

Hard-to-find classics 1: Carmichael, Hogan & Walter (1932)

Reference

Carmichael L, Hogan HP & Walter AA (1932) An experimental study of the effect of language on the reproduction of visually perceived form, *Journal of Experimental Psychology*, 15: 73-86.

Introduction

This great study was based on some earlier research by JJ Gibson who criticised the Gestalt approach to psychology. From his investigations using the method repeated reproductions of visual forms similar to that used by Bartlett (1932), Gibson concluded that "...the nature of the change found in a reproduction depends on the manner in which it was apprehended." When his participants apprehended (ie perceived) the images in different ways, eg as 'Gothic' or 'irregular', this affected the way they reproduced them. Carmichael et al wanted to investigate this effect systematically.

Carmichael et al's study links to several useful concepts that appear in GCSE and A level specs:

- priming
- perceptual set
- schemas
- reconstructive memory
- effects of context
- effects of expectation
- effects of words on memory

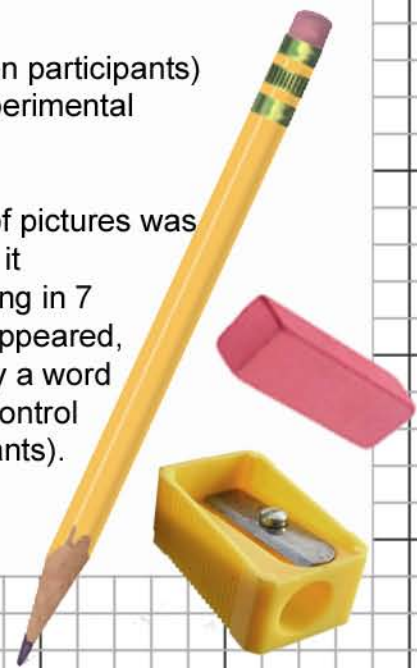
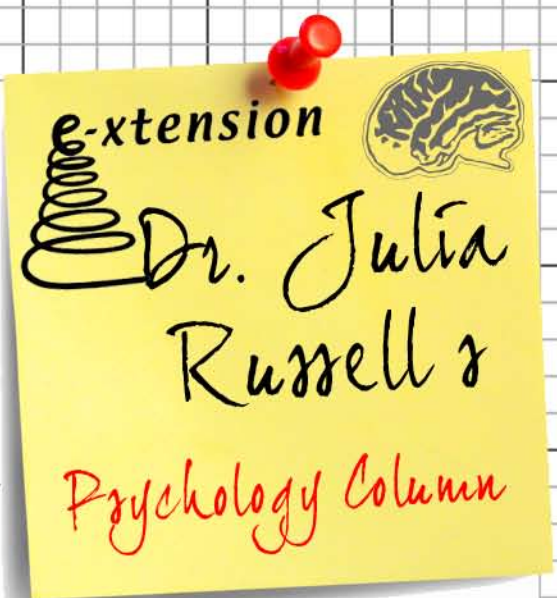
Aim

To demonstrate whether speaking a word when a picture is presented affects recall of the pictures.

Procedure

This was a laboratory experiment with an independent measures (between participants) design. 95 participants, 35 male and 60 female, were divided into two experimental groups and a small control group (9 participants).

The participants were shown 12 pictures. The timing of the presentation of pictures was controlled by a rotating disc divided into 30 segments. As the disc rotated it alternately revealed pictures and blank segments to the participants, ending in 7 blank segments before the sequence repeated. As each blank segment appeared, the experimenter said 'The next figure resembles...'. This was followed by a word from either List 1 (for 48 participants) or List 2 (for 38 participants). The control participants did not hear any verbal labels (so were like Gibson's participants). Lists 1 and 2 were experimental conditions.



Hard-to-find classics 1: Carmichael, Hogan & Walter (1932)































At the end of the sequence of 12 pictures the participants were asked to reproduce all the pictures they had seen in any order. If necessary, the sequence was repeated until a drawing had been produced for every picture. The drawings were then assessed for their likeness to the original in terms of:

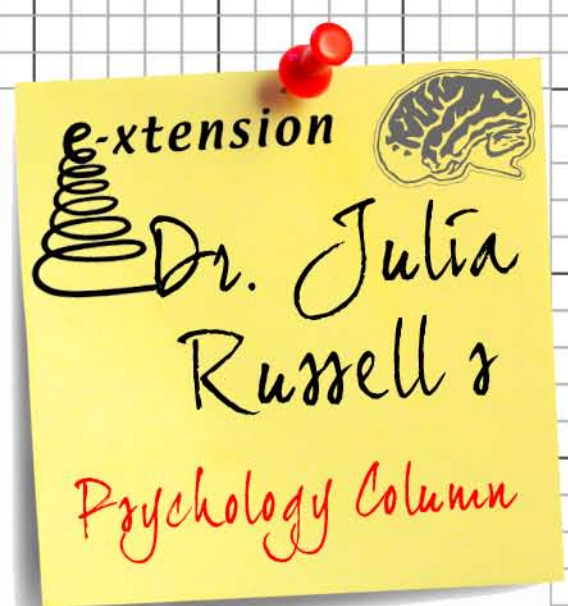
1. being almost identical
2. differences in line lengths or curves
3. differences in proportions of parts of the figure
4. omissions or additions
5. being almost entirely different (eg inverted).

This rating was done without reference to the word lists and independently by two raters. Where they disagreed the decision was discussed and a third rater's opinion was taken if agreement couldn't be reached. This was rarely necessary.

Carmichael et al's main analysis, as described below, used only those reproductions falling into category 5. These were then compared to the word list. This was the dependent variable.

Participants were also asked "Will you tell me how you performed this task?" Their replies were noted down.

REPRODUCED FIGURE	WORD LIST 1.	STIMULUS FIGURE	WORD LIST 2.	REPRODUCED FIGURE
	Curtains in a window		Diamond in a Rectangle	
	Bottle		Stirrup	
	Crescent Moon		Letter C	
	Bee Hive		Hat	
	Eye Glasses		Dumbbells	
7	Seven	7	Four	4
	Ship's Wheel		Sun	
	Hour Glass		Table	
	Kidney Bean		Canoe	
	Pine Tree		Trowel	
	Gun		Broom	
2	Two	2	Eight	8



Hard-to-find classics 1: Carmichael, Hogan & Walter (1932)

Findings

Reproductions by participants who heard a word list tended to look like the words they had heard. Of more than 3000 reproductions they assessed, 905 reproductions were in category 5.

e-extension



Dr. Julia
Russell &

Psychology Column

Group	Percentage of drawings
List 1	73% of the drawings resembled the word spoken
List 2	74% of the drawings resembled the word spoken
Control	45% of the drawings resembled one of the words in List 1 or 2

These results show that the spoken words affected the participants' reproductions of the drawings.

Conclusion

Memory for pictures is reconstructed. The verbal context in which drawings are perceived affects later reproduction because when the figure is redrawn the memory of the word alters the way the picture is represented.

Comments

By using a control group who did not hear either list, Carmichael et al could be sure that the drawings were not simply distorted because the stimulus picture was ambiguous. The certainty of the influence of the words was confirmed by the use of two lists which influenced the drawings different ways, clearly indicating the role of the verbal labels in distorting recall.

However, when Prentice (1954) tested the effect of verbal labels on recognition, the results suggested that verbal labels did not affect recognition although recent evidence from Kunen & Duncan (1983) supports Carmichael et al's original findings.

Questions

1. The central figure below could have been used in Carmichael et al's study. Look at the verbal labels and explain each of the two reproductions.



REPRODUCTION
verbal label:
ladder



ORIGINAL FIGURE



REPRODUCTION
verbal label:
letter A



Hard-to-find classics 1:

Carmichael, Hogan & Walter (1932)

2. If Carmichael et al's fifth figure had been described as resembling 'two oranges', how might it have been recalled?

3. Look at the original figure and reproductions below. Suggest possible verbal labels for Reproduction 1 and Reproduction 2.



Reproduction 1



ORIGINAL FIGURE



Reproduction 2

Ideas for practicals

1. Draw a new set of ambiguous figures and devise two alternative word lists. Replicate Carmichael et al's study.
2. Compare the effect of two word lists, one list which does resemble the figure in each case and one list where the words do not resemble the figures.
3. Compare the effect of a word list to just reading the words. This is a different control group, which Carmichael et al did not use.

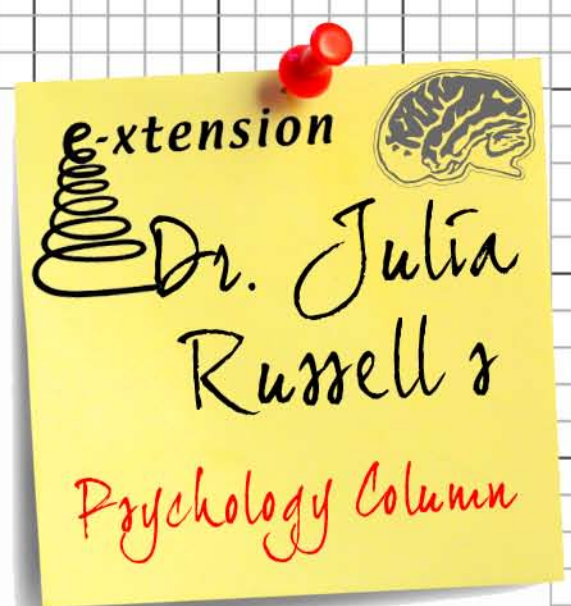
References

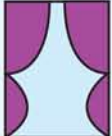









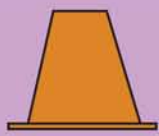

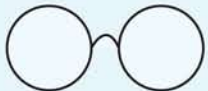
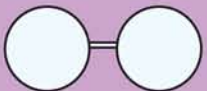
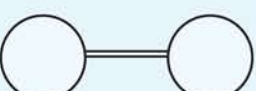



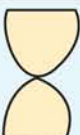
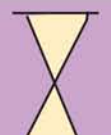
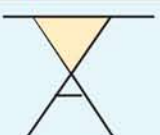






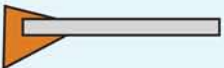


[Bartlett FC \(1932\)](#) Remembering: A Study in Experimental and Social Psychology, Cambridge: Cambridge University Press.

[Gibson JJ \(1929\)](#) The reproduction of visually perceived forms. *Journal of Experimental Psychology*, 12: 1-39.

[Kunen S & Duncan EM \(1983\)](#) Do verbal descriptions facilitate visual inferences? *Journal of Educational Research*, 76: 370-3.

[Prentice WCH \(1954\)](#) Visual recognition of verbally labelled figures. *American Journal of Psychology*, 67: 315-20.



REPRODUCED FIGURE →	WORD LIST 1. →	STIMULUS FIGURE →	WORD LIST 2. →	REPRODUCED FIGURE
	Curtains in a window		Diamond in a Rectangle	
	Bottle		Stirrup	
	Crescent Moon		Letter C	
	Bee Hive		Hat	
	Eye Glasses		Dumbbells	
7	Seven	7	Four	4
	Ship's Wheel		Sun	
	Hour Glass		Table	
	Kidney Bean		Canoe	
	Pine Tree		Trowel	
	Gun		Broom	
2	Two	2	Eight	8