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Behaviorist Learning Theory

Behaviorism is an approach to [psychology](#) based on the proposition that **behavior can be researched scientifically without recourse to inner mental states**. It is a form of **materialism**, denying any independent significance for mind. Its significance for psychological treatment has been profound, making it one of the pillars of pharmacological therapy.

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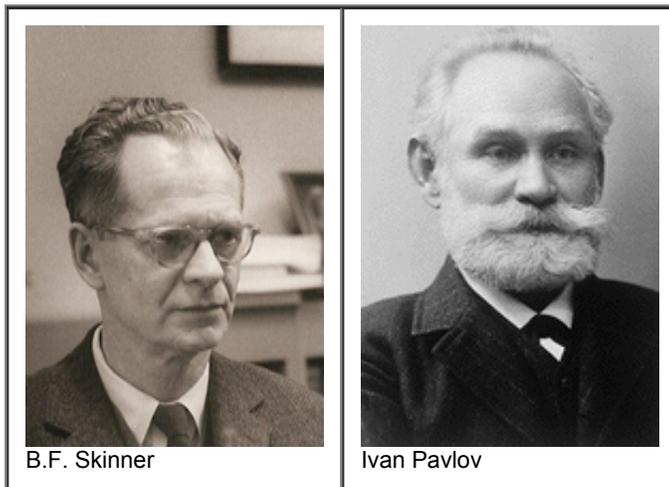
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B.F. Skinner

Ivan Pavlov

One of the assumptions of behaviorist thought is that **free will is illusory**, and that all behavior is determined by the environment either through **association** or **reinforcement**.

The behaviorist school of thought ran concurrent with the psychoanalysis movement in psychology in the 20th century. Its main influences were Ivan

Pavlov, who investigated classical conditioning, John B. Watson (1878-1958) who rejected introspective methods and sought to restrict psychology to experimental laboratory methods. B.F. Skinner, sought to give ethical grounding to [behaviorism](#), relating it to pragmatism.

Within that broad approach, there are different emphases. Some behaviorists argue simply that the observation of behavior is the best or most convenient way of investigating psychological and mental processes. Others believe that it is in fact the only way of investigating such processes, while still others argue that behavior itself is the only appropriate subject of psychology, and that common psychological terms (belief, goals, etc.) have no referents and/or only refer to behavior. Those taking this point of view sometimes refer to their field of study as behavior analysis or behavioral science rather than psychology.

- **Classical:** The behaviorism of Watson; the objective study of behavior; no mental life, no internal states; **thought is covert speech**.
- **Methodological:** The objective study of third-person behavior; the data of psychology must be inter-subjectively verifiable; no theoretical prescriptions. Has been absorbed into general experimental and cognitive psychology. Two popular subtypes are Neo-Hullian and post-Hullian, theoretical, group data, not dynamic, physiological, and Purposive: Tolman's behavioristic anticipation of cognitive psychology.

- **Radical:** Skinnerian behaviorism; includes behavioral approach to 'mental life;' not mechanistic; internal states not permitted.
- **Teleological:** Post-Skinnerian, purposive, close to microeconomics. Theoretical: Post-Skinnerian, accepts internal states (the skin makes a difference); dynamic, but eclectic in choice of theoretical structures, emphasizes parsimony.

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J. B. Watson



Early in the 20th century, John B. Watson argued in his book *Psychology from the Standpoint of a Behaviorist* for the value of a psychology which concerned itself with behavior in and of itself, not as a method of studying consciousness. This was a substantial break from the structuralist psychology of the time, which used the method of introspection and considered the study of behavior valueless. Watson, in contrast, studied the **adjustment of organisms to their environments**, more specifically the particular **stimuli** leading organisms to make their responses.

Most of Watson's work was comparative, i.e., he studied the behavior of animals. Watson's approach was much influenced by the work of Russian physiologist Ivan Pavlov, who had stumbled upon the phenomenon of classical conditioning (**learned reflexes**) in his study of the digestive system of the dog, and subsequently investigated the phenomena in detail. Watson's approach emphasized physiology and **the role of stimuli in producing conditioned responses** - assimilating most or all function to reflex. For this reason, Watson may be described as an S-R (stimulus-response) psychologist.

Methodological behaviorism

Watson's behaviorist manifesto persuaded most academic researchers in experimental psychology of the importance of studying behavior. In the field of comparative psychology in particular, it was consistent with the warning note that had been struck by Lloyd Morgan's canon, against some of the more anthropomorphic work such as that of George Romanes, in which mental states had been freely attributed to animals. It was eagerly seized on by researchers such as Edward L. **Thorndike** (who had been studying cats' abilities to escape from puzzle boxes). However, most psychologists took up a position that is now called methodological behaviorism: they acknowledged that **behavior was either the only or the easiest method of observation in psychology, but held that it could be used to draw conclusions about mental states**. Among well-known twentieth-century behaviorists taking this kind of position were Clark L. **Hull**, who described his position as neo-behaviorism, and Edward C. **Tolman**, who developed much of what would later become the cognitivist program. Tolman argued that rats constructed cognitive maps of the mazes they learned even in the absence of reward, and that the connection between stimulus and response (S->R) was mediated by a third term - the organism (S->O->R). His approach has been called, among other things, purposive behaviorism.

Methodological behaviorism remains the position of most experimental

psychologists today, including the vast majority of those who work in cognitive psychology – so long as behavior is defined as including speech, at least non-introspective speech. With the rise of interest in animal cognition since the 1980s, and the more unorthodox views of Donald Griffin among others, mentalistic language including discussion of consciousness is increasingly used even in discussion of animal psychology, in both comparative psychology and ethology; however this is in no way inconsistent with the position of methodological behaviorism.

Politics

Behaviorism relates to a school of politics that developed in the 50s and 60s in the USA. This school represented a revolt against institutional practices in the study of politics and called for political analysis to be modeled upon the natural sciences. That is to say that only information that could be quantified and tested empirically could be regarded as 'true' and that other normative concepts such as 'liberty' and 'justice' should be rejected as they are not falsifiable. This is a version of what has been called scientific empiricism, the view that all beliefs can, at least in principle, be proved scientifically. Skinner has been roundly criticized for his political/social pronouncements, which many perceive as based on serious philosophical errors. His recommendations thus reflect not science, but his own covert preferences.

Behaviourism has been criticised within politics as it threatens to reduce the discipline of political analysis to little more than the study of voting and the behaviour of legislatures. A virtual obsession with the observation of data, although providing interesting findings in these fields deprives the field of politics of other important viewpoints.

Other criticisms have been leveled at the behaviorist claims to be Value Free. This is impossible (it is argued) because every theory is tainted with an ideological premise that led to its formation in the first place and subsequently the observable facts are studied for a reason. An example of this 'value bias' would be that through this discipline the term 'democracy' has become the competition between elites for election 'a la' the western conception rather than an essentially contested term concerning literally rule by the people (the demos). In this manner behaviourism is inherently biased and reduces the scope of political analysis. Nevertheless it has still managed to introduce a new scientific rigour into political analysis and bequeathed a wealth of new information.

B.F. Skinner and radical behaviorism

B.F. Skinner, who carried out experimental work mainly in comparative psychology from the 1930s to the 1950s, but remained behaviorism's best known theorist and exponent virtually until his death in 1990, developed a distinct kind of behaviorist philosophy, which came to be called **radical behaviorism**. He also claimed to have found a new version of psychological science, which he called behavior analysis or the experimental analysis of behavior.

Definition

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 treatment of 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.

Experimental and conceptual innovations

This essentially philosophical position gained strength from the success of Skinner's early experimental work with rats and pigeons, summarised in his books *The Behavior of Organisms* (1938) and *Schedules of Reinforcement* (1957, with C. B. Ferster). 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 behavioural level. This lent some credibility to his conceptual analysis.

Relation to language

As Skinner turned from experimental work to concentrate on the philosophical underpinnings of a science of behavior, his **attention** naturally turned to human language. His book *Verbal Behavior* (1957) laid out a vocabulary and theory for functional analysis of verbal behavior. This was famously attacked by the linguist Noam Chomsky, who presented arguments for the bankruptcy of Skinner's approach in the domain of language and in general. Skinner did not rebut the review, later saying that it was clear to him that Chomsky had not read his book (though subsequent rebuttals have been provided by Kenneth MacCorquodale and

David Palmer, among others). Skinner's supporters claim Chomsky's consideration of the approach was superficial in several respects, but the appropriate subject for a study of language was a major point of disagreement. Chomsky (like many linguists) emphasized the structural properties of behavior, while Skinner emphasized its controlling variables.

What was important for a behaviorist 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. Important figures in this effort have been A. Charles Catania, C. Fergus Lowe, and Steven C. Hayes.

Molar versus molecular behaviorism

Skinner's view of behavior is most often characterized as a "molecular" view of behavior, that is each behavior can be decomposed in atomistic parts or molecules. This view is inaccurate when one considers his complete description of behavior as delineated in the 1981 article, "Selection by Consequences" and many other works. Skinner claims that a complete account of behavior involves an 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, with all those histories, then interacts with its environment. He often described even his own behavior as a product of his phylogenetic history, his reinforcement history (which includes the learning of cultural practices) interacting with the environment at the moment. Molar behaviorists (e.g. Howard Rachlin) argue that behavior can not be understood by focusing on events in the moment. That is, they argue that a behavior can be understood best in terms of the ultimate cause of history and that molecular behaviorist are committing a fallacy by inventing a fictitious proximal cause for behavior. Molar behaviorists argue that standard molecular constructs such as "associative strength" are such fictitious proximal causes that simply take the place of molar variables such as rate of reinforcement. Thus, a molar behaviorist would define a behavior such as loving someone as exhibiting a pattern of loving behavior over time, there is no known proximal cause of loving behavior (i.e. love) only a history of behaviors (of which the current behavior might be an example of) that can be summarized as love.

Recent experimental work (see *The Journal of the Experimental Analysis of Behavior* and *Journal of Experimental Psychology: Animal Behavior Processes*--2004 and later) shows quite clearly that behavior is affected both by molar variables (i.e., average rates of reinforcement) and molecular ones (e.g., time, preceding responses). What is needed is an understanding of the real-time

dynamics of operant behavior, which will involve processes at both short and long time scales.

Behaviorism in philosophy

Behaviorism is both a psychological movement and a philosophy. The basic premise of radical behaviorism is that the study of behavior should be a natural science, such as chemistry or physics, without any reference to hypothetical inner states of organisms. Other varieties, such as theoretical behaviorism, permit internal states, but do not require them to be mental or have any relation to subjective experience. Behaviorism takes a **functional view of behavior**.

There are points of view within analytic philosophy that have called themselves, or have been called by others, behaviorist. In logical behaviorism (as held, e.g., by Rudolf Carnap and Carl Hempel), psychological statements meant their verification conditions, which consisted of performed overt behavior. W. V. Quine made use of a variety of behaviorism, influenced by some of Skinner's ideas, in his own work on language. Gilbert Ryle defended a distinct strain of philosophical behaviorism, sketched in his book *The Concept of Mind*. Ryle's central claim was that instances of dualism frequently represented 'category mistakes,' and hence that they were really misunderstandings of the use of ordinary language.

It is sometimes argued that Ludwig Wittgenstein defended a behaviorist position, and there are important areas of overlap between his philosophy, logical behaviorism, and radical behaviorism (e.g., the beetle in a box argument). However, Wittgenstein was not a behaviorist, and his style of writing is sufficiently elliptical to admit of a range of interpretations. Mathematician Alan Turing is also sometimes considered a behaviorist, but he himself did not make this identification.

Recognized Behaviorists

Leading developers of behaviorism (in rough chronological order):

- C. Lloyd Morgan
 - Ivan Pavlov
 - Edward Thorndike
 - John B. Watson
 - Edward C. Tolman
 - Clark L. Hull
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