

Hard-to-find classics 8: Palmer (1975)

Reference

Palmer SE (1975) The effects of contextual scenes on the identification of objects. *Memory & Cognition*, 3(5): 519-26.

Introduction

When we look around the world, the way we perceive is affected by what we already know. This happens because we develop schemas. A schema is a mental structure that holds all our knowledge about a particular type of object, event or group of people. Schemas help us to organise information and recall what we have seen but they can also affect the way interpret what we see, ie they can alter our perception causing us to make mistakes. For example, I was in Scotland with a small boy who had schema for aeroplanes, helicopters, hang-gliders and birds. We were lucky enough to see a sea eagle – an enormous bird that appears to ‘float’ on rising air currents. Because it was hard to judge distance and therefore size, he said ‘Look, look, a hang-glider!’ The sea eagle fitted his ‘hang-glider’ schema (‘big winged things that glide through the sky’) better than his ‘bird’ schema (small things that flap their wings to fly) as it seemed too big for a bird and wasn’t flapping.

We also tend to notice things we are expecting, because of experience, expectations or the situation, more than others. This is why you might do a ‘double-take’ if you see one of your teachers miles away from home during the holidays – you don’t expect to see them when you aren’t in school, so your perceptual set makes recognising them harder. This explains the findings of experiments such as who found we are quicker to find a target object when it is located in an appropriate context than in an inappropriate one (Biederman et al, 1973).

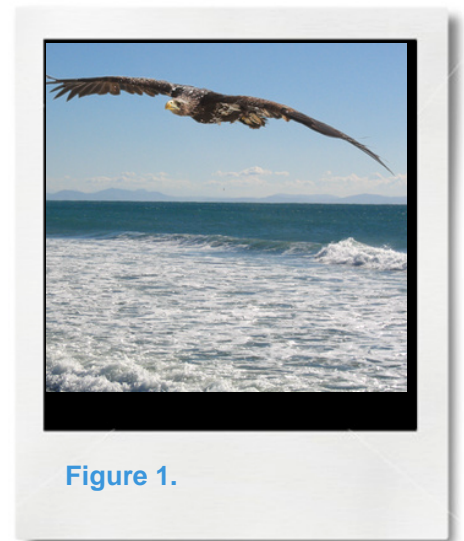
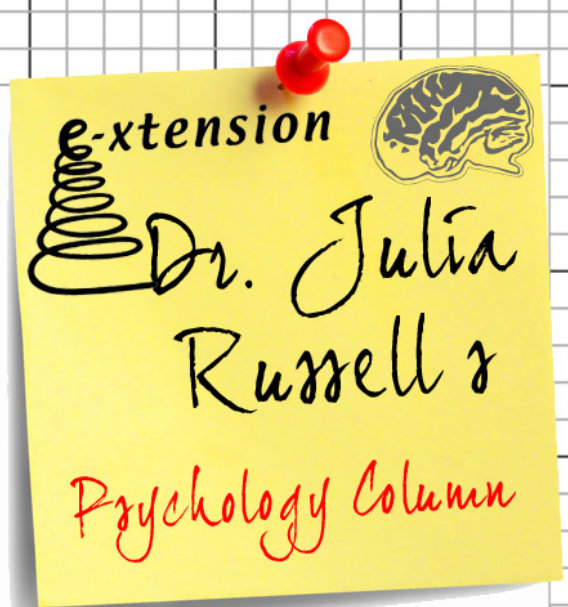


Figure 1.

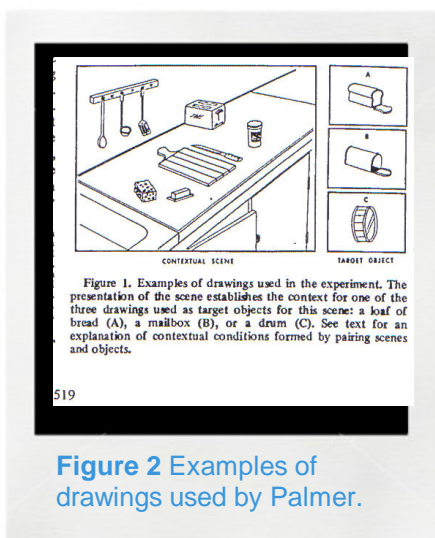


Figure 2 Examples of drawings used by Palmer.

Aim

To find out whether context in which an object is seen affects the perception of that object.

Procedure

The research method used was a laboratory experiment. The sample consisted of 71 university students who participated as a course requirement. The results from seven of these were eliminated (three due to equipment malfunction, two for failing to follow instructions and two because they forgot their glasses), leaving 64 participants.

Each participant was shown line drawings of many different visual scenes like the one in Figure 1, which were given



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written instructions telling them what to do.

The independent variable was the relationship between the scene and the object that the participant had to identify. There were four conditions:

- *appropriate*: the scene and the object matched eg identifying a loaf after seeing a kitchen scene
- *inappropriate, similar object*: the scene and the object didn't match but the object was shaped like something that could have been in the scene eg identifying a mailbox which looks like a loaf after seeing a kitchen scene
- *inappropriate, different object*: the scene and the object didn't match eg recognising a drum after seeing a kitchen scene
- *no context*: the participant didn't see a scene first, they just identified an object.

Every participant was tested in each of the four conditions, so it was a repeated measures design.

The dependent variable was the number of correctly identified objects. If the participants used different words (eg 'trash can' or 'garbage can') or named a similar object (eg pen/pencil) this counted as correct.

Findings

Participants were most likely to identify objects correctly after seeing an appropriate context and less likely to after seeing an inappropriate context. Identification was worse when objects were in inappropriate contexts than when there was no context at all. It was also worse if the object looked like something that would have matched the scene than if it didn't resemble anything that could have been in the context.

condition	% correct responses
<i>Appropriate context</i>	83
<i>Inappropriate, similar object</i>	40
<i>Inappropriate, different object</i>	49
<i>No context</i>	63

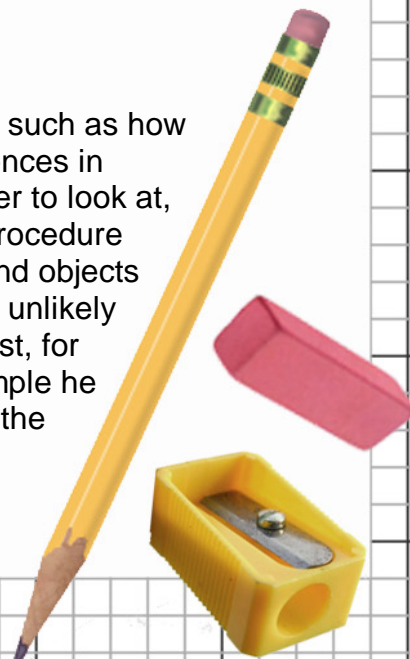
Table 1 The percentage of correctly identified objects in each condition

Conclusion

Expectations about the objects based on the scenes affected perception. This happens because the context triggers a perceptual set which leads the individual to identify objects that fit the context more easily than ones which do not.

Comments

In some respects Palmer's study was valid as he controlled variables, such as how long each participant saw the context and the object for, so the differences in accuracy of identification could not have been caused by having longer to look at, think about or remember some of the objects. Another aspect of the procedure that was a practical strength was that the order in which the scenes and objects were presented was randomised for each participant. This means it is unlikely that some objects were identified better because they always came first, for example. As the situation was the same for every participant, for example he made sure they were all the same distance from the projected image, the findings are likely to be reliable.



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Data from two possible participants was not used because they had forgotten their glasses. This is good because if they had not been able to see the projected images clearly this would have affected the results.

An ethical strength was that the participants were given written instructions before they started the experiment so they knew exactly what they would be doing.

More recent research has found similar results to Palmer. Brewer & Treyens (1981) asked their participants to wait a room and told them it was an office. They then moved the participants to another room and asked each one what they could remember about the first room. They recalled more objects that fitted the context of an office, such as the desk and chair but were less likely to recall the picnic hamper, bottle of wine or skull! Almost a third of the participants said they had seen books, even though there weren't any. This also suggests that perceptual set affects the way we understand a scene.

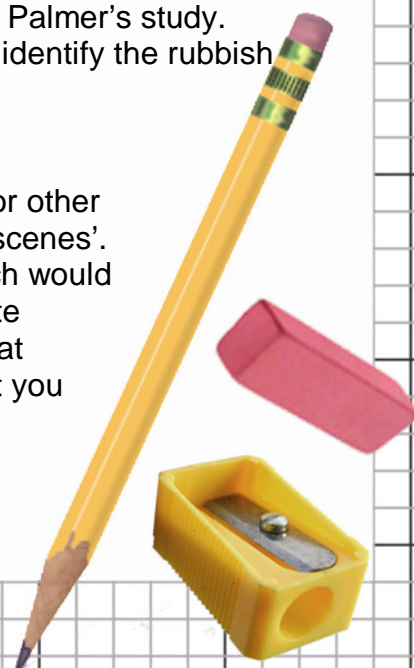
There were some weaknesses in Palmer's study, however. For example, telling the participants what they would be doing might have caused them to try harder in some conditions. Differences between recall in different visual contexts might have been caused by participants trying to please the experimenter rather than because of the independent variable. This would be a practical weakness. As some participants' data couldn't be used this means there were fewer results. A smaller sample makes the data less reliable. The participants were all university students who, in the 1970s, were probably all very similar. For example, they might all have been very familiar with drums if they'd seen lots of bands but not very familiar with kitchens if they didn't do much cooking. This would mean that the results would not generalise to a more diverse population.

Questions

1. Draw a bar chart using the data in Table 1.
2. a) Suggest another possible scene that Palmer could have used.
b) Suggest two objects that would be 'appropriate' for this scene.
c) Suggest one object that would be 'inappropriate' for this scene.
d) Suggest another object that would be 'inappropriate' for this scene but which *looks like* something that would fit the scene. Explain why you have chosen this object, ie say which scene-relevant object it resembles.
3. Suggest a context which would have been appropriate for a pencil in Palmer's study.
4. Suggest a context which would have helped Palmer's participants to identify the rubbish bin.

Activity

Collect together some colour supplements from weekend newspapers or other glossy magazines. Cut out any full-page pictures that some particular 'scenes'. Write a list for each scene of objects that are *not* in the picture but which would be appropriate to that context. Write two more lists. One of inappropriate objects and another of inappropriate objects that look like something that could be in the scene. Use the internet to find examples of pictures that you could use with one scene.



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You might find it helpful to read (or look at the PowerPoint of) the example below.

Scene: a picture of a vegetable garden.

Appropriate object: a garden fork

Inappropriate, different object: a telephone

Inappropriate, similar object: a cutlery fork

Extension

Find scenes which the 'out-of-context' object would fit (eg in the example above, a place setting on a table, a cutlery drawer or the cutlery rack of a dishwasher).

Resources

A short PowerPoint illustrates the example given above at the end of the activity.

A photo of the original 'office' used by Brewer & Treyns (1981) can be found here:

<http://www.psych.illinois.edu/~wbrewer/office.html>

<http://www.cgu.edu/include/Memory%20for%20Real%20World%20Scenes.pdf>

References

Biederman, I, Glass AL & Stacy EW (1973) Searching for objects in real-world scenes. *Journal of Experimental Psychology*, 97: 22-7.

Brewer WF & Treyns JC (1981) Role of schemata in memory for places. *Cognitive Psychology*, 13: 207-30.

