement, p. 276
shaping, p. 276
discriminative stimulus, p. 277
positive reinforcement, p. 277
negative reinforcement, p. 278
primary reinforcer, p. 278
conditioned reinforcer, p. 278
reinforcement schedule, p. 279
continuous reinforcement, p. 279
partial (intermittent) reinforcement, p. 279
fixed-ratio schedule, p. 279
variable-ratio schedule, p. 280
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respondent behavior, p. 289
operant behavior, p. 289
cognitive map, p. 297
latent learning, p. 297
insight, p. 297
intrinsic motivation, p.297
extrinsic motivation, p. 298
coping, p. 298
problem-focused coping, p. 298
emotion-focused coping, p. 298
learned helplessness, p. 299
external locus of control, p. 300
internal locus of control, p. 300
self-control, p. 301
observational learning, p. 304
modeling, p. 304
mirror neurons, p. 305
prosocial behavior, p. 307

Key Contributors to Remember

Ivan Pavlov, p. 266
John B. Watson, p. 266
B. F. Skinner, p. 275
Edward Thorndike, p. 275
John Garcia, p. 293
Robert Rescorla, p. 296
Edward Tolman, p. 297
Albert Bandura, p. 304

AP® Exam Practice Questions

Multiple-Choice Questions

1. Which of the following most accurately describes an impact of punishment?

a. Punishment is a good way to increase a behavior, as long as it is not used too frequently.
b. Punishment may create problems in the short term but rarely produces long-term side effects.
c. Punishment can be effective at stopping specific behaviors quickly.
d. Punishment typically results in an increase of a behavior that caused the removal of an aversive stimulus.
e. Punishment should never be used (in the opinion of most psychologists), because the damage it causes can never be repaired.

2. Which of the following is an application of shaping?

a. A mother who wants her daughter to hit a baseball first praises her for holding a bat, then for swinging it, and then for hitting the ball.
b. A pigeon pecks a disk 25 times for an opportunity to receive a food reinforcement.
c. A rat presses a bar when a green light is on but not when a red light is on.
d. A rat gradually stops pressing a bar when it no longer receives a food reinforcement.
e. A gambler continues to play a slot machine, even though he has won nothing on his last 20 plays, and he has lost a significant amount of money.

3. What is one of the principal functions of mirror neurons?

a. To allow an organism to replace an unconditioned response with a conditioned response
b. To help produce intrinsic motivation in some children
c. To be the mechanism by which the brain accomplishes observational learning
d. To produce the neural associations that are the basis of both classical and operant conditioning
e. To explain why modeling prosocial behavior is more effective than modeling negative behavior

4. Which of the following illustrates generalization?

a. A rabbit that has been conditioned to blink to a tone also blinks when a similar tone is sounded.
b. A dog salivates to a tone but not to a buzzer.
c. A light is turned on repeatedly until a rat stops flexing its paw when it's turned on.
d. A pigeon whose disk-pecking response has been extinguished is placed in a Skinner box three hours later and begins pecking the disk again.
e. A child is startled when the doorbell rings.

5. What did Albert Bandura's Bobo doll experiments demonstrate?

a. Children are likely to imitate the behavior of adults.
b. There may be a negative correlation between televised violence and aggressive behavior.
c. Children are more likely to copy what adults say than what adults do.
d. Allowing children to watch too much television is detrimental to their development.
e. Observational learning can explain the development of fears in children.

6. What did Robert Rescorla and Allan Wagner's experiments establish?

a. That the acquisition of a CR depends on pairing the CS and the US
b. That different species respond differently to classical conditioning situations
c. The current belief that classical conditioning is really a form of operant conditioning
d. That mirror neurons form the biological basis of classical conditioning
e. The importance of cognitive factors in classical conditioning

7. What does Edward Thorndike's law of effect state?

a. The difference between positive and negative reinforcement
b. That behavior maintained by partial reinforcement is more resistant to extinction than behavior maintained by continuous reinforcement
c. How shaping can be used to establish operant conditioning
d. That rewarded behavior is more likely to happen again
e. The limited effectiveness of punishment

8. Which of the following processes would produce the acquisition of a conditioned response?

a. Repeatedly present an unconditioned response
b. Administer the conditioned stimulus without the unconditioned stimulus
c. Make sure that the conditioned stimulus comes at least one minute before the unconditioned stimulus
d. Pair a neutral stimulus with an unconditioned stimulus several times
e. Present the conditioned stimulus until it starts to produce an unconditioned response

9. Which of the following would help determine what stimuli an organism can distinguish between?

a. Negative reinforcement
b. A variable-ratio schedule of reinforcement
c. A fixed-ratio schedule of reinforcement
d. Extinction
e. A discriminative stimulus

10. A student studies diligently to avoid the bad feelings associated with a previously low grade on a test. In this case, the studying behavior is being strengthened because of what kind of reinforcement?

a. Positive reinforcement
b. Negative reinforcement
c. Delayed reinforcement
d. Primary reinforcement
e. Conditioned reinforcement

11. Taste aversion studies lead researchers to which of the following conclusions?

a. Taste is the most fundamental of the senses.
b. There are genetic predispositions involved in taste learning.
c. Animals must evaluate a situation cognitively before taste aversion develops.
d. Taste aversion is a universal survival mechanism.
e. An unconditioned stimulus must occur within seconds of a CS for conditioning to occur.

12. Mary checks her phone every 30 minutes for incoming text messages. Her behavior is being maintained by what kind of reinforcement schedule?

a. Fixed-interval
b. Variable-interval
c. Variable-ratio
d. Fixed-ratio
e. Continuous

13. A dog is trained to salivate when it hears a tone associated with food. Then the tone is sounded repeatedly without an unconditioned stimulus until the dog stops salivating. Later, when the tone sounds again, the dog salivates again. This is a description of what part of the conditioning process?

a. Spontaneous recovery
b. Extinction
c. Generalization
d. Discrimination
e. Acquisition

14. Latent learning is evidence for which of these conclusions?

a. Punishment is an ineffective means of controlling behavior.
b. Negative reinforcement should be avoided when possible.
c. Cognition plays an important role in operant conditioning.
d. Conditioned reinforcers are more effective than primary reinforcers.
e. Shaping is usually not necessary for operant conditioning.

15. Classical and operant conditioning are based on the principles of which psychological perspective?

a. Cognitive
b. Biological
c. Behaviorist
d. Evolutionary
e. Humanist

Free-Response Questions

1. Briefly explain how the concepts below could be used to help a child stop throwing temper tantrums.

- Extinction (operant conditioning)
- Positive reinforcement
- Modeling
- Negative reinforcement
- Shaping
- Extinction (classical conditioning)

Rubric for Free Response Question 1

1 point: **Extinction (operant conditioning)** The child might be throwing a temper tantrum because that behavior is being reinforced (for example, it gains the child desired attention from a parent). Extinction could be used to stop the temper tantrum by removing the reinforcement. Without the reinforcement, eventually the behavior (tantrums) should decrease. Pages 279, 290

1 point: **Positive reinforcement** A positive reinforcement (such as reading a favorite book) could be used to encourage a behavior other than temper tantrums. The child could be given the positive reinforcement after a "prosocial" behavior, such as sharing a toy with a friend instead of throwing a tantrum. Page 277

1 point: **Modeling** The child might learn to avoid temper tantrums through modeling or observational learning. A parent or other adult could show positive behaviors when disappointed, and the child might imitate this behavior. Page 304

1 point: **Negative reinforcement** Negative reinforcement occurs when a stimulus is removed, and this removal reinforces a behavior. In this situation, a parent or adult could sit the child on a "time-out" seat as soon as the temper tantrum begins. The child could leave the time out seat as soon as she or he stops crying. The removal of the aversive stimulus of the time out seat could reinforce not crying, and help to stop the temper tantrums. Page 278

1 point: **Shaping** A parent or other adult could gradually shape the child's negative behavior toward desired behaviors by rewarding successive approximations. For example, a child could first be rewarded for crying more quietly during a tantrum, then for stopping yelling, then for avoiding the tantrum completely. Page 276

1 point: **Extinction (classical conditioning)** In the context of classical conditioning, a behavior becomes extinct because a neutral stimulus is repeatedly presented without the unconditioned stimulus. For example, a child might have been classically conditioned to throw a tantrum whenever the child's brother is present, because the brother always pinches the child. The tantrums could be made extinct by convincing the brother to stop the pinching. The conditioned stimulus (the brother) is presented to the child without the unconditioned stimulus (the pinching). After repeated pairings, the conditioned response of the tantrum should become extinct. Pages 269, 290

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2. Martin is a sixth-grade teacher who feels he is not able to connect with some of his students. Several of them have had academic problems in the past and although Martin feels that they can do the work, he believes that these students have given up. Explain how Martin could use each of these concepts to learn how best to help his students succeed.

- External locus of control
- Self-control
- Learned helplessness
- Intrinsic motivation

(4 points)

3. Researchers investigating conditioning throughout the history of psychology reached very different conclusions about how humans learn behaviors. Explain how these theorists might explain this example of behavior and response: A child cries when she sees a large pile of peas on her dinner plate.

- Edward Thorndike
- B. F. Skinner
- Ivan Pavlov
- Albert Bandura

(4 points)