

---

## MODULE 23

# Classical Conditioning

## Module Preview

Learning helps us adapt to our environment. Pavlov explored classical conditioning, in which we learn to anticipate events, such as being fed or experiencing pain. In his famous studies, Pavlov presented a neutral stimulus just before an unconditioned stimulus, which normally triggered an unconditioned response. After several repetitions, the neutral stimulus alone began triggering a conditioned response resembling the unconditioned response. The behaviorists' optimism that learning principles would generalize from one response to another and from one species to another has been tempered. We now know that conditioning principles are cognitively and biologically constrained.

## Module Guide

### Introduction and How Do We Learn?

- ▶ Introductory Exercise: Fact or Falsehood?
- ▶ Exercise: Defining Learning

#### 23-1. *Define learning, and identify two forms of learning.*

**Learning** is a relatively permanent change in an organism's behavior due to experience. Nature's most important gift to us may be our adaptability—our capacity to learn new behaviors that enable us to cope with ever-changing experiences.

- ▶ Video: *Discovering Psychology, Updated Edition: Learning*
- ▶ Lecture: Cultural Beliefs About Learning: Mind or Virtue?

We learn by association; our mind naturally connects events that occur in sequence. The events linked in **associative learning** may be two stimuli (as in classical conditioning) or a response and its consequences (as in operant conditioning). In observational learning, we learn from viewing others' experiences.

### Introducing Classical Conditioning

- ▶ Exercises: Classical Conditioning; Classical Conditioning: Preparing for an Important Event
- ▶ Lecture: Human Taste Aversions
- ▶ PsychSim 5: Classical Conditioning
- ▶ Feature Film: *Jaws*
- ▶ Videos: Video Clip 6 of *Digital Media Archive: Psychology*, 1st ed.: *Pavlov's Discovery of Classical Conditioning*; Module 10 of *Psychology: The Human Experience: Classical Conditioning*

23-2. *Define classical conditioning and behaviorism.*

Pavlov explored the phenomenon we call **classical conditioning**, in which organisms learn to associate stimuli and thus anticipate events. This laid the foundation for John B. Watson's **behaviorism**, which held that psychology should be an objective science that studied only observable behavior.

**Pavlov's Experiments**23-3. *Describe the basic components of classical conditioning.*

Pavlov would repeatedly present a neutral stimulus (such as a tone) just before an **unconditioned stimulus (US)**, such as food, which triggered the **unconditioned response (UR)** of salivation. After several repetitions, the tone alone (now the **conditioned stimulus [CS]**) began triggering a **conditioned response (CR)**, salivation. Unconditioned means "unlearned"; conditioned means "learned." Thus, a UR is an event that occurs naturally in response to some stimulus. A US is something that naturally and automatically triggers the unlearned response. A CS is an originally neutral stimulus that, through learning, comes to be associated with some unlearned response. A CR is the learned response to the originally neutral but now conditioned stimulus.

- ▶ Exercise: Classical Conditioning With a Watergun
- ▶ Lecture: Classical Conditioning, Implicit Self-Esteem, and Automatic Racial Prejudice
- ▶ Project: Conditioning the Eyeblink

23-4. *Summarize the processes and adaptive value of acquisition, higher-order conditioning, extinction, spontaneous recovery, generalization, and discrimination.*

Responses are **acquired**—that is, initially learned—best when the CS is presented half a second before the US. This finding demonstrates how classical conditioning is biologically adaptive because it helps organisms prepare for good or bad events.

**Higher order conditioning** occurs when the conditioned stimulus from one conditioning procedure is paired with a new neutral stimulus, creating a second, often weaker, conditioned stimulus.

**Extinction** refers to the diminishing of a conditioned response when the conditioned stimulus occurs repeatedly without the unconditioned stimulus. **Spontaneous recovery** is the reappearance, after a pause, of an extinguished conditioned response. **Generalization** is the tendency to respond to stimuli that are similar to the conditioned stimulus. **Discrimination** is the learned ability to distinguish between a CS and other irrelevant stimuli.

Generalization can be adaptive because it extends a learned response to other stimuli in a given category, for example, fearing not only moving cars but also moving trucks and motorcycles. Discrimination has adaptive value because it limits our learned responses to appropriate stimuli, for example, fleeing from a pit bull but not from a golden retriever.

**Extending Pavlov's Understanding**

- ▶ Lectures: Cognitive Processes in Learning; Biological Predispositions

23-5. *Discuss the importance of cognitive processes and biological predispositions in classical conditioning.*

Research indicates that, for many animals, cognitive appraisals are important for learning. That is, thoughts and perceptions are important to the conditioning process. For example, animals appear capable of learning when to *expect* an unconditioned stimulus. The more predictable the association between the CS and the US, the stronger the CR.

The early behaviorists' view that any natural response could be conditioned to any neutral stimulus has given way to the understanding that each species is biologically prepared to learn associations that enhance its survival. Thus, humans are likely to develop an aversion to the taste of a contaminated food but not to the sight of an associated restaurant, its plates, or the music they heard there.

Similarly, rats develop aversions to tastes but not to sights or sounds. Organisms are predisposed to learn associations that help them adapt.

### Pavlov's Legacy

- ▶ Lectures: The Association Principle; Watson's Colorful History; Phobias
- ▶ Videos: Video Clip 7 of *Digital Media Archive: Psychology*, 1st ed.: *Watson's Little Albert*; Program 24 of *Moving Images: Exploring Psychology Through Film: Intensive Exposure Therapy: Overcoming Agoraphobia*
- ▶ Instructor Video Tool Kit: *Classical Conditioning and the Immune System*; *Combating Lupus*; *Overcoming Fear*

23-6. *Summarize Pavlov's contribution to our understanding of learning and to improvements in human health and well-being.*

Pavlov taught us that principles of learning apply across species and that classical conditioning is one way that virtually all organisms learn to adapt to their environment. Pavlov also demonstrated that significant psychological phenomena can be studied objectively. Finally, Pavlov taught us that conditioning principles have important applications, such as how to treat fear.

Classical conditioning principles provide important insights into drug abuse and how it may be overcome. Classical conditioning works on the body's disease-fighting immune system. For example, when a particular taste accompanies a drug that influences immune responses, the taste by itself may come to produce those immune responses. Watson's "Little Albert" study demonstrated how classical conditioning may underlie specific fears. Today, psychologists use extinction procedures or even new conditioning to change our unwanted responses to emotion-arousing stimuli.

