Learning objectives

By the end of this lecture you should:

- Be able to assess whether the behaviorist movement represented a Kuhnian revolution
- Have an understanding of the neo-behaviorist and radical behaviorist approach to psychology

The behaviorist approach:

Part 2

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The behaviorist approach and Kuhn’s model of scientific revolution

1. Normal science
2. Anomaly
3. Crisis
4. Revolution

1. Normal science is the stage of ordinary science and progress. Research is determined by the dominant paradigm. This paradigm is accepted by most scientists and there is very little criticism of it. If everyone were critical then no detailed work would get done.

2. The appearance of anomaly occurs when some puzzles are difficult to solve. Normal science assumes that the paradigm can explain the puzzles being worked upon. Observations that are disconfirming are initially rejected. They are either blamed on the scientist (e.g. poor method) or treated as anomalies. It is not culturally acceptable to challenge the paradigm.

3. The presence of anomalous findings provokes a crisis of confidence. The paradigm appears to be weaker. Some researchers begin to work outside the paradigm. We begin to lose faith in it. The crisis becomes more serious if there is a rival paradigm ready to take its place. This rival will probably be very different and incompatible with the existing paradigm. Different questions and puzzles will be regarded as legitimate.

The behaviorist approach and Kuhn’s model of scientific revolution

The 4 stages of scientific revolution:
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2. Anomaly
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4. Revolution

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The behaviorist approach and Kuhn’s model of scientific revolution


4. Revolution. This occurs when people working outside the paradigm become influential. The old paradigm is replaced with the new one. Thus revolution is a consequence of the crisis.

Kuhn suggests that it is similar to a religious conversion. If the scientific community as a whole abandons one paradigm and adopts a new one, then this becomes the norm and we start the cycle once more.

Kuhn suggests that there are 4 questions to pose:

The behaviorist approach: Kuhn’s model of scientific revolution

The 4 questions to pose (Leahey, 1992):

- Was there an old paradigm to be replaced?
- Was there a period of intense struggle?
- Were there anomalies with the current paradigm?
- Was it international?

The behaviorist approach: in relation to Kuhn

Let’s look at this in relation to behaviorism:

Q1: was there an old paradigm to replace?

There are 2 aspects to consider:

(a) Method: there was agreement beforehand that psychology was about the study of consciousness and the method of investigation should be introspection. But there were disagreements about how exactly this could be achieved between Wundt and Titchener. So there was no exact agreement on this.

(b) Theory: there was disagreement about the explanation of research findings as well….

Q1: was there an old paradigm to replace? Continued…

Theory – Titchener believed that sensations had a neural basis but Wundt did not see the need to refer to physiology. Wundt was just interested in mental laws. Thus there wasn’t agreement on theory either.

Beyond agreement on the focus on consciousness, everything else was disputed. So there was not really a paradigm for behaviorism to overthrow.

Question 2: Was there a period of intense struggle leading to a visible break between the old and the new paradigm?

No. The important changes in Psychology occurred before Watson’s manifesto of 1913. The changes also took place gradually and were largely unnoticed. It was a gradual evolution from the study of consciousness to the study of behaviour.

Animal psychology had begun as the study of the mind, but problems. (E.g. do cats display insight when opening doors?)

Similarly in child psychology and clinical psychology introspection was rarely used.

In 1913 Watson did not refer to the term “revolution”.

3. Were there anomalies with the current paradigm?

In other words, was introspection experiencing difficulties?

There were some dissatisfactions with the paradigm, but this did not pre-empt change – it reflected the change taking place in psychology.

There was an “imageless thought” debate leading to arguments about the validity of introspection. But there was a belief that this would eventually be solved.

Behaviorism just stated that imageless thought was no longer a topic for discussion in psychology.

Conclusion: there weren’t really any anomalous findings.
The behaviorist approach: in relation to Kuhn

4. Was the “revolution” international or limited to a just a few countries?

Behaviorism was largely American, so the answer is no.

A revolution: conclusion

It was not a revolution because:
(a) There was no paradigm to overthrow; (b) there was no period of visible crisis or break – change was gradual; (c) change was not in response to anomalous findings; (d) the change was largely in the USA; (e) the so-called “revolution” was really just a recognition that psychology had already changed.

The behaviorist approach: Neo-behaviorism

First stage of behaviourism was 1913-1930
it took over completely and had popular public appeal
Second stage was 1930-1960: ‘neo-behaviorism’
this cemented and advanced Watson’s ideas
They began to consider the organism intervening variables
S-O-R psychology (to be explained)

Remainder of topic
Tolman’s purposive behaviourism
problems with S-O-R accounts
Skinner’s radical behaviourism

The behaviourist approach: Edward Tolman’s (1886-1959) purposive behaviourism

Tolman studied at MIT and then went to Harvard and got a PhD in 1915 and most of his time was spent at the University of California, Berkeley.

Tolman considered himself a behaviorist. But he became dissatisfied with Watson’s behaviorism and developed his own.

He was interested in the idea that the purpose of behaviour can be defined through objective study of behaviour. He thought that all behaviour had purpose. It was oriented to achieving a specific goal. So this put him on the periphery.

Tolman also introduced the notion of intervening variables.
E.g. hunger can be objectively related to the amount of food that a rat has eaten after performing a task. The concept of hunger can be considered to be an intervening variable, which is unobservable, but it can be defined empirically.

So hunger can be an intervening variable between a stimulus and a response. E.g. rat expects food when a light appears so presses a lever more rapidly to get the food. Subsequent observation of food eaten would indicate how hungry it was at the time.

We can make objective statements about internal states.

The behaviourist approach: Edward Tolman’s (1886-1959) purposive behaviourism

Tolman also argued that rats acquire cognitive maps of a maze by exposure to it. For him reinforcement affects motivation and therefore performance, but learning is independent of this.

In one experiment the following apparatus was used.

A was the starting box and B was the goal. A hungry rat learned to run to B very quickly and without hesitation. But what had been learned? That “turning right” led to food? Tolman believed it had developed a cognitive map of the maze and where the place of the reward was located. Once a rat had learned how to run from A to B, it was started at C. The stimulus-response explanation predicted that the rat would turn right and reach D. The cognitive map explanation predicted that the rat would reach the reward in B. The test demonstrated that most of the rats reached B. Tolman concluded that a cognitive map was most likely developed by rats in maze running.
The behaviourist approach: Edward Tolman's (1886-1959) purposive behaviourism

Tolman's "neo-behaviorism" was dominant until the 1960s, but it has been criticised on two counts:

1. As new behaviours can be explained by new mechanisms, it made research findings increasingly complex.
2. Intervening variables (e.g. expectancy, hunger) cannot be observed, only inferred. One can't prove they exist.

Such criticisms led to another branch of behaviorism – Skinner's radical behaviorism...

Skinner's radical behaviorism (Burrhus Frederick Skinner – 1904-1990)

Skinner recalled that he was never physically punished as a child, but he often heard lectures about the horrors of hell and the consequences of social behaviour.

He acquired his PhD in 1931 and in 1936 went to the University of Minnesota. He contributed to war time research and developed his ideas about operant conditioning.

He retired in 1974 after a long career.

Skinner's radical behaviorism (Burrhus Frederick Skinner – 1904-1990)

Skinner was a follower of Watson and placed responsibility for behaviour with the environment. In some ways he went back to the old behaviorism of Watson.

He believed that humans are like a machine: they are like a black box waiting to be conditioned. So he did not wish to speculate what was going on inside the box (i.e. intervening variables, such as cognitive/biological drives).

Skinner's radical behaviorism (Burrhus Frederick Skinner – 1904-1990)

Skinner's focus was the description of data, not the explanation. He believed that we should not try to theorise about what is going on inside the organism. The task is to establish relationships between carefully manipulated stimuli and subsequent behaviour.

He was interested in creating an environment to predict and control people's behaviour. (Remember that was Watson's primary objective as well.)

This could be done via operant conditioning, which differs from Pavlovian conditioning. In classical conditioning the behavioural response (salivation) is elicited by a stimulus (e.g. a bell) and is involuntary. Operant conditioning...

Operant conditioning is based on the idea of reward and punishment. You reward people for actions you want them to perform and punish them for actions you don't want (e.g. don't feed; put in prison). Thus behaviour is shaped.

In his classic experiment he used a Skinner box in which a rat was placed. This rat learned to press a lever to get food. The rat's behaviour was operating in an environment (by ensuring the production of food).

Soon operant conditioning was applied and used for behavioral modification (BM). BM programs have been used in many environments where people want to control behaviour (e.g. prisons, hospitals, schools).

Skinner's radical behaviorism (Burrhus Frederick Skinner – 1904-1990)

Operant conditioning has been applied to a range of spheres. E.g. Low tax is regarded as a positive reinforcer – it reinforces work. In such a situation for every hour you work you will be rewarded by taking home more pay.

Conversely high taxation is a punishment for work. Similarly increasing indirect taxation (VAT) punishes for spending and extra duties on spirits and cigarettes discourages us further.

Finally, there are philosophical difficulties with behaviorism...
The behaviourist approach: Philosophical problems

- Behaviorists asserted that the study of minds isn’t necessary. But we do have minds that engage in thinking.
- We respond to more than just visible observable stimuli. We respond to unobservable stimuli (e.g., to someone who says they are in pain).
- Behaviorists argued that we don’t have free will. Instead our behaviours are responses to stimuli. But we do have (or like to think we have) free will.

The behaviourist approach: A summary

The rise of behaviorism was not a revolution. It was a gradual development that existed before Watson’s 1913 manifesto.

Attempts to make it explain many types of behaviours (e.g., Tolman) served to dilute behaviorism by introducing non-observable (e.g., cognitive) processes.

S-O-R accounts were difficult to verify. Several intervening variables could be proposed.

This led to a reversion to Skinner’s radical behaviorism, but there are several philosophical objections to this.

The behaviorist approach: Part 2

End