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Working Memory Model

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by Baddeley and Hitch

The working memory model was proposed by Alan Baddeley and Graham Hitch in 1974. They had studied the 1968 Atkinson-Shiffrin model in 1968 and believed that the model's short term memory (STM) store lacked detail.

Their model consisted of three main sections with a fourth added in 2000 by Baddeley:

Supervisory System:

- Central Executive

Slave Systems:

- The Phonological Loop (e.g. language)
- The Visuo-Spatial Sketchpad (visual semantics)
- Episodic Buffer (2000) (short term episodic memory)

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Central Executive

According to their working memory model, the central executive was the most important part

of the working memory because it was in complete control of the actions of the other components. The central executive has the ability to store information but its capacity is limited. It is deemed to be something of a supervisory system that becomes involved when cognitive processes go astray.

The Phonological Loop

This contains the **articulatory control system** (inner voice) and the **phonological store** (inner ear) - (not the physical ear canals). The articulatory control system revives memory traces with all auditory information believed to directly enter the phonological store. This stores information via a code based on sound but it decays within two seconds. This store's input comes from long-term memory [1] (LTM) or the ears. An example of this involves people who hear their favorite music in their mind.

The Visuo-Spatial Sketchpad

This is believed to hold visual information. The eyes are used to store and manipulate visual and spatial information such as remembering colors or shapes.

Episodic Buffer

26 years after the original working memory model, Baddeley added this third slave system. The point of the episodic buffer is to link together every piece of information from all other elements of working memory with further information relating to time and order. This process enables memories to be prepared for episodic LTM storage.

Strengths

This working memory model seems perfectly realistic because it ties in with the manipulation of information when problems are encountered and solved. It seems more plausible than the Atkinson-Shiffrin model which claims STM is a static store. Baddeley and Hitch's model shows STM to be a dynamic process. In a 1997 piece, Baddeley stated that mentally counting the windows on a house is an example of the working memory model in action.

This process begins with a visualization of every window which corresponds with the Visuo-Spatial Sketchpad of the model. The counting of each window brings the Phonological Loop into play while the Central Executive coordinates all of this activity.

Weaknesses

The primary part of the working memory model is the Central Executive which is still not clearly explained nor understood. Its functions are unclear and extremely difficult to test. Baddeley states that the Central Executive only has a limited capacity but at present, there seems to be no way to separate it to find out conclusively. He also claims that it is possible to divide the Central Executive into smaller systems but has thus far failed to positively do so.

The Episodic Buffer which was brought into the equation remains a mystery to researchers in terms of how it binds together information from the model's other parts and LTM.

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Links

[1] <https://explorable.com/long-term-memory>