

THE COGNITIVE SHIFT

Before discussing the problems that behaviourism has encountered, it's worth summarising the essence of S-R Psychology. Pavlov had demonstrated that, by pairing a **neutral stimulus** with an **unconditioned stimulus**, the neutral stimulus became a **conditioned stimulus** that acquired some of the properties of the unconditioned stimulus. Watson and others developed a theory to explain this in terms of **strengthening an association** between a **stimulus** and a **response**. In **operant conditioning**, Thorndike, Skinner and others had demonstrated the ability of **reinforcement** to change the behaviour of the animal: the effect of the response served to strengthen the link between the stimulus situation and the response that had proved instrumental in obtaining reinforcement. Thus, both classical and operant conditioning were explained in terms of **stimulus-response** learning. However, not everyone agreed with this explanation of learning. Strict behaviourist explanations cannot explain, in a parsimonious way, a number of findings. Most of these findings are discussed in Hayes (1994).

EXAMPLES OF PROBLEMS WITH BEHAVIOURIST ACCOUNT

- in avoidance learning, it is possible that the finding that the animal learns to avoid something unpleasant by producing a particular behaviour could be explained by saying that the animal uses the warning light in these situations as a predictor of the shock. This suggests that the animal expects the shock: cognitive factors such as expectations can explain the behaviour in a much more parsimonious manner.
- Kohler (1925) found that animals have an insight into the nature of problems in a way that trial and error learning cannot explain. He claimed that cognitive factors must be involved in insight learning.
- Tolman (1932) trained rats to run a maze without a reward. He found that latent learning must have occurred and so suggested that animals can learn in the absence of reinforcement. He suggested that the animal develops an internal representation of the maze. He called this mental representation a **cognitive map**.

These findings and a number of other observations led to the “**cognitive shift**” in Behaviourism. This shift represented something of a revolution Psychology. Tolman (1886-1959) was one of the most famous dissenters against the S-R theory of Psychology. He had one foot in the behaviourist camp **and** the other in the cognitive camp. However, Tolman did not want to resort purely to “**mentalism**” even if he did think that cognitive events did matter. He felt, from observing rats running in a maze, that behaviour usually appears to be governed by a **purpose**. Rather than being a simple stereotyped response to a stimulus, behaviour is **directed towards a goal**. He argues that animals act as if they have an **expectancy** of what will be obtained when they reach their goal.

Tolman's approach is characterised by the term “**cognitive**” because it suggests that the animal learns facts (or cognitions) not responses. In Tolman's terms the animal running a maze will form a cognitive map of the maze. This is an internal

representation of the maze store in the brain. This does not suggest that the cognitive capacity of the animals is exactly the same as that of the human; we can never be sure if the animals consciously reason through problems in the way that we do.

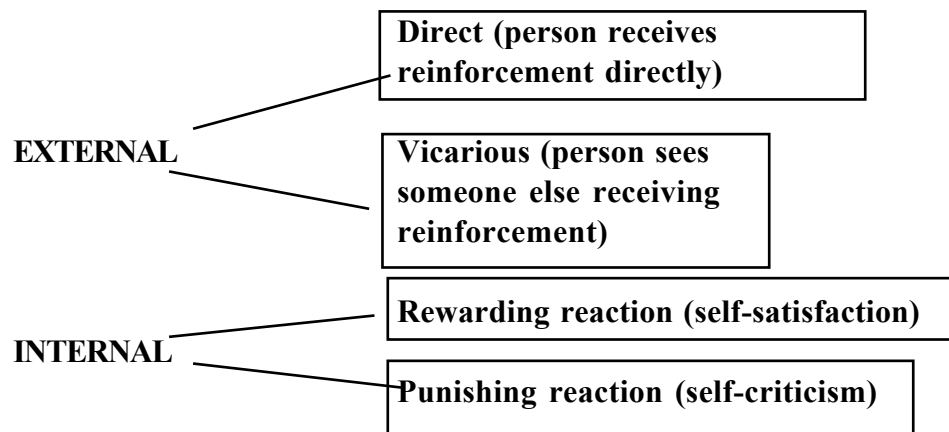
From the later 1960s to the present day there has been a strong shift in favour of the cognitive approach; this has produced a reinterpretation of Classical and Operant conditioning. To summarise this interpretation: a cognitive interpretation of classical conditioning is that the animal constructs an expectancy that presentation of a conditioned stimulus (e.g. bell) will be followed by presentation of an unconditioned stimulus (e.g. food). A cognitive explanation of operant conditioning in the Skinner box is that what the animal learns is an expectancy that the response (e.g. pressing a lever) will produce a given outcome (e.g. the delivery of food). In addition, an animal learns to find its way through a maze because it constructs a cognitive map, not because it learns a string of stimulus-response associations.

Similarly, Social Learning theorists suggest that cognitive variables are crucial. They claim that cognitive factors have a very important role to play in learning. Mischel (1973) describes five kinds of cognitive variables (he called them person variables) that affect learning:

1. **Competencies:** It is very likely that learning will be affected by the skills already possessed.
2. **Cognitive Strategies:** most people have habitual and characteristic ways of memorising things, of attending to things, of perceiving things etc. All these strategies are bound to affect learning.
3. **Expectancies:** in precisely the same way as Tolman and others argued, what we expect to happen as a consequence of our actions is likely to affect learning.
4. **Subjective outcome:** As well as expecting certain consequences, we will have a particular value that we place on these consequences. These values will differ from individual to individual.
5. **Self-regulatory systems and plans:** The notion here is that we all have certain standards and rules that we live by and these will affect the learning process.

In addition, Social Learning theorists suggest that reinforcers are not simply external: you can have internal reinforcers too. They suggest that reinforcement can take two forms, as shown in Figure 1. Learning, therefore, is not simply a case of being influenced by external events, the suggestion is that our learning is strongly influenced by internal events too: cognitive variables do matter.

Figure 1: External and Internal Reinforcement



All of this suggests that S-R is not the whole story: you need to take into account the person in between. In fact, Social Learning theorists suggest that S-O-R is a better way to characterise learning (**S**timulus-**O**rganism-**R**esponse).