

## ***FOCUS ON VOCABULARY AND LANGUAGE***

*Learning breeds hope.* The fact that we can change and adapt as a result of experience (*learn*) in so many different areas gives rise to optimism (*breeds hope*) about our future prospects. The study of **learning** (*the process of acquiring, through experience, new and relatively enduring information or behaviors*) has played an important role in psychology, and no area is more central or fundamental to the discipline (*no topic is closer to the heart of psychology*).

### **How Do We Learn?**

. . . watching a TV character get *mugged* . . . To be *mugged* means to be attacked, (sometimes) beaten, and robbed. This example shows how associations are formed between events, such as between the sounds that precede an attack and the *mugging* itself. In movies and on TV, a certain type of music is often played before a frightening event or scene. After a few such associations, the music itself can elicit fear before you actually see the frightening or scary event. This is an example of **classical conditioning**.

*Learned associations also feed our habitual behaviors* (Wood & Neal, 2007). *Habits* are behavioral patterns that are regular, repetitive, and often unconscious (*something people do without thinking and would find it hard not to do*). When *behaviors* are repeated in a given context, they become linked or associated with that context. Experiencing the context and its associations again can elicit or evoke the behaviors (*learned associations feed our habitual behaviors*).

### **Classical Conditioning**

*For many people, the name Ivan Pavlov (1849–1936) rings a bell.* Myers is making a little joke here. A common expression when hearing something familiar but vague is to say, “*That rings a bell.*” Pavlov’s name is familiar to many people, who may also be vaguely aware that his research involved dogs and ringing bells (*classical conditioning*). His pioneering (*novel*) experiments on learning in the early twentieth century made him famous and established his reputation as one of the best-known researchers in psychology (*earned Pavlov his place in history*).

#### *Pavlov’s Experiments*

. . . imagine *what the dog was thinking and feeling* as it *drooled* . . . To *drool* means to salivate or produce spit. When food (the **US—unconditioned stimulus**) is placed in a dog’s mouth, the dog will automatically salivate or *drool* (the **UR—unconditioned response**). If a tone (the **NS—neutral stimulus**) is sounded before (*precedes*) the US over a number of trials, then the NS (the tone) becomes a **CS (conditioned stimulus)**, which by itself will elicit salivation or *drooling* (the **CR—conditioned response**). Note that before conditioning, the tone is a neutral stimulus (NS) because it does not elicit the target response of salivation. The basic classical conditioning procedure does not require knowledge of the dog’s cognitions. Pavlov decided that the dog’s internal mental state (*what the dog was thinking and feeling*) was not important in reaching an understanding of fundamental learning principles. Rather, focusing attention on cognitive processes only led to futile arguments (*useless debates*).

They [the male quail] developed a *preference* for their *cage’s red-light district*. Traditionally, a red lamp hung in the window identified a house as a brothel, and the area of town populated by many brothels became known as the *red-light district*. In experiments with male quail, a red light (the NS) was used to signal the arrival of a receptive female quail (the US), which elicited sexual arousal (the UR). Eventually,

the red light (now the CS) alone elicited sexual arousal (the CR), and the male quail appeared to develop a general liking (*preference*) for the area of the cage with the red light (*the cage's red-light district*).

Confronted by a guard dog, *your heart may race*; confronted by a guide dog, it probably will not. Guard dogs are generally perceived as aggressive and potentially dangerous; guide dogs are usually gentle and friendly. Thus, when you encounter a guard dog, you may experience physiological arousal (*your heart may race*) and you may experience fear. The sight of a guide dog will not likely cause the same reaction. To be able to tell the difference (*discriminate*) between two stimuli (in this case, two types of dogs) is an adaptive ability that has obvious survival value.

### *Pavlov's Legacy*

But if *we see further* than Pavlov did, it is because we *stand on his shoulders*. This phrase is not to be taken literally; it simply means that we now know more than Pavlov did (*we see further*) because we can build and expand on his great work (*stand on his shoulders*).

(*Retrieve and Remember*) If the *aroma* of cake baking *makes your mouth water*, what is the US? The CS? The CR? When you bake a cake in the oven, there is a lovely smell (*aroma*), which makes you salivate or drool (*makes your mouth water*). This is an example of classical conditioning. The taste of the cake in your mouth is the US, which automatically produces saliva (the UR). The *aroma* is the CS and, because of its past associations with the US, it can now, by itself, elicit saliva (the CR).

Former drug users often feel a *craving* when they are again in *the drug-using context*. They associate particular people or places with previous *highs*. For drug users who are attempting abstinence, the strong desire (*craving*) for the drug may be a classically conditioned response (a CR) to the sight or presence of people or places (the CSs). These CSs were associated with taking the drug (the US) that produced the UR (the euphoric feelings or *highs*). Drug addicts are therefore advised to avoid (*steer clear of*) any settings, equipment, or people related to previous drug-taking activity (*the drug-using context*) that might elicit (*trigger*) these intense needs or desires (*cravings*).

It seems he [Little Albert] was Douglas Merritte, the son of a campus hospital *wet nurse* who received \$1 for her *tot's* participation. A wet nurse is a woman who cares for and breast-feeds other people's babies. John B. Watson and Rosalie Rayner classically conditioned an 11-month-old infant (*tot*) to fear a white rat. In their experiment, the NS (the white rat) was repeatedly paired with a loud noise (the US), which automatically elicited fear (the UR). After seven such pairings, the sight of the white rat (now the CS) elicited the fear response (the CR). In 2009, psychologist-investigators (*psychologist-sleuths*) discovered that the subject in this famous experiment, Little Albert, was actually Douglas Merritte. As Myers points out, the treatment of Little Albert would be unacceptable by today's ethical standards.

## **Operant Conditioning**

### *Skinner's Experiments*

. . . *to pull habits out of a rat*. Myers is having fun playing with the English language here. The expression "*to pull rabbits out of a hat*" refers to stage magicians who are able to extract rabbits from a seemingly empty hat. Can you see the way Myers has twisted this expression? Both classical and **operant conditioning** involve teaching new *habits* to various organisms, including *rats*. Following classical conditioning, the CS triggers a new response from the animal (that is, the CS *pulls a habit out of a rat*). Or, following operant conditioning, the sight of the lever may elicit the *habit* of lever pressing. Skinner's research on learning has been very important and has done much more than simply demonstrate how the **acquisition** of habitual behaviors occurs (*how habits are pulled out of a rat*).

Or consider a teacher who *sticks gold stars on a wall chart* beside the names of children scoring 100 percent on spelling tests. Teachers often use extrinsic rewards or **reinforcers** such as small, bright stickers (*gold stars*) and typically display them on a classroom bulletin board (*stick them on a wall chart*) for, say, the very best spellers in the class. Unfortunately, if only the top few students (*the academic all-stars*) are recognized in this way, the rest of the students may lose motivation because, even if they improve their spelling and work very hard (but still don't score 100 percent), they won't receive any reinforcers (*gold stars*). Myers suggests that it might be better if teachers use a **shaping** procedure that rewards even small improvements and recognizes the child for making the effort to do better and better.

. . . *hitting snooze* will silence your annoying alarm. When your alarm goes off in the morning, you may press (*hit*) the switch (*snooze*), which turns off the irritating tone for a brief period of time. The ensuing quiet period may allow you to go back to sleep for a while (*snooze*) and the absence of the buzzer becomes a negative reinforcer for pushing *snooze*. (Your *snooze*-pushing behavior has been strengthened because it removed an aversive event, the annoying sound of the alarm.) Likewise, a regular drug user (*a drug addict*) may be **negatively reinforced** for continuing or resuming drug taking because doing so diminishes the pain associated with going without the drug (*the withdrawal pangs*).

But there's *a catch*: *Extinction also occurs rapidly*. Because learning occurs relatively quickly, **continuous reinforcement** works very well for acquiring (*mastering*) a behavior. However, there is a hidden or unexpected problem (*a catch*)—once the reinforcement stops, the behavior soon stops as well (*extinction occurs rapidly*). With **partial (intermittent) reinforcement**, which only sometimes reinforces responses, resistance to **extinction** is greater.

Salespeople don't make a sale with every *pitch*. The *pitch* referred to here is the sales talk (*pitch*) that the salesperson uses to promote a product or service. The idea is that much of our behavior is not continuously reinforced but persists, nevertheless, by being partially, or intermittently, reinforced (the salesperson makes a sale only once in a while, despite using the sales *pitch* many times). Thus, partial (intermittent) reinforcement encourages the expectation of future reinforcement (*hope springs eternal*). Further, it creates greater resistance to *extinction* of the behavior, compared with continuous reinforcement.

. . . *fly fishing* . . . This refers to a style of fishing in which artificial insects, such as flies, are used as bait to catch fish. People who *fly fish* (*fly-casting anglers*) are reinforced only once in a while, despite making many responses. This **variable-ratio schedule** of reinforcement makes the target behavior very persistent and hard to suppress (the behavior is very resistant to *extinction*) because, ultimately, the more a person responds, the more he or she is reinforced.

. . . *a choppy stop-start pattern* . . . When reinforcement is for the first response after a set time period (a **fixed-interval schedule**), responding is typically more frequent as the expected time for the reinforcer gets closer (*draws near*). Responding is much less frequent after the reward has been received. The pattern of responding is consequently uneven (*choppy*) because cycles of post-reinforcement pauses followed by higher levels of responding (*a stop-start pattern*) are characteristic of the fixed-interval schedule.

At varying times, *longed-for responses* finally reward persistence in rechecking Facebook or e-mail. Facebook messages and e-mails can arrive at unpredictable times. If you are expecting, or hoping for, a reply to a message that you have sent (*a longed-for response*), it is best to check online every once in a while. This type of slow, steady responding, typical of a **variable-interval schedule**, may be reinforced with a reply to your message.

. . . *drawbacks* . . . This means problems or bad consequences. One problem (*drawback*) with using **punishment** is that the behavior may be temporarily suppressed in the presence of the punisher but may reappear in other, safer settings. In addition, punishment may elicit aggression, create fear and dread, and generate avoidance behavior in those being punished. As Myers notes, *punishment tells you what not to do; reinforcement tells you what to do*.

No wonder *spanking is a hit* with so many U.S. parents of 3- and 4-year-olds . . . *Hit* has a number of meanings; it can mean to physically strike someone or something (*hit* the ball), but it can also mean to be popular (*to be a hit*). Parents who physically punish (*hit* or *swat*) their young children are negatively reinforced for doing so if the bad behavior is suppressed or eliminated. It is not surprising then that *spanking* (*hitting* or *swatting*) has been so popular (*has been a hit*) with so many parents.

*Which is the chicken and which is the egg?* The old question, “Which came first, the chicken or the egg?” implies that it is not always clear what is *cause* and what is *effect*. Studies show a correlation between physical punishment (*spanking*) and risk for aggression (and depression and low self-esteem). However, some critics note that correlations do not provide *cause-effect* answers (*Which is the chicken and which is the egg?*). Perhaps preexisting tendencies (such as aggression) elicited stricter or harsher punishment than might otherwise be the case, rather than the other way around.

### *Skinner’s Legacy*

. . . *stirred a hornet’s nest* . . . A *hornet* is a large yellow and black stinging insect belonging to the wasp family. Up to 200 *hornets* live together in a sheltered home (*nest*); if disturbed or agitated (*stirred*), they will attack in an angry and aggressive manner. B. F. Skinner aroused a great deal of anger and hostility and was fiercely attacked by many people (*he stirred a hornet’s nest*) for insisting that mental events and free will (*internal thoughts and feelings*) were of little relevance as determinants of behavior when compared with environmental factors such as rewards and punishments (*external influences*).

When he observed an achievement, *he wrote the employee a check on the spot* (Peters & Waterman, 1982). To be most effective, reinforcement should immediately follow the desired behavior. The head of IBM practiced this by reinforcing employees with a monetary reward (*a check*) right at the time he observed an exceptionally good performance or achievement (*he wrote them a check on the spot*).

## **Biology, Cognition, and Learning**

### *Biological Limits on Conditioning*

(*Margin note*) As *the laboring son of California farmworkers*, Garcia attended school only in the *off season* during his early childhood years. John Garcia and his parents were seasonal agricultural workers (*he was the laboring son of California farmworkers*). Consequently, he attended school only during the time of year when they were not employed (*the off season*). Nevertheless, he went on to earn a doctorate degree (*a Ph.D.*). Further, his original (*pioneering*) taste-aversion research demonstrated that a common assumption in psychology—that any stimulus (whether taste, sight, or sound) could serve equally well as a CS—was incorrect.

In one taste-aversion study, coyotes and wolves were tempted into eating sheep *carcasses laced with a sickening poison*. In one study, coyotes and wolves developed an aversion to sheep meat after they had eaten the dead bodies (*carcasses*) of sheep that had been coated or infused (*laced*) with a toxic, nausea-inducing substance (*a sickening poison*). When two wolves were subsequently put in an enclosure (*penned*) with a live sheep, they appeared to fear and avoid it (*they became sheep-shunning wolves*).

## *Cognitive Influences on Conditioning*

In classical conditioning, it is (especially with humans) not simply the CS-US pairing, but also *the thought that counts*. The expression “*it’s the thought that counts*” recognizes that a person’s intentions and motivations (*thoughts*) are just as important as his or her actual behavior. Myers is making the point that our thoughts, perceptions, and expectations (*cognitive processes*) are now viewed as being critically important in the process of learning through classical conditioning. For example, in therapy, people with alcohol use disorder may be given a drink that has had a drug added to it to make the drinker sick (*alcohol spiked with a nauseating drug*). If the drinker is aware that the drug induced the sickness, the association between drinking alcohol and feeling nausea is weakened (*the thought counts*).

Promising people a reward for a task they already enjoy can *backfire*. If children enjoy doing something because it is fun (*intrinsic motivation*), they may lose interest in the task if they are promised a reward for it (*extrinsic motivation*). Thus, in some circumstances, offering material gains may have an effect opposite to the one expected (*can backfire*). Applied properly, however, rewards can motivate high performance levels (*they fuel your efforts*), increase or foster (*spark*) creativity, enhance enjoyment of tasks, and raise (*boost*) feelings of competence, especially if they suggest (*signal*) that a job was well done.

## **Learning by Observation**

Compared with other children in the study, those who viewed the model’s actions were much more likely to *lash out at* the doll. Albert Bandura’s experiments on **observational learning** demonstrated that children who saw an adult engage in (*model*) violent behavior (*an aggressive outburst*) were more inclined to attack and beat up (*lash out at*) a Bobo doll and to copy (*imitate*) the words and gestures used by the role model.

In one of those *quirky* events that appear in the growth of science, researchers made an *amazing* discovery [the discovery of mirror neurons]. Researchers were astonished (*amazed*) when they accidentally discovered a previously unknown type of neuron, called a **mirror neuron**, in the monkey brain. It was one of those strange or peculiar (*quirky*) events that happen in the growth of science. Some researchers believe that the activity of these neurons provides a neural basis for everyday imitation and observational learning and helps humans develop the ability to infer another’s mental state (*we grasp others’ states of mind*). Though humans have brains that support empathy and imitation, researchers are still debating whether it is mirror neurons and related brain networks that give humans this ability.