Sensory and working memory

Memory

- Stores representations
  - Some long-term, some short-term
  - Sometimes different kinds
- There are several memory systems
  - Sensory memory
    - Iconic (visual), echoic (auditory)
  - Working/short-term memory
  - Long-term memory

Sensory memory

- Items in iconic memory last about a second before decaying
- Not long enough to precisely count more than about 4

Sensory memory

- Items in sensory memory are not yet recognized
- Have to attend to an object to recognize it

Primary visual cortex

(Tootell et al., 1982)

- Stimulus presented to monkey
- Retinotopic representation in (half of) primary visual cortex

Forgetting in sensory memory

- Representations fade (decay) on their own, but can also get overwritten (masked)
The modal model

Free recall
- You'll see 15 words in a row
- Afterwards, write them down, in any order

Serial position curve
(Fig 5.2, Glanzer & Cunitz, 1966)

Serial position curve
- Assumptions:
  - Primacy items are stored in LTM
  - Recency items are in WM
- Decay during a filled delay interval

Verbal WM capacity
- A rule of thumb: $7 \pm 2$ chunks
- Two-second rule:
  - WM holds about as many items as you can say (to yourself) in 2 sec

Working memory model

[Words]
group
night
thing
boy
time
book
face
play
door
car
place
tree
road
dog
school
Chunking

Chunking: Replace several items with one idea
You have to know that idea
The more you know, the easier it is to remember

Exam

• Three short-answer questions
  – Modal model (Fig. 5.1)
  – Draw corner of impossible triangle
  – Karpicke and Roediger (2008)

Exam

• Study guide for multiple-choice questions posted on course web page
  – www.msu.edu/~ema
  – Guide is partial: there will be a few other questions, from the assigned readings or class

Exam

• Guest lectures (1/11, 1/13, 1/20):
  – Be able to link general topic to lecturer
• Not on exam:
  – Details of Fig. 2.2
  – Details of Fig. 2.8, associated text on p. 48