Behaviorism: Decoding the Science of Human Action

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Behaviorism (or behaviourism), also called the learning perspective (where any physical action is a behavior), is a philosophy of psychology based on the proposition that all things that organisms do--including acting, thinking and feeling--can and should be regarded as behaviors. The behaviorist school of thought maintains that behaviors as such can be described scientifically without recourse either to internal physiological events or to hypothetical constructs such as the mind. Behaviorism comprises the position that all theories should have observational correlates but that there are no philosophical differences between publicly observable processes (such as actions) and privately observable processes (such as thinking and feeling).

From early psychology in the 19th century, the behaviorist school of thought ran concurrently and shared commonalities with the psychoanalytic and Gestalt movements in psychology into the 20th century; but also differed from the mental philosophy of the Gestalt psychologists in critical ways. Its main influences were Ivan Pavlov, who investigated classical conditioning although he did not necessarily agree with Behaviorism or Behaviorists, Edward Lee Thorndike, John B. Watson who rejected introspective methods and sought to restrict psychology to experimental methods, and B.F. Skinner who conducted research on operant conditioning.

In the second half of the 20th century, behaviorism was largely eclipsed as a result of the cognitive revolution. While behaviorism and cognitive schools of psychological thought may not agree theoretically, they have complemented each other in practical therapeutic applications, such as in cognitive-behavioral therapy that has demonstrable utility in treating certain pathologies, such as simple phobias, PTSD, and addiction. In addition, behaviorism sought to create a comprehensive model of the stream of behavior from the birth of the human to his death (see Behavior analysis of child development).

Versions

There is no generally agreed upon classification, but some titles have been given to the various branches of behaviorism and they include:
Methodological: The behaviorism of Watson; the objective study of behavior; no mental life, no internal states; thought is covert speech.
Radical: Skinner's behaviorism; is considered radical since it expands behavioral principles to processes within the organism; in contrast to methodological behaviorism; not mechanistic or reductionistic; hypothetical (mentalistic) internal states are not considered causes of behavior, phenomena must be observable at least to the individual experiencing them. Willard Van Orman Quine used many of radical behaviorism's ideas in his study of knowing and language.

Teleological: Post-Skinnerian, purposive, close to microeconomics. Focuses on objective observation as opposed to cognitive processes.
Theoretical: Post-Skinnerian, accepts observable internal states ("within the skin" once meant "unobservable", but with modern technology we are not so constrained); dynamic, but eclectic in

choice of theoretical structures, emphasizes parsimony.
Biological: Post-Skinnerian, centered on perceptual and motor modules of behavior, theory of behavior systems.
Psychological behaviorism: Arthur W. Staats' unifying approach to behaviorism and psychology. He merges psychological concepts like "personality" within a behavioral model like BBR Basic Behavioral Repertoires.

Two subtypes are:

Hullian and post-Hullian: theoretical, group data, not dynamic, physiological;
Purposive: Tolman's behavioristic anticipation of cognitive psychology

Definition

B.F. Skinner was influential in defining radical behaviorism, a philosophy codifying the basis of his school of research (named the Experimental Analysis of Behavior, or EAB.) While EAB differs from other approaches to behavioral research on numerous methodological and theoretical points, radical behaviorism departs from methodological behaviorism most notably in accepting feelings, states of mind and introspection as existent and scientifically treatable. This is done by identifying them as something non-dualistic, and here Skinner takes a divide-and-conquer approach, with some instances being identified with bodily conditions or behavior, and others getting a more extended "analysis" in terms of behavior. However, radical behaviorism stops short of identifying feelings as causes of behavior. Among other points of difference were a rejection of the reflex as a model of all behavior and a defense of a science of behavior complementary to but independent of physiology. Radical behaviorism has considerable overlap with other western philosophical positions such as American pragmatism.

Experimental and conceptual innovations

This essentially philosophical position gained strength from the success of Skinner's early experimental work with rats and pigeons, summarized in his books The Behavior of Organisms and Schedules of Reinforcement. Of particular importance was his concept of the operant response, of which the canonical example was the rat's lever-press. In contrast with the idea of a physiological or reflex response, an operant is a class of structurally distinct but functionally equivalent responses. For example, while a rat might press a lever with its left paw or its right paw or its tail, all of these responses operate on the world in the same way and have a common consequence. Operants are often thought of as species of responses, where the individuals differ but the class coheres in its function-shared consequences with operants and reproductive success with species. This is a clear distinction between Skinner's theory and S-R theory.

Skinner's empirical work expanded on earlier research on trial-and-error learning by researchers

such as Thorndike and Guthrie with both conceptual reformulations--Thorndike's notion of a stimulus-response "association" or "connection" was abandoned; and methodological ones--the use of the "free operant", so called because the animal was now permitted to respond at its own rate rather than in a series of trials determined by the experimenter procedures. With this method, Skinner carried out substantial experimental work on the effects of different schedules and rates of reinforcement on the rates of operant responses made by rats and pigeons. He achieved remarkable success in training animals to perform unexpected responses, and to emit large numbers of responses, and to demonstrate many empirical regularities at the purely behavioral level. This lent some credibility to his conceptual analysis. It is largely his conceptual analysis that made his work much more rigorous than his peers, a point which can be seen clearly in his seminal work Are Theories of Learning Necessary? in which he criticizes what he viewed to be theoretical weaknesses then common in the study of psychology. An important descendant of the experimental analysis of behavior is the Society for Quantatative Analysis of Behavior.

Relation to language

As Skinner turned from experimental work to concentrate on the philosophical underpinnings of a science of behavior, his attention turned to human language with Verbal Behavior and other language-related publications; Verbal Behavior laid out a vocabulary and theory for functional analysis of verbal behavior, and was strongly criticized in a review by Noam Chomsky. Skinner did not respond in detail but claimed that Chomsky failed to understand his ideas, and the disagreements between the two and the theories involved have been further discussed. In addition; innate theory is opposed to behaviorist theory which claims that language is a set of habits that can be acquired by means of conditioning. According to some, this process that the behaviorists define is a very slow and gentle process to explain a phenomenon complicated as language learning. What was important for a behaviorist's analysis of human behavior was not language acquisition so much as the interaction between language and overt behavior. In an essay republished in his 1969 book Contingencies of Reinforcement, Skinner took the view that humans could construct linguistic stimuli that would then acquire control over their behavior in the same way that external stimuli could. The possibility of such "instructional control" over behavior meant that contingencies of reinforcement would not always produce the same effects on human behavior as they reliably do in other animals. The focus of a radical behaviorist analysis of human behavior therefore shifted to an attempt to understand the interaction between instructional control and contingency control, and also to understand the behavioral processes that determine what instructions are constructed and what control they acquire over behavior. Recently a new, promising line of behavioral research on language was started under the name of Relational Frame Theory.

Molar versus molecular behaviorism

Skinner's view of behavior is most often characterized as a "molecular" view of behavior; that is,

behavior can be decomposed into atomistic parts or molecules. This view is inconsistent with Skinner's complete description of behavior as delineated in other works, including his 1981 article "Selection by Consequences". Skinner proposed that a complete account of behavior requires understanding of selection history at three levels: biology (the natural selection or phylogeny of the animal); behavior (the reinforcement history or ontogeny of the behavioral repertoire of the animal); and for some species, culture (the cultural practices of the social group to which the animal belongs). This whole organism then interacts with its environment. Molecular behaviorists use notions from melioration theory, negative power function discounting or additive versions of negative power function discounting.

Molar behaviorists, such as Howard Rachlin, Richard Herrnstein, and William Baum, argue that behavior cannot be understood by focusing on events in the moment. That is, they argue that behavior is best understood as the ultimate product of an organism's history and that molecular behaviorists are committing a fallacy by inventing fictitious proximal causes for behavior. Molar behaviorists argue that standard molecular constructs, such as "associative strength", are better replaced by molar variables such as rate of reinforcement. Thus, a molar behaviorist would describe "loving someone" as a pattern of loving behavior over time; there is no isolated, proximal cause of loving behavior, only a history of behaviors (of which the current behavior might be an example) that can be summarized as "love".

Evaluation of the behaviourist approach

The main strengths of the behaviourist approach come from the methods it uses. The insistence on objectivity, control over variables and precise measurement means that the studies carried out by behaviourists tend to be very reliable, and the behaviourists can be credited with introducing the scientific method into psychology. The drawback of these methods, however, is that behaviour may be studied under very artificial conditions than do not reflect real-world contexts very well (although this criticism clearly does not apply to all behaviourist studies). The widespread use of animals is a source of criticism. Whilst conditioning can be observed in most species, there are genetic influences on what different species can and cannot learn which reflect their different evolutionary histories (e.g. rats can be conditioned to respond to tastes but not smells). This meansthat generalizations between species must be made with more caution than many behaviourists apply.

A more fundamental criticism of behaviourism is that it ignores the influences of mental processes on learning. In behaviourist theory people can only learn as a result of their own experiences. However, experience and many studies (e.g. by social learning theorists like Bandura) show that people are quite capable of observing and learning from the behaviour and experiences of others. Furthermore, studies of a wide range of human behaviours (principally language learning and use) have shown that classical and operant conditioning cannot adequately explain how people are able to solve problems without the lengthy period of trial and error that behaviourism would say is

necessary. These findings imply that mental processes must play a part in explaining much human behaviour.

Nonetheless, behaviourism has supplied practical solutions to many human problems. Operant conditioning has proven an effective way of modifying behaviour amongst people who may be difficult to teach in other ways (e.g. autistic children) and many people with problems like phobia have benefitted significantly from behaviour therapies including systematic desensitization.

Criticism

The behaviorist approach is deterministic: people's behaviour is assumed to be entirely controlled by their environment and their prior learning, so they do not play any part in choosing their own actions. The approach takes the nurture side of the nature-nurture debate, believing that apart from a few innate reflexes and the capacity for learning, all complex behaviour is learned from the environment. Their insistence that all learning can be accounted for in terms of law-governed processes like classical and operant conditioning, reflects a nomological approach to studying human behaviour (although behaviourists never ignore individual differences, since every person's history of learning is unique). The behaviourists' view that all behaviour, no matter how complex, can be broken down into the fundamental processes of conditioning makes it a highly reductionist approach to psychology.

21st century behavior analysis

As of 2007, modern-day behaviorism, known as "behavior analysis", is a thriving field. The Association for Behavior Analysis: International (ABAI) currently has 32 state and regional chapters within the United States. Approximately 30 additional chapters have also developed throughout Europe, Asia, South America, and Australia. In addition to 34 annual conferences held by ABAI in the United States and Canada, ABAI held the 5th annual International conference in Norway in 2009.

The interests among behavior analysts today are wide ranging, as a review of the 30 Special Interest Groups (SIGs) within ABAI indicates. Such interests include everything from developmental disabilities and autism, to cultural psychology, clinical psychology, verbal behavior, Organizational Behavior Management (OBM; behavior analytic I/O psychology). OBM has developed a particularly strong following within behavior analysis, as evidenced by the formation of the OBM Network and the influential Journal of Organizational Behavior Management (JOBM; recently rated the 3rd highest impact journal in applied psychology by ISI JOBM rating).

Modern behavior analysis has also witnessed a massive resurgence in research and applications related to language and cognition, with the development of Relational Frame Theory (RFT; described as a "Post-Skinnerian account of language and cognition"). RFT also forms the empirical

basis for the highly successful and data-driven Acceptance and Commitment Therapy (ACT). In fact, researchers and practitioners in RFT/ACT have become sufficiently prominent that they have formed their own specialized organization, known as the Association for Contextual Behavioral Science (ACBS).