

Review

Review on Behaviorist Approach and the Construction of Knowledge

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The theory of behaviorism focuses on the study of observable and measurable behavior. It emphasizes that behavior is mostly learned through conditioning and reinforcement (reward and punishment). It does not give much attention to the mind and the possibility of thought processes occurring in the mind. Contributions in the development of the behaviorist theory largely came from Pavlov, Skinner, Watson, and Thorndike. This article tries to review those big 4 behaviorists in brief. It also includes the basic tenets, further arguments and issues on various aspects.

Key Words: Behaviorist approach, Conditioning, Application, Knowledge

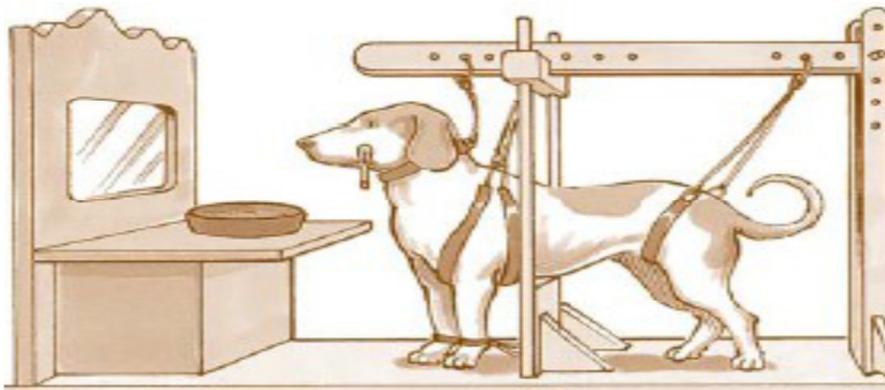
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Ivan Pavlov (1849-1936) – Classical Conditioning

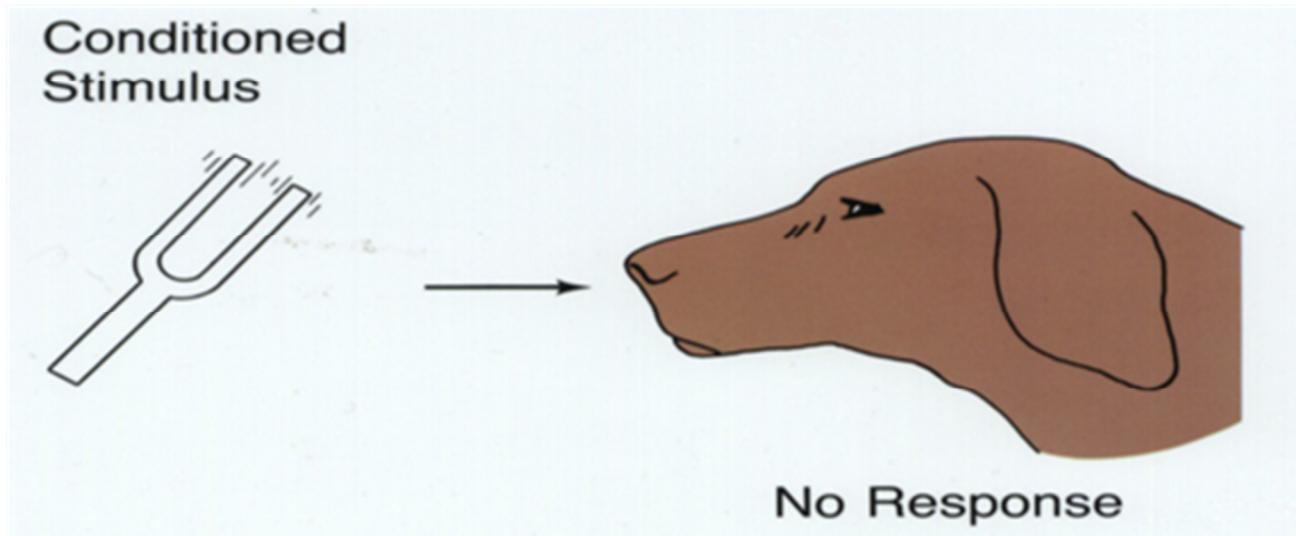
A Russian psychologist, Ivan Pavlov, is well known for his work in classical conditioning or stimulus substitution. Pavlov's classical conditioning focusing on voluntary behaviors. For example, Pavlov's notable experiment involving classical conditioning called ringing a bell in order to cause dogs to salivate.

Prior to his experiment, Pavlov noticed that dogs salivated whenever they saw food which is an involuntary response on their part. To see if he could associate the involuntary response with a certain prompt, he added a bell as a neutral response. For a period of time, he rang a bell whenever he fed dogs, and eventually, they would salivate whenever they heard the bell, even if no food was present.

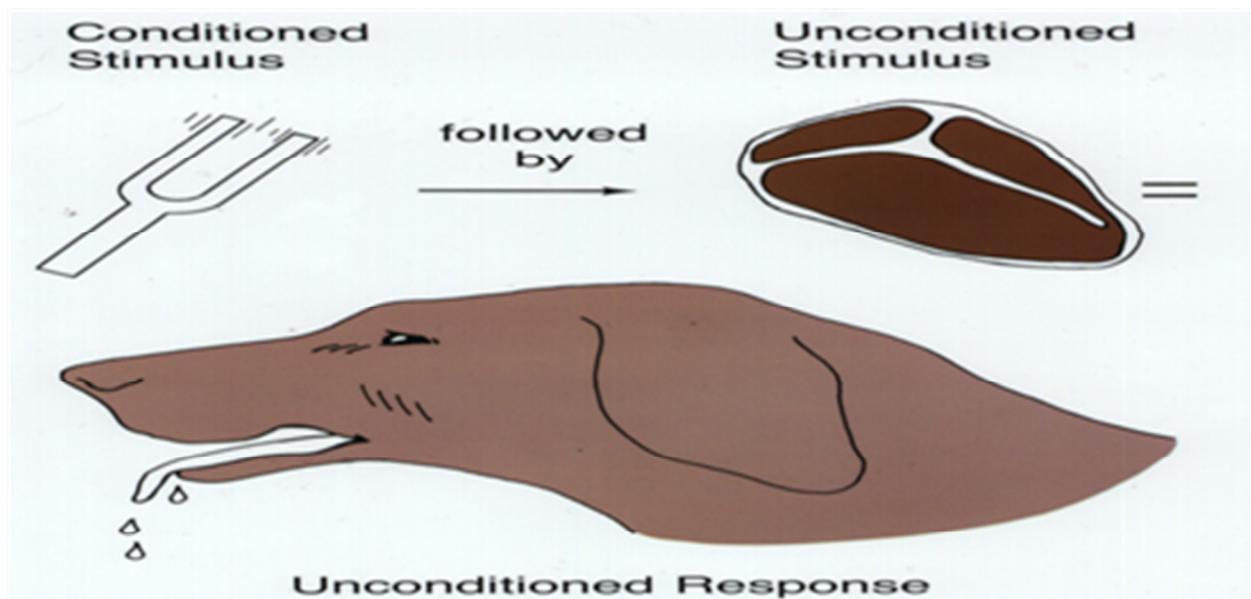
Therefore Pavlov was able to prove that an involuntary behavior could be associated with a certain stimulus. This discussion is illustrated in the following pictures.



(Picture 1: Animal behavior in learning. <http://www.juliantrubin.com/bigten/skinnerbox.html>)

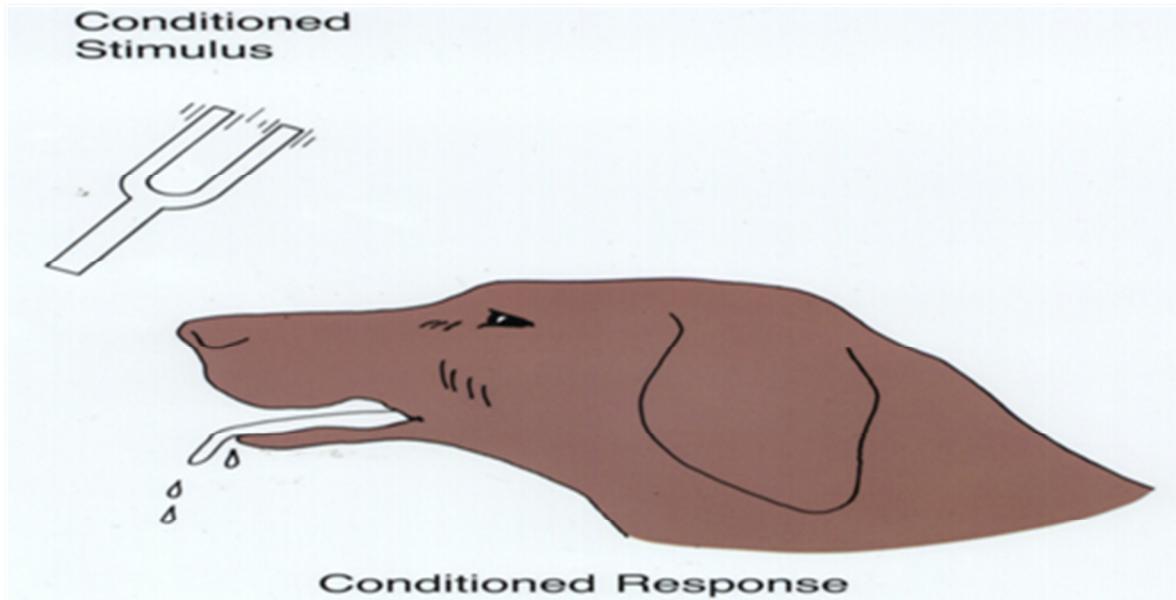


Picture 2



Picture 3

Note: Unconditioned stimulus is the stimulus that causes an organism to display a certain reaction without learning having been occurred yet. In an ordinary experiment, food is an unconditioned stimulus because it causes the dog to secrete juice before learning occurs. Unconditioned response is the reaction that the organism displays to this stimulus. The juice secreted by the dog to the food is unconditioned response. On the other hand, **conditioned response** appears when the dog gives reaction to a stimulus to which it should not react normally.



Picture 4

Behaviorism expresses **shaping behavior**. In classical conditioning, shaping a dog's behavior is possible through reinforcement. Reinforcement means giving unconditioned stimulus again in classical conditioning. In the experiment carried out by Pavlov, the food given to the dog is reinforced and the dog continues to secrete as long as it is given food. In relation to this, when the food is not given for a certain period of time, **extinction** occurs and the dog stops to give the response of secretion after a time. If the dog is expected to continue to give the response of secretion, it is necessary to do reinforcement and to go on giving food.

Classical conditioning can be used for shaping many behaviors of human and animals. Since it is about natural and inborn behaviors, it is an effective technique to shape animals' behaviors. Likewise, it can also be used to shape the behaviors of children who are thought to continue naturalist to a great extent. **Classical conditioning** is true for humans especially about feelings since people's feelings are inborn and natural to a great extent. For example; fear is one of the feelings used by the organism to protect it. When an organism comes across a danger about continuing its life, it feels fearful. Fear is inborn, but it is shaped by classical conditioning that why and how fear is felt. Fears in daily life and also love and like are all results of classical conditioning. A child matches doctor and painful experiences during a doctor treatment and starts to be afraid of doctors. Likewise, people like other people with whom they enjoy themselves.

B. F. Skinner: Operant Conditioning

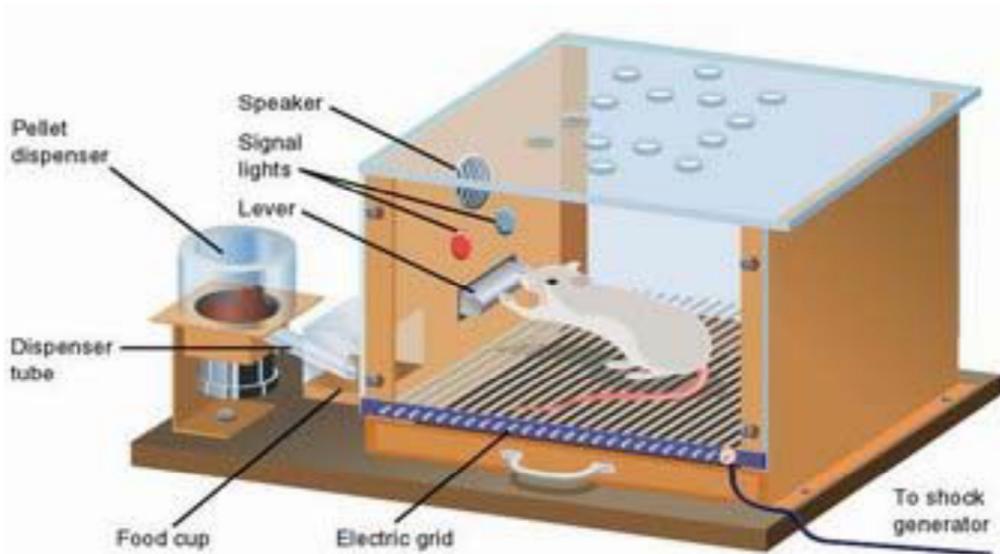
Burrhus Frederick Skinner (1904-1990) is one of the most important and effective people in the history of psychology. Skinner's theory of operant conditioning was based on the work of Thorndike (1905). Edward Thorndike studied learning in animals using a puzzle box to propose the theory known as the 'Law of Effect'. Operant Conditioning deals with operant - intentional actions that have an effect on the surrounding environment. Skinner set out to identify the processes which made certain operant behaviors more or less likely to occur.

Skinner (1938) proposed two laws that govern the conditioning of an operant:

The Law of Conditioning: If the occurrence of an operant is followed by presentation of a reinforcing stimulus, the strength is increased.

The Law of Extinction: If the occurrence of an operant already strengthened through conditioning is not followed by the reinforcing stimulus, the strength is decreased.

Because operant conditioning focuses on voluntary behavior, Skinner's experiment was much different than Pavlov's in that Skinner placed a rat in a box that contained a lever that would produce a food pellet when pushed. As the rat ran about the box, it accidentally bumped into the lever and it was provided with a pellet of food. The rat soon associated pushing the lever with receiving food (positive reinforcement) which increased the odds of it pushing the lever again. This is illustrated in picture 5 as follows.



Picture 5: Animal behavior in learning

The behavior of an animal, which is always reinforced, continues as long as reinforcement goes on. Skinner also noted that punishment could also modify the animal's behavior. For example, if he were to take the food pellets out of his experiment, the rat would eventually stop pressing the lever after realizing it was no longer going to receive a reward for doing so. This is an example of negative punishment “punishment by removal”.

Unlike Pavlov's experiment with dogs, the behavior of the rats was completely voluntary, and due to instances of both positive and negative reinforcement, Skinner proved that they could learn to associate certain behaviors with certain consequences.

One of the contributions of Skinner to behaviorism is the concept of **behavior modification**. This approach expresses changing human behaviors through developed rules and principles, and it especially uses positive reinforcement. A very common example of this is the case of a child who cried to get what she/he wants. If what the child wants is bought, the possibility of the child to cry in order to get what she/he wants at a later time. Because what he/she wants is bought when she/he cries. However, it is a more preferable case to reward the child when she/he doesn't cry. Another contribution of Skinner to education is **programmed instruction**. Programmed instruction means directing a student by means of reinforcing his/her responses given to teaching materials in a manner of small progresses. Although it was not successful in early 1960s when it was first developed, it is used in a very effective way with the development of computers today. The student is exposed some questions and he/she is allowed to go on only if she/he gives the correct answer. Thus, the student can pass to higher levels as he/she learns. Programmed instruction, which can be defined as **reinforcing the suitable behavior** of a student, is one of the most important contributions of Skinner to education.

In general, both Ivan Pavlov and B. F. Skinner are considered behaviorists. This means that they focused on measurable, observable, and specific behaviors and how these behaviors can be manipulated and changed. Unlike many psychological theorists of their time, who focused primarily on thoughts and emotions, these behaviorists sought to deal with more concrete actions. Pavlov was the first to demonstrate conditioning, where behaviors can be created and reinforced through a system of pairing behaviors with stimuli. On the other hand, Skinner denied the importance of what comes before a behavior. Instead, he believed that it is what comes after the behavior that is most important. Following behaviors with rewards and punishment determines whether these behaviors will be repeated.

There are also other noteworthy behaviorists that have been influenced by Pavlov and Skinner, including John Watson and Thorndike.

John B. Watson (1878-1958)

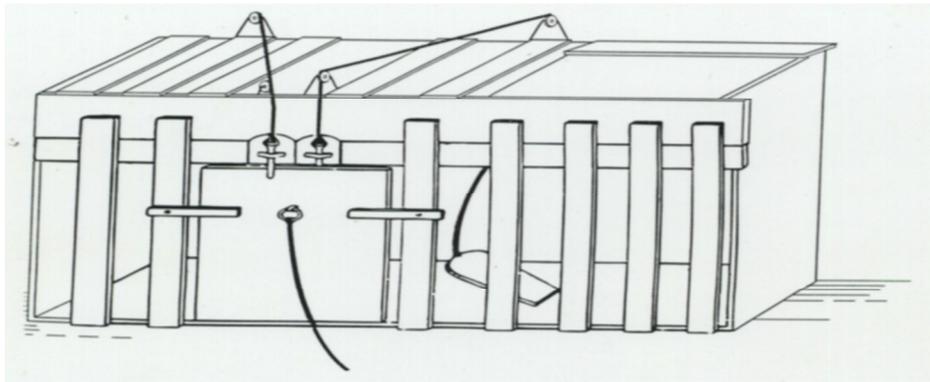
Although behaviorism is closely related to Pavlov's experiments in early 1900s, it was Watson who established behaviorism in 1913 with his article. Watson is the founder of behaviorist theory. He believed behavior originated from experiences. He was largely influenced by Pavlov's ideas about conditioning. In his famous experiment, he conditioned a young boy named Albert, an 11 month old infant child. The goal of the study was to condition Albert to become afraid of a white rat by pairing the white rat with a very loud, jarring noise (UCS). At first, Albert showed no sign of fear when he was presented with rats, but once the rat was repeatedly paired with the loud noise (UCS); Albert developed a fear of

rats. It could be said that the loud noise (UCS) induced fear (UCR). The implications of Watson's experiment suggested that **classical conditioning** could cause some phobias in humans.

According to **Watson**, behaviors can be simple just like reflexes while they can also be very complex. Complex behaviors are called actions. Actions such as eating, reading, and building are complex. However, no matter how much complex an action is, they can also be handled in terms of simple actions. Responses can also be divided into implicit/explicit or learnt/unlearnt. Responses that psychology will investigate should be somehow **observable**. Watson claimed that observable behaviors had to be investigated by means of separating them into the smallest unit, to the responses of muscles and nerves. According to Watson's behaviorism, behavior is separated to the smallest unit.

E. L. Thorndike

Edward Lee Thorndike (1874-1949) is said to be the greatest learning theorists of all time in some by some sources (Hergenhahn, 1982 as cited in Johnson 2004:19-30). Thorndike was a psychologist who carried out studies not only in the field of learning but also in other fields of education. He claimed that stimulus and response are connected to each other about learning. According to him, a neural connection is established in the organism when learning takes place. He called his theory as **connectionism**. It states that behavioral responses to specific stimuli are established through a process of **trial and error** that affects neural connections between the stimuli and the most satisfying responses. Similar to Pavlov, Thorndike also used animal experiments. He developed his ideas on "instrumental conditioning" which is made up of two laws: **The law of exercise** and **the law of effect**. For example, he placed a cat in what skinner called a "puzzle box" and waited to see how long it would take for the cat to escape and find food. The cat struggled at first, but eventually found its way out. After that every time the cat was placed in the box, it escaped more quickly than before, proving the law of exercise that strengthens it. The law of effect is that the strength of the learned response is determined by whether or not the behavior is rewarded or punished. Look the situation in following picture.



Picture 6: Thorndike's Puzzle Box

Principles Derived from Thorndike's Connection

- Learning requires both practice and rewards.
- A series of S-R connections can be chained together if they belong to the same action sequence (law of readiness).
- Transfer of Learning occurs because of previously encountered situations.
- Intelligence is a function of the number of connections learned.

Behaviorism and the Construction of Knowledge

This theory postulates that learning has nothing to do with the mind. In fact, learning occurs with the acquisition of new behavior. It was introduced by B.F. Skinner one of the behaviorist psychologist saying that a measurable learning outcome is only possible if we change the learner's behavior. According to Skinner, behavior is a learned response reinforced by the consequences resulting from that behavior. For instance, if students are rewarded for doing extra work, they're more likely to repeat that behavior.

To behaviorists, learning comes from **observation of cultures** (Henry Plotkin 2003 as cited in Qasi 2007: 2-10). It comes from the **environment**. There must be some incentive to create certain responses. According to behaviorism, the incentive may either be positive or negative. If it is the former then the learner will be rewarded, while if it is the latter, the learner will be punished (Lisa M. Baumgartner, Ming Yeh Lee, Sosan Birden, Doris Flower. 2003 as cited in Qasi 2007: 2-10). Study has also shown that behaviorist methods of reinforcement are very effective in creating positive behavior in almost any learning environment. Such methods positively affect the performances among learners (John Dawning, Tedd Keating, and Karl Bennett 2005 as cited in Qasi 2007: 2-10).

Behaviorism is the **psychology of the environment which a person lives**. After all, the main stimuli of behaviors come from the external environment rather than the internal. It is the situational interactions (external or environment) which have effect to the particular individual (learner) not to the mind (Robert Marrone, 1999 as cited in Qasi 2007: 2-10). B.F. Skinner believed that if we could change the behavior of a rat which is an animal, then human behavior could also be changed. To behaviorists, man's actions should be controlled (Charlotte Hua Liu & Robert Mathew 2005 as cited in Qasi 2007: 2-10), as scientists control and influences other natural phenomena. This theory denies the existence of the human mind as a distinct feature to that of animal kingdom. As such, to behaviorist man is like a machine can be switched on and off (Michael L. Birzer. (2003 as cited in Qasi 2007: 2-10). We also learn from **our interactions with our environment or surrounding**. The process of learning occurs because our learning is associated with a condition and that condition is the environment.

Basic Tenets of Behaviorist Approach

The following principles illustrate the operating principles of behaviorism:

1. Behaviorist theory is the habit formation theory of language teaching and learning reminding us the learning of structural grammar. In other words, language learning is a mechanical process leading the learners to habit formation whose underlying scheme is the conditioned reflex. Thus, it is definitely true that the language is controlled by the consequences of behavior.
2. The stimulus-response (S-R) is a pure case of conditioning. Behaviorists emphasize that conditioning and building from the simplest conditioned stimulus to more and more complex behaviors. Each stimulus is thus the cause of the response, and each response becomes the initiator of a stimulus, and this process goes on and on this way.
3. All learning is the establishment of habits as the result of reinforcement and reward. Positive reinforcement is a reward while negative reinforcement is prevention. In a stimulus situation, the response is exerted and if the response is positively augmented by a reward, then the association between the stimulus and the response is reinforced and thus the response will very likely be manipulated by every response to stimulus. The result will yield conditioning when responses to stimuli are coherently reinforced, and then habit formation is established. It is because of this fact that this approach is termed habit formation by reinforcement.
4. The learning due to its socially conditioned nature can be the same for each individual. In other words, each person can learn equally if the conditions in which the learning takes place are the same for each person.
5. All behaviorists agreed that it is more worthwhile to focus on observable rather than just theory. They also agreed that behavior is shaped by experiences surrounding the behavior.
6. Basic strategies of language learning within the scope of behaviorist theory are imitation, reinforcement, and rewarding.

Arguments on Behaviorist Approach

As it has seen from the basic tenets of behaviorist approach, some of the principles are questionable. For one thing, the learners may find themselves in a situation where the stimulus for the correct response does not occur, so the learner cannot respond. For example, a worker who has been conditioned to respond to a certain cue at work may stop production when an anomaly /irregularity occur because they do not understand the system. Chomsky (1959) argues that Skinner does not acknowledge the internal structure of the learner or how they process input information. Therefore, Behaviorism does not explain the mental processes involved in language learning, distancing itself, for instance, from the sociocultural perspective which accounts both: the external stimuli and the internal mental structure.

It is also highly unlikely for learning to be the same for each individual; that is, each person cannot learn equally well in the same conditions in which learning takes place, for the background and the experience of the learners make everybody learn differently. In addition, according to Chomsky, there must be some innate capacities which human beings possess that predispose them to look for basic patterns in language.

An additional concept related to this theory is the Contrastive Analysis Hypothesis (CAH). According to this concept, learners of a second language would start the acquisition process using the habits formed in their L1 and, eventually,

these habits would interfere with the new ones needed for the L2. In other words, there is not any single theory can ever clarify how people behave or learn in the context of a changing environment.

Application of Behaviorist Approach in Ethiopian Context

One of the most representative teaching methods related to the Behaviorist approach is the Audio-lingual Method. This methodology was very popular in the 1960s and 1970s, and it is based on the premise of learning through habit-formation. Thus, the classroom activity takes the following procedure: students listen to an audio which contains particular structures and patterns that they must repeat in order to drill grammatical points, such as verb forms and sentence structures. Therefore, students are first taught to listen and speak, and then to read and write based on the assumption that this is the natural sequence in first language acquisition/learning.

By considering a behaviorist approach class, students are also required to satisfy a mastery requirement in one unit before proceeding to the next. Typically, a unit in the program would have more than one equivalent form of assessment; for example, three quizzes of equal difficulty. Students are required to demonstrate mastery of a unit's objectives at a certain level. If the student does not reach the threshold, he or she is redirected to unit materials (or supplements if provided) and can then take an equivalent form of the unit assessment. From a behaviorist perspective, demonstrating mastery, and being allowed to continue to a subsequent unit, was presumed to be reinforcing.

Moreover, behaviorist approach is applied in all Ethiopian 'Kies Schools'. Learners from 'Kies Schools' memorize and apply as necessary all the courses that are offered to them on the basis of their levels. As soon as the learners complete their courses, they get rewards/certificates from the concerned bodies. The way of their certification depends on approval. Similarly, the religious schooling (Kies School Learners) and the learners in KG, Nursery, and others are also supported with 'Fidel Gebeta' and 'Abugida' on the first days of their education. This implies that the behaviorist approach is practically applied in the overall Ethiopian education system till these days. In short, it is better to say Ethiopia is the home of behaviorist approach. In one case, it is the place where religious education is totally fall on such approach. In the other case, its significant role for Ethiopian teachers and students is obvious and everlasting in that most of the EFL classroom teaching and learning takes place for the mastery of the content of lessons in all grade levels (primary, secondary, and tertiary) supporting with formal instruction. Therefore, it is better to say behavioristic approach is serving as a cornerstone in the Ethiopian education system in all grade levels.

Summary

Learning is seen as a process of developing connections between a stimulus and a response. This process is called conditioning. As the behavior is reinforced, habits are importance of environment: learning is a result of environmental rather than genetic factors. The child is born as a clean slate and the environment writes its messages on this clean slate mind. As a result, behaviorist approach is one of the most important and efficient instrument in learning and teaching. It is also possible to say that behaviorism is serving as a **cornerstone** in that different types of teaching and learning theories are originated and developed in it. In addition, behaviorist approach is serving as base for constructing educational knowledge using various reinforcement techniques.

In spite of contradictions in behaviorism methodology, one cannot deny its usefulness in the classroom, notably, the concept of reward and punishment add insights into learning, language development, and moral and gender development, which have all been explained in terms of conditioning. In addition, it has exerted a great impact by influencing many teaching methods on the area of language teaching, for example, Audio-lingual Method, Total Physical Response, and Silent Way embody the behaviorist view of language.

Issues for Interest

1. The Effectiveness of Behavioral Approaches in Primary EFL Contexts
2. Behaviorist Approaches to Motivation
3. The Effect of Behaviorism in Tertiary Level Learners
4. Critical Review of Behaviorist Approach
5. From Constructivism to Behaviorism to Teacher Education

References

- Andreasen, N.C. (1984). *The Broken Brain, the Biological Revolution in Psychiatry*: New York: Harper and Row.
- Bacanli, H. (2012). *Eğitim Psikolojisi*. Ankara: Pegem Akademi Publication. Üsküdar University, (Translated by Sakine Koca Sincer).
- Bellak, A. S. & Hersen, M. (1986). *Dictionary of Behavior Therapy Techniques*. New York: Pergamon Press.
- Bolles, R.C. (1979). *Learning Theory* (2nd ed.) New York: Holt, Rinehart, and Winston.
- Brown, H. D.. (2000). *Principles of Language Learning and Teaching*, Fourth Edition. San Francisco: Addison Wesley Longman, Inc.
- Chomsky, N. (1959). A Review of BF Skinner's Verbal Behavior. *Language*, 35(1), 26-58.
- Hall, E. (1983). *Psychology today: An introduction* (5th ed.). New York: Random House.
- Hergenhahn, B. R. (1982). *An introduction to Theories of Learning*. Englewood Cliffs, NJ: Prentice-Hall.
- Hintzman, D.L. (1977). *The Psychology of Learning and Memory*. New York: Freeman.
- Johnson, M. (2004). *A Philosophy of Second Language Acquisition*. London: Yale University.
- LeFrancois, G. R. (1982). *Psychology for Teaching* (4th ed.). Belmont, CA: Wadsworth Publishing Company.
- Liebert, R. M., Poulos, R. W. & Marmor, G. S. (1977). *Developmental Psychology*, (2nd ed.). New Jersey: Prentice-Hall.
- Mitchell, R., & Myles, F. (2004). *Second Language Learning: key Concepts and Issues*. *Second Language Learning Theories* (pp. 5-28). London: Hodder Education.
- Qais, F. (2007). *Behaviorism and the Construction of knowledge*. Published Article, Malaysia.
- Richards, J. C., & Rodgers, T. S. (2001). *Approaches and Methods in Language Teaching*. Cambridge: CUP.
- Vernon, A. (1993). *Counseling Children and Adolescents*. Denver, CO: Love Publishing Company.
- Zastrow, C. & Kirst-Ashman, K. K. (1974). *Understanding Human Behavior and the Social Environment*. Chicago: Nelson-Hall Publishers.