Are Emojis Processed Visuo-spatially or Verbally? Evidence for Dual Codes

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Introduction

- Some argue that emojis are processed similar to words (e.g., Weissman & Tanner, 2018), opponents note dissimilarities (e.g., Tang et al., 2021)
- It remains unclear whether encoding and later remembering emojis, relative to words, engages primarily verbal or visuo-spatial cognitive functions
- Using a divided attention at retrieval paradigm, we can infer the codes used to represent emojis and words in memory (Fernandes & Moscovitch, 2000)

Purpose

➢ To infer how emojis are represented we compared recall of words or emojis under three different divided attention (DA) retrieval conditions, relative to a full-attention (FA) condition

➢ If emojis are processed similarly to words, memory should be most impaired with a verbal distracting task

➢ If emojis are processed similarly to pictures, memory should be most impaired with a visuo-spatial distracting task

Methods

Participants encoded either target words or emojis (between-subjects) under full attention (FA), and later recalled them under FA or while concurrently doing a 1-back task that involved either words (DA Words), emojis (DA Emojis), or novel star shapes (DA Stars), manipulated within-subjects.

ENCODING: under full attention

"queen" OR 

10 Words 10 Emojis

Filler Task: count backwards from 99 by 3's for 20 s

RETRIEVAL: free recall aloud, 60 s, under one of four conditions

Full Attention	DA Words	DA Emojis	DA Stars

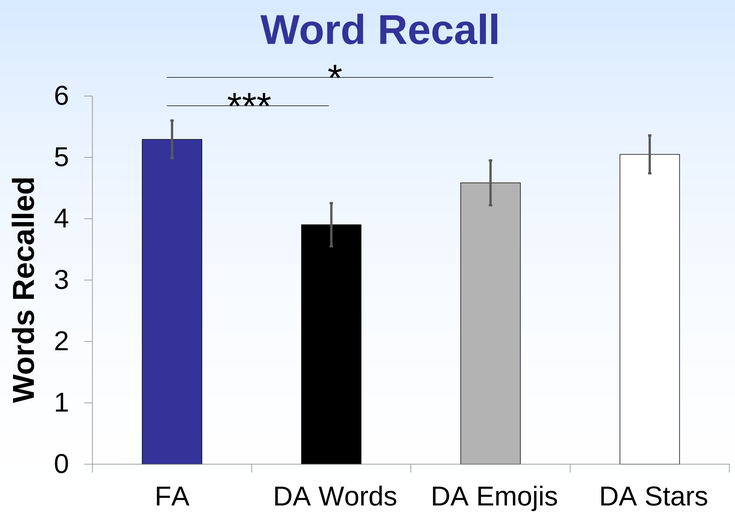
zebra  

1-back Instructions: press "m" when the item matches the one in the previous trial

30 trials, 10 repeated items, 2 s per trial

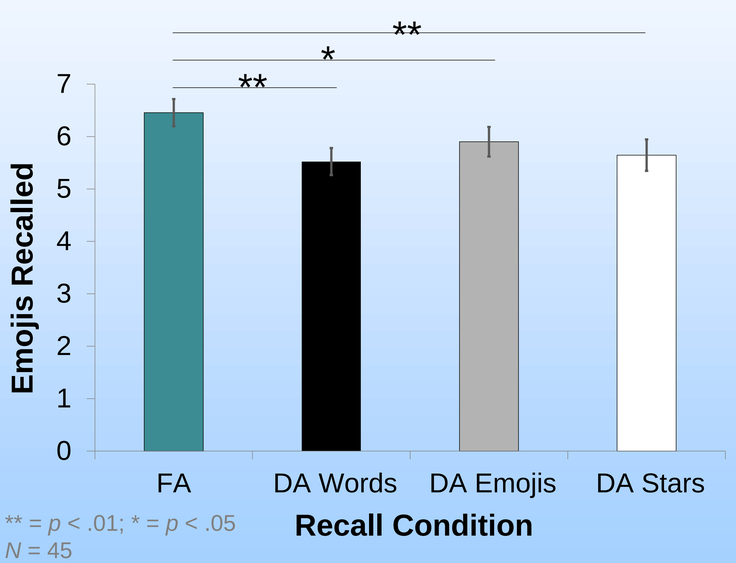
Recall Results

❑ Overall, memory for emojis was better than memory for words ($p < .001$, $\eta_p^2 = .13$)



*** = $p < .001$; * = $p < .05$
$N = 41$
Error Bars = ± 1 SEM

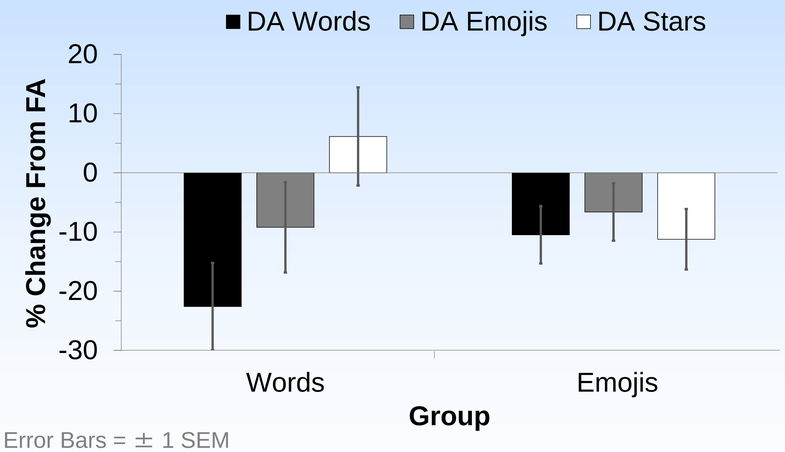
❑ **Word recall** was significantly impaired under DA Words and DA Emojis conditions, but not DA Stars, relative to FA



** = $p < .01$; * = $p < .05$
$N = 45$
Error Bars = ± 1 SEM

❑ **Emoji recall** was significantly hampered under all DA conditions, relative to FA

Memory Interference



Error Bars = ± 1 SEM

Summary & Conclusions

❑ We replicated past research showing that memory for words relies primarily on verbal representations, inferred from selective interference DA with a verbal but not visuo-spatial concurrent task (e.g., Fernandes & Moscovitch 2000)

❑ Participants recalled more emojis than words, in line with the *picture superiority effect* (Paivio & Cspao, 1973)

❑ Memory for emojis was impaired in all DA conditions relative to FA, suggesting that re-activation of emoji representations may rely on both visuo-spatial **and** verbal-based processing mechanisms

❑ Emojis appear to be encoded with dual-codes

Our results suggest that emojis may be processed more like pictures than words

References

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