Content list

THE ATTENDING BRAIN

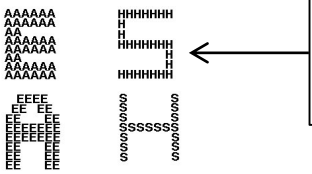
Chapter 7

Attention

- The process by which certain information is selected for further processing and other information is discarded
- Needed to avoid sensory overload
- Determines what is processed and what is attended to
- Limited capacity as it requires withdrawal from some things in order to deal effectively with others

Selection

- There is a relationship between where cells respond to visual information in V1 and where the stimuli is in space
- Selection of things tend to be based on spatial location
- Selection is based on objects, and our selection of objects is biased
  - E.g. see big letters first and faster, which is a bias for global selection
  - Also biased toward faces



E.g. 'S' is the global letter, 'H' is the local letter

Orientation

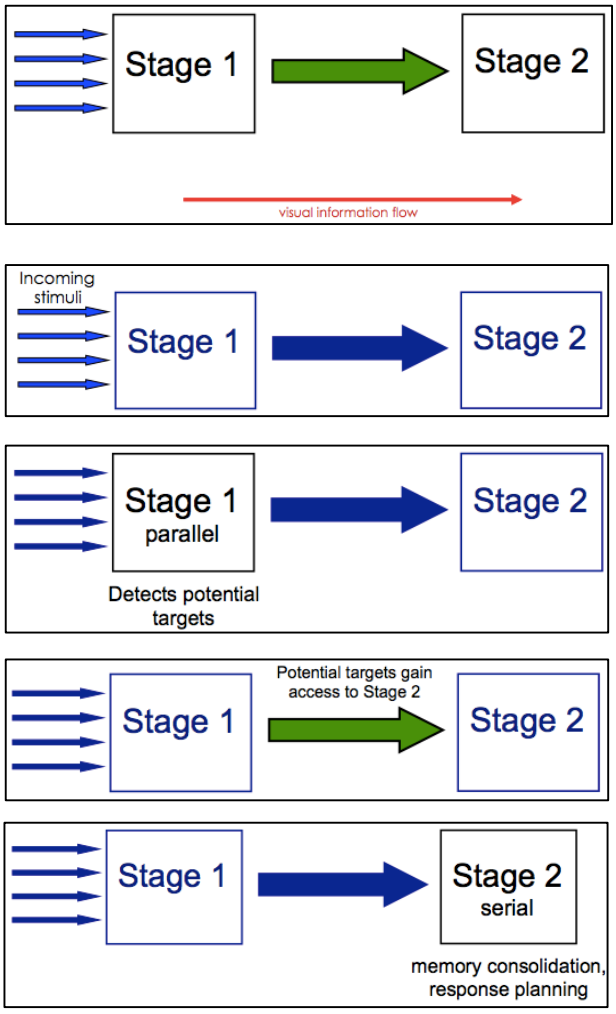
- Orientation means moving the focus of attention
- Choosing where to select information from
- Covert orienting: moving attention without moving the eyes or head
- Overt orienting: moving the eyes or head along with the focus of attention
- Where attention is focus can be determined "bottom-up" or "top-down"
  - Bottom-up: exogenous attention
    - ⇒ Attention that is externally driven by a stimulus in the environment
  - Top-down: endogenous attention
    - ⇒ Attention is guided by the goals of the perceiver
- "Inhibition of return" is a slowing of reaction time associated with going back to a previously attended location

Attentional blink

- An inability to report a target stimulus if it appears soon after another target stimulus
- A result of limited attentional capacity
- E.g. If there is a fast presentation of stimuli and participants are asked to report which targets they saw, participants fail to report the second target when it appears soon after an initial target
  - The initial target (T1) takes over our limited attentional capacity leading to an apparent "blindness" of a subsequent target (T2)
  - T1 processing delays allocation of attention to T2
  - This leaves T2 vulnerable to decay or masking

Bottleneck model

- The brain does not have the capacity to fully process all the information it receives, nor would it be efficient for it to do so
- Consequently, attention is often linked to a filter or a bottleneck in processing
- Stage 1 is early information processing without attention
  - Looks for potential targets
- Stage 2 is memory consolidation and response planning
  - Limited capacity (serial)
- Bottleneck model explains attentional blink



Inhibition of distraction

- The attentional blink is also about distraction
- I.e. the stuff you're not supposed to pay attention to also influences your performance
- Therefore, things you are not supposed to be attending to are still processed to some degree
- Varied condition (Target|Distraction|Target) vs. Uniform condition (Target|Target|Target)
  - Varied condition performs worse than Uniform condition, possibly because inhibition of distraction causes second target to be missed

Performance is worse the more similar the distractors look to the targets