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Behavioral Psychology

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Behavioral Medicine. See HEALTH PSYCHOLOGY.

Behavioral Psychology. Behavioral psychology is concerned with the conditions involved in development, maintenance, and control of the behavior of individuals and other organisms. Behavioral approaches have been developed in many areas of applied psychology. These raise a number of issues important from a Christian perspective.

History. Behavioral psychology grew out of laboratory studies of learning that began in the late nineteenth century. Applications of behavioral psychology to human problems are more recent, beginning around 1950 under the influence of B. F. Skinner and his colleagues. Most theories of personality, psychopathology, and psychotherapy can be divided into three to five broad schools. Lyddon (1995) proposes four models, based on Pepper's root metaphor or world hypothesis (ontology, or nature of reality) theory: formism, mechanism, contextualism, and organicism (pp. 71–72). Behavioral psychology is based on the mechanistic metaphor. Of contemporary theories, behavioral psychology is most clearly rooted in empirical research.

Ivan Pavlov, the Russian physiologist, was one of the earliest contributors to modern behavior theory. Pavlov's original work involved the study of the digestive system in dogs. He noticed that the dogs secreted saliva upon the sight of food as well as when food was placed in their mouths. Pavlov soon found that the presence of the lab attendant produced salivation and that ringing a bell or sounding a tone also quickly came to produce salivation if these events immediately preceded giving food. Pavlov's discovery came to be known as classical, respondent, or Pavlovian conditioning (see Conditioning, Classical).

John B. Watson, an American psychologist and an avowed materialist, soon learned of Pavlov's work. Watson vigorously objected to such concepts as mind, consciousness, volition, and emotion. He believed that psychology should be the science of directly observable behavior. Watson adopted the conditioned reflex method of Pavlov and played a major role in further development of behavioral psychology. Watson emphasized comparative psychology; he was firmly convinced that principles of animal behavior could be extended to higher-order animals and to humans.

A contemporary of Watson, Edward Lee Thorndike shared Watson's naturalistic and mechanistic approach to comparative psychology. Thorndike also believed psychology should be a science of observable behavior, developed through rigorous experimentation. From his studies of cats in puzzle boxes, Thorndike concluded learning takes place by trial and error. He developed the law of effect, which states that responses followed by reinforcement will be repeated while responses followed by nonreinforcement or by punishment will not recur. Guthrie, Clark Leonard Hull, Edward Chace Tolman, and

others made significant contributions to the psychology of learning. Skinner is widely known for his work on reinforcement, which extended Thorndike's law of effect.

Skinner, an intrepid individualist, went his own way even though it was inconsistent with that of prominent theorists of his time. Skinner coined the term *operant*. He studied operant behavior through ingenious laboratory techniques that he developed. Skinner and his students contributed prolifically to the growing knowledge of operant behavior. Watson had conceived respondent behavior as the sole form of learned response. Under Skinner's influence respondent behavior came to be seen as a minor form of behavior, with most behavior considered operant.

Modern Behavior Theory. Behavior theory divides behavior into two classes, respondents and operants. Respondents are behaviors elicited or controlled primarily by preceding events. They are involuntary, involving the autonomic nervous system and the smooth muscles and glands. Respondents occur automatically following their eliciting stimulus unless the organism is exhausted or incapacitated; thus respondents are sometimes referred to as reflexive. Initially respondents are under control of a limited range of stimulus events determined by biological and genetic factors. Through presenting a new stimulus followed by the eliciting stimulus, new eliciting stimuli can be developed. This process is known as respondent or Pavlovian conditioning. Conditioned respondents can be eliminated by presenting the conditioned stimulus in the absence of the natural eliciting stimulus until the organism ceases to respond; this process is called respondent extinction.

The range of respondent behavior is limited. First, respondents are determined by biological factors; the responses are given with the biological characteristics of the organism. Second, learning brings the existing respondents under control of the new stimulus; no new responses are developed. Third, conditioned stimuli lose their eliciting capability very quickly. Fourth, most behavior is not respondent.

Operant behavior involves the organism acting on the environment to produce an effect. Operants are controlled primarily by events that follow them, called consequences. However, once the response-consequence relationship has been established, the response can then be brought under control of preceding events, called discriminative stimuli. The process is called stimulus control. Since much of human behavior is operant, the principles of operant behavior are extremely important in understanding human behavior.

Respondent behavior is measured primarily in terms of the latency or delay between presentation of stimulus and occurrence of the response and the intensity or magnitude of the response. Operant behavior, because of its greater complexity, is measured in several ways: rate or frequency, latency, du-

ration, and intensity or amplitude. Rate or frequency is by far the most common measure, but the preferred measure of an operant depends substantially on the aspect of behavior that is of concern. Tantrums, for example, are often measured in terms of duration and intensity as well as frequency.

Operant behaviors are also determined by the biological characteristics of the organism: for example, pigs do not fly. However, operant behavior is vastly more variable than respondent behavior, and the initial number of operants is much larger as well. Operant behaviors include such behaviors as walking, throwing, grasping, chewing, swallowing, talking, and thinking. Virtually all behavior involving the skeletal muscles is operant.

Operant learning involves a variety of processes. Complex operant performances involve integrated sets of basic response units under precise stimulus control. Playing the piano involves common finger, hand, and arm movements. But the intricate control over the precise location, intensity, and timing of the movements requires extensive training. Complex operants are formed from basic operants by the processes of operant learning, which include strengthening and weakening of responses by altering their consequences, shaping, establishing stimulus control, and chaining.

The most basic operant processes are those that increase or decrease the frequency of a response: reinforcement, extinction, and punishment. Presenting a stimulus following a response with the result that the response increases in strength (rate or frequency increases, latency decreases) is termed positive reinforcement. Removing a stimulus following a response with the result that the response increases in strength is termed negative reinforcement. Presenting a stimulus following a response with the result that the response decreases in strength is termed punishment. The process of weakening a response through removing a stimulus that follows it is sometimes termed response cost. Extinction weakens an operant by eliminating the reinforcement that previously maintained the response.

In shaping, the form or topography of a response is progressively altered from an existing form to a desired form. This is accomplished through systematically reinforcing successively closer approximations to the desired performance. For example, in teaching a child to say "daddy" one might begin by reinforcing the vocalization *da-da-da* and then gradually shift to reinforcing only two-syllable vocalizations: "da-da." Gradually reinforcement would be provided only when the "da-dee" sequence occurred. Similar processes are involved in developing driving skills and in athletic or dance performance.

Operant stimulus control is developed by presenting a stimulus before a response. When the stimulus reliably predicts that a particular consequence will follow the response, the response gradually comes under control of the stimulus. Bringing the vocalization *daddy* under stimulus control, for

example, involves reinforcing the vocalization *daddy* only when Daddy is present or when objects or events related to Daddy occur. For a young child, if the word *hot* reliably predicts pain when an object is touched, the child soon learns to avoid touching objects when Mom or Dad says "hot."

Discrete response elements are linked into integrated sequences by chaining. Through this process longer and more complex sequences of behavior may be developed. The example of saying "da-dee" is an example of an elementary chain composed of two response elements. Reciting the Pledge of Allegiance is a more complex example of an operant chain in which the entire pledge eventually becomes linked into a complex performance.

Since the 1970s it has become clear that operant and respondent processes continuously interact in an intricate fashion. Traditional distinctions between operant and respondent behavior also have become blurred. Operant-respondent interactions can be seen in at least four ways. First, the consequences following operant responses—reinforcement, punishment, and extinction—both affect the frequency of the preceding operant and simultaneously elicit various respondent behaviors. When Johnny runs an errand, Mother's comment "Thank you, Johnny, that's a good boy" not only strengthens Johnny's errand running but also produces pleasant emotional respondents.

Operants and respondents also interact through setting conditions, stimulus-response interactions that, simply because they have occurred, affect a wide range of subsequent stimulus-response interactions. There are many kinds of setting conditions: being ill, having eaten a good meal, smashing one's thumb with a hammer, and so on. When Johnny's mother compliments him for errand running, the resulting emotional responses will affect his response to other people and events for a time. Imagine what might have occurred if Mother had instead shouted, "Johnny, you dummy, you never get things right." The emotional effects thus elicited are an integral part of each operant-consequence interaction. Depending on which of these interactions has just occurred, Johnny's response to a wide range of events can be dramatically altered.

A third area of interaction involves operant conditioning of respondents. Miller and his colleagues demonstrated that autonomic nervous system functions such as peripheral vascular dilation, heart rate, blood pressure, and kidney output can be influenced by operant conditioning. While the precise mechanisms involved are a subject of controversy, these findings blur the distinction that has traditionally been held between operants and respondents (see Turner, Calhoun, & Adams, 1992).

A fourth area of overlap is species-specific behavior. Species-specific behaviors include such phenomena as imprinting in young ducklings. Species-specific behaviors involve a relatively permanent or lasting effect from a single learning experience dur-

ing a critical time period in the development of the organism. Because they are so unusual, some theorists consider them a third type of learning.

Finally, emotions are thought of as respondent by many behavioral psychologists. Thus they are presumed to be automatically elicited by stimulus events that precede them. However, much of what we normally consider emotion is actually operant. Hitting, kicking, throwing objects, and so on are operants. Tantrums and emotional outbursts illustrate the complex intertwining of operant and respondent processes. Interventions must take such complexities into account.

Applications. Early application studies were isolated and had little impact. In the 1920s Watson and Rayner studied conditioning of fear responses, and Jones studied the elimination of conditioned fear. Other early work included the development of the negative practice technique by Dunlap and the principles of reconditioning developed by Guthrie and supported by the research of Jersild and Holmes conducted in 1935. Around 1950, Dollard, Miller, and Mowrer contributed to relating psychoanalytic concepts to learning theory. Skinner's *Science and Human Behavior* (1953), although largely theoretical, clearly advocated application of behavior theory to practical human concerns. In the 1950s two additional books were published, and journal articles applying behavioral principles to human problems began to appear more regularly. At the same time a number of psychologists whose primary identification was as researchers began shifting their research from basic to more applied concerns.

By 1968 the interest in behavior modification and behavior therapy had become sufficiently widespread that the first journal devoted exclusively to this subject, the *Journal of Applied Behavior Analysis*, was started. In the ensuing years research in applied behavior theory grew phenomenally. By 1980 several journals had appeared that addressed a broad range of applied behavioral research. Behavior theory has been applied to institutionalized retarded and psychotic persons, children in public schools, outpatient psychotherapy with adults and children, prisons, business and industry, and other settings. The scope of behaviors addressed is equally broad, including elimination of problem behaviors like tantrums, establishment of basic social skills such as toileting and education, and social concerns such as conservation of resources and litter reduction. Behavior principles have even been applied in Christian education and pastoral ministries (Bufford, 1981).

Many applications of behavioral techniques have been developed, including assertiveness training; social skills training; aversion therapy for alcohol and drug abuse and for sexual offenders; token economies for use with children, institutionalized psychotics, and retarded persons; systematic desensitization, flooding, and relaxation training for elimination of anxiety and phobias; and biofeedback for

control of such bodily processes as temperature, blood pressure, and heart rate (Craighead, Craighead, Kazdin, & Mahoney, 1994; Emmelkamp, 1994; Kazdin, 1994; Turner, Calhoun, & Adams, 1992).

Issues from a Christian Perspective. Numerous parallels can be found between biblical teachings and behavior principles (Bufford, 1981). The reinforcement principle is consistent with the biblical teaching that one must work to eat and that the laborer is worthy of his hire. Biblical teachings about social influence indicate that association with wise persons or with foolish or angry persons results in learning their ways; these are paralleled by Bandura's (1986) concepts of modeling and vicarious learning. Biblical teachings that self-control is desirable and manifests the working of the Holy Spirit are at least partially comparable to the behavioral emphasis on self-control.

But while many parallels exist, behavioral psychology is highly controversial for Christians. Most of the controversy surrounds the philosophy or worldview (religion) of behaviorists rather than the science or application of behavioral psychology. Worldview issues include the assumptions of materialistic reductionism, scientism, naturalism, determinism, and evolution by many behaviorists. Christians also object to common behavioral views of the nature of humanity and to the focus in early behavioral work on overt motor behavior to the exclusion of mental, emotional, and relational aspects of behavior (Cosgrove, 1982). Some Christians also object to the behavioral emphasis on reinforcement or reward. Finally, at times empirical findings have been reported that seem contrary to biblical teachings, such as the findings that led Skinner and others to conclude that punishment is both ineffective and undesirable (Bufford, 1982).

Many behavioral psychologists are materialistic reductionists who view persons as nothing but complex animals. Christians object because they believe persons are created in the image of God, although humans clearly share with other animals the characteristics of eating, sleeping, begetting after our own kind, and dying. However, one can study the behavior of persons as material beings in relationship to their environment without assuming material existence is the entire story (e.g., see Koteskey, 1991). Thus reductionism is not intrinsic to behavioral psychology.

Another criticism of behavioral psychology is its implicit scientism. Scientism is the view that science is the only legitimate way of knowing. It discounts intuition and experience and explicitly rejects biblical revelation. However, it is possible to view science as a legitimate approach without making it the sole means of knowledge.

Naturalism limits reality to the natural order. Implicit in reductionism and scientism, naturalism is a common assumption among those who do not believe in a creator God. While rejecting naturalism, Christians affirm the existence of physical creation, which God pronounced as "good."

For many Christians the common behavioral assumption of determinism is the most objectionable. Christians affirm free will or choice. In its strongest form, free will is postulated as an uncaused cause of human behavior. Free will is problematic for science since it implies that human behavior is not predictable. Determinism suggests that responsible choice is an illusion and that all behavior is solely the result of material causes. Both free will and determinism are inconsistent with biblical teaching (see Determinism and Free Will).

The New Testament uses freedom in terms of one's relationship to God in Christ: "The New Testament idea of freedom is thus linked to the Old Testament idea, which sees freedom as connected to God as giver; this freedom is a freedom from the bondage of sin and its inescapable compulsion. 'Liberation from the compulsion to sin . . . opens up the hitherto impossible possibility of serving God'" (Bufford, 1981, p. 49). God foreknows and foreordains all things; thus from God's perspective they are completely predictable. God alone is free from external causes. Christian freedom involves not so much physical freedom from events and consequences as spiritual freedom from the penalty, power, and (ultimately) presence of sin. Slavery to sin and its consequences is contrasted with freedom to serve God and receive his blessings.

Another common behavioral assumption is evolution. Evolution is generally seen as antithetic to creation, although some Christians postulate theistic evolution. It is possible to view humans as both unique and similar to animals without assuming evolution. If persons and other animals are made by a common creator to share a common environment, we can expect similarities in structure, function, and behavior.

In many ways materialistic reductionism, naturalism, and, to a large degree, scientism and determinism are intricately interrelated. Once one is committed to a naturalistic worldview that rejects the notion of a creator God, these assumptions are easily adopted, especially for persons involved in academic communities where they are widespread and rarely discussed or subjected to critical examination and where such examination may be quickly labeled "unscientific" (cf. VanLeeuwen, 1982). Along with behaviorists, psychologists who adhere to the other major theoretical systems also typically make these assumptions. However, it is possible to adopt behavioral theory and methods while holding a Christian worldview. Conversely, it is possible to hold un-Christian worldviews whether or not one advocates behavioral theory.

Objections have also been raised regarding the behavioral emphasis on reward; some have equated reward with bribery. However, reward is a common theme in Scripture. We are told that God rewards those who diligently seek him and that on his return his reward will be with him. Similarly, the elder who serves well is worthy of a double reward. Scripture

teaches that one must work in order to eat and that laziness leads to want.

Behavioral psychology is also faulted for neglecting the central essence of humanity. The Bible is clear in its teaching that persons function as unified wholes. Biopsychosocial and spiritual wholism is consistent with a behavioral perspective that emphasizes the role of what one does but strikes a balance and thus takes exception with early forms of behavior theory that tend to deemphasize the role of thinking, feeling, and relating. Recent developments extend behavior theory to include these aspects.

A final consideration is the effectiveness and desirability of punishment. Skinner and many behaviorists contend that punishment is ineffective and that it has a number of harmful side effects. Bufford (1982) shows that while Skinner's conclusions were plausible in the 1940s, subsequent data clearly indicate that punishment works. Though the direction of effects is opposite, reinforcement and punishment are otherwise similar: both alter the frequency of behavior; in both cases the effects are normally reversible but under extreme conditions may be permanent; both affect emotional behavior; generalization occurs with both; problems may arise from attempts to circumvent the contingent relationship between behavior and consequences for both reinforcement (theft) and punishment (unauthorized escape and counteraggression). To be consistent one must conclude either that both work or that neither is effective.

Christians believe that God created and continuously sustains the universe and that God's normal method of working in the world is through the world processes that he created and sustains. The naturalistic viewpoint of many behavioral psychologists holds that events may be explained completely in terms of natural causes. Christians believe that most events in the created order can be explained at two levels: first in terms of natural (or creational) cause and then in terms of divine activity. Miracles are a special class of events, at least some of which may be explainable only in terms of divine activity (e.g., creation *ex nihilo*); by their very definition they do not follow world principles and thus cannot be the subject of or ruled out by science. Thus science, the study of the created order, is one method of knowing and understanding the way in which God normally works. As such, science in general and behavioral psychology in particular pose no insurmountable problem for a Christian worldview.

Summary and Conclusions. Behavioral psychology has long raised concerns for Christians. However, most of the objections raised to behavioral psychology have focused on the worldview of many behavioral psychologists rather than on behavioral psychology as a science or on behavioral applications. Modern science emerged in the context of a Christian worldview that acknowledged God as creator and God's mandate to persons to exercise stewardship over the earth (Hooykaas, 1972). Steward-

ship requires us to understand the functioning of the world and implies that it is orderly. Behavioral psychology as a method for understanding human and animal functioning is largely consistent with a Christian worldview.

Early behavioral psychology ignored thinking, feeling, and relating. Recently behavioral psychology has begun to address these aspects of behavior as well as motor activities.

As an underlying premise, the notion that God is the source of all truth suggests that there is in principle consistency between good science and good biblical interpretation. While the worldview of many behavioral psychologists is incompatible with a biblical worldview, behavioral psychology per se is fundamentally consistent with Christian beliefs.

References

- Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall.
- Bufford, R. K. (1981). *The human reflex: Behavioral psychology in biblical perspective*. San Francisco: Harper & Row.
- Bufford, R. K. (1982). Behavioral views of punishment: A critique. *Journal of the American Scientific Affiliation*, 34, 135-144.
- Cosgrove, M. P. (1982). *B. F. Skinner's behaviorism: An analysis*. Grand Rapids, MI: Zondervan.
- Craighead, L. W., Craighead, W. E., Kazdin, A. E., & Mahoney, M. J. (1994). *Cognitive and behavioral interventions: An empirical approach to mental health problems*. Boston: Allyn & Bacon.
- Emmelkamp, P. M. G. (1994). Behavior therapy with adults. In A. E. Bergin and S. L. Garfield (Eds.), *Handbook of psychotherapy and behavior change*. New York: Wiley.
- Hooykaas, R. (1972). *Religion and the rise of modern science*. Grand Rapids, MI: Eerdmans.
- Kazdin, A. E. (1994). Psychotherapy for children and adolescents. In A. E. Bergin and S. L. Garfield (Eds.), *Handbook of psychotherapy and behavior change*. New York: Wiley.
- Kotesky, R. L. (1991). *Psychology from a Christian perspective* (2nd ed.). Washington, DC: University Press of America.
- Lyddon, W. J. (1995). Forms and facets of constructivist psychology. In R. A. Neimeyer & M. J. Mahoney (Eds.), *Constructivism in psychotherapy*. Washington, DC: American Psychological Association.
- Skinner, B. F. (1953). *Science and human behavior*. New York: Free Press.
- Turner, S. M., Calhoun, K. S., & Adams, H. E. (1992). *Handbook of clinical behavior therapy*. New York: Wiley.
- VanLeeuwen, M. S. (1982). *The sorcerer's apprentice: A Christian looks at the changing face of psychology*. Downers Grove, IL: InterVarsity Press.
- John B. Watson, an early behavioral psychologist, rejected previous approaches to human understanding because he considered them to be too subjective and qualitative. Rather, he argued, the study of human experience should focus on overt, measurable behavior and should utilize the methods of natural science. Watson, along with a great many methodological heirs, sought to use controlled scientific investigations to isolate factors, chiefly environmental influences, that might teach or condition people to behave as they do.

F. C. CRAIGIE, JR.

Behaviorism. See BEHAVIORAL PSYCHOLOGY.

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Behavioral Science. Behavioral science encompasses a number of disciplines that seek to describe, understand, and beneficially influence human experience. It has its origins in the rise of the behavioral movement in the early twentieth century.