Supplementary materials for: Feature and order manipulations in a free recall task affect memory for current and future lists

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Abbreviation	Description
acc	Accuracy
temp	Temporal
clust	Clustering
cat	Category
sz	Size
len	Length
loc	Location
clr	Color
1st ltr	First letter
df	Degrees of freedom
95% CI	95% confidence interval
p-value (raw)	Uncorrected p-value
p-value (corrected)	Benjamini/Hochberg-corrected p-value

Table S1: List of abbreviations. Used in tables in the main text.

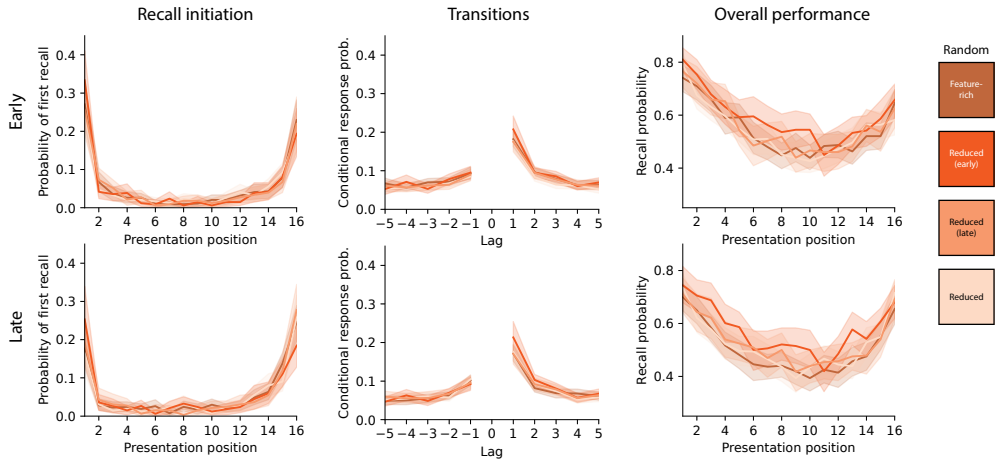

Figure S1: Recall dynamics in feature-rich free recall (random conditions). Left panels. The probabilities of initiating recall with each word are plotted as a function of presentation position. **Middle panels.** The conditional probabilities of recalling each word are plotted as a function of the relative position (Lag) to the word recalled just-prior. **Right panels.** The overall probabilities of recalling each word are plotted as a function of presentation position. **All panels.** Error ribbons denote bootstrap-estimated 95% confidence intervals (calculated across participants). Top panels display the recall dynamics for early lists in each condition, and bottom panels display the recall dynamics for late lists.

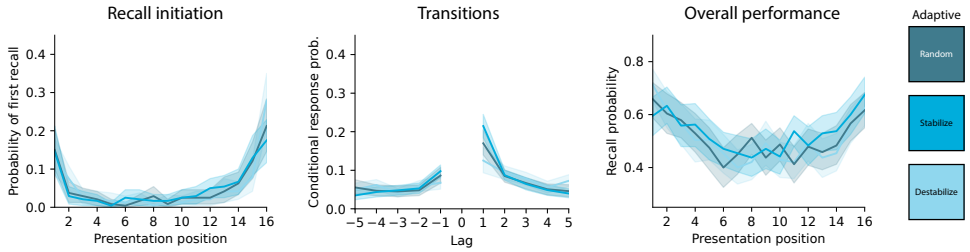

Figure S2: Recall dynamics in feature-rich free recall (adaptive condition). Left panel. The probabilities of initiating recall with each word are plotted as a function of presentation position. **Middle panel.** The conditional probabilities of recalling each word are plotted as a function of the relative position (Lag) to the word recalled just-prior. **Right panel.** The overall probabilities of recalling each word are plotted as a function of presentation position. **All panels.** Error ribbons denote bootstrap-estimated 95% confidence intervals (calculated across participants). Word-sorting policy (batch) is denoted by color.

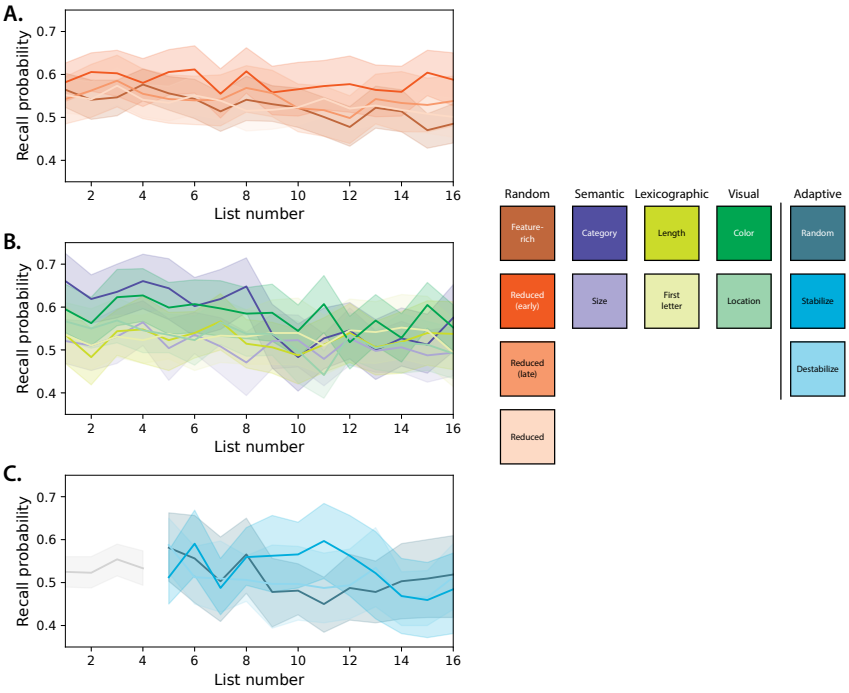

Figure S3: Recall accuracy by study list number. Each panel displays the average recall accuracy (across participants) as a function of the number of studied lists for the random conditions (**A.**), order manipulation conditions (**B.**), and word-sorting policy (batch) in the adaptive condition (**C.**). The conditions (or batches) are denoted by color. Note that words in the first four lists of the "adaptive" condition were ordered randomly to compute a baseline fingerprint for each participant prior to initiating the adaptive ordering procedure. **All panels.** Error ribbons denote bootstrap-estimated 95% confidence intervals (calculated across participants).

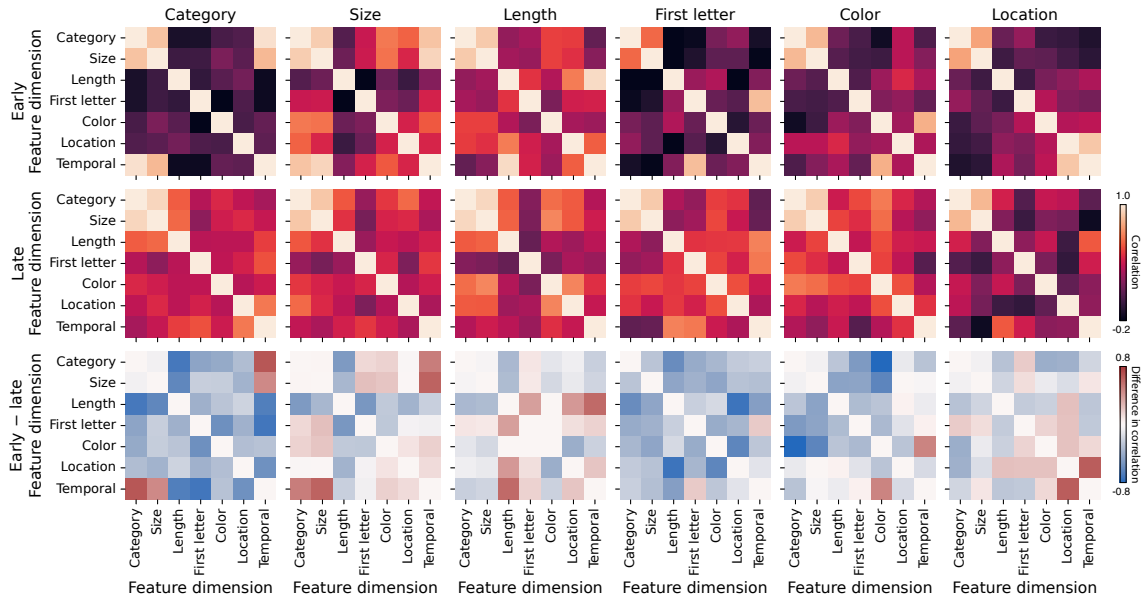

Figure S4: Correlations between feature clustering scores (order manipulation conditions). Each column reflects one experimental condition. The matrices in the top and middle rows display across-participant correlations between clustering scores for each feature dimension (top: early lists; middle: late lists). The matrices in the bottom row display the differences between the top and middle rows.

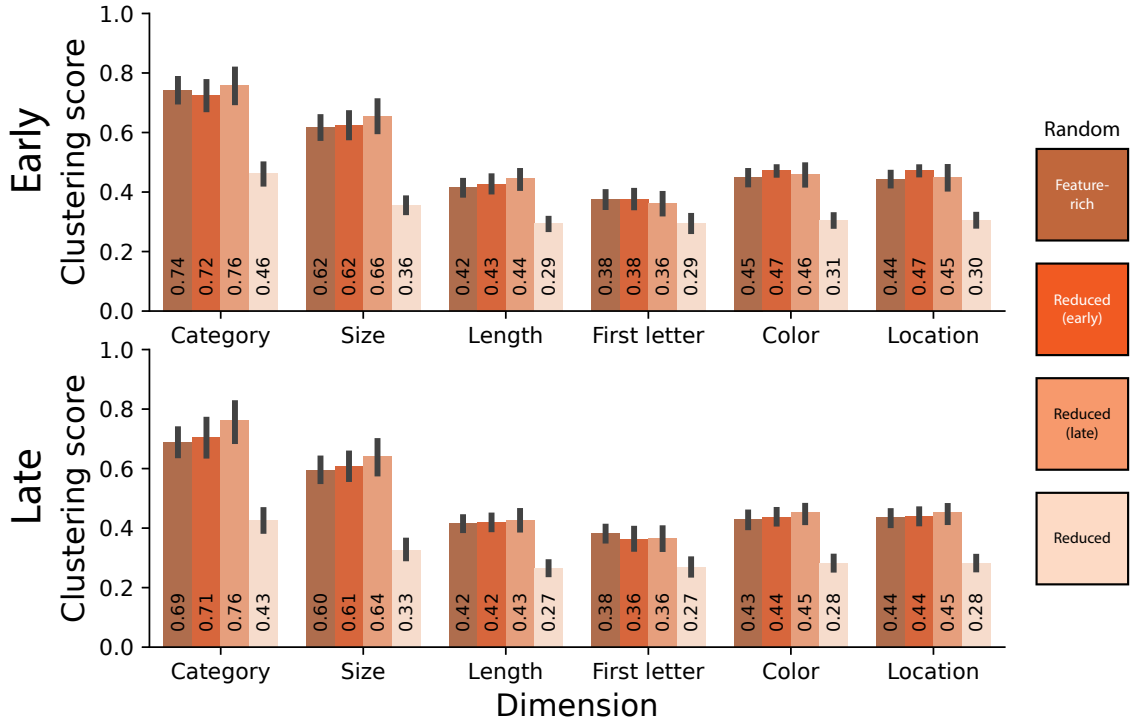

Figure S5: Memory "fingerprints" (random conditions). The across-participant average clustering scores for each feature type (x-axis) are displayed for each experimental condition (color), separately for early (top) and late (bottom) lists. Error bars denote bootstrap-estimated 95% confidence intervals.

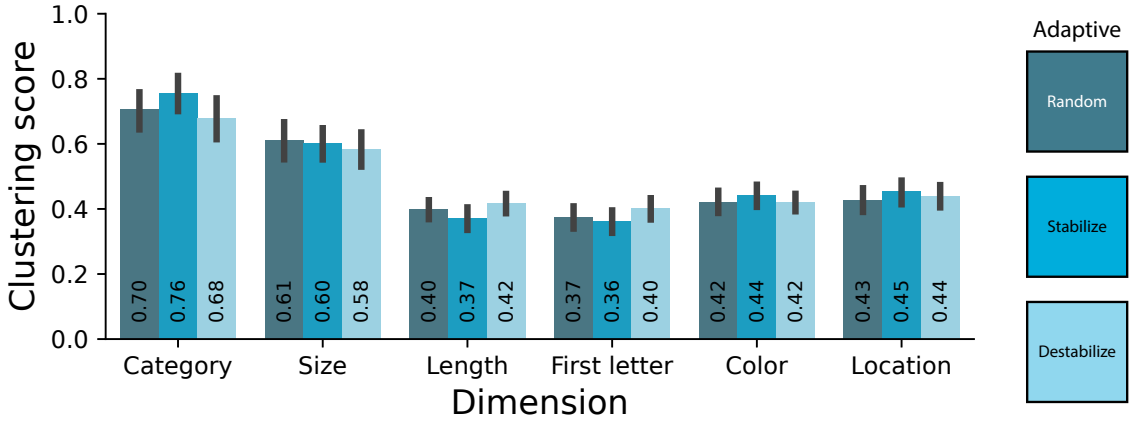

Figure S6: Memory "fingerprints" (adaptive condition). The across-participant average clustering scores for each feature type (x-axis) are displayed for each batch of lists in the adaptive condition (color). Error bars denote bootstrap-estimated 95% confidence intervals.

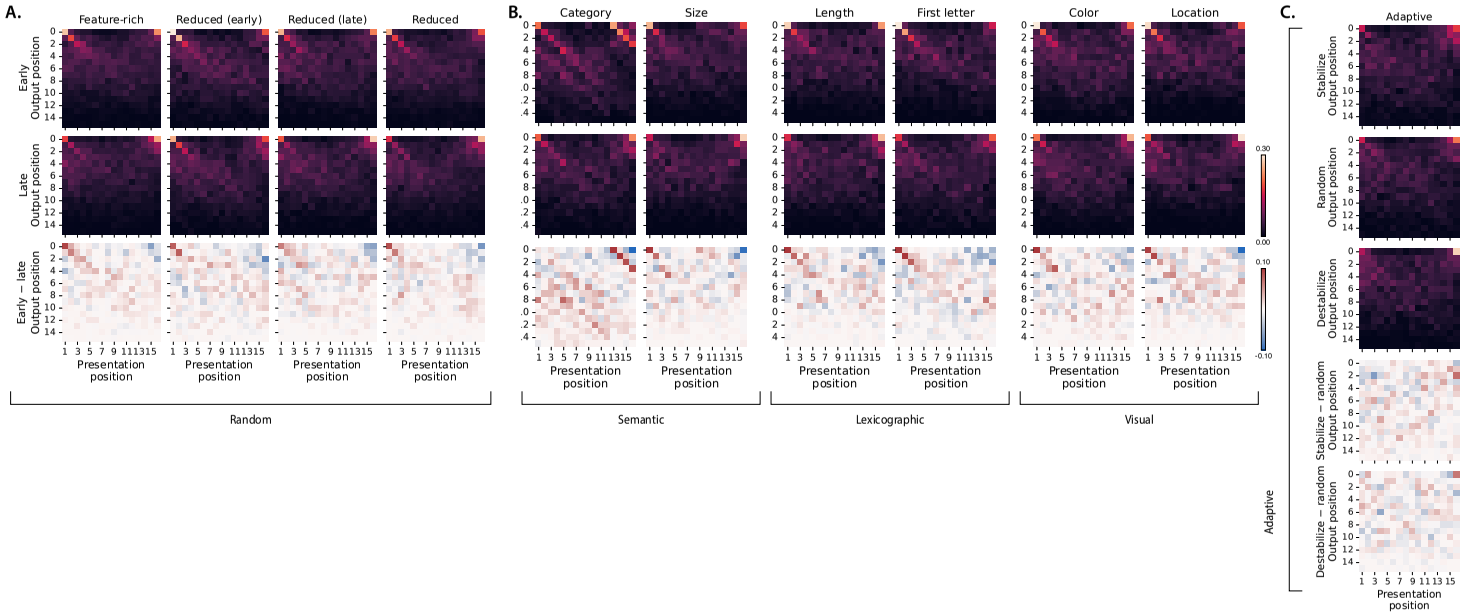

Figure S7: Probability of n^{th} recall matrices. Each sub-panel displays the average probability of recalling the word with the given presentation position (matrix column) at the given output position (matrix row); color denotes the probability. **A. Random conditions.** The top row of matrices displays data from early lists, the middle row of matrices displays data from late lists, and the bottom row of matrices displays the differences between the matrices in the top and middle rows. Panel columns denote experimental conditions. **B. Order manipulation conditions.** The matrices are displayed in the same format as those in Panel A. In these conditions, word order was manipulated in early lists (top row) and randomized in late lists (middle row). Panel columns are grouped by feature type (semantic, lexicographic, or visual). **C. Adaptive condition.** The sub-panels are displayed in the same formats as Panels A and B, but here the matrices and contrasts (indicated by y-axis labels) reflect different word-sorting policies (batches).

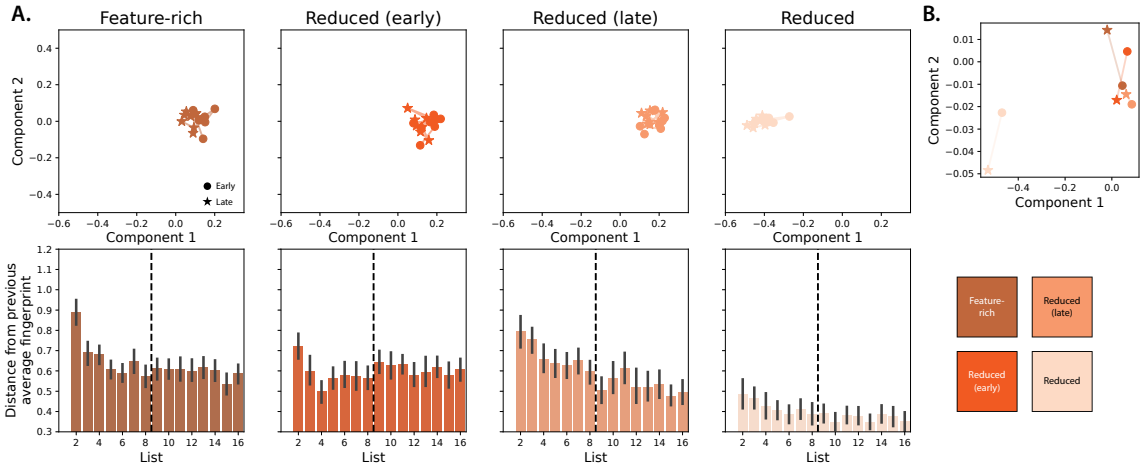

Figure S8: Memory fingerprint dynamics (random conditions). **A.** Each column (and color) reflects an experimental condition. In the top panels, each marker displays a 2D projection of the (across-participant) average memory fingerprint for a single list. Early lists are denoted by circles and late lists are denoted by stars. Lines connect successive lists. All of the fingerprints (across all conditions and lists) are projected into a common space. The bar plots in the bottom panels display the Euclidean distances between each per-list memory fingerprint and the average fingerprint across all prior lists, for each condition. Error bars denote bootstrap-estimated 95% confidence intervals. The dotted vertical lines denote the boundaries between early and late lists. **B.** In this panel, the fingerprints for early (circle) and late (star) lists are averaged across lists and participants before projecting the fingerprints into a (new) 2D space.

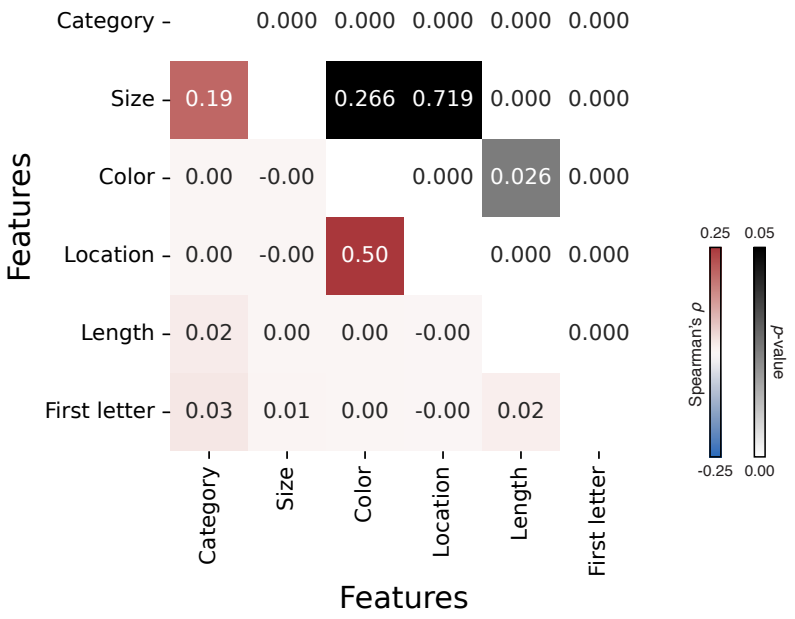

Figure S9: Correlations between features. Within each list, for each participant, we computed the set of distances between each pair of words, along each feature dimension. We then combined these pairwise distances across all lists and participants, and computed the Spearman correlation coefficient (ρ) between the distances for each pair of feature dimensions. The correlation coefficients are displayed in their corresponding cells of the heatmap in the lower triangle, and the corresponding p-values are displayed in the upper triangle.