Effects of study context on recall organization

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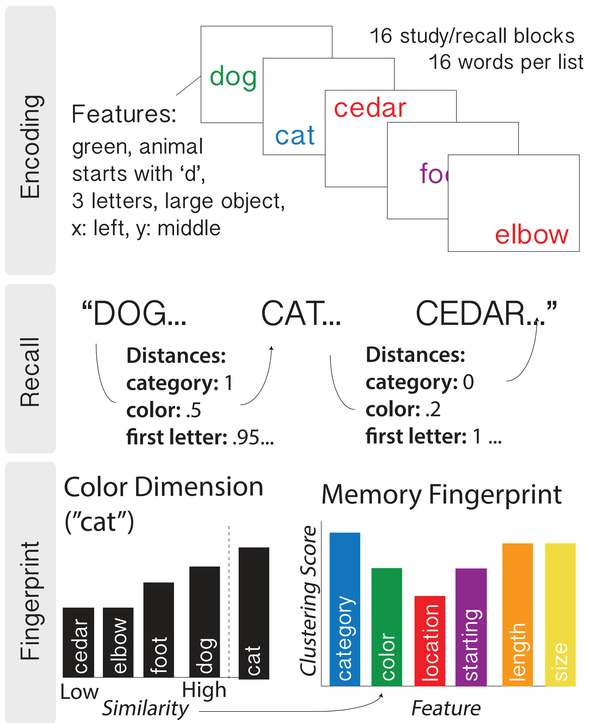
Introduction

Context affects how we process, store, and retrieve incoming information.

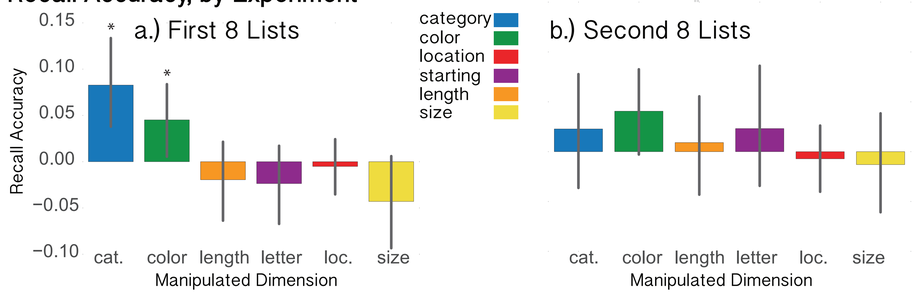
To explore which aspects of these processes are malleable and how much they change within and across individuals, we designed the Feature-Rich Free Recall paradigm, which provides us with dynamic control over the multidimensional contextual space in which each word in a free recall task is presented to the participant.

Overview:
Feature-Rich Free Recall ⟶ Fingerprint



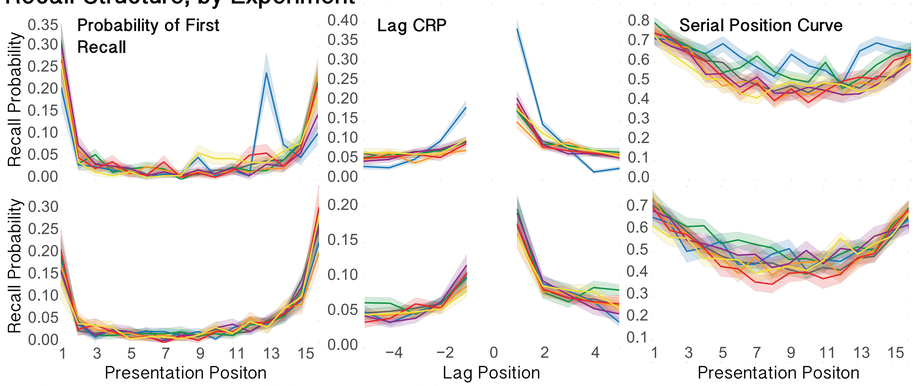
In different experimental conditions, we manipulated the presentation order of the first eight lists according to a single feature dimension, with the last eight lists presented in random order.

Recall Accuracy, by Experiment



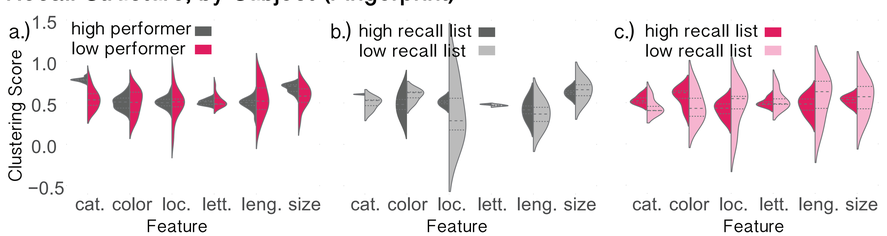
Recall Accuracy, by Experimental Manipulation.
Average recall accuracy, relative to random control condition, for a.) first 8 lists and b.) second 8 lists, by experiment.

Recall Structure, by Experiment



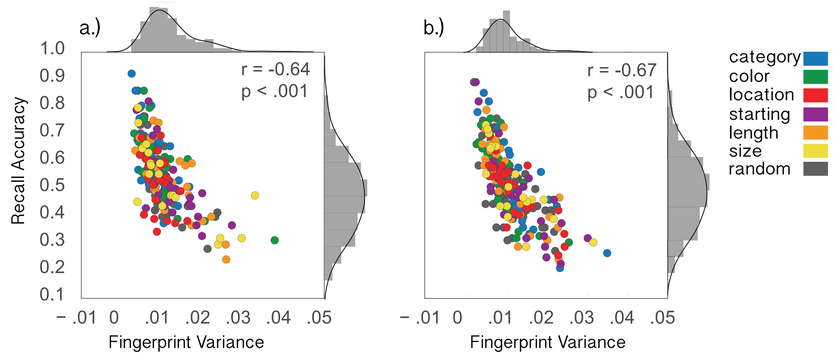
Analyses of average recall data, by condition.
Probability of first recall (left), lag-CRP (middle) and serial position curves (right) for first and second 8 lists (rows 1 and 2), colored by condition.

Recall Structure, by Subject (Fingerprint)



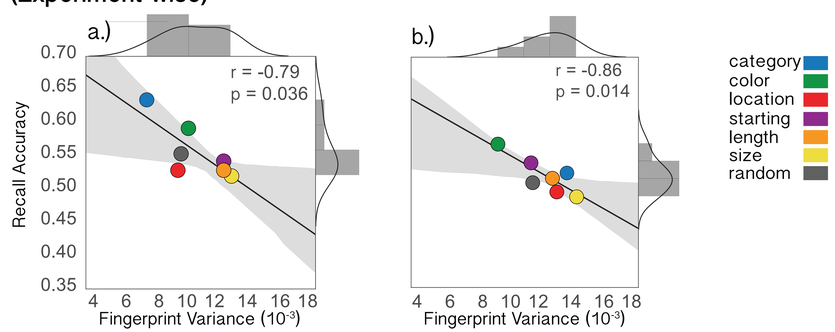
Fingerprints of single highest and single lowest performing subject, random condition.
Fingerprint for highest and lowest performing subjects in the random (control) condition (a.), and list-wise fingerprint data for the four highest-recall and four lowest-recall lists from each subject, respectively (b. and c.).

Recall Accuracy with Respect to Fingerprint Variance (Subject-wise)



Average recall accuracy with respect to fingerprint variance, across lists for each subject, colored by experiment for the first (a) and second (b) 8 lists.

Recall Accuracy with Respect to Fingerprint Variance (Experiment-wise)



Average recall accuracy with respect to fingerprint variance, averaged across experiments, for the first (a) and (b) second 8 lists.

Leveraging Individual Fingerprints

We have released two free recall software packages. Our AutoFR package provides an M-Turk ready experiment that automatically transcribes verbal response data. Our Quail package provides tools for analyzing and plotting data from memory experiments. Both are freely available via www.context-lab.com.

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