**Learning outcome: Evaluate schema theory with reference to research studies**

*Evaluate*: “make an appraisal by weighing up the strengths and limitations of something”

Schema theory

Knowledge stored in our memory is to very great extent organized. There are many theories of knowledge organization, schema theory is just one of them.

Schema theory is used to refer to *a number of interrelated ideas*, proposed over the years by *several theorists* to account for the influence of stored knowledge on current information processing and behaviour.

Bartlett (1932), Rumelhart (1975) and Schank and Abelson (1977) have been main contributors.

According to these theorists…

Schemas:

* Organize information in memory
* They can be activated to increase information processing efficiency
* They enable the generation of expectations about objects, events and people
* They regulate behaviour
* They are very stable and usually very resistant to change

Schemas can also lead to distortions and mistakes when…

* Settings are unfamiliar (and thus require novel approaches)
* The wrong schema is activated

Definition of a schema

* A schema is a cognitive framework for structuring information about the physical world and the events and behaviour occurring within it.
* Knowledge becomes stored within memory in an organized way so that future experiences become perceived in preset ways.

Different terms are often used to refer to schemas relevant to different aspects of our world.

* **Scripts** are schemas which provide information about the sequence of events that occur in a more or less unchanging order in particular contexts such as going to a restaurant, or going to the dentist.
* **Self schemas** organize information we have about ourselves; for example, information stored in our memory about our strengths and weaknesses.
* **Social schemas** (e.g. stereotypes) represent information about groups of people.

How have schemas been studied?

* Serial reproduction-a participant reads a story then writes it down from memory and this version is read by another participant, who writes down what they recall. This version is then read and recalled by a third participant, and so on until 6-7 participants have read and written a version of the story
* Repeated reproduction-the same participant reads and writes down the story from memory 6-7 times with time gaps of between 15 minutes to several years between readings.

Key study: Bartlett 1932. You should have an AMFE written up for this.

In summary, the way the participants recalled the story came under the influence of relevant schematic knowledge in their memory. Such knowledge consisted of schemas acquired in, and reflecting, the participants own culture. Bartlett used the term **rationalization** to refer to the process of making the story conform to the cultural expectations of the participants.

The picture of memory emerging from Bartlett’s work is that of an active reconstructive process, rather than a passive reproductive one.

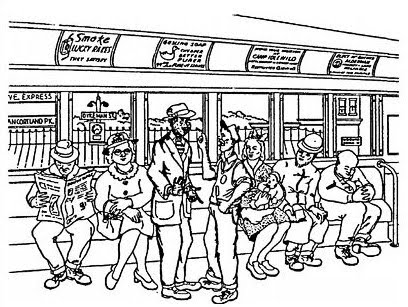
Evaluation: Although Bartlett’s study has been criticized for its lack of control, however, conformation for his major findings has come from several well controlled studies (Eysenck and Keane, 2010).

Supporting Evidence:

Allport and Postman (1947)

Procedure: Showed white participants a picture of two men evidently in an argument. After looking briefly at the picture participants were asked to describe the scene to someone who hadn’t seen it. This person was then required to describe the scene to another person and so on (serial reproduction).

Findings: As the story was reproduced details changed. The most significant change was that the cutthroat razor was reported as being held by the black man. This suggests that the white participants used a schema that included the belief that black men are prone to violence, making them distort or reconstruct the details. This study, like Bartlett’s, suggests that memories are reconstructed to fit personal beliefs about the world.



Bransford and Johnson (1972)

View the following clip:

<http://www.youtube.com/watch?v=mzbRpMlEHzM>

Bartlett argued that schematic influences were exerted mostly during retrieval (recovery from memory) Bransford and Johnson (1972) attempted to identify more precisely the processing stage or stages at which schemas are likely to exert their influence.

Aim: Do schema’s influence the encoding of information?

Procedure: There were 3 conditions. One third of participants were simply read a passage of text. Another third were given the schema “washing clothes” BEFORE being read the passage of text. Another third were given the schema “washing clothes” AFTER being read the passage of text.

Findings: Participants who were not given a schema had the lowest recall closely followed by the schema after group. The schema before group were able to recall the most information. This shows that schema’s do influence the way that information is understood and encoded. The participants must have had a schema for doing laundry already present and used this to interpret the new information. Schemas are great facilitators in the comprehension and memorization of information.

Anderson and Pichert (1978)

Aim: Does schema processing influence retrieval?

Method: Participants were read a story about two boys who stayed away from school one day and went to one boy’s house. The story mentioned 72 points which included details about the house and objects found in the house. These points had previously been rated by people for their importance to a house buyer or burglar.

Condition 1:

Participants were asked to read the story from the point of view of a house buyer.

Condition 2:

Participants were asked to read the story from the point of view of a burglar.

After participants read the story they carried out a distracting task for 12 mins. They were then asked to recall the story. Participants remembered details that fitted their schema, for example those with the burglar’s perspective recalled that the house contained valuable items, but didn’t recall that the house was musty with a leaky roof. Those with the house buyer’s perspective did recall this, but not the valuable items.

After another 5 min delay half of the participants from each condition were given the “opposite” schema. The other half were reminded of the same schema. They were all then asked to recall the story again.

Findings: Changed schema group recalled 7% more points on 2nd recall test. A number of points (10%) were due to the new schema. The recall of points important to the original schema declined. This provides evidence for the importance of schemas at the retrieval stage i.e. we require a schema to access certain information. The study also shows that people did actually encode information, which was irrelevant to their original schema. In summary, schemas are important during encoding and retrieval.

Evaluation:

+ Highly controlled and conducted in a laboratory. Allowed researchers to establish a cause and effect relationship on how schemas affect different memory processes.

- Issues of ecological validity.

- Not a real life event.

Evaluating schema theory

+ A lot of research has supported the idea that schemas affect cognitive processes such as memory. Specifically in the encoding and retrieval of information.

+ Schema theory has also contributed to our understanding of social cognition, specifically the formation of schemas containing negative stereotypes of people that can lead to prejudice. This understanding is important in devising ways to reduce socially harmful prejudices.

+ Schema theory offers a plausible explanation for the reconstructive, and often distorting, effects previous knowledge can have on memory.

- It is not entirely clear how schemas are acquired in the first place and how they actually influence cognitive processes. Schemas are not of course directly observable; they can only be inferred from behavioural evidence.

- Schema theory may focus too much on the inaccuracies of memory.