# The Effect of Verbal Labeling and Category Grouping on Visual Memory

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## Abstract

It is easier to memorize visual objects when we name them overtly. For instance, people are better at recalling objects' hues when they are allowed to label the colors during study. Such labeling helps to highlight to-be-remembered features and thus facilitates their later retrieval. However, as objects can often be characterized by multiple attributes, the question arises whether the memory benefit of naming one feature could be at the expense of memory of other, not-labeled features.

To investigate this problem I will conduct a project exploring the influence of verbal labeling and category clustering on memory. Specifically, I will examine whether the generality of the label used at learning (item-descriptive vs. category-descriptive labels) affects memory retrieval while multiple objects from the same semantic category are presented. To this end I plan to conduct two experiments where participants will be asked to overtly label visually presented objects in a specific manner.

In Experiment 1 participants will be presented with sequences of pictures representing objects from a small set of semantic categories (e.g. FRUITS, ANIMALS, etc.), with each object presented in different color. Participants will be asked to name the objects out-loud using either item-descriptive labels (e.g., "red apple"), category-descriptive labels (e.g., "red fruit"), or- in the control condition- to produce non-meaningful speech (e.g., "babababa") to inhibit verbal labeling. The crucial manipulation will concern the clustering of the colors across the categories. In the Similar-Feature condition, objects from the same category will be presented in the similar hues that can be referred to with the same label (e.g all objects from the ANIMALS category will be presented in different hues of red, and all the objects from the FRUITS category will be presented in different hues of blue), while in the Dissimilar-Feature condition, objects from the same category will be presented with different colors. We hypothesize that participants will perform better in the Similar-Feature condition, as the combination of color and semantic similarity should aid memory retrieval. More importantly, we predict that in the Dissimilar-Feature condition, item-descriptive labels should improve performance, while category-descriptive labels may cause interference, leading to worse memory performance. In the Similar-Feature condition, category-descriptive labels are expected to improve memory by highlighting the relationship between colors and categories, yet it is possible that item-descriptive labels might hinder detection of the color-category associations, hence diminishing the positive clustering effect.

In Experiment 2, participants will also encounter "lure" items at test—objects that were not seen before but belonging to the studied categories. This will allow to examine whether verbal labels are facilitating or impeding forming category-color associations in memory by inspecting whether responses for the lures are adhering to the color in which object from given category were presented in the Similar-Feature condition.
Overall, this study will contribute to our understanding of how verbal labels and semantic organization influence visual long-term memory. By examining both the benefits and potential costs of labeling and categorization, the research aims to offer insights into how these factors shape memory encoding and retrieval processes.

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