

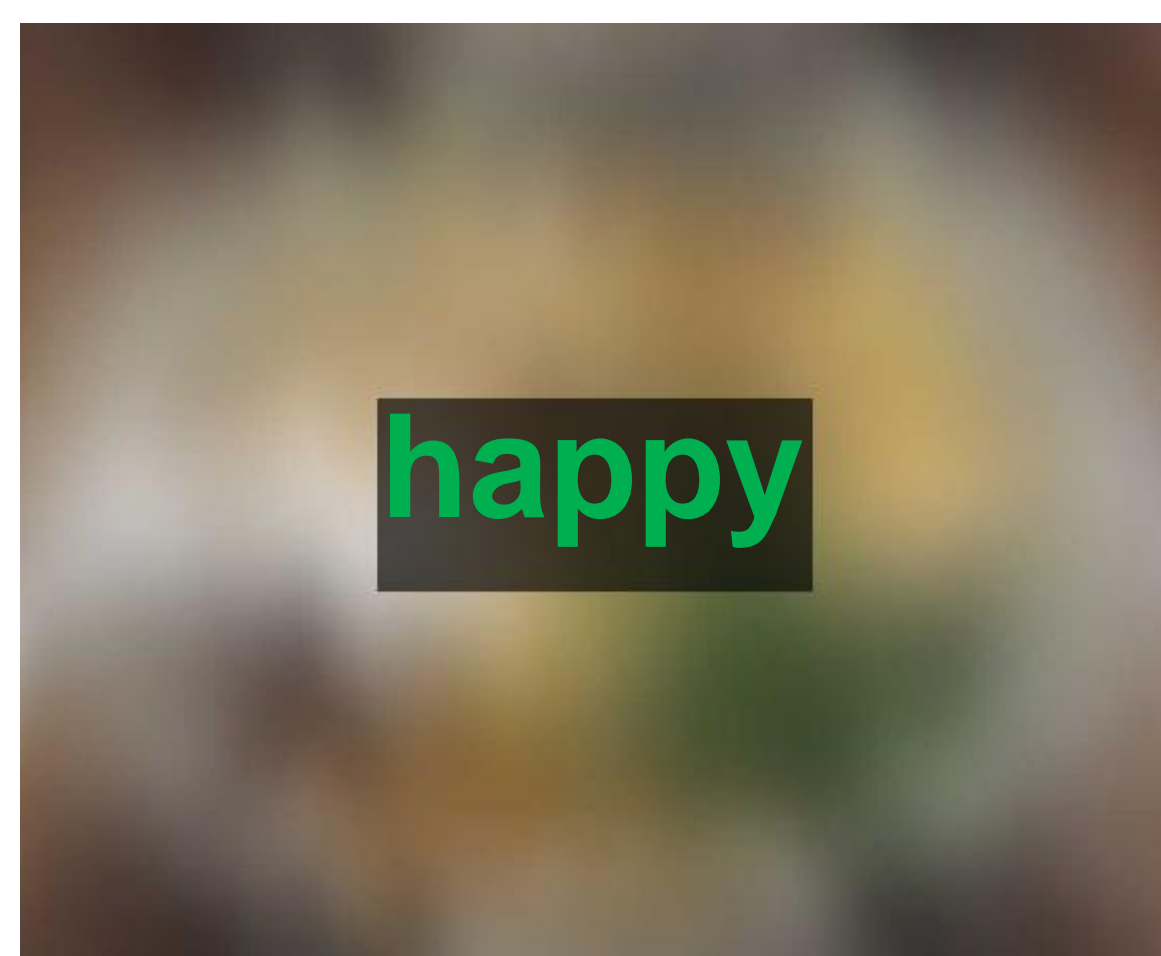
A Picture is Worth a Thousand Words: Effects of Emotional Distracters on Executive Task Performance

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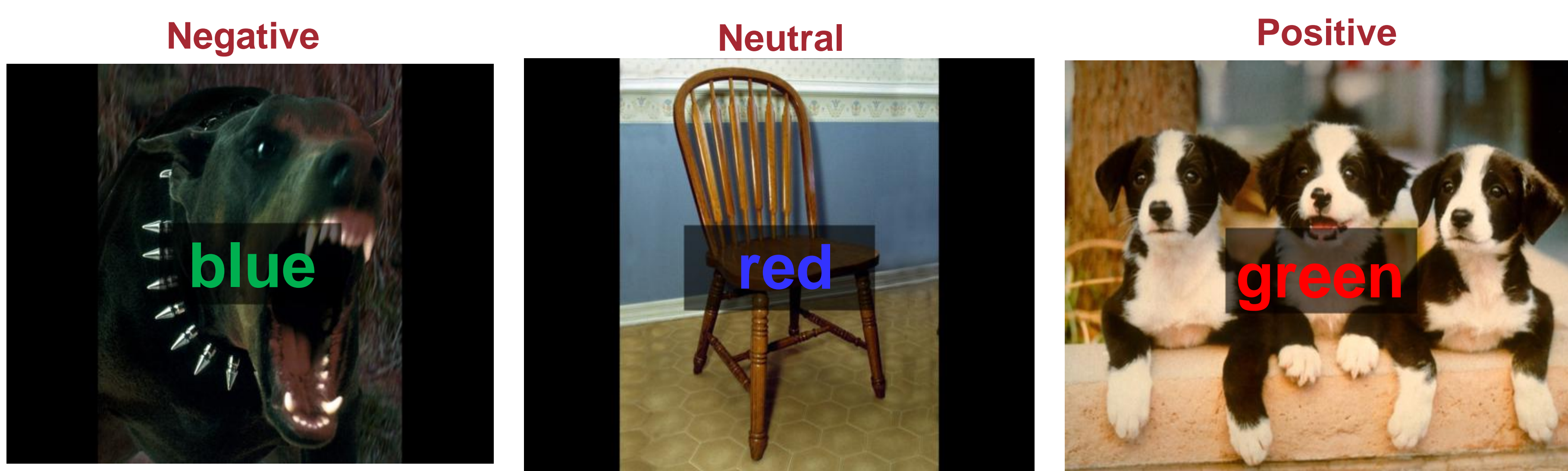
Background

- Executive functions (EF) are a class of cognitive processes that allow us to plan, organize, and successfully execute mental and behavioral actions.
- EF are necessary for response selection, inhibition, and regulation of emotions.
- Emotional stimuli alter performances on various measures of EF, including Stroop tasks (Ashley, Swick, 2009).
- It is often interpreted that the presence of emotional stimuli may lead to emotional arousal, which requires EF resources for down-regulation leaving fewer resources available for performing the task.
- However, because the Stroop task is inherently verbal, one could argue that the effect is caused by competition between saying the emotional words (which are more salient) and the non-emotional words (which are less salient).

Lexical Emotional Stroop



Pictorial Distracter Stroop



Study Objectives

- Investigate the differential impacts of visual (images) versus lexical (words) emotional distracters on Stroop performance
- Determine whether the effect on the emotional Stroop task is simply a function of competition between verbalization of emotional versus nonemotional words.

Method

- Participants:**
 - 29 college students
 - Age: $M = 20.03$, $SD = 2.28$
 - 51.72% female
- Stroop tasks:**
 - Pictorial Distracter Stroop*: ink color congruent (e.g., **RED**) or incongruent (e.g., **RED**).
 - Lexical Emotional Stroop*: common English words in different ink colors (e.g., **HAPPY**)
- Dependent variable:** response latencies
- Independent variables:**
 - Distracter type*:
 - Words: Affective Norms for English Words (ANEW)
 - Pictures: International Affective Picture System (IAPS)
 - Distracter valence*:
 - Negative, positive, neutral

Results

- Main effect of distracter type**
 - $(F[1,28]=77.48, p<.05)$
 - Pictures are more distracting than words.
- Main effect of valence**
 - $(F[2,27]=5.54, p<.05)$
 - T-tests
 - Positive vs. Negative
 - Pictures: $t(28) = -2.55, p = .016^{**}$
 - Words: $t(28) = -.52, p = .605$
 - Negative vs. Neutral
 - Pictures: $t(28) = -2.75, p = .010^{**}$
 - Words: $t(28) = -1.90, p = .068^*$
 - Neutral vs. Positive
 - Pictures: $t(28) = .12, p = .906$
 - Words: $t(28) = 1.21, p = .238$
- Interaction: distracter type x valence**
 - $(F[2,27]=2.74, p=.07)$
 - Trending toward significance.
 - Negative distracters increased response latencies compared to positive and neutral distracters, but only for pictures.

Conclusions

- Emotional images cause greater interference for executive functioning compared to emotional words, especially for negative valence.
- Negative pictures may be more salient (and thus more distracting) than positive or neutral images.
- Increased color naming latencies for emotional words in an emotional Stroop paradigm are not simply due to competition for verbal processing resources. Rather, the emotional distracters employed in these tasks likely evoke emotional responses, which compete for EF resources to down-regulate emotional arousal.
- Limitations:
 - Small sample size
 - No non-word color naming control

