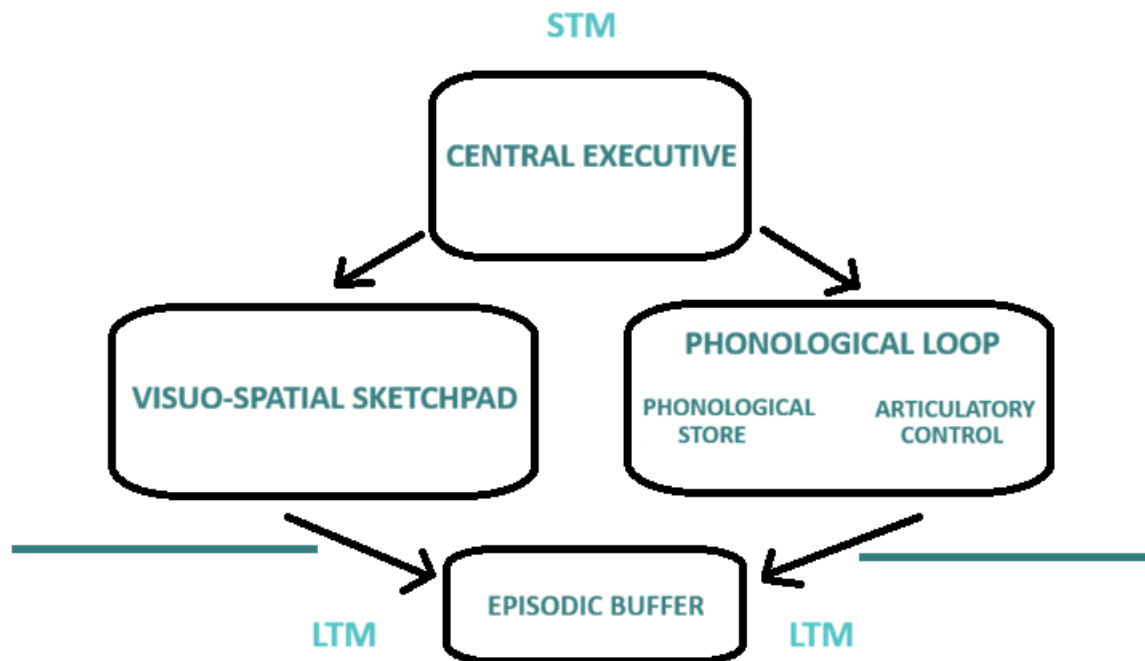


# WORKING MEMORY MODEL



Baddeley and Hitch (1974) devised the Working Memory Model (WMM) to try and explain how information is processed in short-term memory. They initially suggested there were three main components that processed and stored information –

- Central Executive
- Visuo-spatial Sketchpad
- Phonological Loop

They later amended the model (yr 2000) to include the Episodic Buffer, as a way of explaining how information is transferred to and from long-term memory. This model has been developed to directly challenge the concept of a single unitary store for short-term memories.

## Description

The most important component is the central executive as it is involved in problem solving/decision-making. It also controls attention and plays a major role in planning and synthesising information. It is flexible and can process information from any sensory modality, although it does have a limited storage capacity and so can only attend to a limited number of things at one time. The role of the central executive is to pass the information to the relevant sub-system for active processing.

Another component is the phonological loop which stores a limited number of speech-based (verbal) sounds for brief periods of time. It is thought to consist of two components - the phonological store (inner ear) that allows acoustically coded items to be stored for a short period and the articulatory control process (the inner voice) that allows sub-vocal repetition of the items stored in the phonological store.

Another component is the visuo-spatial sketchpad which stores visual and spatial information and can be thought of as an inner eye. It is responsible for setting up and manipulating mental images. Like the phonological loop, it has limited capacity, but the limits of the two systems are independent. Therefore, it is possible, for example, to rehearse a set of digits in the phonological loop while simultaneously making decisions about the spatial layout of a set of letters in the visual spatial sketchpad.

The episodic buffer is responsible for integrating and manipulating material, yet it has limited capacity and depends heavily on executive processing. It binds together information from different sources into smaller, more manageable chunks or episodes, hence the term 'episodic'. One of its important functions is to recall material from LTM and integrate it into STM when working memory requires it.

## **Evaluation**

The WMM provides an explanation for dual tasks/ processing. Baddeley (1975) offered support for the WMM using dual task experiments, showing when both tasks are visual or both are verbal, performance declines.

However, much of the supporting research is lab based, whilst this in itself is not a problem, there is the issue of a lack of ecological validity, especially when in artificial settings. Nevertheless, most memory research is easier to conduct under controlled conditions in the laboratory, making it more replicable and therefore reliable.

Shallice & Warrington (1970) reported a case study to support the WMM. Brain-damaged patient K.F could recall visual but not verbal information immediately after its presentation. This shows that the two sub-systems are working independently of each other.

The WMM has been criticised for being too simplistic and vague, e.g. it is unclear what the central executive is, or its exact role in attention is. There is also no way of testing its function experimentally, like we can with the other components.

Despite the limitations there is no better model of memory which explains the active processing of short-term memory.

