

Cognitive Seminar: Working Memory (WM).

This seminar will help you to understand the idea behind working memory as a concept. You will design a dual task experiment to help demonstrate how WM is made up of more than one component.

Read the excerpt below to make sure you understand why Baddeley and Hitch needed to create a model of working memory that included the phonological loop and the visuospatial sketchpad:

Baddeley and Hitch (1974) set out to test the hypothesis that the short-term store also functioned as a working memory. They did so by requiring participants to perform reasoning, comprehension or learning tasks at the same time as they were holding in STM between 0 and 8 digits for immediate recall. If STM does function as a working memory, then loading it to capacity should lead to massive disruption of cognitive processing. It did indeed cause some disruption, with time to perform a reasoning task increasing with load, but the effect was not huge, and there was no influence on error rate. Baddeley and Hitch (1974) therefore abandoned the modal model, according to which STM is a unitary store, proposing instead a multicomponent model assumes an attentional controller, the central executive aided by two subsystems, the visuo-spatial sketchpad concerned with visual storage and processing, and its acoustic/verbal equivalent, the phonological loop.(scholarpedia.org).

Your task:

Using this principal of loading components of WM to measure the costs in performance - design an experiment to test whether the visuospatial sketchpad and phonological loop are separate components.

If you load one system to capacity - you should see massive deficits in that system (i.e., 2 visuospatial tasks should result in poorer performance on the primary visuospatial task, than performing 1 visuospatial task and a verbal task).

Follow this model:

Group 1:

1. Use the digit span as your baseline measure.
2. Suppress (delay) performance/response with another verbal/phonological task
3. Suppress (delay) performance with a visuospatial task.

Group 2:

1. Use the blocks task as your baseline measure.
2. Suppress (delay) performance/response with another visuospatial task
3. Suppress (delay) performance with a verbal/phonological task.

The tasks used to delay performance (sometimes called secondary tasks) should be of a similar level of difficulty and should take the same amount of time.

Complete the following questions:

- A. What is/are your dependent variables (what are you measuring)?
- B. Clearly explain your conditions (IVs) and give an explanation for choosing them.
- C. What results do you predict in each condition? Why? Draw a rough graph of your results.