

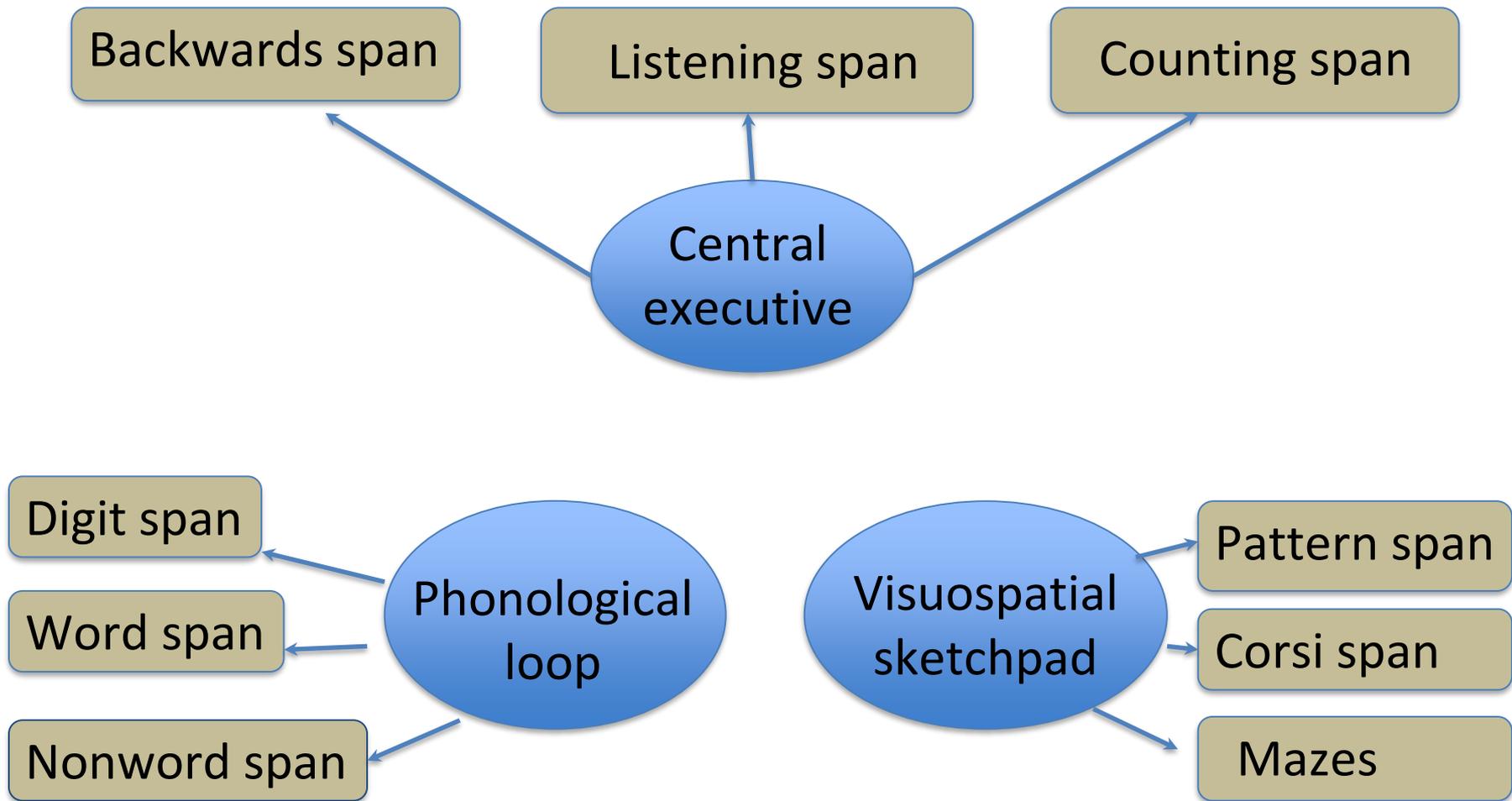
# Assessment of Working Memory – based on “Alan Baddeley’s model”

Timo Ahonen  
Emeritus Professor  
University of Jyväskylä, Finland

# How is Working Memory Measured

- There is different kinds of “psychological tests” or “assessment tools” for assessing the components of the working memory systems (phonological loop, visuospatial sketchpad, central executive etc.)
- Many psychological test batteries include tests of these components

# Measures of working memory in children



# 1. Phonological loop

- Memory “span tests” - asking participants to recall lists of words, letters or digits
- These simple task are the most often used measures of phonological working memory
- Span means that the number of items to be remembered is gradually growing (2-1, 1-5-3, 3-5-8-2...) we like to know the longest list the child can repeat correctly
- Span tests measure reflect also verbal rehearsal strategies in children over 7-years, when children are developmentally ready to do that

# To remember when you assess memory span

- Does the child have hearing impairment?
- Was the child paying attention when the memory task was presented?
- Can the child recall the information verbally or do they have difficulties with spoken output (speech production, articulation problems)?
- Is the child able to use additional strategies than verbal rehearsal such as chunking items together?

# Nonword repetition

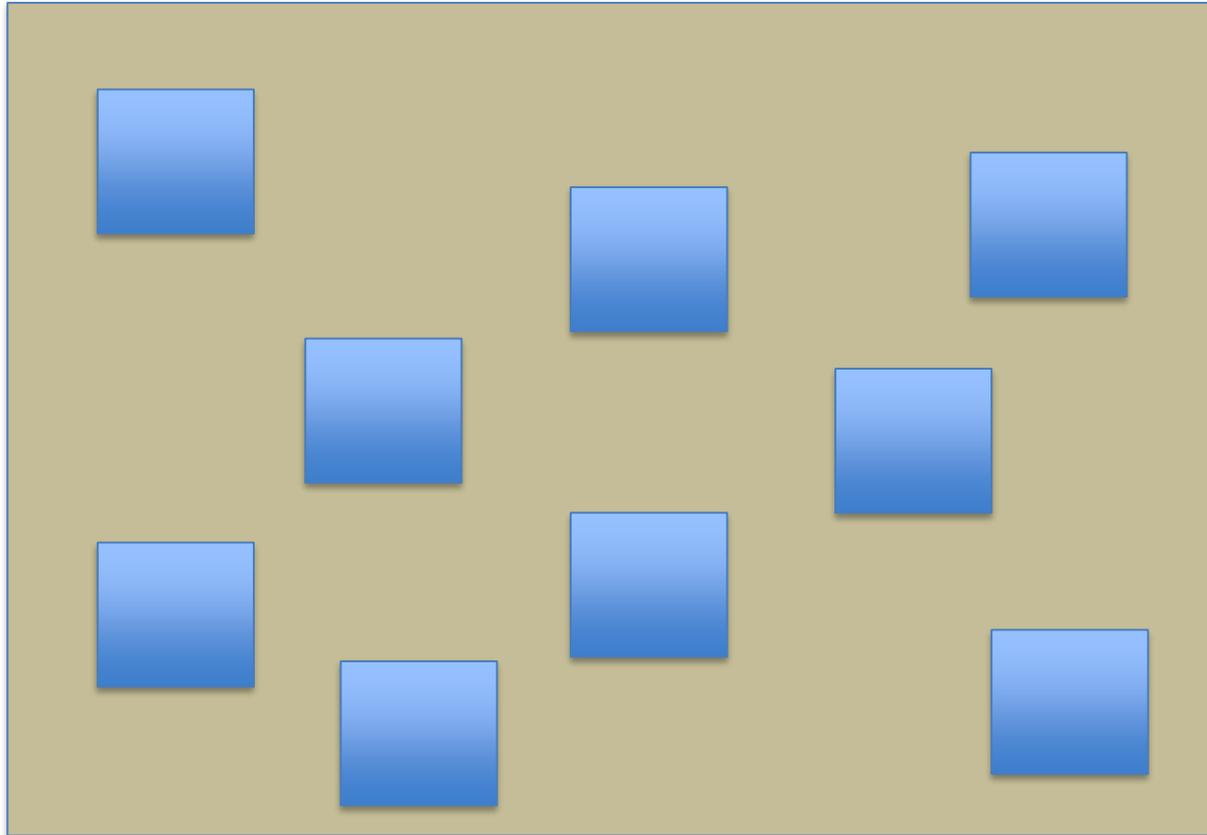
- **The basic idea:** asking the child to repeat complex series of sounds (that do not correspond to real word) measures how accurately the child can store unfamiliar sound sequences
- these tasks are very helpful in identifying children with specific language impairment
- Children who are good in nonword repetition are likely to have good vocabularies and they are good in learning new words
- In these tasks child cannot use the pack-up of long term memory, because these “words” do not have representations there

## 2. The visuospatial sketchpad

- Spatial short -term memory e.g. “Block tapping task” (Corsi test). The child is repeating the sequence of blocks tapped by the adult. First two blocks, then three, four etc.

How long sequences the child is able to repeat in correct order ?

# Corsi Block Task



- Visual short-term memory e.g. memory for visual details, child sees two pictures first one then another – were these pictures similar or different?

# 3.The central executive

- All tests of executive control or executive functioning should include 1. novelty, 2. complexity, 3. need to integrate information.
- They should not be routine everyday tasks where you need new schema, new strategies and constant monitoring
- E.g. Listening span test:

Trees are covered in LEAVES..... “True”

People live in a NEST..... “False”

Recall.....LEAVES, NEST

# Trail making test

- The child draws the line from 1 to A, from 2 to B, from 3 to C etc
- Combining the alphabet and number lists

# Trail making Test

B

D

2

4

3

1

A

C

# Other examples

- Tower of Hanoi, or London
- Fluency tasks (e.g. how many animals you can remember in one minute?)
- Inhibition tasks (if I show you my finger, you will show me your fist; when I show you my fist you will show me your finger) – the child has to do the opposition – it needs inhibition

# 4. The episodic buffer

- E.g. “Paired recall” The child tries to learn associations between pairs of words:

Dog –table

Car – garage

Swing –lamp

Clock – time

The child hears the pairs, after that the first words of the pairs and tries to remember the second