

BEHAVIORISM AND THE LEARNING APPROACHES TO PERSONALITY

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Chapter Focus

Have you ever dated someone who did something that really annoyed you? A woman was particularly bothered by her boyfriend's constant moaning about how much schoolwork he had to do. She grew tired of constantly providing him with attention and sympathy—after all, she had just as much work! One day she was struck with a new idea: What if she simply ignored her boyfriend every time he complained? It worked! When she stopped pampering him, his complaining gradually disappeared; in the language of behaviorism, her attention to his problems had been serving as a positive reinforcement that had taught him to complain in the first place.

Without realizing it, this woman was using some of the basic principles of learning theory to change her boyfriend's behavior. This chapter considers approaches to personality that are based on theories of learning and the overall approach to psychological science known as behaviorism. According to behaviorism, people gradually acquire their personality styles as a result of their experiences with the environment. Associated theories of learning specify the exact processes through which people are shaped by environmental experiences.

In this chapter, you will learn about theories of exceptional importance in the history of psychology: Pavlov's classical conditioning and Skinner's operant conditioning. These theories both share a commitment to the experimental testing of clearly defined hypotheses. Approaches to assessment and change are then considered, along with an overall critical evaluation of these approaches to personality.

**QUESTIONS TO BE
ADDRESSED IN THIS
CHAPTER**

1. Can principles of learning discovered in research on animals provide the basis for a theory of personality?
2. Is our behavior controlled by events (stimuli) in the environment?
3. If abnormal behavior is learned like all other behavior, can one base therapies on learning principles?
4. If our behavior is ultimately determined by the environment, as claimed by the behaviorists, do people have "free will"?

This chapter presents two theories of learning. They are not opposing views. Instead, they are complementary; they highlight different aspects of how people learn from environmental experiences. In combination, these two ideas—Pavlov's classical conditioning and Skinner's operant conditioning theories—provided the foundation for a view of psychology known as behaviorism.

During the middle of the 20th century, behaviorism was the predominant school of thought in scientific psychology. Behaviorism subsequently experienced a precipitous decline in influence, although the study of operant and classical conditioning remains a part of the contemporary field (Domjan, 2005; Staddon & Cerutti, 2003). Why—you may already be asking—should I learn

about a school of thought that already has declined in influence? There is much to be learned from a review of behaviorism. Developing a comprehensive scientific theory of personality is no easy feat. It is instructive to see where past efforts have succeeded and failed. Furthermore, despite whatever limits it may have, the behaviorist school of thought gave rise to therapeutic methods of unquestioned value; we will consider some of them in this chapter. An additional point is that, in recent years, a number of researchers who would not label themselves “behaviorists” have nonetheless explored some of the themes that are defining of the behavioral approach. These include the ideas that much of our action is controlled directly by stimuli in the environment (Bargh & Ferguson, 2000; Bargh & Gollwitzer, 1994) and that our intuition that we are in conscious control of our behavior (rather than the environment being in control of us) is simply a “trick” (Wegner, 2003, p. 65) that our mind plays on us. Ideas that were originally highlighted by the behaviorists endure in the contemporary field.

We begin by considering behaviorism’s view of the person. (Views of the main theorists, especially B. F. Skinner, appear later in the chapter.) Its viewpoint on psychology is best understood by way of analogy. Consider how we think about people’s anatomy and physiology. It is reasonable to conceive of the body as a kind of “machine.” Like any complex machine, the body is a collection of mechanisms (heart, lungs, sweat glands, and so forth) that perform various functions (respiration, regulation of temperature, etc.). Now return to our main topic: personality. Here the idea of a machine seems odd. Bodies seem machine-like, but personalities do not. People are spontaneous and fun loving. They are conflicted and anxious. Brave and imaginative. Machines are not spontaneous, fun loving, conflicted, anxious, brave, or imaginative. Intuitively, then, persons seem quite unlike machines.

Despite these intuitions, in the behaviorist view persons are machinelike. To B.F. Skinner, behaviorism’s greatest spokesperson and most influential theorist, the interesting thing about machines is that people have “created the machine in [their] *own image*” (Skinner, 1953, p. 46, emphasis added). With advances in science during the past two centuries, Skinner writes, “we have discovered more about how the living organism works and are better able to see its machinelike properties” (1953, p. 47). When seeking to build a science of persons, the behaviorist assumes that persons can be viewed as collections of machine-like mechanisms. The behaviorist explores how these mechanisms learn, that is, how they change in reaction to environmental input.

Viewing persons as machinelike has a major implication. This implication is a second important feature of behaviorism’s view of the person. The implication is a philosophical position known as **determinism**. Determinism is the belief that an event is caused by, or determined by, some prior event, with the cause being something that can be understood according to basic laws of science. When applied to questions of human behavior, determinism is the belief that people’s behavior is caused in a lawful scientific manner. Determinism stands in opposition to a different belief, namely, the belief in “free will.” As we will explain in more detail, behaviorists do not believe that people have free will,

BEHAVIORISM'S VIEW OF THE PERSON

that is, they do not think it is correct to say that a person freely chose to act in one way or another. Instead, they believe that people are part of a natural world, and that in the natural world events—including the behavior of persons—are causally determined.

BEHAVIORISM'S VIEW OF THE SCIENCE OF PERSONALITY

As an approach to the science of personality, behaviorism differs enormously from the theories we discuss elsewhere in this book. The differences are revealed in the basic assumptions of the behavioral approach. There are two. The first is that behavior must be explained in terms of the causal influence of the environment on the person. Compare this to other theories. The other theories in this book primarily are theories about what's "in the head of" the person (psychodynamic structures, traits, etc.). They ask about how internal personality factors influence people's experiences and actions. Behaviorism, in contrast, is about what's in the environment. Behaviorists ask about how environmental factors causally determine people's behavior.

The second assumption is that an understanding of people should be built entirely upon controlled laboratory research, where that research could involve either people or animals. Again, compare this to the other theories. One thing shared by the other personality theorists is that, in building theories of personality, the beings that were studied were persons. Behaviorists, in contrast, build a theory of persons in large part on a database involving animals. This may strike you as odd. Yet, as we will review, it exemplifies a strategy common in the sciences, a strategy of studying "simple systems."

ENVIRONMENTAL DETERMINISM AND ITS IMPLICATIONS FOR THE CONCEPT OF PERSONALITY

The most basic feature of behaviorism's view of the science of personality is that this science must study how environmental factors determine human behavior. They reason as follows. We human beings are physical objects in a physical universe. As such, we are subject to physical laws that can be understood through scientific analysis. Ever since the beginnings of modern physics hundreds of years ago, the behaviorists reason, scientists have recognized that the way to explain the behavior of any physical object is to identify the forces in the environment that act upon it, causing its behavior. Suppose we throw a rock into the air and observe its behavior: It travels in a curving, parabolic path back to the ground. How do we explain this? We don't say that the rock "enjoys traveling in parabolic paths" or that it has "the trait of fallingness." Instead, we recognize that the behavior of a rock is fully determined by lawful environmental forces (the force and direction of our throw, plus gravity and perhaps air pressure). To the behaviorist, the behavior of people should be explained in exactly this same way. Just as environmental forces determine the trajectory of the rock, environmental forces determine the trajectories of our lives as we come into contact with, and are influenced by, one environmental factor after another. To the behaviorist, then, there is no more need to explain a person's behavior in terms of his or her attitudes, feelings, or personality traits than there is to explain the rock's behavior in terms of its attitudes,

feelings, or rock traits. The rock doesn't fall because it decided to fall but because gravity caused it to fall. Similarly, people do not act as they do because they decided to act that way but because environmental forces cause them to do so.

Behaviorists recognize that people have thoughts and feelings. But they view thoughts and feelings as behaviors that also are caused by the environment. If you say "I took this personality psychology class because I thought it would be interesting" or "I broke up with my boyfriend because I felt our relationship wouldn't work out," a behaviorist would say that you were wrong. You didn't identify the right factor in your "because." To the behaviorist, the environment caused your behavior of taking the class. Furthermore, the environment caused your behavior of saying that you thought the class would be interesting! Similarly, features of the environment caused your feelings in the relationship and caused your decision to end it.

The most radical feature of the behaviorist worldview, then, is that it does not explain a person's actions in terms of thoughts and feelings. Instead, it explains people's actions, thoughts, and feelings in terms of environmental forces that shape the individual. This, to the behaviorist, is the only way to build a scientifically credible study of behavior. Suppose, by analogy, that we were studying evolution and wanted to explain why primates who once walked on four legs later evolved into upright primates who walked on two legs. We would never explain this by saying that the four-legged walkers "got tired of walking on all fours" or "decided to stand straight up." Such explanations would be absurd. They would have no scientific utility. The evolutionary change from four- to two-legged walking was, we recognize, caused entirely by adaptive pressures in the evolutionary environment. To the behaviorist, saying that people act a certain way "because they decided to" has no more scientific value than saying that the primates evolved because they decided to do so. Instead of such nonscientific explanations, behaviorists urge us to identify the environmental factors that are the true cause of people's feelings, thoughts, and actions. The behaviorist B.F. Skinner states this thesis with the greatest clarity:

We can follow the path taken by physics and biology by turning directly to the relation between behavior and the environment and neglecting supposed mediating states of mind. Physics did not advance by looking more closely at the jubilation of a falling body, or biology by looking at the nature of vital spirits, and we do not need to try to discover what personalities, states of mind, feelings, traits of character, plans, purposes, [or] intentions really are in order to get on with a scientific analysis of behavior.

SOURCE: SKINNER (1971), *Beyond Freedom & Dignity*, p. 15.

What does all this have to do with the study of personality? Suppose, hypothetically, that the behaviorist could in fact explain all behavior in terms of general laws of learning. This, the behaviorist would claim, would completely *eliminate the need for* a distinct field of study called "personality theory" or "personality psychology." The variables in all the other theories of personality—psychoanalytic conflicts, personality traits, and so forth—would not, according to the behaviorist, be referring to real psychological entities in persons' heads.

Instead, the variables of other theories would be seen merely as descriptive labels—descriptions of patterns of psychological experience that are, in reality, caused by the environment. If the environment causes a person to feel hostility toward a same-sex parent and attraction toward an opposite-sex parent, the psychoanalyst labels this an “Oedipal complex.” If the environment causes a person to engage in energetic, outgoing, sociable behaviors, the trait theorist labels the person an “extravert.” In these and infinite other cases, the personality term does not identify the cause of the person’s behavior. The behaviorist views the term as merely a label for a pattern of action that is caused by the environment.

To the behaviorists, then, an understanding of the laws of learning promises to replace any and all personality theories. If behavior can be explained by the laws of learning, and if “personality” is just a label that describes the type of behavior a person has learned to do, then there is no need for a scientific theory of personality that is distinct from learning theory. Behaviorists were quite explicit about this. They looked forward to a day when theories of personality would be “regarded as historical curiosities” (Farber, 1964, p. 37).

The belief in environmental determinism has additional implications. One is that it highlights the potential **situational specificity** of behavior. Since environmental factors are the causes of behavior, people’s behavioral style is expected to vary significantly from one environment to another. Note how this expectation differs from the approach of the trait theories (Chapters 7 and 8). Trait variables corresponded to consistent styles of behavior; these variables were meant to explain why a person acts in a consistent manner across diverse situations. In contrast, behaviorists expect that there will be substantial variability in action as people adapt to situations that present different rewards and punishments for different types of behavior.

Another implication involves the causes and treatment of psychopathology. Psychopathology is not understood as an internal problem—an illness in the person’s mind. Instead, the behaviorist assumes that maladaptive, “abnormal” behavior is caused by maladaptive environments to which the person has been exposed. The implication of this assumption is profound. It is that the task of therapy is not to analyze underlying conflicts or to reorganize the individual’s personality. Instead, the goal is to provide a new environment, that is, new learning experiences for the client. The new environment should cause the client to learn new and more adaptive patterns of behavior, as we discuss later in this chapter.

Although rarely influential in its original form, learning approaches to personality are presented here because of their historical importance, because they set the stage for other developments, and because they present an interesting contrast to the cognitive approaches that follow in subsequent chapters.

EXPERIMENTATION, OBSERVABLE VARIABLES, AND SIMPLE SYSTEMS

Another defining feature of the behavioral view of personality science is its research strategy. This strategy follows in a natural way from the belief in environmental determinism. If behavior is determined by the environment, then the way to do research is to manipulate environmental variables to learn how they influence behavior. Behaviorists base the study of human nature entirely on carefully controlled laboratory experiments of this sort.

In designing research, behaviorists emphasize that one must study things that are observable. The researcher must be able to see the environmental and behavioral variables, so he or she can measure them with accuracy and systematically relate them to one another. This point may seem obvious. Yet this feature—being able to observe the psychological variables about which one is theorizing—is *not* a part of the other theories we have discussed. One cannot directly observe the id, an Oedipal conflict, an extraverted tendency, a motive to self-actualize, and so forth. The behaviorist argues that these other theories are too speculative, and thus not sufficiently scientific, because they contain variables that one cannot even observe. For this reason, behaviorists were harshly critical of virtually all other theories in psychology.

The attempt to study personality through experimental methods poses a severe challenge. It often may be impractical, as well as unethical, to manipulate environmental variables that may substantially affect people's everyday behaviors. Also, day-to-day human actions may be determined by such a large number of variables, and these variables may be so complexly related to one another, that it is difficult to sort out the potentially lawful relations between any one environmental factor and behavior. These difficulties lead the behaviorist to adopt the following research strategy. Rather than researching complex social actions, the behaviorist commonly studies simple responses. And rather than study complex human beings, the behaviorist studies simpler organisms, such as rats and pigeons. The original body of data upon which behavioral principles are based consists almost entirely of laboratory research on laboratory animals.

This research strategy may strike you as strange. "Why," you may be thinking, "would anyone think that they can learn about personality by studying animals?" This is a very good question. It is important, as one begins to learn about the behavioral approach, to recognize that the behaviorists' research strategy is not one that is unique to them. Instead, it is common in the sciences. It is the strategy of studying simple systems.

Suppose you were designing an airplane and were wondering if your craft would fly safely in windy weather. One strategy for answering this question would be to build an entire real plane, fill it with people, launch it into the sky, and see if it crashes when the wind kicks up. Of course, you would not do that. This strategy for learning about the flight characteristics of the plane is very costly and completely unethical. You would, instead, study something simpler than a real plane: perhaps a model plane in a wind tunnel, or a computer simulation of an airline and wind flows. You would recognize that this simpler system is not the same thing as a real plane. Yet you would reason that it contains important features that are the same as the features of the system in which you are really interested, that is, the real plane. A similar strategy might be adopted by biologists seeking to understand the side effects of a new drug. Although the researchers are interested in the effects of the drug on people, they would first study its effects on laboratory animals, under the assumption that there is enough similarity in the makeup of animals and people that the animal study will, at the very least, provide some valuable information about the effects of the drug on people. Even if we do not think about it explicitly, we all recognize the value of studying simple systems.

This, then, is the simple system strategy. It is a research strategy in which, for both practical and ethical reasons, one conducts scientific studies on a system

Table 10.1 Basic Points of Emphasis of Learning Approaches to Personality

1. Empirical research is the cornerstone of theory and practice.
2. Personality theory and applied practice should be based on principles of learning.
3. Behavior is responsive to reinforcement variables in the environment and is more situation specific than suggested by other personality theories (e.g., trait, psychoanalytic).
4. The medical symptom-disease view of psychopathology is rejected, and emphasis instead is placed on basic principles of learning and behavior change.

that is simpler than the one in which the researcher fundamentally is interested. This is the strategy adopted by the behaviorist.

Table 10.1 summarizes the basic points of emphasis in behaviorism that we have reviewed. With this background, we now begin our coverage of theories that were developed within this behavioral approach to psychological science. Specifically, we start where the approach itself began historically, with the ideas of John Watson and the associated research contributions of Ivan Pavlov.

WATSON, PAVLOV, AND CLASSICAL CONDITIONING

WATSON'S BEHAVIORISM

John B. Watson (1878–1958) was the founder of the approach to psychology known as **behaviorism**. He began his graduate study at the University of Chicago in philosophy and then switched to psychology. He took courses in neurology and physiology and began to do biological research with animals. During the year before he received his doctorate, Watson had an emotional breakdown and had sleepless nights for many weeks. He described this period as causing him to become interested in the work of Freud (Watson, 1936, p. 274). He eventually completed his dissertation, which caused him to develop a particular attitude regarding the use of human subjects.

At Chicago, I first began a tentative formulation of my later point of view. I never wanted to use human subjects. I hated to serve as a subject. I didn't like the stuffy, artificial instructions given to subjects. I always was uncomfortable and acted unnaturally. With animals I was at home. I felt that, in studying them, I was keeping close to biology with my feet on the ground. More and more the thought presented itself: Can't I find out by watching their behavior everything that the other students are finding by using O's (human subjects)?

SOURCE: WATSON, 1936, p. 276.

Watson left Chicago in 1908 to become a professor at Johns Hopkins University, where he served on the faculty until 1919. During his stay there, which was interrupted by a period of service during World War I, Watson developed his views on behaviorism as an approach to psychology. He first stated these views forcefully in a landmark paper published in psychology's leading journal, *Psychological Review*, in 1913. Public lectures and a book published in 1914

WATSON, PAVLOV, AND CLASSICAL CONDITIONING

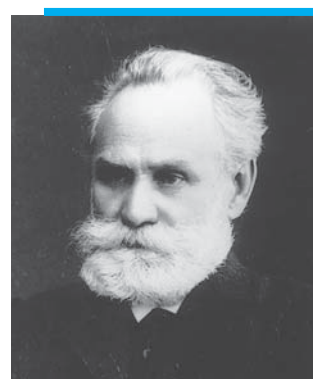
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John B. Watson (© Corbis-Bettmann.)

(*Watson's Behavior*) called further attention to a view of psychology that emphasized the study of observable behavior and rejected the use of introspection (observing one's own mental states) as a method of research. Watson's arguments were received enthusiastically by American psychologists. He was elected president of the American Psychological Association for 1915. He quickly expanded the theoretical base of his work by drawing on the findings of the Russian physiologist Pavlov (see below), incorporating them into his most significant book, *Psychology from the Standpoint of a Behaviorist* (1919). In 1920, he published a revolutionary study of the learning of emotional reactions with his student Rosalie Rayner (Watson & Rayner, 1920). At that time, he clearly was poised to be the dominant American psychologist of the 20th century.

This, however, is not how his career unfolded. In 1919, Watson divorced his wife and subsequently married his student Rayner. This scandalous turn of events forced his resignation from Johns Hopkins and caused him to entirely abandon his research career. Instead, he entered the business world, spending his years in advertising studying potential sales markets. Watson appeared to take this turn of events in good spirit, reporting "that it can be just as thrilling to watch the growth of a sales curve of a new product as to watch the learning curve of animals or men" (Watson, 1936, p. 280). After 1920, Watson did write some popular articles and a book, *Behaviorism* (1924). But his career as a theorist and experimenter had ended.



Ivan Petrovich Pavlov (© Bettmann/Corbis.)

PAVLOV'S THEORY OF CLASSICAL CONDITIONING

Ivan Petrovich Pavlov (1849–1936) was a Russian physiologist who, in the course of his work on the digestive process, developed a procedure for studying behavior and a principle of learning that profoundly affected the field of psychology. Around the beginning of the 20th century, Pavlov was involved in the study of gastric secretions in dogs. As part of his research, he placed some food powder inside the mouth of a dog and measured the resulting amount of salivation. He noticed that after a number of such trials the dog began to salivate, even before the food was put in its mouth, to certain stimuli: the sight of the food dish, the approach of the person who brought the food, and so forth. Stimuli that previously did not elicit salivation (called neutral stimuli) could now elicit the salivation response because of their association with the food powder that automatically caused the dog to salivate. To animal owners this may not seem to be a startling observation. However, it led Pavlov to conduct significant research on the process known as classical conditioning.

Pavlov explored a broad range of scientific issues. In addition to his work on basic conditioning processes, he studied individual differences among his dogs, thereby stimulating a new field of temperament research (Strelau, 1997). He made important contributions to the understanding of abnormal behavior, using animal experiments to study disorganized behavior in dogs and human patients to study neuroses and psychoses, providing the foundation for forms of therapy based on principles of classical conditioning. In 1904 he was awarded the Nobel Prize for his work on digestive processes. His methods and concepts remain important today; they are among the most important in the history of psychology (Dewsbury, 1997).

Principles of Classical Conditioning

Classical conditioning is a process in which a stimulus that initially is neutral (i.e., that the organism initially does not respond to in any significant manner) eventually elicits a strong response. It elicits the response because the neutral stimulus becomes associated with some other stimulus that does produce a response. The process in which the organism learns to respond to the stimulus that originally was neutral is known as conditioning.

In the classic case studied in Pavlov's lab, a dog salivates the first time that food is presented. The response of salivation to food is *not* learned or conditioned; it is an automatic, built-in response of the organism. In the terminology of classical conditioning, food is an unconditioned stimulus (US) and the salivation in response to food is an unconditioned response (UR). "Unconditioned" here merely means that the connection between stimulus and response occurs without any learning, or conditioning. Pavlov then introduces a new stimulus, such as the sound of a bell. Initially, this sound is neutral; it does not elicit any strong response on the part of the dog in Pavlov's lab. Then the critical step in research is taken. Over a series of trials, the bell is sounded just before the presentation of food. After these learning trials, the bell is sounded without any food being presented. What happens? The dog now salivates merely upon hearing the ring of the bell. Conditioning has occurred. The previously neutral stimulus now elicits a strong response. At this point, the bell is called a conditioned stimulus (CS), and the salivation in response to the bell is a conditioned response (CR).



Drawing by Norm Rockwell. Reprinted by permission.

The point of this work of course does not concern merely dogs, bells, and food. The point is general. In theory, any emotion could be associated with any stimulus. The emotional responses that dogs—and people!—experience to events in the world could be determined largely by classical conditioning.

Through classical conditioning, one also can learn to avoid a stimulus that initially is neutral. This is called conditioned withdrawal. In early research on conditioned withdrawal, a dog was strapped in a harness and electrodes were attached to its paw. The delivery of an electric shock (US) to the paw led to the withdrawal of the paw (UR), which was a reflex response on the part of the animal. If a bell was repeatedly presented just before the shock, eventually the bell alone (CS) was able to elicit the withdrawal response (CR).

The experimental arrangement designed by Pavlov to study classical conditioning allowed him to investigate a number of important phenomena. For example, would the conditioned response become associated with the specific neutral stimulus alone or would it become associated with other similar stimuli? Pavlov found that the response that had become conditioned to a previously neutral stimulus would also become associated with similar stimuli, a process called **generalization**. In other words, the salivation response to the bell would generalize to other sounds. Similarly, the withdrawal response to the bell would generalize to sounds similar to the bell.

What are the limits of such generalization? If repeated trials indicate that only some stimuli are followed by the unconditioned stimulus, the animal recognizes differences among stimuli, a process called **discrimination**. For example, if only certain sounds but not others are followed by shock and reflexive paw withdrawal, the dog will learn to discriminate among sounds. Thus, whereas the process of generalization leads to consistency of response across similar stimuli, the process of discrimination leads to increased specificity of response. Finally, if the originally neutral stimulus is presented repeatedly without being followed at least occasionally by the unconditioned stimulus, there is an undoing or progressive weakening of the conditioning or association, a process known as **extinction**. Whereas the association of the neutral stimulus with the unconditioned stimulus leads to the conditioned response, the repeated presentation of the conditioned stimulus without the unconditioned stimulus leads to extinction. For example, for the dog to continue to salivate to the bell, there must be at least occasional presentations of the food powder with the bell.

**CURRENT
APPLICATIONS****DEATH BY HEROIN OVERDOSE: A CLASSICAL CONDITIONING
EXPLANATION**

Dwayne Goettel, 31, keyboardist and programmer for the influential industrial band Skinny Puppy, died from an apparent heroin overdose on August 23, 1995, in a bathroom at his parents' house. How could this have happened? As a bandmate told *Rolling Stone* magazine, Goettel had just returned to his parents' house to kick his habit.

Goettel is one of hundreds of heroin addicts who die each year of a reaction typically known as an "overdose." Yet, how these deaths happen still remains unclear. Why do some long-term heroin users die from a dose that would not be expected to be fatal for them? Research by Sheppard Siegel and his colleagues suggests that some instances of heroin overdose may result from a failure of tolerance. How does a heroin addict, who has spent years building up a tolerance to heavy doses of the drug, experience such a failure of tolerance? Pavlov's theory of classical conditioning provides the basis for an answer to this question.

Pavlov proposed that drug administration constitutes a conditioning trial. The unconditioned stimulus (US) is the bodily effect of the drug, and the unconditioned response (UR) is how the body compensates for those effects. Conditioning occurs when the US (the effect of the drug) becomes associated with a conditioned stimulus (CS)—such as environmental cues present when the drug is taken. In other words, as heroin users establish an addiction, they learn to associate the effects of the drug with the environment in which they usually take it. Soon, the environmental cues alone can bring about the compensatory effects even before the drug is taken. Thus, the environmental cues serve as a signal to the body that the effects of the

drug are about to take place. In preparation, the body reacts to the cues in a manner that helps compensate for the anticipated effects of the drug. This conditioned response (CR) builds tolerance to the drug by lessening the drug's effects.

This Pavlovian model of drug tolerance has an important implication: Heroin addicts are at risk for overdose when they take the drug in an environment that has not previously been associated with the drug. If the environmental cues typically associated with the drug are absent, the conditioned response cannot occur, causing a failure of tolerance. The heroin user takes a heavy dose of the drug, and the body is left unprepared for its effects.

Is there empirical evidence for this explanation? In an animal study, rats received daily injections of increasing dosages of heroin in one of two environments. In the final session of the experiment, all the rats were administered a dose of heroin; for this injection, half of the rats were in the same environment in which they had been administered heroin in the past (same-environment rats), and the other half were in an environment in which they had never been administered heroin before (different-environment rats). The different-environment rats were significantly more likely to die from the injection than the same-environment rats. Why? The different-environment rats had lower tolerance to heroin because they were in an environment not previously associated with the drug. Unlike the same-environment rats, they did not have the conditioned response stimulated by cues in the environment to prepare them for the effects of the drug.

The rat experiment supports the model, but does the same phenomenon occur in humans? For obvious reasons, the parallel experiment cannot be conducted on people, so we must rely on what heroin users who have survived an overdose tell us about their experience. This is exactly what Siegel did to complement the results of the rat experiment. He interviewed former heroin addicts who had been hospitalized for drug overdoses. The majority of the survivors reported that the setting in which the overdose episode oc-

curred was atypical. For example, one person reported that he injected the drug in the bathroom of a car wash—for him, an unusual place to take the drug. These reports from human victims show that the Pavlovian model of drug tolerance is relevant and useful in understanding such tragic deaths as that of the musician Dwayne Goettel in his parents' bathroom.

SOURCE: *Rolling Stone*, Oct. 1995, p. 25; Siegel, 1984; Siegel, S., Hinson, R.E., Krank, M.D., & McCully, 1982.

Although the illustrations used relate to animals, the principles can apply to humans as well. For example, consider a child who is bitten or merely treated roughly by a dog. The child's fear of this dog may now be extended to all dogs—the process of generalization. Suppose, however, by getting help, the child begins to discriminate among dogs of various kinds and begins to be afraid only of certain dogs. We can see here the process of discrimination. Over time, the child may have repeated positive experiences with all dogs, leading to the extinction of the fear response altogether. Thus, the classical conditioning model may be potentially very helpful in understanding the development, maintenance, and disappearance of many of our emotional reactions.

PSYCHOPATHOLOGY AND CHANGE

Pavlov extended his analysis of conditioning to the study of phenomena of clinical interest. He developed explanations for phenomena such as psychological conflict and the development of neuroses. A classic example explored what came to be known as experimental neuroses in animals. In this research, a dog was conditioned to salivate to the image of a circle. Differentiation between a circle and a similar figure, an ellipse, was then conditioned; this was done by not reinforcing the response to the ellipse, while response to the circle continued to be reinforced. Then, gradually, the ellipse was changed in shape. Its shape was made to be closer and closer to a circle. At first, the dog could still discriminate between the circle and the ellipse. But then, as the figures became extremely similar, it no longer could tell them apart. What happened to the dog? Its behavior became disorganized; as Pavlov himself described:

After three weeks of work upon this discrimination not only did the discrimination fail to improve, but it became considerably worse, and finally disappeared altogether. The hitherto quiet dog began to squeal in its stand, kept wriggling about, tore off with its teeth the apparatus for mechanical stimulation of the skin, and bit through the tubes connecting the animal's room with the observer, a behavior which never



John Watson and Rosalie Raynor conducting research on the classic conditioning of emotional reactions with the 11-month-old Little Albert. (Benjamin Harris.)

happened before. On being taken into the experimental room the dog now barked violently, which was also contrary to its usual custom; in short, it presented all the symptoms of a condition of acute neurosis.

SOURCE: PAVLOV, 1927, p. 291.

Conditioned Emotional Reactions

Pavlov's work greatly influenced the thinking of John Watson. It inspired Watson to perform, with humans, the sort of conditioning research done by Pavlov with dogs. In 1920, Watson published one of the most famous, and infamous, studies in the history of psychology. It reported the conditioning of emotional reactions in an infant, an 11-month-old known as Little Albert.

In this research the experimenters, Watson and Rayner (1920), combined a stimulus that Little Albert was not afraid of—a small white laboratory rat—with an unconditioned stimulus that elicited fear—the noise produced by striking a hammer on a suspended steel bar. They then found that if the bar was struck immediately behind Albert's head just as he began to reach for a rat, he began to develop fear of the rat. After a few experimental trials, the instant the rat alone (without the noise) was shown to Albert, he began to cry. He had developed what is called a **conditioned emotional reaction**. Furthermore, Albert's fear generalized, just as dogs' responses had generalized in Pavlov's lab. Albert began to fear not only white rats but also other white and furry objects—including, Watson and Rayner report, the white beard of a Santa Claus mask! Despite some evidence that Albert's emotional reaction was not as strong or as general as expected (Harris, 1979), Watson and Rayner concluded that many fears are conditioned emotional reactions. On this basis they criticized the more complex psychoanalytic interpretations.

The Freudians twenty years from now, unless their hypotheses change, when they come to analyze Albert's fear of a seal skin coat will probably tease from him the recital of a dream upon which their analysis will show that Albert at three years of age attempted to play with the pubic

hair of the mother and was scolded violently for it. If the analyst has sufficiently prepared Albert to accept such a dream when found as an explanation of his avoiding tendencies, and if the analyst has the authority and personality to put it over, Albert may be fully convinced that the dream was a true revealer of the factors which brought about the fear.

SOURCE: WATSON AND RAYNER, 1920, p. 14.

The “Unconditioning” of Fear of a Rabbit

For many psychologists, the classical conditioning of emotional reactions plays a critical role in the development of psychopathology and a potentially important role in behavioral change. Behavior therapy based on the classical conditioning model emphasizes the extinction of problematic responses, such as conditioned fears, or the conditioning of new responses to stimuli that elicit such undesired responses as anxiety.

An early utilization of this approach, one that followed Watson and Rayner’s study of the conditioning of the fear emotional response in Albert, was the effort of Jones (1924) to remove a fear under laboratory conditions. In this study, described as one of the earliest, if not the first, systematic utilization of behavior therapy, Jones attempted to treat the exaggerated fear reaction in a boy, Peter, who then was two years and ten months old. Peter was described as a generally healthy, well-adjusted child with a fear of a white rat that also extended to a rabbit, fur coat, feather, and cotton wool. Jones carefully documented the nature of the child’s fear response and the conditions that elicited the greatest fear. She then set out to determine whether she could “uncondition” the fear response to one stimulus and whether such unconditioning would then generalize to other stimuli. Jones chose to focus on Peter’s fear of the rabbit since this seemed even greater than his fear of the rat. She proceeded by bringing Peter to play at a time when the rabbit was present, as well as the other children who were selected because they were fearless toward the rabbit. Gradually Peter moved from almost complete terror at the sight of the rabbit to a completely positive response.

Peter was progressing well in his unconditioning until, unfortunately, he had to be taken to the hospital with scarlet fever. When he returned to the laboratory, his fear was back to its original level, a not unusual occurrence in conditioning procedures. At this point Jones began anew with another method of treatment, “direct conditioning.” Here Peter was seated in a chair and given food he liked as the experimenter gradually brought the rabbit in a wire cage closer to him: “Through the presence of a pleasant stimulus (food) whenever the rabbit was shown, the fear was eliminated gradually in favor of a positive response.” In other words, the positive feelings associated with food were counterconditioned to the previously feared rabbit. However, even in the later sessions the influence of other children who were not afraid of the rabbit seemed to be significant.

And what of the other fears? Jones noted that after the unconditioning of Peter’s fear of the rabbit, he completely lost his fear of the fur coat, feathers, and cotton wool as well. Despite the lack of any knowledge concerning the origins of Peter’s fears, the unconditioning procedure was found to work successfully and to generalize to other stimuli as well.

Systematic Desensitization

A major advance in the application of classical conditioning principles to questions of psychopathology was the development of a therapeutic technique known as systematic desensitization. The technique was developed by Joseph Wolpe, a psychiatrist from South Africa who became familiar with the writings of Pavlov.

Wolpe viewed persistent reactions of anxiety as a learned response that could be un-learned. He developed a therapy that was designed to provide this “un-learning.” Phrased more technically, his therapy technique of **systematic desensitization** was designed to inhibit anxiety through **counterconditioning**. In counter conditioning, a person learns a new response that is physiologically incompatible with an existing response. If the existing response to a stimulus is fear or anxiety, then the goal might be to have the person learn a new response such as relaxation. Once the person learns, through new classical conditioning experiences, to experience relaxation in response to the previously feared stimulus, his or her fear should be eliminated.

In practice, systematic desensitization involves a number of phases (Wolpe, 1961). After determining whether the patient has a problem that can be treated by systematic desensitization, the therapist trains the patient to relax. This generally is done through deep muscle relaxation; the patient relaxes one part of the body after another. The next phase of treatment involves the construction of an anxiety hierarchy. This is a procedure in which the therapist tries to obtain from the patient a list of stimuli that arouse anxiety. These anxiety-arousing stimuli are grouped into themes such as fear of heights or fear of rejection. Within each group or theme, the anxiety-arousing stimuli are then arranged in order from most disturbing to least disturbing. For example, a theme of claustrophobia (fear of closed spaces) might involve placing the fear of being stuck in an elevator at the top of the list, an anxiety about being on a train in the middle of the list, and anxiety in response to reading of miners trapped underground at the bottom of the list. A theme of death might involve being at a burial as the most anxiety-arousing stimulus, the word “death” as somewhat anxiety-arousing, and driving past a cemetery as only slightly anxiety-arousing. Patients can have many or few themes and many or few items within each anxiety hierarchy.

With the construction of the anxiety hierarchies completed, the patient is ready for the desensitization procedure itself. The patient has learned to calm the self by relaxation, and the therapist has established the anxiety hierarchies. Now the therapist encourages the patient to achieve a deep state of relaxation and then to imagine the least anxiety-arousing stimulus in the anxiety hierarchy. If the patient can imagine the stimulus without anxiety, then he or she is encouraged to imagine the next stimulus in the hierarchy while remaining relaxed. Periods of pure relaxation are interspersed with periods of relaxation and imagination of anxiety-arousing stimuli. If the patient feels anxious while imagining a stimulus, he or she is encouraged to relax and return to imagining a less anxiety-arousing stimulus. Ultimately the patient is able to relax while imagining all stimuli in the anxiety hierarchies. Relaxation in relation to the imagined stimuli generalizes to relaxation in relation to these stimuli in everyday life. “It has consistently been found that at every stage a stimulus that evokes no anxiety when imagined in a state of relaxation will also evoke no anxiety when encountered in reality” (Wolpe, 1961, p. 191).

**CURRENT
APPLICATIONS****WHAT MAKES SOME FOODS A TREAT AND OTHERS
DISGUSTING?**

Most people love some odors and food tastes and are disgusted by others. Often these responses date back to childhood and seem nearly impossible to change. Can classical conditioning help us to understand them and their power?

Consider some research on food tastes. What makes some foods so unpleasant—even disgusting—that we have emotional reactions to just the thought of them? Eating worms or drinking milk that has a dead fly or dead cockroach in it are examples. The interesting thing about some of these reactions is that a food that evokes disgust in one culture can be considered a delicacy in another, and disgust might be evoked by a dead fly or cockroach in the milk even if one is told that the insect was sterilized before it was put in the milk. Having seen the dead insect in the milk, one might not even be prepared to drink a different glass of milk, the disgust reaction now having generalized to the milk itself.

According to the researchers of such reactions, a possible explanation lies in the

strong emotional reaction that becomes associated with a previously neutral object. In classical conditioning terms, the disgust response becomes associated with, or conditioned to, a previously neutral object such as milk or another food: “We believe that Pavlovian conditioning is alive and well, in the flavor associations of billions of meals eaten each day, in the expression of affects of billions of eaters as they eat away, in the association of foods and offensive objects, and in the association of foods with some of their consequences.”

If this is the case, then it suggests that many things that we like, perhaps even feel addicted to, are the result of classical conditioning. This being the case, it may be possible to change our emotional reactions to certain objects through the process of classical conditioning.

SOURCE: *Psychology Today*, July 1985; Rozin & Zellner, 1985. Copyright © 1985 American Psychological Association. Reprinted by permission from *Psychology Today*.



Conditioned food responses: Many strong and persisting emotional responses to foods, such as a disgust response to worms, are acquired through the process of classical conditioning. (Courtesy Psychology Today.)



Behavior Therapy: One aspect of behavior therapy involves the extinction of learned fears or phobias. (Copyright © Sidney Harris.)

A number of clinical and laboratory studies have indicated that systematic desensitization is, in fact, an effective treatment procedure. These successful results led Wolpe and others to question the psychoanalytic view that, as long as the underlying conflicts remain untouched, the patient is prone to develop a new symptom in place of the one removed (symptom substitution) (Lazarus, 1965). According to the behavior therapy point of view, no symptom is caused by unconscious conflicts. There is only a maladaptive learned response, and once this response has been eliminated, there is no reason to believe that another maladaptive response will be substituted for it.

A REINTERPRETATION OF THE CASE OF LITTLE HANS

In this section the application of the learning theory approach will be observed in a case presented by Wolpe and Rachman (1960) that gives us an excellent opportunity to compare the behavioral approach with that of psychoanalysis. In fact, it is not a case in the same sense as other cases that have been presented. Rather, it is a critique and reformulation of Freud's case of Little Hans.

As we learned in Chapter 4, the case of Little Hans is a classic in psychoanalysis. In this case, Freud emphasized the importance of infantile sexuality and Oedipal conflicts in the development of a horse phobia, or fear. Wolpe and Rachman are extremely critical of Freud's approach to obtaining data and of his conclusions. They make the following points: (1) Nowhere is there evidence of Hans's wish to make love to his mother. (2) Hans never expressed fear or hatred of his father. (3) Hans consistently denied any relationship between the horse and his father. (4) Phobias can be induced in children by a simple conditioning process and need not be related to a theory of conflicts or anxiety and defense. The view that neuroses have a purpose is highly questionable. (5) There is no evidence that the phobia disappeared as a result of Hans's resolution of his

Oedipal conflicts. Similarly, there is no evidence that insight occurred or that information was of therapeutic value.

Wolpe and Rachman feel handicapped in their own interpretation of the phobia because the data were gathered within a psychoanalytic framework. They do, however, attempt an explanation. A phobia is regarded as a conditioned anxiety reaction. As a child, Hans heard and saw a playmate being warned by her father that she should avoid a white horse lest it bite her: "Don't put your finger to the white horse." This incident sensitized Hans to a fear of horses. Also, there was the time when one of Hans's friends injured himself and bled while playing with horses. Finally, Hans was a sensitive child who felt uneasy about seeing merry-go-round horses being playfully beaten. These factors set the condition for the later development of the phobia. The phobia itself occurred as a consequence of the fright Hans experienced while watching a horse fall down. Whereas Freud suggested that this incident was an exciting cause that allowed the underlying conflicts to be expressed in terms of a phobia, Wolpe and Rachman suggest that this incident was *the* cause.

Wolpe and Rachman see a similarity here to Watson's conditioning of fear in Little Albert. Hans was frightened by the event with a horse and then generalized his fear to all things that were similar to or related to horses. The recovery from the phobia did not occur through the process of insight but probably through a process of either extinction or counterconditioning. As Hans developed, he experienced other emotional responses that inhibited the fear response. Alternatively, it is suggested that perhaps the father's constant reference to the horse in a nonthreatening context helped to extinguish the fear response. Whatever the details, it appears that the phobia disappeared gradually, as would be expected by this kind of learning interpretation, instead of dramatically, as might be suggested by a psychoanalytic, insight interpretation. The evidence in support of Freud is not clear, and the data, as opposed to the interpretations, can be accounted for in a more straightforward way through the use of a learning theory interpretation.

RECENT DEVELOPMENTS

For some time interest in classical conditioning declined among personality psychologists. However, more recently there has been increased recognition of the potential contributions of concepts and procedures associated with classical conditioning theory. One illustrative area of research is the use of classical conditioning procedures to demonstrate that people can unconsciously develop fears and attitudes toward others (Krosnick, Betz, Jussim, Lynn, & Kirschenbaum, 1992; Ohman & Soares, 1993). For example, a stimulus, such as a picture with positive or negative affective value, can be presented subliminally (i.e., below the threshold of awareness) in association with another stimulus, such as another photo. Thus, a person will come to dislike a photo unconsciously associated with negative emotion and come to like a photo unconsciously associated with positive emotion. One can speculate in this regard how many of our attitudes and preferences are classically conditioned on a subliminal or unconscious basis. Consider, for example, the following conclusion of a leading social psychologist: "The aversive prejudice, once created, may be difficult to consciously eliminate." People can have egalitarian beliefs and still act

prejudicial in certain situations—their impulsive, automatic reaction when faced with a member of that minority group may be negative. This doesn't mean that people are lying about nonprejudicial attitudes. It's that these attitudes reside coincidentally with a conditioned aversive reaction learned early in childhood (Cacioppo, 1999, p. 10).

In a surprising turn of events, researchers recently have related classical conditioning principles to a topic that we previously associated with the phenomenological theory of Rogers, namely, self-esteem. Baccus, Baldwin, and Packer (2004) reasoned that expressions of high self-esteem are responses that could be altered through classical conditioning. Participants in their research took part in a conditioning task in which both words and pictures appeared on a computer screen. In an experimental condition, words that were self-relevant (i.e., words that the given participant said described himself or herself) appeared in combination with pictures of people who were smiling. This experimental condition was designed as a classical conditioning process in which positive emotions would be paired with the self. In another condition—a control condition—such words were paired with a mixture of pictures: some smiling, some frowning, some looking neutral. Afterward, participants completed self-esteem measures. The researchers compared the effects of the experimental condition (i.e., the condition with the faces that were consistently smiling) to the control condition for the group of participants overall, and for subgroups of participants who, based on pre-experimental measures, had low versus high self-esteem in general. The results demonstrated classical conditioning increased feelings of self-esteem. People who saw smiling faces paired with words that are defining of them displayed higher levels of self-esteem than control-group subjects.

The studies we have just reviewed primarily involve applications of conditioning principles to questions of human behavior. However, another major development concerns the study of basic neural and biochemical processes that mediate classical conditioning. Put simply, the question is “What actually happens in the brain when an organism acquires a new response to a stimulus?” Although many contemporary scientists contribute to an understanding of this issue, an investigator of particular note is Eric Kandel of Columbia University in New York, who was awarded the Nobel Prize in medicine in 2000 for his research on the topic. Kandel's research is a classic example of the simple systems strategy we overviewed previously. In order to understand what happens in the brain when an organism learns a new response, Kandel studied an organism much simpler than the one Pavlov studied (the dog). Kandel studied a type of sea slug named *Aplysia*. *Aplysia* have relatively few nerve cells, which makes it easier to study the role of specific individual cells in classical conditioning. *Aplysia* also exhibit a simple response, the gill-withdrawal reflex, that can be modified through conditioning. Kandel's findings reveal that the conditioning process, at the neural level, involves changes in the strength of connections among neurons (Kandel, 2000). The synapses of neurons that comprise the gill-withdrawal reflex become more strongly associated as a result of conditioning. Kandel's work is an exceptional example of how basic research in the neurosciences can inform the study of learning and, potentially, the understanding of human personality.

Although John Watson dropped out of the field of psychology, others picked up the banner of behaviorism during the middle of the 20th century. These included historically significant figures such as Clark Hull, who developed a highly systematic drive theory of learning, and John Dollard and Neal Miller, who attempted to show how Hull's theory could address phenomena involving drives and intrapsychic conflicts that were of interest to psychoanalysts. Even these important contributions, however, were eventually overshadowed by those of another researcher who became one of the most influential figures in all of 20th-century psychology.

The most influential behavioral researcher, theorist, and spokesperson was the Harvard psychologist B.F. Skinner (1904–1990). Indeed, Skinner is probably the most well-known American psychologist of the last century; a recent quantitative analysis of the impact of individual psychologists on the field as a whole ranked Skinner as the singularly most eminent psychologist of the 20th century (Haggbloom et al., 2002). Skinner's eminence reflects his exceptional skill at articulating the broad implications of behavioral principles. In Skinner's hands, behaviorism was not just an approach to the psychology of learning. It was an all-encompassing philosophy that promised a comprehensive account of human behavior, as well as technologies for improving the human experience.

SKINNER'S THEORY OF OPERANT CONDITIONING

A VIEW OF THE THEORIST

The scientist, like any organism, is the product of a unique history. The practices which he finds most appropriate will depend in part upon his history.

SOURCE: SKINNER, 1959, p. 379.



B.F. Skinner (Courtesy Julie S. Vargas. Reproduced with permission.)

In this passage, Skinner takes the point of view that has been argued in each of the theory chapters in this book, that is, that psychologists' orientations and research strategies are, in part, consequences of their own life history and expressions of their own personalities.

B.F. Skinner was born in Pennsylvania, the son of a lawyer who was described by his son as having been desperately hungry for praise and a mother who had rigid standards of right and wrong. Still, Skinner (1967) described his home during his early years as a warm and stable environment. He reported a love for school and showed an early interest in building things. This desire to build things is particularly interesting in relation to the behavioral emphasis on laboratory equipment in the experimental setting and because it contrasts with the absence of such an interest in the lives and research of the clinical personality theorists.

At about the time Skinner entered college, his younger brother died. Skinner commented that he was not much moved by his brother's death and that he probably felt guilty for not being moved. Skinner went to Hamilton College and majored in English literature. At that time, his goal was to become a writer, and at one point he sent three short stories to Robert Frost, from whom he received an encouraging reply. After college, Skinner spent a year trying to write but concluded that at that point in his life he had nothing to say. He then spent six months living in Greenwich Village in New York City. During this time he read Pavlov's *Conditioned Reflexes* and came across a series of articles by Bertrand Russell on Watson's behaviorism. Russell thought that he had demolished Watson in these articles, but they aroused Skinner's interest in behaviorism.

Although Skinner had not taken any psychology courses in college, he had begun to develop an interest in the field and was accepted for graduate work in psychology at Harvard. He justified his change in goals as follows: "A writer might portray human behavior accurately, but he did not therefore understand it. I was to remain interested in human behavior, but the literary method had failed me; I would turn to the scientific" (Skinner, 1967, p. 395). Psychology appeared to be the relevant science. Besides, Skinner had long been interested in animal behavior (recalling his fascination with the complex behaviors of a troupe of performing pigeons). Furthermore, there would now be many opportunities to make use of his interest in building gadgets.

During his graduate school years at Harvard, Skinner developed his interest in animal behavior and in explaining this behavior without reference to the functioning of the nervous system. After reading Pavlov, he disagreed with Pavlov's contention that, in explaining behavior, one could go "from the salivary reflexes to the important business of the organism in everyday life." However, Skinner believed that Pavlov had given him the key to understanding behavior: "Control your conditions (the environment) and you shall see order!" During these and the following years, Skinner (1959) developed some of his principles of scientific methodology: (1) When you run into something interesting, drop everything else and study it. (2) Some ways of doing research are easier than others. A mechanical apparatus often makes doing research easier. (3) Some people are lucky. (4) A piece of apparatus breaks down. This presents problems, but it can also lead to (5) serendipity—the art of finding one thing while looking for something else.

After Harvard, Skinner moved first to Minnesota, then to Indiana, and then returned to Harvard in 1948. During this time he became, in a sense, a

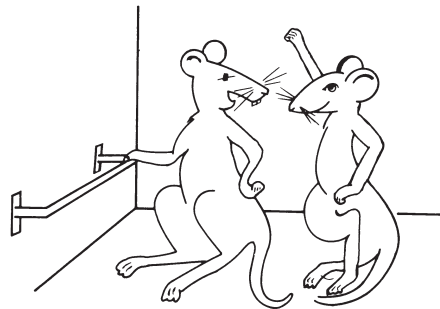


Figure 10.1 “Boy, have I got this guy conditioned! Every time I press the bar down he drops a piece of food.” (Courtesy of B.F. Skinner, 1956.)

sophisticated animal trainer; he was able to make organisms engage in specific behaviors at specific times. He turned from work with rats to work with pigeons. Finding that the behavior of any single animal did not necessarily reflect the average picture of learning based on many animals, he became interested in the manipulation and control of individual animal behavior. Special theories of learning and circuitous explanations of behavior were not necessary if one could manipulate the environment so as to produce orderly change in the individual case. In the meantime, as Skinner notes, his own behavior was becoming controlled by the positive results being given to him by the animals “under his control” (Figure 10.1).

The basis of Skinner’s **operant conditioning** procedure is the control of behavior through the manipulation of rewards and punishments in the environment, particularly the laboratory environment. However, his conviction concerning the importance of the laws of behavior and his interest in building things led Skinner to take his thinking and research far beyond the laboratory. He built a “baby box” to mechanize the care of a baby, teaching machines that used rewards in the teaching of school subjects, and a procedure whereby pigeons could be used militarily to land a missile on target. He wrote a novel, *Walden Two* (1948), in which he describes a utopia based on the control of human behavior through positive reinforcement (reward) rather than punishment. Skinner committed himself to the view that a science of human behavior and the technology to be derived from it must be developed in the service of humankind. In an interview published within his obituary notice in the *New York Times* (August 20, 1990), Skinner related that “all humans are controlled”—that is, it is inevitable that people’s behavior is ultimately under the control of whatever environments they experience—but the idea of behaviorism is to eliminate coercion, to apply controls by changing the environment in such a way as to reinforce the kind of behavior that benefits everyone” (pp. A1, A12).

Skinner was considered by many to be the greatest contemporary American psychologist. He received many awards, including the American Psychological Association’s award for Distinguished Scientific Contribution (1958) and the National Medal of Science (1968). In 1990, shortly before his death, he became the first recipient of the American Psychological Association’s Citation for Outstanding Lifetime Contribution to Psychology.

SKINNER’S THEORY OF PERSONALITY

Let’s begin our discussion of Skinner’s theory of personality by contrasting its general qualities with those of the theories you already have learned about in

the previous chapters. Each of the previous theories (and, to give you a preview, each of the ones discussed subsequently in this book) emphasizes structural concepts. Freud used structural concepts such as id, ego, and superego; Rogers used concepts such as self and ideal self; and Allport, Eysenck, and Cattell used the concept of traits. Each theorist, then, inferred the existence of a psychological structure in the mind of the individual that accounted for the person's consistent styles of emotion and behavior. In contrast, Skinner's behavioral approach greatly deemphasizes structure. This is for two reasons. First, behaviorists view behavior as an adaptation to situational forces. They thus expect situational specificity in behavior: If the situational forces change, so does the behavior. If behavior varies from one situation to another, then there is little need to propose structural concepts to explain the supposed consistency of personality. The second reason involves a general approach to constructing a theory. As we explained earlier, the behaviorists wanted to build a theory based on observable variables. They felt that only observable variables could be verified by basic research. Inferring the existence of invisible personality structures was seen by Skinner, then, as a way of thinking that was not properly scientific.

The fact that Skinner does not propose a series of personality structures makes his work entirely different from the other personality theories. In fact, Skinner rejected the view that his ideas constituted a personality theory. He saw himself as replacing the personality theories with a new way of thinking about behavior.

Structure

The key structural unit for the behavioral approach in general, and Skinner's approach in particular, is the response. A response may range from a simple reflex response (e.g., salivation to food, startle to a loud noise) to a complex piece of behavior (e.g., solution to a math problem, subtle forms of aggression). What is critical to the definition of a response is that it represents an external, observable piece of behavior that can be related to environmental events. The learning process essentially involves the association or connection of responses to events in the environment.

In his approach to learning, Skinner distinguishes between responses elicited by known stimuli, such as an eyeblink reflex to a puff of air, and responses that cannot be associated with any stimuli. These responses are emitted by the organism and are called **operants**. Skinner's view is that stimuli in the environment do not force the organism to behave or incite it to act. The initial cause of behavior is in the organism itself. "There is no environmental eliciting stimulus for operant behavior; it simply occurs. In the terminology of operant conditioning, operants are emitted by the organism. The dog walks, runs, and romps; the bird flies; the monkey swings from tree to tree; the human infant babbles vocally. In each case, the behavior occurs without any specific eliciting stimulus. It is in the biological nature of organisms to emit operant behavior" (Reynolds, 1968, p. 8).

Process: Operant Conditioning

The most important concept in the Skinnerian analysis of psychological processes is **reinforcer**. A reinforcer is something that follows a response and increases the probability of the response occurring again in the future.

Suppose a pigeon is pecking at a disk. If the pecking is followed by the provision of some food and the pigeon therefore pecks at the disk more frequently in the future, the food is a reinforcer. Suppose a baby in a crib is crying. If the crying draws the attention of adults who rush over to care for the infant and the infant therefore cries more frequently in the future, the attention from adults is reinforced. Learning by reinforcement is a process in which the probability of a given response is altered by the presentation of a reinforcer.

What counts as a reinforcer in any given situation, then, is defined according to the effects of the potential reinforcer on behavior. Often it is difficult to know ahead of time what will serve as a reinforcer. This may vary from individual to individual. Finding a reinforcer may turn out to be a trial-and-error operation. Stimuli that originally do not serve as reinforcers may come to do so through their association with other reinforcers. Some green rectangular pieces of paper (i.e., money) become **generalized reinforcers** because they are associated with many other reinforcing stimuli.

Skinner developed a specialized piece of laboratory apparatus to study the effects of reinforcers on behavior. It has become known as the "Skinner box." The exact details of a Skinner box vary a bit depending upon the organism for which it is designed. A Skinner box designed for research with a rat would have a lever that the rat may press and some mechanism for delivering a reinforcer such as a food pellet. One would present the reinforcer and determine whether it influenced the frequency with which the rat engaged in the behavior of pressing the lever. Skinner saw this simple environment as the best setting to observe the elementary laws of behavior.

These laws are discovered by varying the nature of the reinforcements and observing the effects on the behavior of the organism in the Skinner box. The variations are done according to different **schedules of reinforcement**. The term *schedules of reinforcement* refers to the relation between behavior and when a reinforcement occurs. The general idea is that reinforcements need not occur after every response. They may be given only some of the time. Different schedules are different patterns of occurrence of the reinforcers. One distinction between schedules of reinforcement differentiates reinforcements that are based on the passage of time from those based on numbers of responses. In a time-based schedule, known as a time interval schedule, the reinforcement appears after a certain time period (e.g., one minute) regardless of the number of responses. In contrast, in a response-based interval, reinforcements appear only after a certain *number* of responses (e.g., presses of a bar, pecks of a key) have been made, no matter how long it takes for the responses to occur.

A second distinction differentiates reinforcement schedules that are **fixed** from those that are **variable**. In fixed schedules the relation of behaviors to reinforcers remains constant. In variable schedules this relation changes unpredictably. To illustrate: Imagine yourself standing in front of each of two machines. Both require you to put money in the machine and to press a button, whereupon you may get a reinforcement. If the machine is a soft-drink dispenser, the experience is routine and uninteresting. If no soft drink (the reinforcer) comes out the first time, you stop putting money into the machine. If the machine is a slot machine in a casino, the same event—putting money into a machine, pressing a button—is exciting! If no money (the reinforcer) comes out, you do not stop putting money in. Instead, many people put more and more money into the machine. The difference between the two settings

is the different schedule of reinforcement. The slot machine features a random schedule, the soda machine a fixed schedule. In both the Skinner lab with rats, and the casino with people, the variable schedule produces higher rates of response.

The behaviorists were remarkably successful in identifying systematic relations between the schedule of reinforcement for a given behavior and the frequency with which that behavior occurred. In research with animals in Skinner boxes, the results were so reliable that they could be replicated with virtually every individual animal put in the box (Ferster & Skinner, 1957). Response-based schedules repeatedly generated higher levels of response than interval schedules. The highest response rates occurred with response-based schedules that were variable (i.e., like a slot machine or other gambling device). These highly consistent operant conditioning results, combined with the equally consistent research results Pavlov and colleagues found when studying classical conditioning, gave behaviorists an exceptionally solid set of findings on which to build their theorizing. These solid research findings contributed enormously to the appeal of behaviorism in the mid-20th century.

How do animals learn to do anything more complex than pressing a lever? According to Skinner, complex behavior results from a process known as **shaping** or (equivalently) **successive approximations**. Through a gradual, step-by-step process one reinforces increasingly complex behaviors that approximate, to a greater and greater degree, the final behavior that is desired. The behavior of the organism is “shaped” until it matches a desired response. For example, suppose you want a rat in a Skinner box to run around in circles. You can’t



Why do people gamble, even after losing large amounts of money? Behaviorists explain that the cause is the schedule of reinforcement. Gambling devices feature variable ratio schedules of reinforcement that create high, persistent levels of behavior. (Corbis Collection/Alamy Images.)

just wait until it runs around in circles and then reinforce it, because it might never spontaneously run around in circles. Instead, you first reinforce a simple response such as running (whether in circles or not). You would then wait until the animal started to run in a curved path and reinforce it only then. Once this happened, you should wait until it ran in at least a half circle and reinforce it then. Eventually you can train the animal to run in circles. Much animal training (in circuses, zoos, and Florida tourist attractions) is done in this manner. Skinner recognized that complex human learning also may occur in a step-by-step process of successive approximations.

In addition to the use of pleasant events as reinforcers, Skinnerians note that the removal or avoidance of an *unpleasant* stimulus also can be reinforcing. For example, suppose you are feeling so anxious about going to a social event that you suddenly decide not to go, and that once you make this decision your anxiety goes away. The lessening of anxiety may reinforce the behavior of saying "I'm not going to social events." The reduction of the negative occurrence, the anxiety, is reinforcing.

Skinnerians also recognize that the presentation of aversive stimuli can influence behaviors. In the behavioral vocabulary, these stimuli are **punishments**. In punishment, an aversive stimulus follows a response, decreasing the probability of that response occurring again. Skinnerians generally are against the use of punishment, whose effects tend to be temporary and whose administration may lead people to rebel against their use. Throughout his career, Skinner emphasized the value of positive reinforcement in shaping behavior.

Growth and Development

Skinner did not posit any principles of development other than the operant conditioning principles reviewed above. To Skinner, as children develop, they learn more and more responses as a result of naturally occurring reinforcement experiences. The process is no different, in terms of general principles, than the case of a rat who learns more and more responses as a result of systematic shaping experiences in a Skinner box.

This mechanistic view of development does have practical implications that may be beneficial. It suggests that parents should attend carefully to exactly how and when they are reinforcing the child's behavior. If one wants the child to behave in a certain way, the most effective procedure, according to Skinner, is not to lecture the child about proper forms of behavior or to punish the child for things it does wrong. The most effective procedure, according to Skinner, is to reinforce good behavior immediately after it occurs.

In its treatment of development, then, behaviorism differs from the other theories in this book. To Skinner, development does not occur in any particular sequences of stages. There are no conflicts that everyone necessarily experiences. No new structures spring up in the mind at one versus another point in development. Instead, the set of behaviors that a person can perform simply increases gradually, as he or she experiences more reinforcements.

Psychopathology

The learning theory position on psychopathology may be stated as follows: The basic principles of learning provide a completely adequate interpretation of psychopathology. Explanations in terms of symptoms with underlying causes are



Superstitious Behavior:
Skinner suggested that
superstitious behavior is based
on an accidental relationship
between a response and
reinforcement. (Dion Ogust/
The Image Works.)

not necessary. According to the behavioral point of view, behavioral pathology is not a disease. Instead, it is a response pattern learned according to the same principles of behavior as are all response patterns.

The Skinnerians argue against any concept of the unconscious or a “sick personality.” Individuals are not sick; they merely do not respond appropriately to stimuli. Either they fail to learn a response or they learn a maladaptive response. In the former case, there is a behavioral deficit. For example, individuals who are socially inadequate may have had faulty reinforcement histories in which social skills were not developed. Having failed to be reinforced for social skills during socialization as children, as adults they have an inadequate response repertoire with which to respond to social situations.

Reinforcement is important not only for the learning of responses but also for the maintenance of behavior. Thus, one possible result of an absence of reinforcement in the environment is depression. According to this view, depression represents a lessening of behavior or a lowered response rate. The depressed person is not responsive because positive reinforcement has been withdrawn (Ferster, 1973).

When a person learns a **maladaptive response**, the problem is that a response has been learned that is not considered acceptable by society or by others in the person’s environment. This may be because the response itself is considered unacceptable (e.g., hostile behavior) or because the response occurs under unacceptable circumstances (e.g., joking at a formal business meeting). Related to this situation is the development of superstitious behavior (Skinner, 1948). Superstitious behavior develops because of an accidental relationship between a response and reinforcement. Thus, Skinner found that if he gave pigeons small amounts of food at regular intervals regardless of what they were doing, many birds came to associate the response that was coincidentally rewarded with systematic reinforcement. For example, if a pigeon was coincidentally rewarded while walking around in a counterclockwise direction, this response might become conditioned even though it had no cause–effect relationship with the reinforcement. The continuous performance of the behavior would result in occasional, again coincidental, reinforcement. Thus, the behavior could be maintained over long periods of time.

In sum, people develop faulty behavior repertoires, what others call “sick” behavior or psychopathology, because of the following: They were not reinforced for adaptive behaviors, they were punished for behaviors that later would be considered adaptive, they were reinforced for maladaptive behaviors, or they were reinforced under inappropriate circumstances for what would otherwise be adaptive behavior. In all cases there is an emphasis on observable responses and schedules of reinforcement rather than on concepts such as drive, conflict, unconscious motives, or self-esteem.

Behavioral Assessment

How does one assess personality in a behavioral approach? Since the theory says that one must understand the relation between behavior and the environment, one does not assess the person in isolation. One assesses the person's responses to different environments. The behavioral approach to assessment, then, emphasizes three things: (1) identification of specific behaviors, often called **target behaviors or target responses**; (2) identification of specific environmental factors that elicit, cue, or reinforce the target behaviors; and (3) identification of specific environmental factors that can be manipulated to alter the behavior. A behavioral assessment of a child's temper tantrums, for example, would include a clear, objective definition of temper tantrum behavior in the child, a complete description of the situation that sets off the tantrum behavior, a complete description of the reactions of parents and others that may be reinforcing the behavior, and an analysis of the potential for eliciting and reinforcing other nontantrum behaviors (Kanfer & Saslow, 1965; O'Leary, 1972). This **functional analysis** of behavior, involving the effort to identify the environmental conditions that control behavior, sees behavior as a function of specific events in the environment. The approach has also been called the **ABC assessment**: One assesses the antecedent conditions of the behavior, the Behavior itself, and the Consequences of the behavior.

Behavioral assessment generally is closely tied to treatment objectives. For example, consider the task of assisting a mother who came to a clinic because she felt helpless in dealing with her four-year-old son's temper tantrums and general disobedience (Hawkins, Peterson, Schweid, & Bijou, 1966). The psychologists involved in this case followed a fairly typical behavioral procedure to assessment and treatment. First, the mother and child were observed in the home to determine the nature of the undesirable behaviors, when they occurred, and which reinforcers seemed to maintain them. The following nine behaviors were determined to constitute the major portion of the boy's objectionable behavior: (1) biting his shirt or arm; (2) sticking out his tongue; (3) kicking or biting himself, others, or objects; (4) calling someone or something a derogatory name; (5) removing or threatening to remove his clothing; (6) saying “No!” loudly and vigorously; (7) threatening to damage objects or persons; (8) throwing objects; and (9) pushing his sister. Observation of the mother-child interaction suggested that the objectionable behavior was being maintained by attention from the mother. For example, often she tried to distract him by offering him toys or food.

The treatment program began with a behavioral analysis of how frequently the boy expressed one of the objectionable behaviors during one-hour sessions conducted in the home two to three times a week. Two psychologists acted as

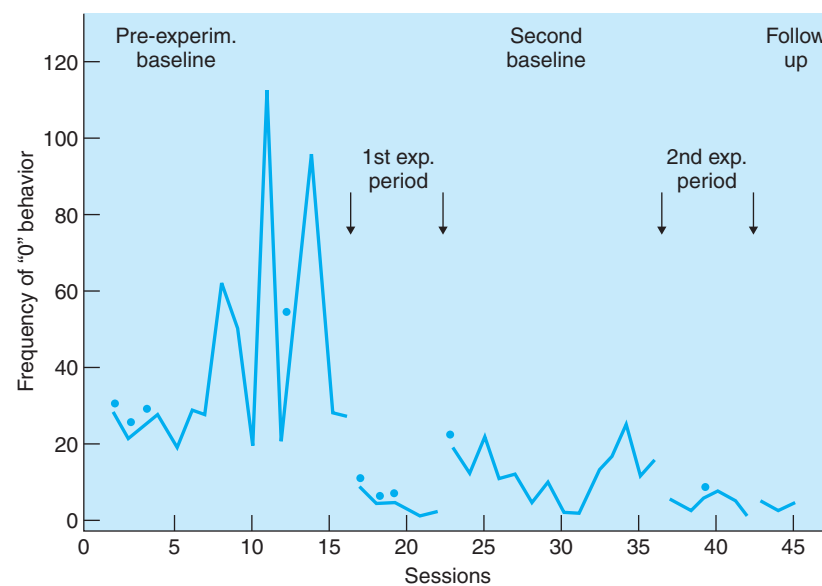


Figure 10.2 Number of 10-Second Intervals per 1-hour Session, in Which Objectionable Behavior Occurred. Dots indicate sessions in which reliability was tested. (Hawkins et al., 1966) Copyright © 1966 by Academic Press, Inc. Reprinted by permission.

observers to ensure that there was high reliability or good agreement concerning recording of the objectionable behavior. This first phase, known as a baseline period, lasted for 16 sessions. During this time, mother and child interacted in their usual way. Following this careful assessment of the objectionable behavior during the baseline period, the psychologists initiated their intervention, or treatment program. Now the mother was instructed to tell her son to stop or to put him in his room by himself without toys each time he emitted an objectionable behavior. In other words, there was a withdrawal of the positive reinforcer for objectionable behavior. At the same time, the mother was instructed to give her son attention and approval when he behaved in a desirable way. In other words, the positive reinforcers were made contingent on desirable behavior. During this time, known as the first experimental period, the frequency of objectionable behaviors was again counted. As can be seen in Figure 10.2, there was a marked decline in the frequency of objectionable behavior. In the pre-experimental baseline phase, dozens of objectionable behaviors commonly were observed during any given one-hour period. In contrast, during the first experimental period, only 1 to 8 such responses per session were observed.

Following the first experimental treatment period, the mother was instructed to return to her former behavior to determine whether it was the shift in her reinforcement behavior that was determining the change in her son's behavior. During this second baseline period, her son's objectionable behavior ranged between 2 and 24 per session (Figure 10.2). There was an increase in this behavior, though not a return to the former baseline level. However, the mother reported that she had trouble responding in her previous way because she now felt more "sure of herself." Thus, even during this period she gave her son more

firm commands, gave in less after denying a request, and gave more affection in response to positive behaviors in her son than was previously the case. Following this there was a return to a full emphasis on the treatment program, resulting in a decline in objectionable behavior (second experimental period). The rate of objectionable behavior was found to remain low after a 24-day interval (follow-up period), and the mother reported a continuing positive change in the relationship.

The study we just reviewed illustrates an experimental method known as an **ABA research design** (Krasner, 1971). In this research design, one measures behavior at one point in time (the "A" time period), introduces a reinforcer and measures behavior again at a second time point (the "B" period), and then one *takes away* the reinforcer to see if the behavior returns to its original level (one returns to the "A" state of affairs). Instead of assigning groups of people to different experimental conditions, then, the Skinnerian studies a given individual at multiple time points in the presence or absence of a given reinforcer. Skinner believed that this was a more powerful method of research than are the typical experimental strategies used in psychology.

One last important point about behavioral assessment is that it illustrates the distinction between a **sign** and a **sample approach** to assessment (Mischel, 1968, 1971). In a sign approach, a given test response is seen as an indicator of (i.e., a "sign" of) some inner characteristic possessed by the individual. For example, if the person says, "I like parties!" a trait theorist implicitly embracing a sign approach might say that the response indicates that the person has a particular inner characteristic, such as the trait of extraversion. In a sign approach, then, the question one asks is "What inner characteristic is the response a sign of?" This is *not* the question behaviorists ask. Behaviorists adopt a sample approach. When assessing a person who emits a certain response (does something, says something, etc.), the behaviorists view the response merely as a sample of behavior, that is, as one example of the sort of behavior the person engages in when faced with a particular stimulus. If the person says, "I like parties!" then the behaviorist will merely conclude that saying "I like parties!" is a behavior that, in the past, has been reinforced for this individual. There will be no additional inferences about unseen psychological structures in the mind of the individual. This approach may seem superficial. Yet it has big advantages. It stops the psychologist from engaging in highly speculative inferences about inner mental life—inferences that may be little more than guesses. It also helps to identify reinforcers in the environment that, in principle, could be changed in a manner that helps a given individual.

Behavior Change

Behaviorists developed an applied technique for using reinforcement principles in real-world settings. This technique is known as a **token economy** (Ayllon & Azrin, 1965). A behavioral technician rewards, with tokens, behaviors that are considered desirable. The tokens, in turn, can be exchanged by the patient for desirable products, such as candy and cigarettes. For example, hospitalized psychiatric patients may receive reinforcing tokens for activities such as serving meals or cleaning floors. In a tightly controlled environment, such as a state hospital for long-term psychiatric patients, it is feasible to make almost anything that a patient wants contingent on the desired behaviors.

Research evidence supports the effectiveness of token economies. They are effective in increasing behaviors such as social interaction, self-care, and job performance in severely disturbed patients and mentally retarded individuals. They also have been used to decrease aggressive behavior in children and to decrease marital discord (Kazdin, 1977).

Token economy programs represent a very straightforward application of operant conditioning principles to the problem of behavior change. Target behaviors are selected, and reinforcement is made contingent on performance of the desired responses. This is completely consistent with the behavioral emphasis on how the environment acts upon people, as opposed to how people act upon the environment. The behaviorist working on human behavior change is, in essence, a social engineer. The scientific technology developed in the behavioral laboratory is applied directly to real-world problems of behavior change. Watson suggested that through control of the environment he could train an infant to become any type of specialist he might select. Skinnerian social engineers take this principle one step further. As seen in the development of token economies, as well as in the development of communes based on Skinnerian principles, there is an interest in the design of environments that will control broad aspects of human behavior.

Free Will?

Skinner's operant behaviorism seems to have uplifting implications. By studying the influence of the environment on behavior, behaviorism gives rise to a technology of behavior change that can be usefully applied to the solution of human problems.

Yet Skinner's behaviorism also has an implication that is disturbing. It is one that Skinner was quite aware of and that he explained in detail in a book titled *Beyond Freedom and Dignity* (Skinner, 1971). The implication is that people do not have free will. If the environment is the cause of our action, then we ourselves cannot be the cause of our behavior. And if we ourselves are not the cause of our behavior, then we do not truly have freedom to act. We do not make free choices. We do not have free will.

Skinner was quite aware that people believe that they have free will. But he concluded that this belief is an illusion. To illustrate how this could be, consider the following circumstances. Suppose that you are speeding down a highway in your red sports car; when you see a police car ahead, you slow down to avoid a ticket. If a passenger asks you "Why did you slow down?" you are not likely to say "Because I have free will and decided to." Instead, you will recognize that the environment caused your behavior. The presence of the police officer was an environmental cause of your slowing down. Now suppose a passenger asks, "Why did you buy a red sports car?" Here you are not likely to cite environmental causes. Instead, you are likely to say "Because I decided to" or "Because I like red sports cars." You feel you had free will regarding your car purchase. But here is where Skinner says you are wrong. In Skinner's behaviorism, your behavior of slowing down and your behavior of buying a red sports car are both caused by the environment. But in the former case, the environment is simple, immediate, and obvious. You cannot miss the fact that the police officer is the cause of your slowing down. In the latter case, the environmental causes are complex and extended over a long

period of time. Dozens of previous experiences (previous reinforcements and punishments) might have contributed to your behavior of buying a red sports car. It is impossible for you to remember all of them and assess their effects on your decision. But that does not mean that they were not there. In these cases, in which the environmental causes of behavior are complex, people essentially lose track of the multifaceted environmental causes and erroneously conclude that their behavior was caused by a single factor: themselves. Skinner concluded that people live with an illusion of free will—a conclusion similar to that reached by some contemporary research psychologists (Wegner, 2003).

Skinner did not argue against the notion of free will merely to disturb people. Quite the opposite. He felt that the solution of personal and social problems required a systematic application of behavioristic technology. Furthermore, he felt that people would not accept this technology if they thought that it infringed on their free will. Skinner recognized that people do not like to think that their behavior is being controlled, and therefore that they would argue against an application of behavioral technology. But Skinner turned this argument on its head by contending that behavior is always controlled by the environment. Recognizing this fact, and rejecting traditional notions of free will would, Skinner argued, open the door to a humane application of behavioral technology.

Before leaving this topic, we caution that many scholars have rejected Skinner's arguments about free will. Phenomenological theorists felt that Skinner's view underestimated the human being's inherent capacities; indeed, Rogers (1956) debated Skinner on the topic. More recent personality theorists (see Chapters 12 and 13) similarly contend that Skinner underestimated people's capacity to exert free will by failing to consider people's ability to think in a creative manner about the environment they face and how that environment can be changed.

The behavioral perspective we have just reviewed contrasts starkly with the personality theories in previous chapters. The contrast is seen most clearly by considering what the behaviorist would say about those theories. Psychoanalysis would be seen as utterly non-scientific, because it speculates about unseen internal variables that cannot be observed and measured. Phenomenological theory would be seen as a soft-headed view that falls into the trap of viewing people as the causes of their own behavior, rather than recognizing that the true cause is the environment. Trait theory would be just as bad in the behaviorist's eyes; it would be seen as dealing merely with superficial descriptions of behavior, rather than their causes. If behaviorism had been fully successful, all these other theories would have been swept aside.

But it was not successful. The theories reviewed in the previous chapters remain intellectually viable today. They fuel much basic and applied activity in contemporary personality science. Behaviorism, in contrast, has far fewer adherents today than in decades past. This is true despite the solid scientific contributions of Pavlov, Skinner, and their followers and despite the successful applications to which this basic research gave rise. This overall state of affairs prompts one to evaluate the strengths and the limits of the behavioral approach.

CRITICAL EVALUATION

SCIENTIFIC OBSERVATION: THE DATABASE

The behaviorists' commitment to basing theory on systematic research is a major strength of their work. Their respect for scientific methodology was beneficial on both scientific and administrative grounds. Scientifically, it contributed to an approach to persons that avoided the overly speculative qualities that were evident in previous perspectives. Administratively, the solid scientific database that behaviorists established made psychology seem more credible in the eyes of other scientists, and thus contributed to the growth of the field in universities in the 20th century.

Yet in other ways the scientific observations that formed the basis of behaviorism are limited. The limitation is obvious: The original database consisted primarily of research with animals (dogs, rats, pigeons). We humans possess psychological abilities not shared by our furry friends: the ability to use language, the ability to reason about events of the past, the ability to contemplate alternative potential outcomes in the future. These capacities are not represented in a database consisting of research with animals and, as a result, are not well represented in the behaviorists' theorizing. This is a major cause of the downfall of behaviorism in the last third of the 20th century.

The primary reason that behaviorism lost influence in psychology was that it overlooked phenomena that are fundamental to human life. Perhaps the main phenomenon is the one that was so central to the phenomenological approaches, meaning, that is, the question of how people assign subjective meaning to environmental events. In their research, the behaviorists skipped this question. Rats and pigeons in Skinner boxes simply do not engage in processes of meaning construction. They don't ask themselves questions such as "Hey, why is the guy in the lab coat over there giving me all this food just for pressing a lever?" But people ask themselves such questions all the time. Behavioristic theory and research simply provided little insight into the psychological processes involved in the construction of subjective meaning. Beginning in the 1960s, however, experimental psychologists working *outside of* the framework of behaviorism began making progress in the study of memory, language, emotions, belief systems—topics that informed the study of internal cognitive processes involved in the construction of meaning. There was what came to be known as the cognitive revolution, the impact of which will be seen in the next three chapters.

THEORY: SYSTEMATIC?

Whatever the limits of behaviorism, the behaviorists were very systematic theorists. Pavlov and Skinner constructed careful, logically coherent accounts of classical and operant conditioning. Different phenomena—the rate with which an organism performs a response in response to reinforcement, the initial learning of that response, the persistence of the response if reinforcement ceases—are all explained through a single, coherent conceptual system.

In some ways obtaining a theory whose parts are related systematically was easier for the behaviorists. This is because they have less theory, that is, theirs is an approach in which there is less theorizing about inner mental structures and processes than one finds in other theoretical accounts. The behaviorist thus does not face the task of relating numerous theoretical constructs to one another.

THEORY: TESTABLE?

Did the behaviorists provide a theory that is testable? If one asks about the behavior of animals in laboratory settings, the answer is yes. One can directly test predictions about the influence of classical and operant conditioning experiences on the emotional and behavioral responses of the organism in controlled laboratory settings. Within these settings, the behaviorists' ideas are as testable as are ideas one might find in the biological or physical sciences.

But what if one leaves the lab and enters the complex world of everyday human life? Here behavioristic analyses sometimes become ambiguous. Consider an example suggested by Chomsky (1959) in a deservedly famous critique of Skinner's behaviorism. Suppose you are in an art museum gazing at a complex artistic composition. Skinner would say that your reactions to the piece are determined by your past history of operant and classical conditioning when exposed to similar stimuli. If you say, "I like it," that is because, in the past, similar stimuli have been positively reinforcing; they have caused the feelings we call "liking" and reinforced the behavior of saying "I like it." How would you test this idea? A huge problem is that, in the practical case presented here, it is hard to know what "stimuli" the person was responding to when saying "I like it." The composition of the painting? Its color? The originality of the artist? The picture frame? In a Skinner box one can be confident in knowing the stimuli that control behavior because there are so few stimuli. But in the everyday world, it commonly is impossible to know what people are responding to in the first place. One might be able to find this out by asking the person after the fact; after they act, you could ask them what they were responding to. But if one has to ask people, after the fact, then there is no way to *predict* their behavior. One can only tell an after-the-fact behavioristic story. And if one only is providing after-the-fact stories, then one's theory is not testable.

THEORY: COMPREHENSIVE?

Thanks in large part to the brilliant creativity of Skinner's writing, behaviorism is highly comprehensive. In just one of his books (Skinner, 1953), Skinner manages to extend behavioral principles to an analysis not only of individual behavior but also of group behavior, the functioning of government and the rule of law, religion, psychotherapy, economics, education, and culture. In another volume (Skinner, 1974) he analyzes perception, language, emotion and motivation, and self-concept. Skinner and other behaviorists consider the full range of psychological and social phenomena that are to be addressed in a personality theory. Whatever the shortcomings of behaviorism, it does consider an exceptionally wide range of individual and social phenomena.

APPLICATIONS

The behaviorists displayed a valuable pragmatic bent. They moved quickly from research in laboratories with animals to practical applications designed to help people. Maybe they moved too quickly; behaviorists did not raise, as carefully as might have been necessary, the question of how the psychology of people may differ from the psychology of animals in Skinner boxes and classical

Learning Approaches at a Glance

<i>Structure</i>	<i>Process</i>	<i>Growth and Development</i>
Response	Classical conditioning; operant conditioning	Schedules of reinforcement and successive approximations

conditioning studies. Nonetheless, behaviorists succeeded in developing practical applications that remain of value to psychology today. Indeed, they developed more valuable applications than did most theorists whose work today is more influential in personality psychology. In particular, the growth of behavior therapy is an application of immense practical value.

MAJOR CONTRIBUTIONS AND SUMMARY

The contributions of behaviorism are enormous (Table 10.2). The behaviorists showed how a comprehensive psychology could be built on an objective database of highly replicable research. They developed numerous applications that continue to be of practical benefit. They also valuably drew psychologists' attention to the impact of situational factors on behavior. By studying patients in their offices or asking people to fill out questionnaires in laboratories, the theorists whose work we covered previously removed individuals from the normal, everyday environments of their daily lives. The behaviorists explained that, to understand people's behavior, one must understand the environmental factors that are the behavior's cause.

A final contribution of behaviorism is indirect. The behaviorists provided clear and forceful statements about human nature that other, subsequent theorists thought were deeply wrong. The behaviorists, then, stimulated the thinking of most of the theorists discussed in the remaining chapters of this book. They each were intimately familiar with the claims of the behaviorists and were skeptical about those claims. This skepticism motivated them to provide alternative approaches to the study of personality, as you will see in the chapters ahead.

Table 10.2 Summary of Strengths and Limitations of Learning Approaches

<i>Strengths</i>	<i>Limitations</i>
1. Committed to systematic research and theory development	1. Oversimplifies personality and neglects important phenomena
2. Recognizes the role of situational and environmental variables in influencing behavior	2. Lacks a single, unified theory
3. Takes a pragmatic approach to treatment, which can lead to important new developments	3. Requires further evidence to support claims of treatment effectiveness

<i>Pathology</i>	<i>Change</i>	<i>Illustrative Case</i>
Maladaptive learned response patterns	Extinction; discrimination learning; counterconditioning; positive reinforcement; systematic desensitization; behavior modification	Reinterpretation of Little Hans

MAJOR CONCEPTS

ABA research design A Skinnerian variant of the experimental method consisting of exposing one subject to three experimental phases: (A) a baseline period, (B) introduction of reinforcers to change the frequency of specific behaviors, and (A) withdrawal of reinforcement and observation of whether the behaviors return to their earlier frequency (baseline period).

ABC assessment In behavioral assessment, an emphasis on the identification of antecedent events and the consequences (C) of behavior; and a functional analysis of behavior involving identification of the environmental conditions that regulate specific behaviors.

Behavioral assessment The emphasis in assessment on specific behaviors that are tied to defined situational characteristics (e.g., ABC approach).

Behaviorism An approach within psychology, developed by Watson, that restricts investigation to overt, observable behavior.

Classical conditioning A process, emphasized by Pavlov, in which a previously neutral stimulus becomes capable of eliciting a response because of its association with a stimulus that automatically produces the same or a similar response.

Conditioned emotional reaction Watson and Rayner's term for the development of an emotional reaction to a previously neutral stimulus, as in Little Albert's fear of rats.

Counterconditioning The learning (or conditioning) of a new response that is incompatible with an existing response to a stimulus.

Determinism The belief that people's behavior is caused in a lawful scientific manner; determinism opposes a belief in free will.

Discrimination In conditioning, the differential response to stimuli depending on whether they have been associated with pleasure, pain, or neutral events.

Extinction In conditioning, the progressive weakening of the association between a stimulus and a response; in classical conditioning extinction occurs because the conditioned stimulus is no longer followed by the unconditioned stimulus, and in operant conditioning it occurs because the response is no longer followed by reinforcement.

Fixed (schedules of reinforcement) Schedules of reinforcement in which the relation of behaviors to reinforcers remains constant.

Functional analysis In behavioral approaches, particularly Skinnerian, the identification of the environmental stimuli that control behavior.

Generalization In conditioning, the association of a response with stimuli similar to the stimulus to which the response was originally conditioned or attached.

Generalized reinforcer In Skinner's operant conditioning theory, a reinforcer that provides access to many other reinforcers (e.g., money).

Maladaptive response In the Skinnerian view of psychopathology, the learning of a response that is maladaptive or not considered acceptable by people in the environment.

Operant conditioning Skinner's term for the process through which the characteristics of a response are determined by its consequences.

Operants In Skinner's theory, behaviors that appear (are emitted) without being specifically associated with any prior (eliciting) stimuli and are studied in relation to the reinforcing events that follow them.

Punishment An aversive stimulus that follows a response.

Reinforcer An event (stimulus) that follows a response and increases the probability of its occurrence.

Sample approach Mischel's description of assessment approaches in which there is an interest in the behavior itself and its relation to environmental

conditions, in contrast to sign approaches that infer personality from test behavior.

Schedule of reinforcement In Skinner's operant conditioning theory, the rate and interval of reinforcement of responses (e.g., response ratio schedule and time intervals).

Shaping In Skinner's operant conditioning theory, the process through which organisms learn complex behavior through a step-by-step processes in which behavior increasingly approximates a final, target response.

Sign approach Mischel's description of assessment approaches that infer personality from test behavior, in contrast with sample approaches to assessment.

Situational specificity The emphasis on behavior as varying according to the situation, as opposed to the emphasis by trait theorists on consistency in behavior across situations.

Successive approximation In Skinner's operant conditioning theory, the development of complex behaviors through the reinforcement of behaviors that increasingly resemble the final form of behavior to be produced.

Systematic desensitization A technique in behavior therapy in which a competing response (relaxation) is conditioned to stimuli that previously aroused anxiety.

Target behaviors (target responses) In behavioral assessment, the identification of specific behaviors to be observed and measured in relation to changes in environmental events.

Token economy Following Skinner's operant conditioning theory, an environment in which individuals are rewarded with tokens for desirable behaviors.

Variable (schedules of reinforcement) Schedules of reinforcement in which the relation of behaviors to reinforcers changes unpredictably.

REVIEW

1. The school of thought known as behaviorism promoted a learning approach to personality. The learning approach suggests that the patterns of social behavior that we see as indications of an individual's personality are learned through environmental experience.
2. Pavlov's work on classical conditioning, combined with Watson's extension of this work to humans in the case of Little Albert, provided the first foundation for a behavioral approach to the study of persons.
3. B.F. Skinner provided a second foundation for behaviorism in his work on operant conditioning. Skinner and his colleagues developed a highly systematic database showing how reinforcements determine the behavior of animals in Skinner boxes.
4. Skinner explained how principles of learning were relevant to questions of profound importance, including the question of whether people have free will.
5. Behaviorists did not merely conduct laboratory research with animals. They developed many useful applications of the principles of learning. These include clinical applications in which the goal of the clinician is to provide new environmental experiences through which the client can learn new, more adaptive forms of behavior. Systematic desensitization and token economy programs are two examples of the application of behavioral principles.
6. Behaviorism dominated psychology in the mid-20th century, but then its influence waned. This largely is because behaviorism failed to provide convincing research-based explanations for uniquely human phenomena, such as people's inherent tendency to assign subjective meaning to events. The growth of cognitive psychology, a foundation for theories discussed later in this book, caused the downfall of behaviorism.