

Word labels and perceptual recognition¹

EUGENE S. GOLLIN

THE FELS RESEARCH INSTITUTE

Adults were tested for recognition of incomplete line drawings of common objects after they had been given prior experience with more complete representations of those objects or with the word names of those objects. Groups trained on the more complete representations of the drawings recognized significantly more of the test displays than did control Ss given no prior experience. Ss trained on word names did not differ significantly from controls in the number of incomplete displays recognized.

The present experiment was designed to investigate the relationship between prior practice with the word names of pictures and the recognition of reduced or incomplete representations of those pictures.

In earlier studies on the recognition of incomplete pictures it was found that training on more complete representations of the same pictures (see Fig. 1) significantly increased the number of incomplete test displays recognized vis-a-vis control groups receiving no training prior to presentation of the test items (Gollin, 1962). Training on Intermediate representations was more effective than training on Complete representations in facilitating recognition of test displays (see Fig. 1), and recognition scores were higher when the test displays were presented one day after the termination of training as contrasted with 1 min. after termination of training when the training stimuli were Complete representations (Gollin, 1966); therefore, in the experiment to be reported groups were tested 1 min. and one day after completion of training.

Subjects

Ninety-one volunteers from introductory psychology sections at Queens College served as Ss.²

Apparatus and Procedure

The stimuli (see Fig. 1) were drawn in ink on cards designed for the magazine of the Hunter Cardmaster. The Cardmaster was set to provide an item exposure of 3 sec. and an interitem exposure of 2 sec. Twenty items constituted the list. Intertrial time was 15 sec., and training was by the method of serial anticipation to a criterion of one errorless run through the list. In the test procedure the items (most reduced pictures) were presented once; item exposure time was 3 sec.; interitem time was 2 sec.

Twenty-six Ss were assigned to each training condition, *Complete*, *Intermediate*, and *Words*. Half the Ss in each training condition were presented with the test displays 1 min. after termination of training and half were given the test one day after termination of training. The order of test items was altered by a random procedure with the qualification that no items in the test list were contiguous if they had been so in the training list. Control group Ss (N=13) received

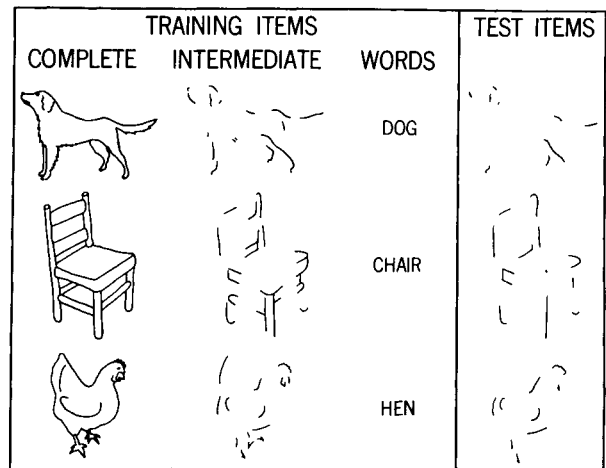


Fig. 1. Examples of training and testing patterns.

no training. They were presented with the test displays in the same manner as were experimental Ss.

Results

Table 1 shows the training and test scores of all groups. There were no significant differences between the six training groups in mean number of trials to criterion.

A 2 by 3 analysis of variance of recognition scores indicated that Training Condition ($F=124.80$, $df=2/72$, $p < .0001$) and Delay ($F=5.35$, $df=1/72$, $p < .025$) main effects were significant.

The recognition scores of the Complete and Intermediate training groups were significantly higher than the recognition scores of the control groups. However, the groups trained on Words did not differ significantly from the controls in number of test displays recognized (see Table 1).

The Complete-min. group achieved a significantly higher mean recognition score than the Word-min.

Table 1. Means and SDs of Trials to Criterion During Training and of the Number of Incomplete Displays Recognized During Testing

Training Condition	Delay	Trials to Criterion		Number Recognized	
		Mean	SD	Mean	SD
Complete	1 min	8.9	3.7	9.7	2.7*
Complete	1 day	8.8	3.1	11.8	2.6**
Intermediate	1 min	8.8	3.6	17.6	1.3**
Intermediate	1 day	8.9	2.7	18.5	1.1**
Words	1 min	8.9	4.1	7.5	2.6
Words	1 day	8.3	3.3	8.2	3.3
Control				8.2	1.0

t tests: * vs. control $p < .05$

** vs. control $p < .0001$

group ($t=2.02$, $df=24$, $p < .05$), and the Complete-day group achieved a significantly higher mean recognition score than the Word-day group ($t=3.08$, $df=24$, $p < .01$).

The Complete-day group recognized more displays than the Complete-min. group ($t=2.04$, $df=24$, $p < .05$) but there were no comparable significant differences between the day and min. groups trained with Intermediate and with Word stimuli.

Discussion

All Ss are able to name every Complete picture; with rare exceptions Intermediate displays are also readily identified and labelled. It may, therefore, be assumed that the word labels and pictorial displays represent points on a common generalization continuum. It has been argued that the phenomena of word recognition can play a strategic role in the rapprochement of theories of perception and verbal learning (Solomon & Postman, 1952). Since many perceptual experiments rely on verbal reports for their basic data the relationships between verbal labels and nonverbal stimuli require specification. The results of the present experiment suggest that prior experience

with the word names of common objects is not sufficient to affect the perceptibility of reduced representations of those objects in contrast to the perceptual facilitation that occurs when prior experience is with more complete representations of those objects.

References

- Gollin, E. S. Factors affecting the visual recognition of incomplete objects: A comparative investigation of children and adults. *Percept. mot. Skills*, 1962, 15, 583-590.
- Gollin, E. S. Serial learning and perceptual recognition in children: Training, delay, and order effects. *Percept. mot. Skills*, 1966, 23, 751-758.
- Solomon, R. L., & Postman, L. Frequency of usage as a determinant of recognition thresholds for words. *J. exp. Psychol.*, 1952, 43, 195-201.

Notes

1. The preparation of this report was supported by Contract No. PH 43 65-1011 between NICHD and the Fels Research Institute.
2. The data for this experiment were collected while the writer was on the staff of Queens College of the City University of New York. For complete description of the materials used see: Gollin, E. S. Developmental studies of visual recognition of incomplete objects. *Percept. mot. Skills*, 1960, 11, 289-298.