



Katedra psychologie

MEMORY

Jiří Lukavský

Memory process - stages



Failures possible on multiple levels

Storage

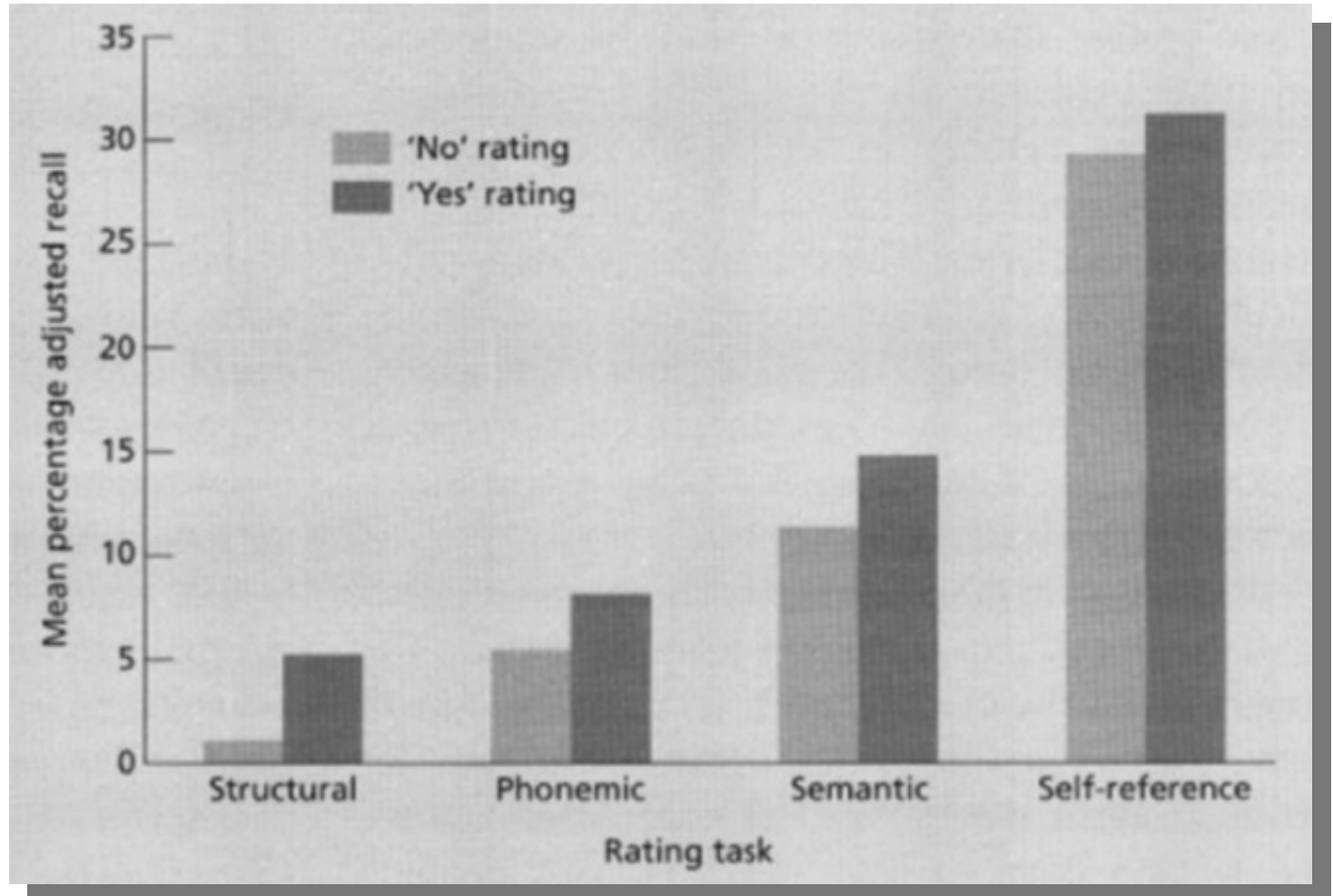
- Automatic
 - Intentional
- Encoding types
 - Semantic
 - W.Bousfield (1935)
 - Visual
 - imagination, imaginability (Paivio, 80')
 - Acoustic

Storage

- Levels of processing
 - Craik & Lockhart (72, 90)
 - rehearsal
 - elaborative rehearsal
 - př. Hyde & Jenkins (73)
- Self-reference effect
 - Rogers et al. (77)

Self-reference effect

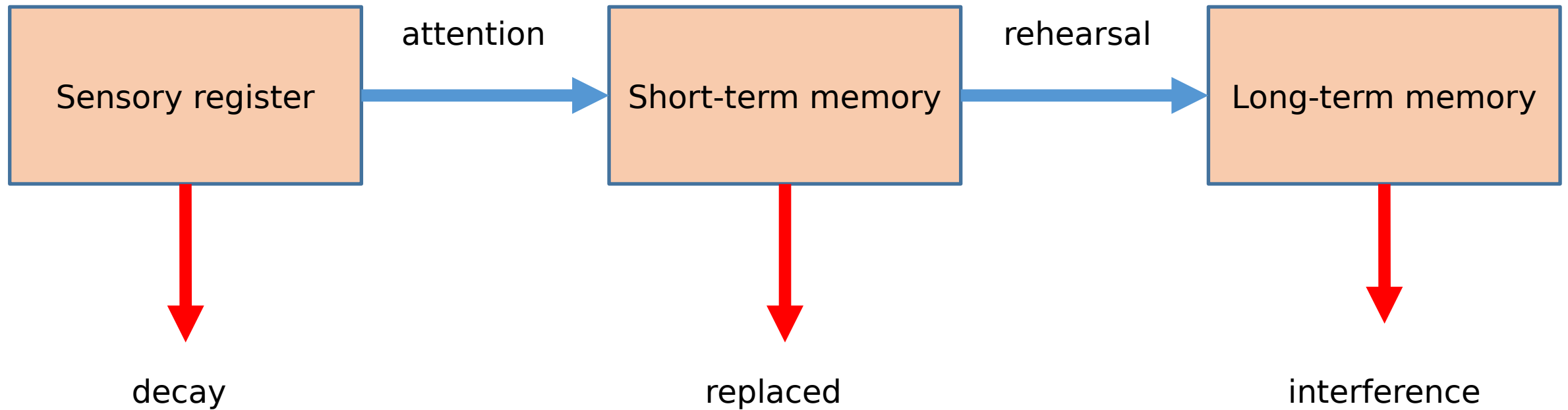
- Rogers et al. (77)
- List of adjectives
 - Contains letter X
 - Rhymes with X
 - Means the same as X
 - Describes you



Memory models

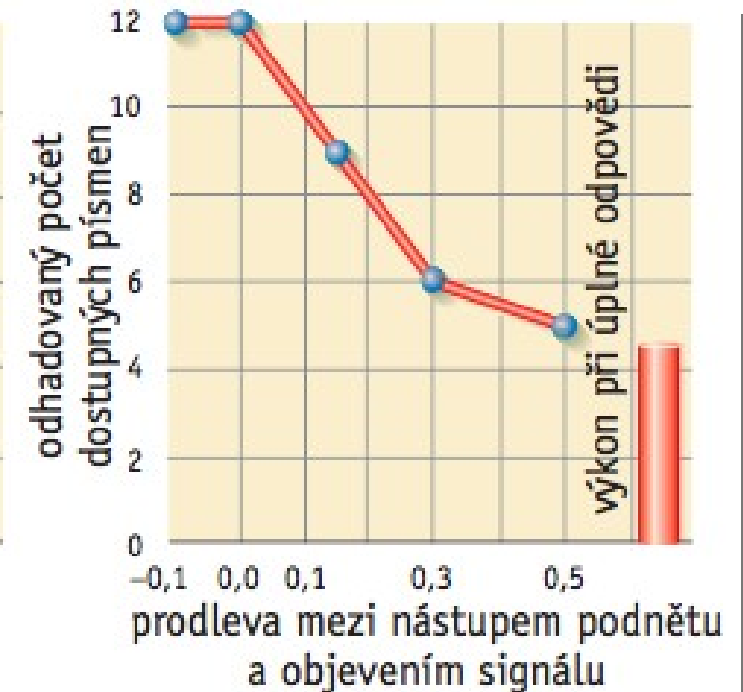
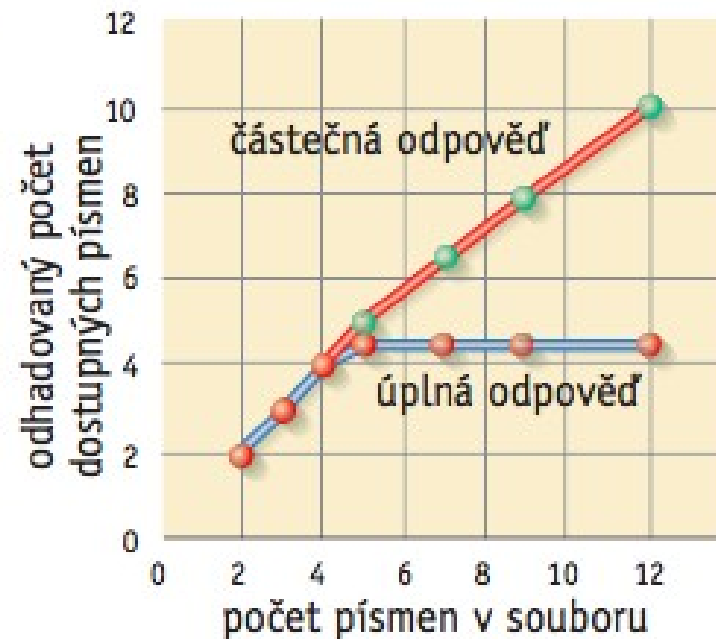
- Atkinson & Shiffrin (68)
- Baddeley

Atkinson & Shiffrin (68)



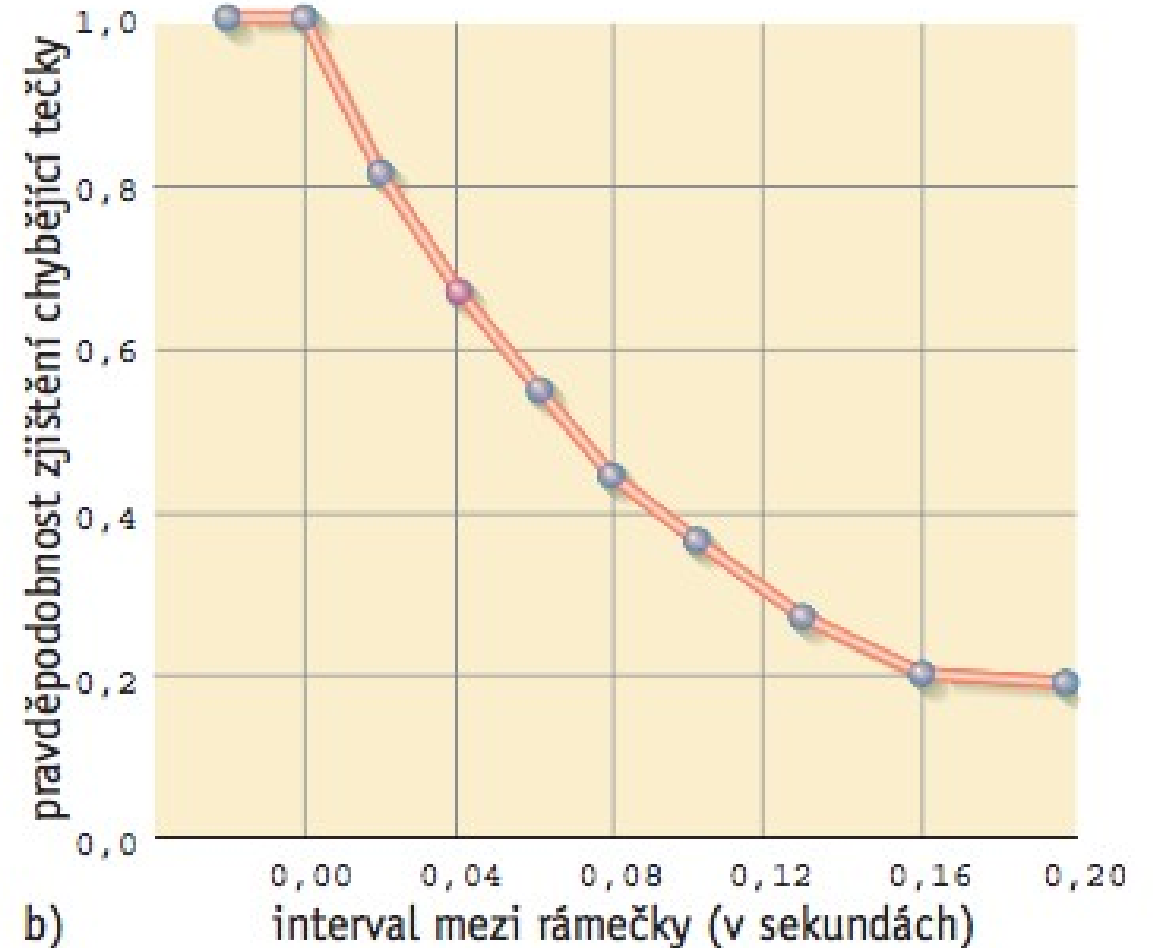
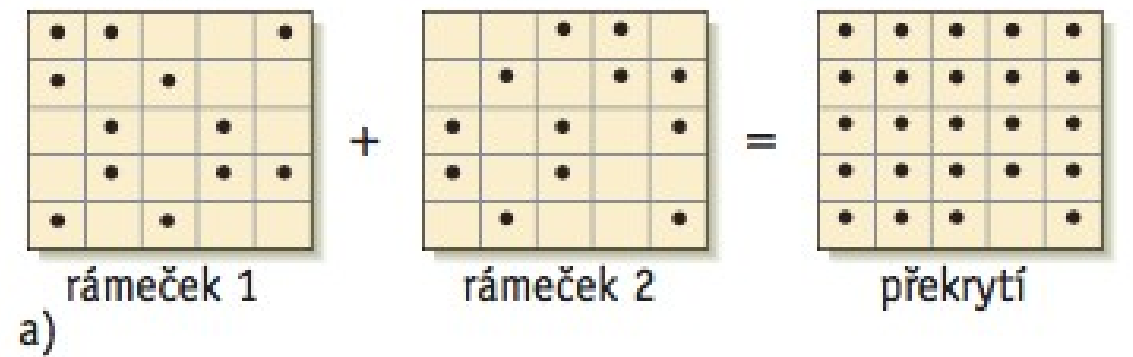
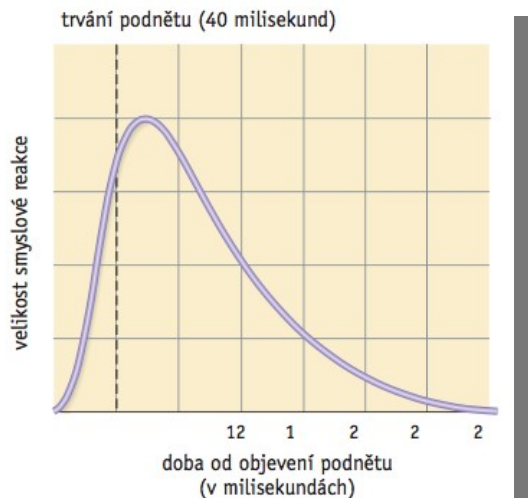
Sensory register

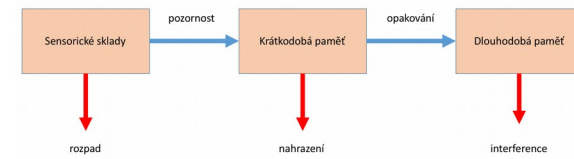
- Specific for sight, hearing, ...
- Iconic memory
 - Sperling (60)
- Echoic memory



Sensory register

- Di Lollo (80, 01)
- Busey & Loftus (94)
 - Sensory response
 - Information processing

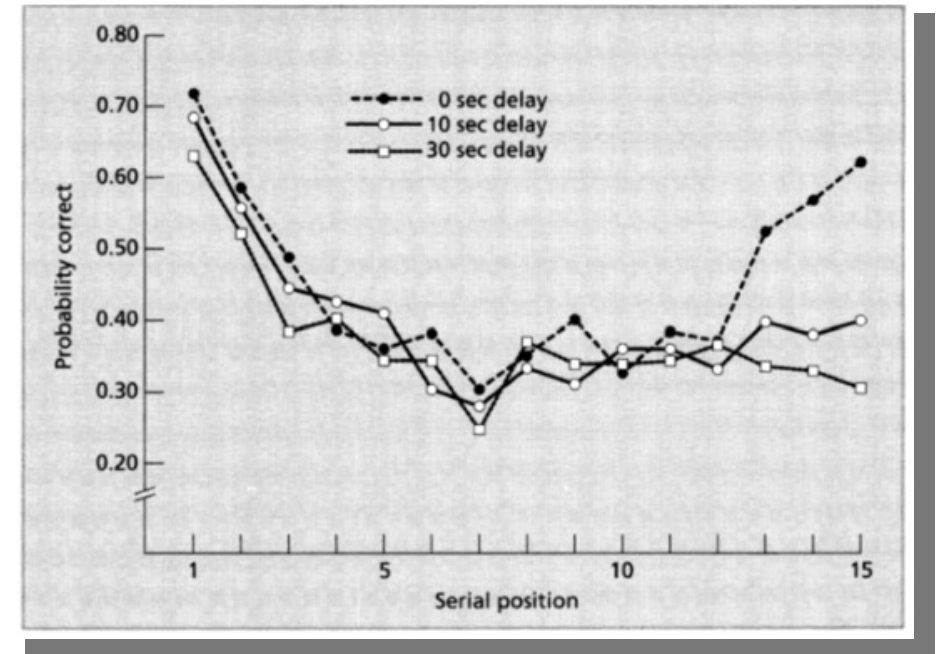




Short-term & long-term memory

- W.James
 - primary
 - secondary
- Double dissociation of LTM/STM in patient
- Short-term memory
 - Limited capacity
 - Volatility of content

- Capacity (memory span)
 - Chunks - Miller (7 ± 2), but Simon (74)
 - Recency effect

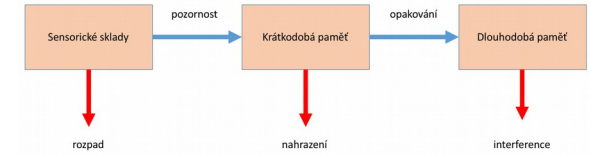


Double dissociation

- vs single dissociation

	Process A	Process B
Region 1	Deficit	No Deficit
Region 2	No Deficit	Deficit

Summary - Atkinson & Shiffrin (68)

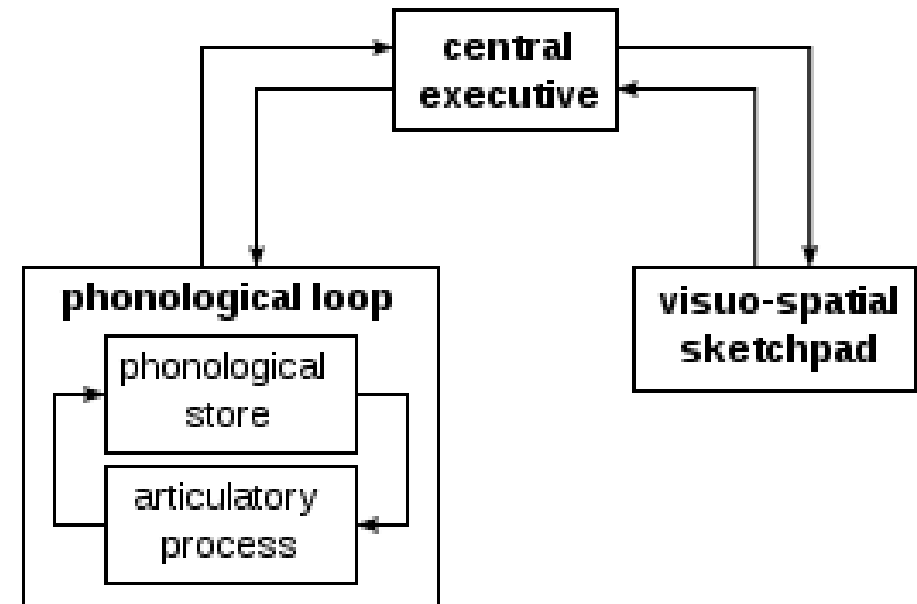
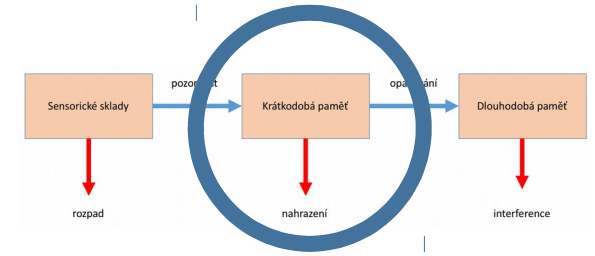


- Storage types with different properties
 - Duration
 - Capacity
 - Forgetting mechanism
 - Brain injury effects

- Limitations
 - Are STM/LTM independent on modality?
 - LTM can contain different kinds of information (semantic, episodic)
 - LTM involved in analysis?

Working memory

- Baddeley & Hitch (74)
- Phonological loop
- Visuo-spatial scratchpad
- Central executive
- Episodic buffer

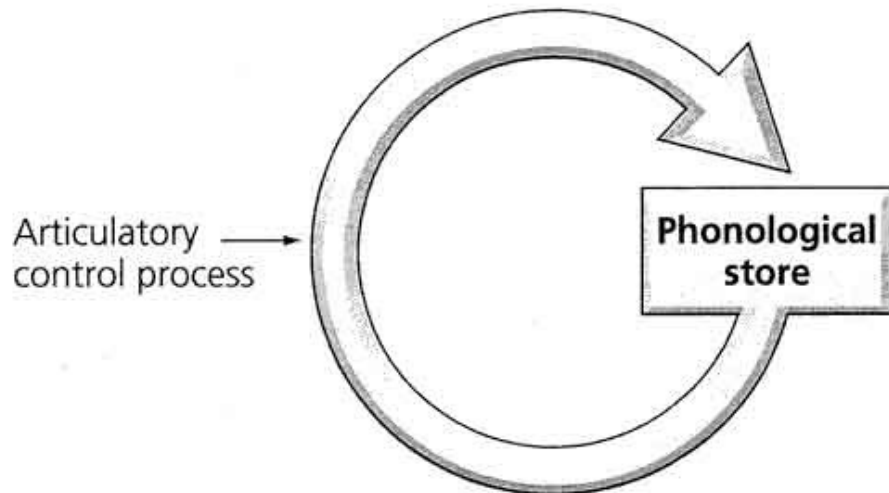


Central executive

- Attention and action control
 - Selective attention, ignoring, transfer, distribution
 - Connected with LTM, activating content
 - Communication between systems, coordination in dual-tasks
 - Selecting strategies
- Director metaphor

Phonological loop

- Phonological store
 - Words spoken, 1-2s
- Articulatory process
 - Rehearsal
 - Written speech to sound
- Word length effect



Visuo-spatial scratchpad

- Spatial relations between objects
- Information from LTM
- Logie (95)
 - Visual cache
 - Inner scribe

Tasks and interference

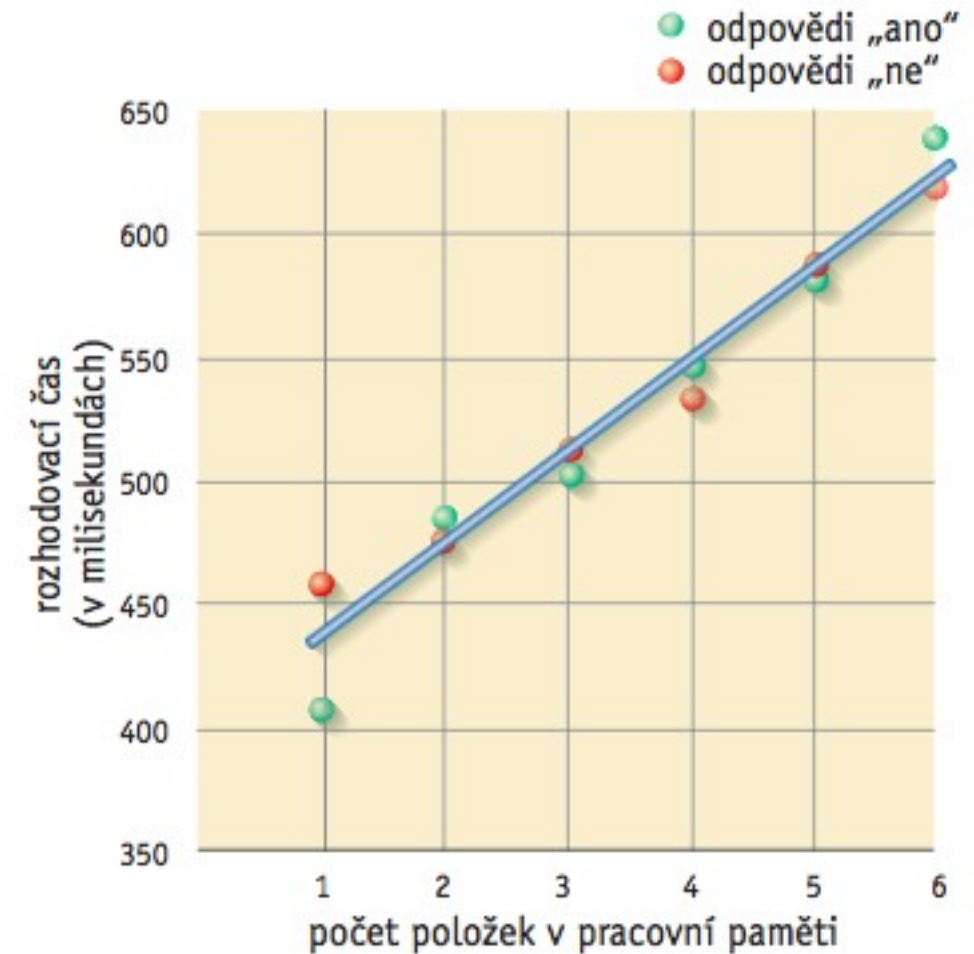
- Generating random numbers
- Pressing keys clockwise
- Repeating words
- Repeating tapping

Episodic buffer

- Baddeley (2000)
- Getting information from scratchpad, loop, perception
- Connected to executive
- Stores temporary information from different modalities, makes groups
- Base for conscious experience

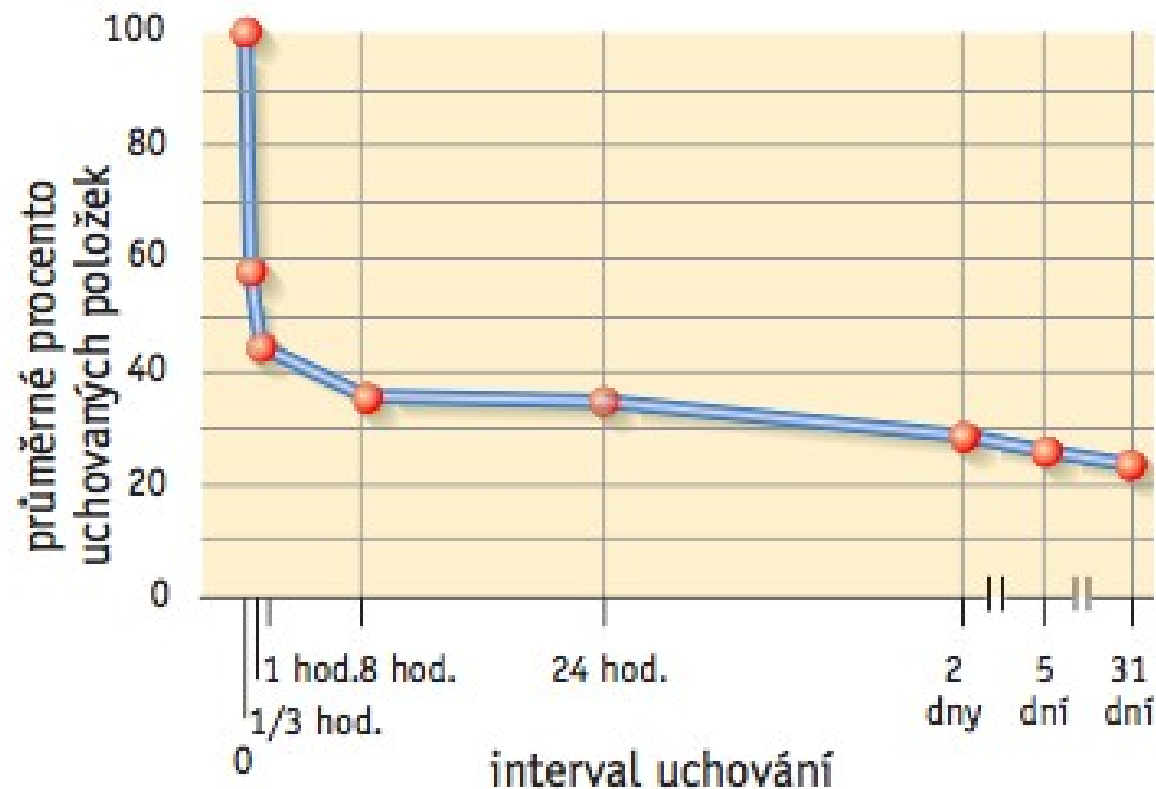
Retrieval

- Retrieval as STM search (Sternberg, 1966)
- Retrieval from LTM
 - Possible failures
 - Recognition vs Recall difference
 - Interference (retroactive, proactive)
 - Search vs spreading activation



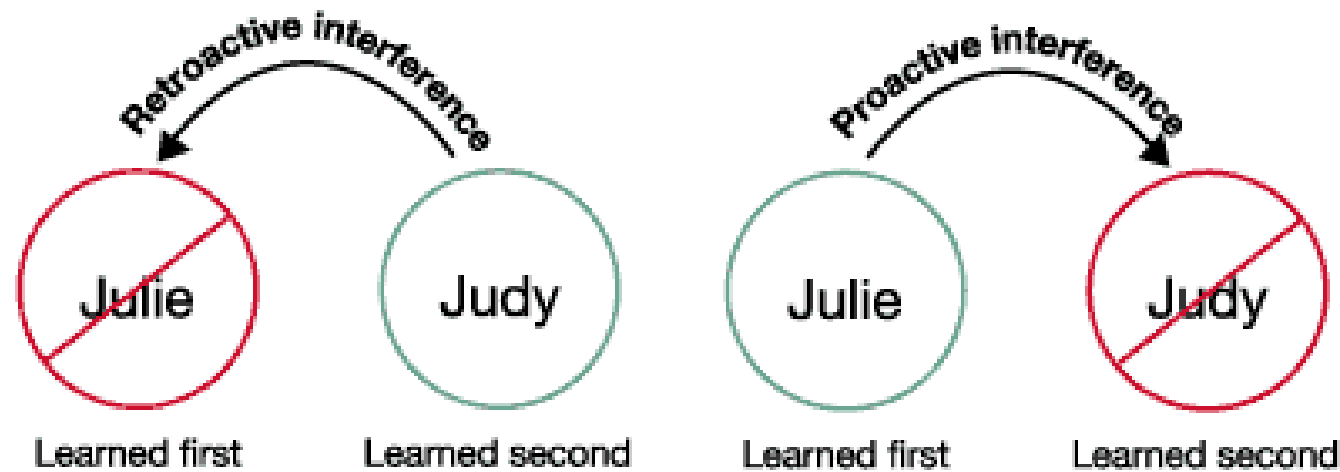
Forgetting

- Forgetting curve (Ebbinghaus, 1885)
- Theories
 - Memory trace decay
 - Forgetting for efficiency
 - Interference
 - Repression (Freud)
 - Cues lost (e.g. tip-of-tongue effect)



Interference

- Retroactive
 - Can recall NEW, but not OLD
- Proactive
 - Can recall OLD, but not new
- Mnemotechnic P.O.R.N.
 - **P**roactive “**O**ld blocks new” **R**etroactive “**N**ew blocks old”



Memory systems

Explicit memory (declarative)

- Semantic
- Episodic

Implicit memory

- Procedural
- Priming, conditioning

Semantic memory

- Knowledge about words and concepts
- Without source reference
- Related
 - Mental representation
 - Concept organisation theories (Collins & Quillian, 1969, Collins & Loftus, 1975)

Episodic memory

- Tulving (1972)
- Events from personal life, happened 1x
- Information about time/place
- Visual quality in memories
- Autobiographic memory
- Prospective memory - planning

Autobiographic memory

- Diary studies
- Case study - John Dean
 - Neisser, 1981
- Flash-bulb memories
- Eyewitness testimonies (E.Loftus)



Procedural memory

- Skill acquisition
 - Motor
 - Perceptual-cognitive

Priming

- exposure to one stimulus influences a response to a subsequent stimulus, without conscious guidance or intention
- Different types
 - Word completion (STR__)

Amnesia

retrograde

- Semantic/episodic memory affected
- Procedural usually retained

anterograde

- Semantic/episodic memory affected
- Procedural usually retained
- Patient H.M.
 - (Suzanne Corkin)

Resources

- Kognitivní psychologie (Eysenck) - 6. kapitola/Paměť: struktura a procesy
- Psychologie Atkinsonové a Hilgarda - 8. kapitola Paměť