Category Similarity, Instance Dominance, and Categorization Time[1]

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Subjects were required to indicate whether or not a probe word belonged to one of a variable number of categories which were held in memory. The semantic similarity among the categories was varied as was the instance dominance of the probe word. Comanipulation of these factors was expected to determine whether category similarity affects between-category shift or within-category search. However, the data suggested that category similarity and instance dominance are additive factors. Instance dominance apparently affected the time to encode the stimulus word and possibly influenced a decision stage; whereas, category similarity ostensibly affected operations involved in the search stage of processing. Semantically similar categories required less search time than semantically dissimilar categories. It was suggested that while dissimilar categories had to be accessed successively prior to search, subjects were able to consolidate similar categories so that categories were simultaneously accessed and searched in parallel.

Psychological studies of semantics gain much of their status from the currently popular assumption that human memory is organized along semantic dimensions. Semantic similarity among individual words and conceptual categories has freqently been manipulated to investigate semantic processing as well as to reveal something about the basic structure of stored meaning. In a recent study by Meyer (1973), subjects were required to determine whether or not a probe word was an instance of either of two semantic categories. Both positive and negative decisions were faster when the categories were semantically similar (for example, *vegetable–fruit*), than when they were semantically dissimilar (for example, *weapons–trees*). Meyer discussed his data in terms of a successive category-search model. He suggested that the semantic similarity between categories could have affected *reaction time (RT)* by facilitating either category-shift time or within-category search. That is, if the categories were semantically similar, categorization time could have been reduced by minimizing the time required to access the second category searched, or by increasing the rate of search within the second category due to a spread of activation resulting from search within the first category.

The present study was designed to investigate category similarity effects on within- and between-category search. A paradigm similar to that of Sternberg (1966) was used in which a memory set of 1, 2, or 3 categories was defined on each trial. For set sizes 2 and 3, semantic similarity among the categories in each set was varied. For example, on a particular trial the subject might have seen *bird–mammal–fish* (similar) or *metal–tree–fish* (dissimilar) followed by a word that was

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