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U.G. Sem IV

Behaviourism

Q. Evaluate the Contributions of later behaviorists such as Tolman, Hull, Guthrie & Skinner to the growth of psychology. Or Discuss the achievements & Contributions of Tolman Hull & Guthrie & Skinner to the development of behaviorism Or Discuss the tenets & achievements of later behaviorism. Or Who were the main figures of later behaviorism. Discuss their Contributions in the field of learning.

Ans: An arbitrary divison of behaviorism can be made between early behaviorism & later behav.ism. The behaviorism ranging from 1913 to 1930 is commonly known as the early behaviorism. This form of behaviorism is also known as the Watsonian Behaviorism. Because by and large it was Watson who established this early behaviorism & contributed to its growth. On the other hand the behaviorism from 1930 & onward is called the later behav.ism. This form of behaviorism was shaped & developed by Tolman, Hull, Guthrie & Skinner. The later behaviorism has been mainly concerned with the problems of learning. The early behaviorism had simply a mention of learning theory based on Pavlovian conditioned reflex theory of learning. But the later behaviorism has contributed largely in the field of learning itself. Let us evaluate the contribution

The chief contributors of later behaviorist are:-
① E.C. Tolman.

achievements of the foll. chief later behavior

① E. C. Tolman — Tolman was a great behavior
He was born in 1886 & died in 1961.
② He was a student at Harvard university & later at Berkeley university to teach comparative psycho.
ist who was born in 1886 & he died in 1961. He differed with Watson in several respects regarding the nature of behaviorism. He went through 'Watson Behavior' (1919), while he was a graduate student at Harvard university. He also went through + introspective psycho. of Wundt & Titchner at the same time. later on he became a teacher at Berkeley & began to teach comparative psycho. He carried on lab. experiments on animal learning with rats as subject.
③ He carried on many experiments on animal learning with rats as subject.
④ Tolman differed from Watson as regards the law of learning. While Watson accepted Pavlovian law of reinforcement as the single law of learning, Tolman accepted Thorndike's law of effect. But Tolman also accepted Pavlovian law of reinforcement.
He said learning is not always based on reinforcement for example latent learning, which occurs in animals & human.
Tolman's second difference between Watson & Tolman lies in the fact that for Watson behavior was simply the relation between stimulus & response. He did not believe that behav. has any purpose but Tolman rejected the simple notion of

stimulus & response. He believed in purposive behaviorism. In 1932 he wrote 'Purposive Behavior in Animals & Men' in which he stressed that the behav. of the organism was purposive. This was again a major deviation of Tolman's behaviorism from Watsonian behaviorism. This contribution of Tolman is still regarded as a great achievement in the field of learning.

The third contribution of Tolman is concerned with the definition of behav. Watson failed to give any consistent definition of behav. He insisted that behav. was something which could be seen & objectively observed. However, he postulated implicit behavior which could not actually be observed. This was quite inconsistent on the part of Watson. Tolman objected to it & called it the molecular definition of behav. In 1932 he gave a consistent defn. of behav. & said that it is not the response or the stimulus which constitutes the behav., rather it is the response of effecting the stimulus situation, which constitute the behav. Thus he gave the molar definition of behav. This was again a major deviation from the Watsonian behaviorism & hence a great achievement of Tolman in the field of learning.

A major contribution of

(1) The merit of Tolman's contribution is that he made a compromise between the structuralists and the behaviorists. Structuralists were typically mentalists and believers of introspection while the behaviorists were typically anti mentalists and rejectors of introspection. Tolman was open minded to all the schools (4)

lies in the fact that he made a Compromise between the strict Watsonian behaviorism & the mentalism. The structuralist were typically mentalists & believed in introspective observations. On the other hand Watson was typically anti mentalist & rejected all introspective observations. His approach was highly negativistic. On the other hand Tolman was open minded to all the schools including the mentalism or structuralism. He pleaded that it can neither be proved directly nor can be rejected whether the animals were Conscious. It can only be ascertained on the basis of animal's behavior. He stated that sensations & emotions are such which can be regarded as the private possession of animals or human beings. Thus Tolman in this respect also differed with Watsonian ~~B~~ Behaviorism & made it a bit liberal.

(5) The concept of intervening variable is also a great achievement of Tolman. He (1935, 1938) believed that behav. is not the simple outcome of SR Connectionism. Several situational factors such as heridity, age, experience etc. have their effect upon the arousal of behav. The variable which is varied is called the experimental variable or the independent variable. On the other

The concept of intervening variable is another achievement of Tolman. He said that it is not the stimulus which arouse the behavior but several other factors

hand the resulting behavior is called the dependent Variable or the behav. variable. Thus behavior is a function of both situation variables & antecedent variables i.e. $B = f(S, A)$. It should be noted here that later on Tolman (1951) added a new Category of Variable called the demand variables. Thus the Concept of intervening Variables advocated by Tolman is still regarded as a great achievement of later behaviorism.

In the field of learning Tolman's Contribution is also very imp. & Valuable. As stated above the behaviorist, particularly Watson explained learning on the basis of Pavlov's law of reinforcement. He believed that learning is a simple bond between stimulus & response. In other words he believed in simple SR connectionism based on reinforcement. But Tolman 1938 developed his sign gestalt theory of learning & rejected the reinforcement as a primary factor in learning. His theory of learning is also called Cognitive theory of learning. Because he put emphasis on expectancy in learning in place of reinforcement. He (1959) also accepted the Concept of performance Vector made up of three positive factors namely the drive, the incentive & the expectancy & three negative factors such as

Thus Thorndike contributed very much to the growth of later behaviorism in general & learning in particular.

drive, negative incentive & expectancy of doing the work. In short he interpreted learning on the basis of S-O-R-formula rather than on S-R formula.

Thus it is obvious that Thorndike contributed very much to the growth of later behaviorism in general & learning in particular.

Hull

(2) 2) C. L. Hull — Hull was also a later behaviorist. He was born in 1884 & died in 1952. Originally he was a logician & a mathematician. But eventually he got interested in psychology. In 1929 he became a research prof. at Yale university. He proved himself a distinguished American psychologist & contributed largely in the field of learning.

Hull also belonged to later behaviorism school. He was born in 1884 & died in 1952.

Originally he was a logician & mathematician but in 1929 he became a research prof. at Yale university. He contributed largely in the field of learning.

Hull went through the tenets of Watsonian behaviorism. But he was not satisfied with it. It is true that he was impressed by Watson views concerning introspection & objective observation. But he did not like many dogmatic claims of Watson. In 1952 he very clearly stated that Watsonian approach was highly dogmatic & negative. Similarly Hull did not accept all the tenets of gestalt psycho. He believed that learning, memory, images & other mental activities must be explained on the basis of objective methods & used in quantitative interpretation of behavior.

He was impressed with Watson's view of introspection & objective observation but he criticised Watson's approach as dogmatic & negative (he said that introspection, memory, images & other mental activities must be explained on the basis of objective methods & used in quantitative interpretation of behavior)

functional laws.

(4) He Contributed in the field of aptitude tests & statistical methods. He also experimented on hypnosis & suggestibility in 1933. His approach was mathematical. Hull also contributed in the field of aptitude tests & statistical methods. In 1928 he explained an elaborate system of aptitude tests. In (1925) he stressed the application of statistical methods & invented a machine for Computing Co-relations. He also Carried on experimental studies on hypnosis & suggestibility in 1933. Thus he made a mathematical approach to the theory of behavior.

(5) In the field of learning Hull's Contributions in the field of learning are no less than Tolman. He established his drive theory of learning in 1943. His theory was based on Pavlov's laws of Conditioning. He believed that reinforcement is a primary factor in learning. It should be noted that Tolman believed that reinforcement is not a primary factor in learning. He further believed that learning is purposive & Cognitive. On the other hand Hull believed that reinforcement is an essential requisite of learning & that Tolman's purpose & Cognition are derived from simple Conditioning.

His drive theory of learning was based on Pavlov's laws of Conditioning. He also found that reinforcement was primary factor in learning. He derived from Tolman who did not give much importance to reinforcement in learning.

(6) About the Postulates of learning Hull mentioned several postulates of learning. One of his postulates was that any stimulus occuring in close temporal contiguity with a reinforced response becomes connected with that response & can evoke it later on. He explained learning in the same way as that of Pavlov. His explanation of learning is like Pavlov but without mentioning the C.S & U.C.S.

that repetition between the S & the R is essential for the occurance of this postulate. Thus here Hull's contention is more similar to that of Pavlov with only difference that Pavlov explained the sequence of the two stimuli namely the CS & the US, but we find no mention of it in Hull's system.

Contribution

(1) Hull's contribution also lies in the field of drive (D) & drive stimuli (SD). He said that drive is an energizing force or activating force which comes out of biological need. He stated that reinforcement depends upon drive reduction, although biological need is not satisfied. He supplemented drive (D) with drive stimuli (SD) & pleaded that the drive stimuli play a major part as the reinforcing factor in learning. This was an additional contribution of Hull in the field of learning by conditioning. He could succeed in explaining the behavior in terms of 'What', 'how' & 'Why'.

Hull's contribution also lies in the field of drive (D) & drive stimuli (SD). He said that drive is an energizing force which comes out of biological need. He stated that reinforcement depends upon drive reduction.

(8) Like Tolman Hull also formulated certain intervening variables to explain behavior or learning. He recognised the importance of drive (D) in learning. He also accepted drive stimuli (SD) as an intervening variable. He also recognised the incentive (K) & the inhibitory factor of work (IR) as the intervening variables of learning. Moreover he

Like Tolman Hull also formulated certain intervening variables to explain behavior or learning. They are like drive (D), drive stimuli (SD), incentive (K), inhibitory factor of work (IR).

He also added habit strength (HS), excitatory potential (SHR), conditioned inhibition (SER) as intervening variables of learning (9)

1. D - Drive
2. SD - Drive Stimulus
3. K - Incentive
4. I.R - Inhibitory potential
5. HS - Habit strength
6. SHR - Excitatory potential
7. SER - Conditioned inhibition as the intervening variables of learning

of reaction accepted habit strength (H_S), excitatory potential or reaction potential ($_SH_R$), Conditioned inhibition ($_SE_R$) as the intervening variables of learning. Of course there is a close parallel between Tolman's intervening variables & Hull's intervening variables. Tolman's expectancy may be regarded as the counter part of Hull's habit strength. Similarly Tolman's kerfor mance vector may be regarded as Hull's reaction potential. In spite of these parallelism there is vast difference between these two behaviorists in respect of learning. Koch (1954) has remarked "Hull's theoretical efforts as a whole are the most intensive and persistent attempt of any learning theorist to achieve rigor."

(9) Hull & Tolman intervening variables are regarded as parallel to each other. Tolman's expectancy is counterpart of Hull's habit strength. Similarly Tolman's kerformance vector is parallel to Hull's reaction potential. In spite of this parallelism there is vast diff. between these two behaviorists in respect of learning. Koch remarks

In 1943 Hull wrote his 'principles of Behavior' & advocated his contentions of learning. It should be noted that he did not ~~claim~~ call himself a behaviorist but he called his concepts objectives & naturalistic. He did not believe in introspection & anthropomorphism. He stated that mental processes are composed of physico chemical processes. Thus his behaviorstic approach was much different from Watsonian approach as his approach was much more mathematical & quantitative.

(10) In 1943 he wrote his principles of learning which he identified his views of learning as objectives approach. He was mathematical & quantitative. In this sense he differed from

It is obvious that Hull also contributed considerably to the growth

behaviorism & particularly to the field of learning. However his concepts are so complex that they can hardly be experimentally proved or disproved. Kendler (1959) has very rightly remarked "The strong influence Hull exerts on contemporary learning psycho. results more from his failures than from his successes.

(11) the behaviorism it can be said that his approach is so complex that it can hardly be proved or disproved. (1959) "

3) E. R. Guthrie — Guthrie is also an imp. fig. of later behaviorism. He was born in 1886 and died in 1960. He was independent of both Hull's behaviorism & Tolman's behaviorism. He was also independent of Watsonian behaviorism. He was much influenced by his colleague Stevenson Smith. He did not believe in Thorndike's law of effect. He also rejected the old law of frequency. He believed that if a stimulus once elicits a response, this SR association is established. If the same stimulus occurs again, it will again elicit the same response. Guthrie stated that many repitions are certainly required for strong SR connectionism. But the same combination of stimuli does not recur. There must be some changes or modifications in the occurance of the combination of stimuli. Even when the external situation is the same, the internal stimuli are likely to be different. Thus the final response learned by the organism

(1) E. R. Guthrie He also belongs to later behaviorism. He was born in 1886 & died in 1960. He was independent of Hull's & Tolman's behaviorism. He was also independent of Watsonian behaviorism. He was much influenced by his colleague Stevenson Smith.

(2) He also rejected Thorndike's law of effect & old law of frequency.

(3) He believed that if a stimulus once elicits a response, this S-R connection is established. If the same stimulus occurs again, it will again elicit the same response.

(4) Guthrie stated that many repitions are certainly required for strong S-R connectionism.

(5) But the same combination of stimuli does not recur. There must be some changes or modifications in the occurance of the combination of stimuli. Even when the external situation is the same, the internal stimuli are likely to be different. Thus the final response learned by the organism

(6) ... does not appear the response only may be same.

(4) So Guthrie concluded that a single trial (the last trial) is competent enough for the S-R connection. the gift of the last trial. It is in this context that guthrie believes that a single (5) trial (The last trial) is competent enough for the S-R association.

Guthrie as mentioned above did not accept Thorndike's law of effect. He also rejected Hull's concept of need reduction. So guthrie did not accept reward or reinforcement as an essential factor for strengthening association. He believed that an association is already established in full strength by the mere making of a certain response to a certain stimulus.

It is evident that guthrie's explanation of behavior or learning is basically simple. It is our common observation that a person is most likely to do what he last did in the same circumstances. So if we want that the person must do or repeat the same response, we must reproduce the same circumstances. If the circumstances are being changed, it is most likely that the person will not repeat the same old response. Thus it may be concluded that guthrie's theory is competent enough to explain our everyday behav as well.

(6) It can be concluded that Guthrie's theory is quite simple and easy to explain very well our everyday behaviour and learning

4) B.F. Skinner — Skinner is also a very imp. fig. of later behav. ism. He brought a radical change in the field of learning by Conditioning. He was born in 1904 & has been working as a professor of ...

(4) B.F. Skinner He is very important and a later behaviorist. He brought a radical change in the learning by conditioning

Behavior - Operant Cond. Theory,
In Psychotherapy - Behavior Therapy, Desensitization

He moved as Professor in Psychology at Harvard University

Herbert University.

He invented the Skinner box for the study on operant conditioning. He conducted the experiments on rats & pigeons.

① Skinner invented the Skinner box for the study of operant Conditioning. He conducted a series of experiments on rats & pigeons. He established his theory of Operant Conditioning in 1938. He did not believe in Pavlovian Classical Conditioning & said that the behavior of the organism in learning is instrumental for the occurance of the reinforcer. In his book behav. of organisms (1938) he claimed that the behav. of the animal is operant in learning situation. Skinner believed that the behav. of the animal can be changed, modified & shaped by several conditioning techniques. It is in this respect that in 1951 behav. therapy was developed on the basis of conditioning techniques. The systematic desensitization, the Catharsis, the Confrontation, the assertive & many similar techniques have been developed for behav. modification. Indeed this is a great achievement of Skinner in the field of psychotherapy.

He did not believe in Pavlovian Cl. Conditioning

He said that behaviour of the subject can be changed, modified & shaped by several conditioning techniques.

② Skinner's Contribution can also be observed in his Concept of schedules of reinforcement. In 1957 Skinner investigated the effects of the complex interval schedules & ratio schedules. This is again an advantage of Skinner's learning theory over Pavlov's learning theory. Even today various schedules of reinforcement are in-vogue.

Interval schedules & ratio schedules.

Skinner's Contribution also lies in the field of verbal learning. In 1957 his book 'verbal behav.' was published. In his book he stated how speaking & writing of all kinds are based on operant conditioning. He stated two basic kinds of verbal response namely the mand & the tact. The mand is the speaker's response to an internal stimulus. Where as the tact is the speaker's response to an external stimulus.

Skinner's Contribution can also be visualised in everyday life & particularly in children's Socialization. In fact modeling behav. develops as a func. of operant condiing. In other words operant condiing is the fundamental ground of socialization process of the child.

Thus it is concluded that along with other later behaviorists, Skinner also contributed very much to the growth of psycho specially in the field of learning.

1) Skinner bore
2) Behav. can be changed. (Behavioral & other therapies)
3) Contribution: Not Verbal learning
4) Verbal Response - Mand & Tact
5) Contribution in Children's Socialization. (Child process)