

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Selective Attention or Structured Representation: The Effect of Category Information on Similarity Judgment

Permalink

<https://escholarship.org/uc/item/41q3b7n7>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 28(28)

ISSN

1069-7977

Authors

Yu, Na-Yung
Yamauchi, Taskashi

Publication Date

2006

Peer reviewed

Selective Attention or Structured Representation: The Effect of Category Information on Similarity Judgment

Na-Yung Yu (nayungyu@gmail.com)
Takashi Yamauchi (tya@psyc.tamu.edu)
Department of Psychology, Texas A&M University
4235 TAMU, College Station, TX 77843 USA

In the context of similarity judgment, verbal labels are known to play a pivotal role. Although Sloutsky and Fisher (2004) provide a good explanation of why children tend to give more selective attention to verbal labels than pictorial features, it is unclear why category labels are treated differently from other features. In this article, we point out that category information is important, not only because of the selective attention that it draws, but also due to its potential for evoking structured representations (Markman & Gentner, 1993; Yamauchi & Markman, 2000).

In our experiment, category information was given, not only through verbal labels, but also as *inferred* information. According to Sloutsky and Fisher (2004), people cannot assign selective attention to implicitly inferred category information. However, we think that category information, whether suggested by verbal labels or inferred by pictorial features, can influence similarity judgment by aiding to construct structured representations (Yamauchi & Markman, 2000).

We employed the triad task that was used by Sloutsky and Fisher (2004). Participants were asked to judge which base picture was more similar to the target picture (Figure 1A). In each triad, the target picture was a real photograph, and two base pictures were morphed pictures of the target and another animal. Triads of pictures were shown either with or without labels. In the Label condition, the dissimilar base picture had the same name as the target, whereas the similar base picture had a different label than the target (Figure 1A). In the No-label condition, pictures were shown without labels. However, the boundary of the base pictures can be inferred. In a pilot study, we found that classification of a base picture changed radically around the middle of the morphed series. According to this category information, two base pictures were taken from either within the boundary (Figure 1B), or across the boundary (Figure 1C). Thus, the category boundary information was not explicit but could be inferred from pictorial features.

Our adults subjects used category labels in their similarity judgment regardless of pictorial features, $F(2,74)=25.114$, $MSE=.075$, $p<.01$. Even when pictorial features indicated that the given labels were incorrect for the stimuli in the Label condition, people could not help using labels. Our subjects were also influenced by the inferred category boundary, $F(1,74)=37.786$, $MSE=.008$, $p<.01$. Since no verbal labels were given in this condition, it is difficult to explain the results by means of mere selective attention generated by verbal labels. Only by constructing

structured representations can people employ inferred information in their similarity judgment. This result suggests that category information, whether explicitly suggested by verbal labels or implicitly inferred by pictorial features, influences similarity judgment. We suggest that this influence arises because category information helps construct structured representations.

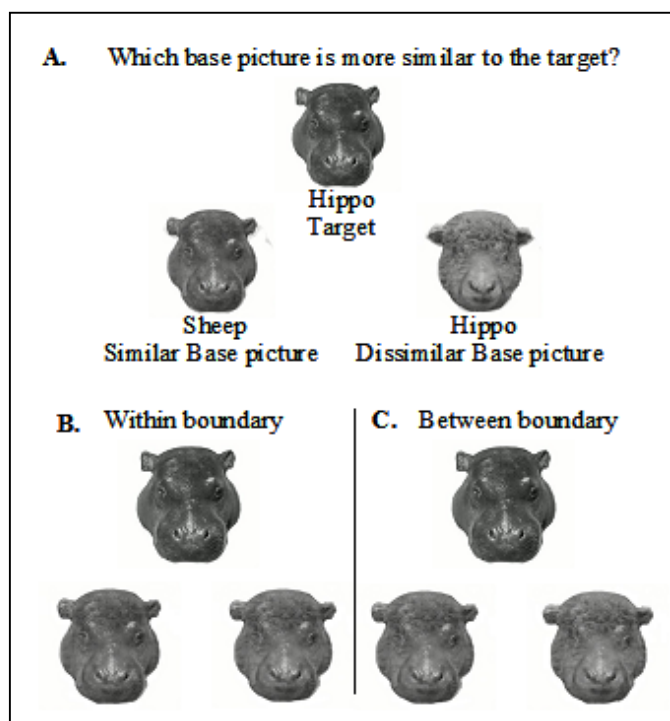


Figure 1

References

- Sloutsky, V. M., & Fisher, A. V. (2004). Induction and categorization in young children: A similarity-based model. *Journal of Experimental Psychology: General*, 133, 166-188.
- Markman, A. B., & Gentner, D. (1993). Structural alignment during similarity comparisons. *Cognitive Psychology*, 25, 431-467.
- Yamauchi, T., & Markman, A. B. (2000). Learning categories composed of varying instances: The effect of classification, inference, and structural alignment. *Memory & Cognition*, 28, 64-78.