DISSOCIATING THE IMPACT OF STIMULUS MEMORABILITY AND ENCODING SUCCESS ON EEG CORRELATES OF VISUAL LONG-TERM MEMORY ENCODING

Matthew Kolisnyk[1], April E. Pereira[2], Caitlin J.I. Tozios[3], & Keisuke Fukuda[1,3]

[1]University of Toronto Mississauga, [2]University of Waterloo, [3]University of Toronto

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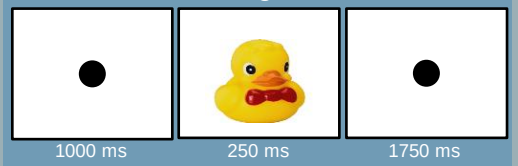
Background

Encoding Phase



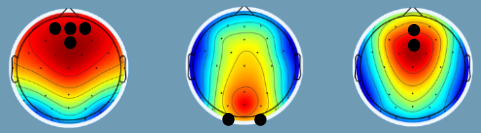
Retrieval Phase

Encoding Success Signals (Old Response vs New Response)

Frontal Positivity 200-500 ms post-stimulus

Occipital Alpha 500 - 1000 ms post-stimulus

Frontal Theta 300 - 1000 ms post-stimulus



What is Stimulus Memorability?

Forgettable Memorable

(Bainbridge, Dilks & Oliva, 2016)

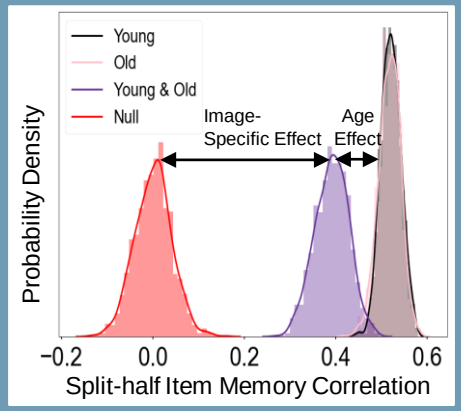
Research Questions

Does stimulus memorability explain putative encoding success signals?

How does participant age (old (n = 32; 60+) vs young (n = 35; 18-30) influence this relationship?

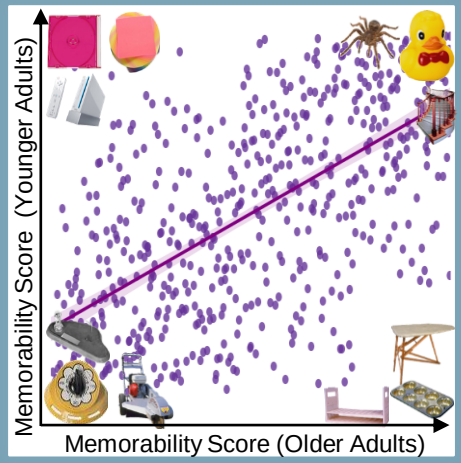
Behavioural Results

Is there stimulus memorability? Does it interact with age?



Stimulus memorability exists.
Within age > Across age memorability

What images show an age effect?

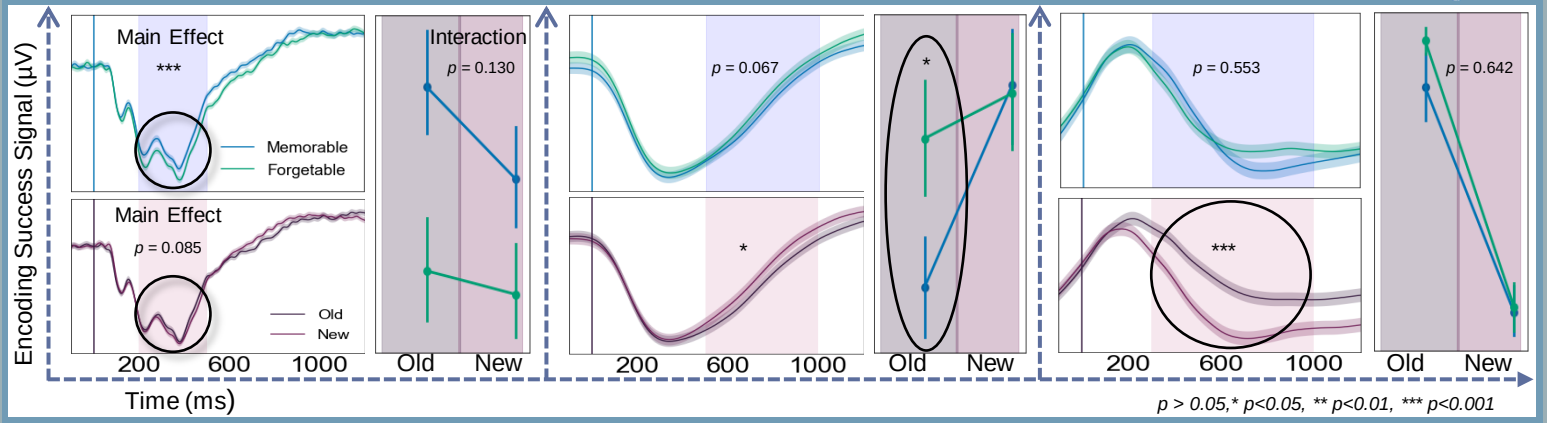


Young and old adults don't always find the same objects equally memorable!

EEG Results

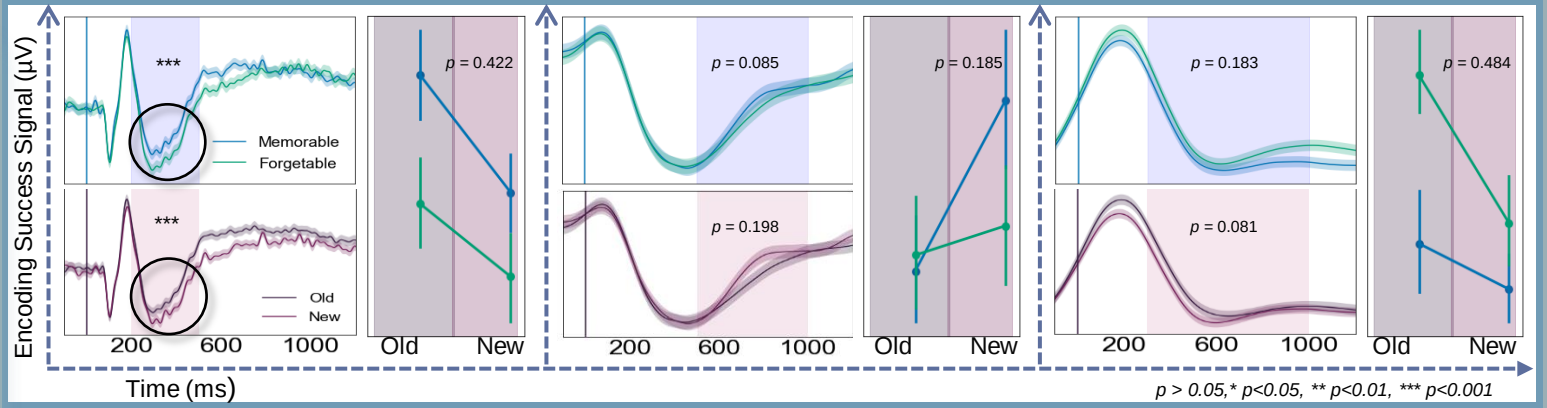
Does stimulus memorability explain encoding success signals in younger adults?

Frontal Positivity | Occipital Alpha | Frontal Theta



Frontal Positivity is best explained by Stimulus Memorability, Frontal Theta is best explained by Encoding Success, and Occipital Alpha by both!

Does this relationship hold for older adults?



For older adults, Frontal Positivity reflects both stimulus memorability and individual encoding success!

Conclusion

Stimulus memorability exists and differentially contributes to previously established encoding success signals.

Frontal positivity is sensitive to memory encoding across age, whereas oscillatory signals are less consistent.