Attentional Capture

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Overview

- Definition
- Importance
- Previous studies
    - Psychology
    - Neurophysiology
- EEG
- Experimental Design

Attentional Capture

• Focused primarily on measuring:

     - effect of an irrelevant stimulus on task performance

     - *Inattentional blindness*

Attentional Capture

- Previous methodologies:
  - Additional Singleton Paradigm
  - Irrelevant Feature Search
  - Oculomotor Capture (EEG)
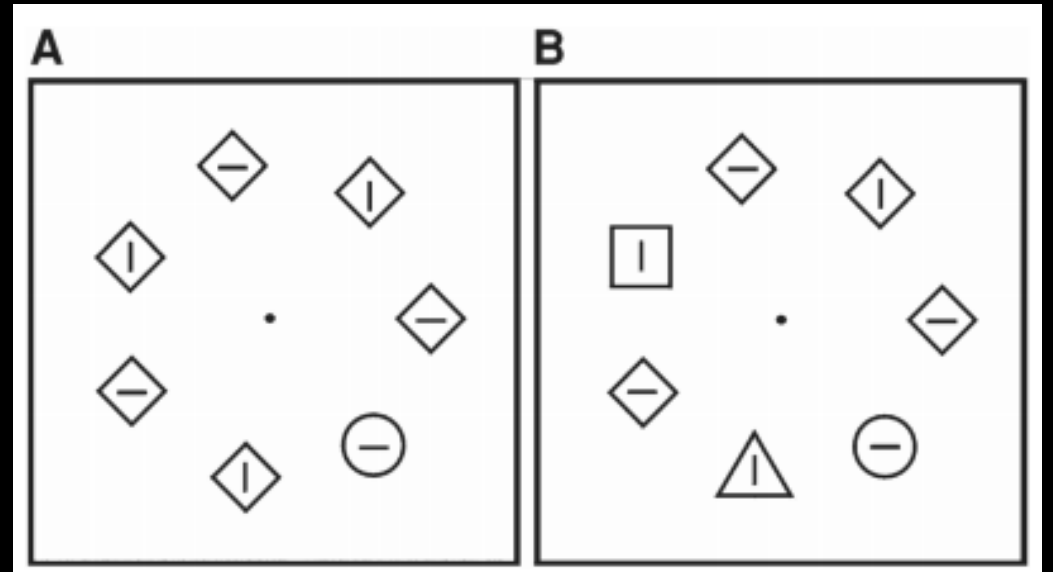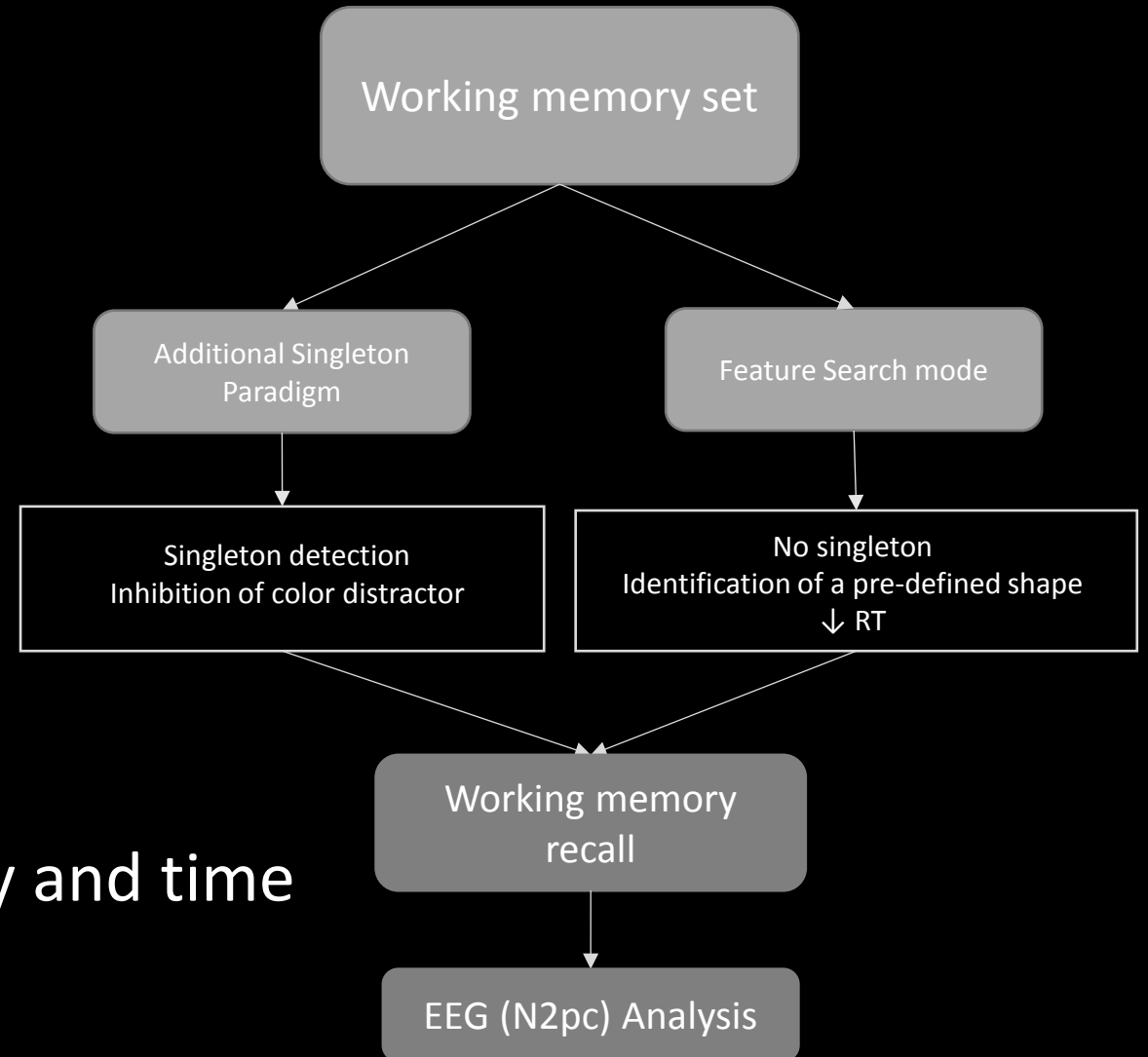
Attentional Capture

- Objects or events receive priority of processing independent of the volitional goals of the observer
- Two theories of control of visual selection:
  - Top-down selection (Controlled)
  - Bottom-up selection (Automatic)

Attention and Memory

- Short-term memory

- Long-term memory

- Duration of attention on an item
  - Important factor in cognition & actions
  - Effect on the allocation of attention

- Question: How does working memory affect attentional capture?

Experimental Design

- Conditions:
  a. Working Memory set
     High vs. Low memory load
  b. With or Without distractors

- 2 groups: 15 participants/group

- 2 Sessions: 1 week apart, same day and time

- N2pc analysis

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                    Working memory set
                    /              \
        Additional Singleton      Feature Search mode
        Paradigm
            |                          |
    Singleton detection        No singleton
    Inhibition of color        Identification of a pre-defined shape
    distractor                 ↓ RT
            \                      /
             Working memory recall
                      |
             EEG (N2pc) Analysis
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- Hypothesis: With higher cognitive load (i.e. working memory), attentional capture will be overriden

Analysis

- **Average reaction time when:**
  - **Error:**
    - Low memory load + With distractor
    - Low memory load + Without distractor
  - **No Error:**
    - High memory load + With distractor
    - High memory load + Without distractor
- **BrainVision EEG/N2pc Analysis**
  - Ipsilateral vs. Contralateral