

Mnemonics for Study

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Introduction to mnemonics

What are mnemonics and what are they good for?

Any memory-improving strategy can, of course, be termed a “mnemonic” strategy, but in its more specific meaning, mnemonic refers to “artificial” memory aids such as stories, rhymes, acronyms, and more complex strategies involving verbal mediators or visual imagery, such as the journey method or “method of loci”, the pegword method, and the keyword method.

We will get to each of these in due course, but first we need to consider the benefits and limitations of such mnemonics, and in particular when you should use them in the course of study and when you should not.

The most important thing to understand is that mnemonics do *not* help you understand your material. They do not help with comprehension; they do not help you make meaningful connections.

The purpose of mnemonics is simply to help you remember something — not by understanding it, not by incorporating it into your developing “expert database”, but simply in the manner of a parrot. They are used to enable you to regurgitate information.

That sounds terribly contemptuous, but if I considered there was no value in mnemonics I wouldn’t be devoting this book to them. The ability to regurgitate information on demand is undeniably a useful one — indeed, in the context of examinations, often a vital one!

Even in the context of material you need to understand, there are often details that must simply be memorized — names of things, technical words, lists of principles, and so on. Moreover, mnemonics can help you remember tags or labels that allow you to access clusters of meaningful information — for example, headings of a speech or main points for exam essays. For both these reasons, mnemonics are a valuable assistance to building up expertise in a subject, as well as in helping you ‘cram’ for an exam.

However, despite a number of studies showing the effectiveness of mnemonic strategies, these remain the least frequently used formal memory aid used by students. Perhaps the main reason for this is that their effectiveness is not intuitively obvious — truly, no one really believes that these ‘tricks’ can so remarkably improve memory until they try them for themselves.

But I can help you believe (and belief is vitally necessary if you’re going to make the effort to use, and keep on using, any memory strategy) if I explain why they work. It’s also important to understand the principles involved if you’re going to fully master these

techniques — by which I mean, know when and when not to use them, and how to use them flexibly.

Do note that this is a very bare-bones account. For more details, I refer you to my book *The Memory Key*, available as a digital download, or to the revised edition put out in paperback by Random House (*Perfect Memory Training*).

Why are mnemonics effective?

Let's think about the basic principles of how memory works.

The strength of memory codes, and thus the ease with which they can be found, is a function largely of repetition. (For those who haven't read *The Memory Key*, let me note that I habitually refer to information encoded in memory as memory codes to emphasize that memories are not faithful and complete recordings, but highly selected and edited.) Quite simply, the more often you experience something (a word, an event, a person, anything), the stronger and more easily recalled your memory for that thing will be.

This is why the most basic memory strategy — the simplest, and the first learned — is rote repetition.

Repetition is how we hold items in working memory, that is, “in mind”. When we are told a phone number and have to remember it long enough to either dial it or write it down, most of us repeat it frantically. This is because we can only hold something in working memory by keeping it active, and this is the simplest way of doing so.

Spaced repetition — repetition at intervals of time — is how we cement most of our memory codes in our long-term memory store. If you make no deliberate attempt to learn a phone number, yet use it often, you will inevitably come to know it (although how many repetitions that will take depends on several factors, including individual variability).

But most of us come to realize that repetition is not, on its own, the most effective strategy for learning, and when we deliberately wish to learn something, we generally incorporate other, more elaborative, strategies.

Why do we do that? If memory codes are strengthened by repetition, why isn't it enough to simply repeat?

Well, it is. Repetition IS enough. But it's boring. That's point one.

Point two is that making memory codes more easily found (which is after all the point of the exercise) is not solely achieved by making the memory codes stronger. Also important is making lots of connections. Memory codes are held in a network. We find a particular one by following a trail of linked codes. Clearly, the more trails that lead to the code you're looking for, the more likely you are to find it.

Elaborative strategies — mnemonic strategies, organizational strategies — work on this aspect. They are designed to increase the number of links (connections) a memory code has. Thus, when we note that a lamprey is an “eel-like aquatic vertebrate with sucker mouth”, we will probably make links with eels, with fish, with the sea. If we recall that Henry I was said to have died from a surfeit of lampreys, we have made another link. Which in turn might bring in yet another link, that Ngaio Marsh once wrote a mystery entitled “A surfeit of lampreys”. And if you’ve read the book, this will be a good link, being itself rich in links. (As the earlier link would be if you happen to be knowledgeable about Henry I).

On the other hand, in the absence of any knowledge about lampreys, you could have made a mnemonic link with the word “lamp”, and imagined an eel-like fish with lamps in its eyes.

So, both types of elaborative strategy have the same goal — to increase the number of connections. But mnemonic links are weaker in the sense that they are arbitrary. Their value comes in those circumstances when either you lack the knowledge to make meaningful connections, or there is in fact no meaningful connection to be made (this is why mnemonics are so popular for vocabulary learning, and for the learning of lists and other ordered information).

Mnemonic strategies have therefore had particular success in the learning of other languages. However, if you *can* make a meaningful connection, that *will* be more effective.

For example, in Spanish the word *surgir* means to appear, arise. If you connect this to the word *surge*, from the Latin *surgere*, to rise, then you have a meaningful connection, and you won’t, it is clear, have much trouble when you come across the word. However, if your English vocabulary does not include the word *surge*, you might make instead a mnemonic connection, such as *surgir* sounds like *sugar*, so you make a mental image involving rising sugar. Now, imagine each of these situations. Imagine you don’t come across the word again for a month. When you do, which of these connections is more likely to bring forth the correct meaning?

But of course, it is not always possible to make meaningful connections, and this is where mnemonics are so useful.

Additionally, sequence is often not obviously meaningful (although it may become so when you have a deeper understanding of the subject), and mnemonics are particularly good for ordered information.

The thing to remember however, is that you haven’t overcome the need for repetition. These strategies are adjuncts. The basic principle must always be remembered: Memory codes are made stronger by repetition. Links are made stronger by repetition. If you don’t practice the mnemonic, it won’t be remembered. The same is true for any connection, but meaningful connections are inherently stronger, so they don’t need as many repetitions.

Points to Remember

Memory codes are made stronger by repetition.

Memory codes are made easier to find by increasing the number of links they have to other memory codes.

Elaborative strategies make connections with existing codes

Some elaborative strategies make meaningful connections between memory codes — these are stronger.

Mnemonic strategies make connections that are not meaningful.

Mnemonic strategies are most useful:

— where there are no meaningful connections to be made, or you lack the knowledge to make meaningful connections

— where you need to remember items in sequence.

About imagery

The more complex mnemonic strategies are usually based on visual images. This causes people who feel that their ability to ‘see’ mental images is poor, to think that mnemonics are of no use to them. That would be overly hasty. Although imagery is certainly an effective tool, there is nothing particularly special about it. The big advantage of imagery is that it provides an easy way of connecting information that is not otherwise readily connected. However, providing verbal links can be equally effective.

Individual differences

Moreover, although there is undoubtedly considerable variation between people in terms of their abilities to visualize images, only a very small percentage of people *don't* visualize. A similarly small percentage make extremely vivid images. Somewhere in between are the rest of us.

My own feeling is that many people don't realize the extent to which they form visual images. You don't need clear television-quality mental images to visualize usefully! When you're reading a novel, for example, you may well have no conscious awareness of the pictures being created in your mind, but if you see a movie adaptation of the book you'll immediately notice all the visual images that are ‘wrong’ (such as what the hero looks like).

If you're uncertain about your visualization abilities, you might find these signs interesting:

High visualizers are more easily tricked into thinking imagined experiences have really happened — they create false memories more easily. So if you know you're prone to that, that's a sign that you form good images!

There's also some evidence¹ that high visualizers are better at fighting the Stroop effect. The Stroop effect concerns color-name interference: when you see the name of a color written in the same color, that's easier to process than when the color doesn't match the name (for example, 'red' written in blue ink). Comparison of the different reaction times (how long it takes you to process **RED** compared to **RED**) has been used to test attention, executive function, and processing speed, and less directly the presence of various disorders. More recently a study that looked at differences in brain activity as people imagined a visual scene, found that not only were there noticeable differences between good and poor visualizers (good visualizers had more activity in their visual cortex), but that this correlated with performance on the Stroop test. Those showing greater activity in their visual cortex (good visualizers) were *slower* at naming colors when the names *matched* the color they were written in (this is of course the opposite of what is usually found). This is a very small study (8 people) and we can't draw too firm a conclusion, but it is interesting. There are places on the web where you can get a feel for this task (for example, <http://www.snre.umich.edu/eplab/demos/st0/stroopdesc.html>).

But the most important thing to note is that visualization is a skill that is strengthened with practice. If you persevere with trying to make good visual images, you will get better at it.

Using imagery

For myself, I am very verbal (not surprising in a writer!), but that doesn't mean images, albeit not particularly vivid ones, aren't being formed in my mind. What I find works best for me, and probably what will work best for most of you, if you're not at the extreme ends of visualization ability, is the use of both words and images. That is, when you're using a verbal mnemonic, aim for words that are easy to visualize; when you're using a visual mnemonic, make sure the pictures have associated word labels, and keep them in mind while you're imagining the picture.

Most mnemonic strategies, despite being usually described as 'visual' or 'verbal', do in fact combine both aspects, and you may emphasize the visual *or* the verbal aspect as suits you.

It is usually emphasized that bizarre images are remembered much better, but there is no clear evidence for this. Indeed in many studies ordinary images are remembered slightly better. One of the problems is that people usually find it harder to create bizarre images. Unless you have a natural talent for thinking up bizarre images, it is probably not worth bothering about.

Whether bizarre or not, images generally take longer to construct than verbal phrases. If you want to construct them 'on the fly', as you hear information in conversation or in a presentation like a lecture, then you need to have practiced the skill a great deal.

The critical point to remember is that images, and words, work well as mnemonics only to the extent that they are bound together. Thus, an image needs to be *interactive* — tying the bits of information tightly together.

Don't worry if you're not sure exactly what this means! It will become clear as we discuss the various mnemonic techniques. For now, I just ask you to bear it in mind.

Points to Remember

Images are effective to the extent that they link information.

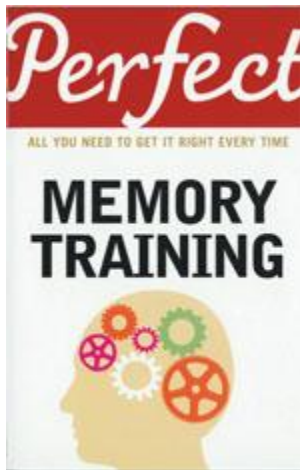
Images are not inherently superior to words.

Bizarre images are not necessarily better recalled than common ones.

Effective images involve the elements interacting with each other.

This is an excerpt from *Mnemonics for Study* by Dr Fiona McPherson

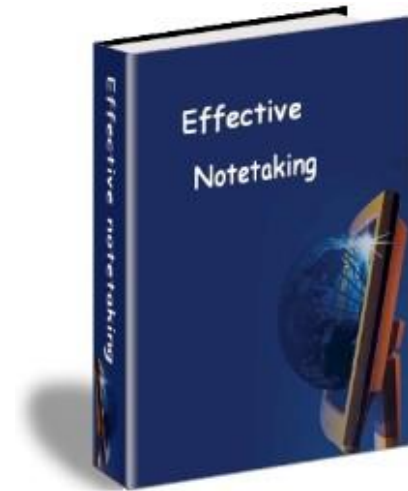
Other books by Dr Fiona McPherson



A revised edition of *The Memory Key*,

Published 2009 by Random House UK

Other ebooks by Dr Fiona McPherson



Being a successful student is far more about being a smart user of effective strategies than about being 'smart'. In fact it is possible to predict how well a student will do simply on the basis of their use of study strategies. **Effective notetaking** looks at the most important group of study strategies — taking notes — a broad category that encompasses not only information selection techniques, but also ways of organizing and arranging your notes to help you understand and remember.



The original **Memory Key**, first published in New Zealand by Tandem Press in 1999, and subsequently published in the United States by Career Press in 2000, and in hardback by Barnes & Noble in 2004, is now available from the Memory Key website as a downloadable, digital book.



Fiona's first digital book, **Remembering intentions: How to remember future actions & events**, tells you how to improve your ability to remember appointments, important dates, and things you plan to do.