Experiments in Remembering

3. The Picture Superiority Effect

In the last Experiment in Remembering, I introduced two kinds of visual mnemonics, both widely used as memory aids. One reason visual imagery has been so popular among mnemonists and memory teachers throughout the ages is that vision is such a strong sense for humans. This is a direct consequence of our primate ancestry, and it has its basis in the structure of our brains. Researchers estimate that about 50% of the primate cerebral cortex is involved with processing visual information, so vision is a sensory system where we have especially good hardware. It should come as no surprise, then, that visual mnemonics are especially powerful.

Vision can confer memory benefits even without constructing special mnemonic images like those in the last handout. Just changing memory information from a verbal format to a visual format can aid memory, a fact that psychologists call the Picture Superiority Effect. In a typical experiment, people are given lists of words to study, words such as necktie, spool, train, pig, or needle – all concrete words – and research participants try to retain them for a period of time. Sometimes the lists are presented as words, other times as pictures. The consistent finding is that people remember the lists better when they see them as pictures.

Interestingly, although the Picture Superiority Effect works for all age groups, it appears to be especially powerful for older adults. In one study, people were given lists of 16 items to remember either as words or as pictures. Those between 45-58 years old remembered 23% more when the material was presented as pictures; those between 75-89 remembered 51% when the list was pictorial.¹

An implication of the Picture Superiority Effect is that it can often be a memory advantage to convert verbal memory material into a mental picture. In this experiment, I invite you to try out this advantage by remembering the theory of working memory presented in today’s lecture in a more visual format. First, take a look at the theory in a verbal format shown in the diagram at right. This is the way I presented it in class – all essential information is given as words. The Picture Superiority Effect suggests that the theory would be easier to remember if it were more pictorial. I have prepared a more visual version of the diagram on the next page.
In the visual version, icons represent key aspects of the model. A flashlight represents attention and a drawing represents a plan. The ear, the eye, and a plug to make connections to long-term memory depict the three memory storage options in the theory. To make this work, the icons need to be meaningful, so if you recall them, you will know what they refer to.

**The Experiment.** The purpose of the experiment is to see how well a visual version of this diagram will be retained. Begin by taking a good look at it and then closing your eyes and recalling it. Start by visualizing it from a distance so you can mentally see the whole design without focusing on specific details. Next zoom in on the different parts and recall what they refer to in the theory and remember how working memory operates according to the theory.

It is important to make sure you have a well-established memory of the visual version before moving on to see how well it is retained. I recommend that you rehearse the image now, tomorrow and again after class next Thursday. That will give you two rehearsals after the initial learning, still well short of the Rule of Five, but enough to create a decent memory. Now wait a month until November 14 to see if you can still recall it. If you carry this out, share your experience with me by sending me a note at bmadigan2@gmail.com.

**A note about visual images.** People differ in how vivid their mental images are. Some describe highly detailed and brightly colored images, but for others, visual images appear washed out, broken up, and fleeting. Fortunately, research has shown that a high level of imagery skill is not necessary for memory benefits. If you experience weak mental images you can expect to receive about as much memory enhancement from visual techniques as a person who experiences vivid images. Moreover, you can expect your imagery skill to improve with practice. Here are three suggestions for getting up to speed with mental imagery.

*Lower your expectations for imagery.* People sometimes expect their images will be graphic pictures in the head – crystal clear and brightly colored. Let go of this idea. Images can also be fragmentary, indistinct, and short-lived.

*Allow images time to emerge.* Visual representations may not appear as soon as you think of an object. Be patient to give them time to form.

*Work to hold onto images and develop them.* Creating memory images for mnemonic purposes is an active process. Ancient memory practitioners talked about the creation of memory images as an acquired art, the practice of “imagination.” You can exercise this art by working to bring out details in your image. Keep in mind that when you visualize an image mentally you are drawing on the same brain machinery you use in actually seeing something. The basic equipment is there; it’s just a matter of learning to use it.

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