Does Emotional Content Facilitate or Disrupt Working Memory Performance in Younger and Older Adults?

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## Introduction

### Background
- Older adults experience declines in working memory (i.e., the ability to maintain and manipulate information for short periods of time), primarily due to deficits in inhibition (i.e., the ability to block distracting information out of working memory) (Hasher, Lustig, & Zacks, 2007).
- In contrast, the ability to regulate and process emotion is preserved with aging. It has been shown that emotional information is usually better remembered than neutral information (Kensinger, 2008).
- Literature has shown mixed results on the facilitative or disruptive effects of emotion on working memory (e.g., Borg et al., 2011; Dolcos & McCarthy, 2006).
- However, it is still unclear whether the emotional effects on working memory would vary by item status (i.e., to-be-remembered target vs. to-be-ignored distracter items) and age of participants.

### Research Questions
- Are emotional targets facilitative to working memory?
- Are emotional distracters disruptive to working memory?
- Do emotional effects on working memory vary by age?

## Materials and Procedure

### Participants
- 36 healthy younger adults, ages 18-29, M = 20 yrs
- 36 healthy older adults, ages 65-86, M = 73 yrs

### Stimuli
- 329 words selected from the Affective Norms of English Words (ANEW). They varied in arousal (high vs. low) and valence (positive vs. negative vs. neutral).

### Trials
- Positive/Negative targets + Neutral distracters
- Neutral targets + Neutral distracters
- Neutral targets + Positive/Negative distracters

### Procedure
- Delayed-response task
- 72 trials, each with 2 targets + 2 distracters
- Control (high vs. low arousal)
- Distracter (high vs. low arousal)

### Target Identification
- 2(Age) x 2(Arousal) x 3(Valence) ANOVA
- Positive/Negative targets > Neutral targets, Valence effect, p < .01

### Results

#### Interference from Distracters
- Interference score = (Controls) – (Distracters)
- 2(Age) x 2(Arousal) x 3(Valence) ANOVA
- Valence x Age interaction, p = .076

#### Target Identification
- Accuracy at identifying target items.
- Interference score vs. Accuracy

## Conclusions
- Overall, the results suggest that emotional content can facilitate or disrupt working memory, depending on the item status.
- Target identification: Facilitative effects of emotional targets on working memory. Accuracy was higher for emotional (positive and negative) than for neutral targets.
- Interference from distracters: Disruptive effects of emotional distracters on working memory, which varied by age. Younger adults experienced interference from positive and neutral distracters whereas older adults experienced interference from negative distracters only.
- An anti-negativity bias in older adults: Older adults had more difficulty resolving interference from negative distracting information, but no difficulty with positive distracting information.

## Key References

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