Is the same name like the same color? The role of linguistic labels in similarity judgment

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Abstract

We propose a model of the label as a discrete attribute of an object. According to the model, a relative weight of the label decreases with the child's age. Predictions derived from the model were tested in two experiments. In Experiment 1, children aged 6 to 12 years were presented with triads of schematic faces and were asked to make similarity judgments. These triads were administered under the label (members of the triads were labeled) and no-label conditions. In both conditions, similarity of faces within the triads was manipulated via systematic variation of distinct facial features. In Experiment 2, labels were substituted with colored dots. It was found that (1) labels could be considered as attributes of object that affect similarity judgment in a quantifiable manner, (2) labels' weight decreased with age, and (3) effects of labels do not stem from children's inability to ignore task-irrelevant information. These results have implications for theories of categorization.

Experiments 1 and 2

A total of 107 children aged 6 to 12 years participated in the study. The participants represented three age groups: (1) 34 five-to-seven year-olds, 41 seven-to-nine year-olds, and 32 nine-to-eleven year-olds. The design included an experimental (label) and a control (non-label) condition. The conditions varied across participants. In both conditions, participants were presented with triads of 2" by 2" schematic faces, two of which were Backgrounds and one was a Target. The participants had to select which of the Background faces was more similar to the Target. Each schematic face had three distinct attributes (shape of head, shape of ears, and shape of nose), and each attribute had three values (e.g., "curve-lined" nose, "straight-lined" nose, and "angled" nose). A Target stimulus could share zero, one, or two attribute values with the Background stimuli. In the experimental condition, one Background stimulus (Background A) shared attributes with the Target, whereas another Background stimulus (Background B) always shared the category label (an artificial word) with the Target. No labels were introduced in the control condition. The design also included six within-subject stimulus pattern conditions. (1) Pattern T-0-0 — the Target stimulus shared zero attributes with each of the Background stimuli. (2) Pattern T-1-0 — the Target shared one attribute with Background A. (3) Pattern T-1-1 — the Target shared one attribute with each of the Background stimuli. (4) Pattern T-2-1 — the Target shared two attributes with Background A and one attribute with Background B. (5) Pattern T-2-0 — the Target shared two attributes with Background A. And (6) Pattern T-2-2 — the Target shared two attributes with both Background stimuli.

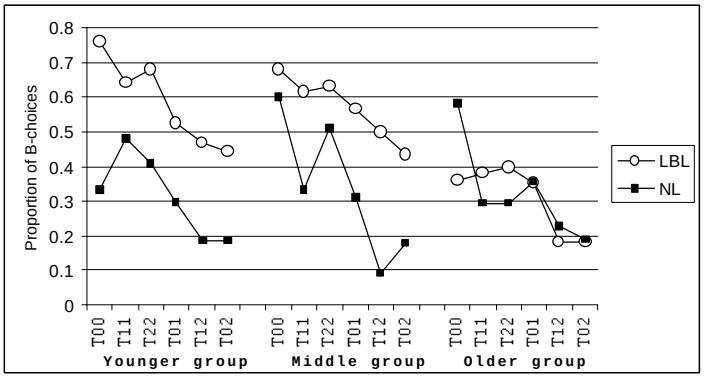

Figure 1: Proportions of B-choices by age and stimulus pattern condition.

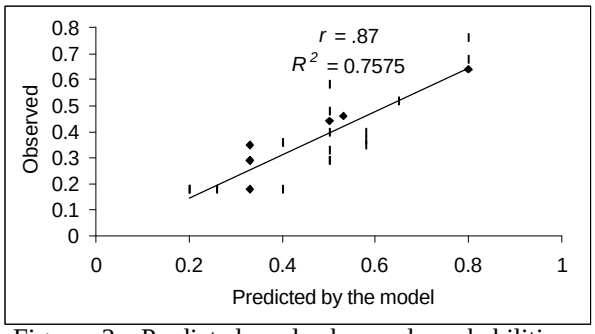

Figure 2: Predicted and observed probabilities across stimulus pattern conditions and age groups

However, these data do not rule out an alternative explanation that the effects stem from inability or unwillingness of young children to ignore task-irrelevant information. To test this alternative, in Experiment 2 labels were substituted with colored dots (task-irrelevant features). Results of Experiment 2 indicate that the contribution of labels in children's similarity judgment is significantly greater than the contribution of dots that were task-irrelevant stimuli.

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