Baddeley et al. responded to criticism about not addressing chunking and interaction with LTM by introducing the **Episodic Buffer.**

This has a span of around 4 chunks. Is consciously accessible and enables a person to manipulate and create new representations.

Making it the multi-component model of working memory.

EPISODIC BUFFER: DONT FORGET

Norman & Shallice (1986) propose that it is comprised of two systems; **semi-automatic/habit** (driving a car) and **supervisory attentional system** (e.g. when a novel event occurs). Examples of dysexecutive syndrome (such as the multiple errands task by Shallice & Burgess) show people without SAS but capable of habit.

Central Executive
It's role is to focus attention and to switch attention between tasks. It controls actions and **connects WM with LTM.**

Working memory is a mental workspace that allows for manipulation, reasoning and comprehension of information. Whereas short term memory is just a simple store.

EVIDENCE

Shepard & Metzler (1971) asked participants to mentally rotate images in their head to see if shapes were same of different. Results showed a directly linear relationship between time taken to rotate the image and the degree of rotation. Suggesting that people use mental imagery and manipulate these in accordance to how they would in the real world.

Corsi-Span Tasks assess the 'spatial' nature of the sketchpad, where participants are required to tap a series of pegs, imitating the experimenter. Visual interference does not limit performance whereas spatial interference does (Della Salla 1999)

Visual Pattern Span participants are presented with a series of matrices in which half the cells are filled. The pattern is removed and the subject is required to mark the filled cells. Spatial interference does not impair people's recall, but visual interference does.

Visuospatial Sketchpad
Construction, maintenance and manipulation of mental images. Also with a limited capacity.

Working Memory

Three Component Model of Working Memory: Baddeley & Hitch (1974)

Baddeley defines working memory as "a system that facilitates cognitive activities such as learning, reasoning and comprehension".

The Phonological Loop

This provides a model of verbal short term memory. It is divided in to a **phonological store** which holds memory traces for several seconds before decay and **articulatory rehearsal process** which is analogous to subvocal speech and allows for retrieval and re-articulation of memory traces.

Like the sketch pad, it has a limited span.

Auditory input enters the phonological store and either goes to output buffer or gets rehearsed. **Visual information** can be recoded verbally to gain access to the phonological store via rehearsal (explains primacy effects).

EVIDENCE

Phonological Similarity Effect (Baddeley, 1966)
Memory is worse for items that sound alike than for items that differ. Those participants asked to rehearse similar items together (man, cap etc.) recalled least, suggesting that auditory speech feeds in to the phonological loop and due to their similarity, become confused in the phonological store.

Articulatory Suppression (Baddeley et al, 1986) blocking subvocal speech by repeatedly saying something irrelevant. Baddeley et al. presented lists either visually or spoken and they either had similar or dissimilar sounds. Participants either used or didnt use articulatory suppression. There was no similarity effect during suppression for **visually listed items** because they do not have immediate access to the phonological store. However, phonologically listed items showed a similarity effect because they have access to the store (which gets similar sounds confused).

Irrelevant Speech Effect (Baddeley et al. 1989)
Phonological less efficient when irrelevant speech is in the background, even with language not understood and non-speech sounds. Baddeley tested this by getting participants to retain information in silence, to instrumental music or to vocal music. Memory was worse for vocal, followed by instrumental. **Vocals interfered with the phonological loop.**