

How does the motivation to learn actually work to improve memory?



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WHAT?

People's motivation to learn varies, for lots of reasons. For instance, we are more motivated to remember some experiences compared to others. Motivation can be internally-focused, e.g., when we are genuinely interested in something; or externally-driven, e.g., when we think we may gain something from remembering a particular experience/piece of information.

This study looked at how motivation might change the way the brain processes information when storing experiences to memory, and how people recall this information, in order to enhance later memory for the most important experiences.

HOW?

We thought carefully about how to describe the effect of motivation, because these kinds of statements can be misinterpreted very easily. We decided to use a numerical approach, so instead of speaking about 'memory' in general, we focused on the number of items that people could recall after a full minute of distraction, without any cues.

We created a computer program that mimicked the information-processing steps we thought might be going on in the brain when recalling information. We gave the computer program virtual items to 'encode'; and then asked it to recall these items. If we are right about the processes that are going on in the brain, then the output of our code will be similar to what human participants recall.

We compared the computer program's recall to published data from experiments where a sample of healthy adults (aged 18-35) were asked to recall different things. These had either a motivational/emotional or neutral component. So, participants were asked to recall items in one of three conditions:

1. Lists of neutral and disturbing pictures
2. Lists containing only neutral pictures
3. Lists containing only disturbing pictures

We thought that when people were asked to remember both important and less-important things together (i.e., condition 1), the brain would prioritise the more important things. We thought this wouldn't happen if people only had to take in one type of information (i.e., conditions 2 or 3).

WHAT DID WE FIND?

We looked at how well our software mirrored what studies with human participants had found. We found that our computer program test was right: when people were asked to remember both emotionally/motivationally important and less-important things together (i.e., condition 1), the brain 'squashed' less important information and prioritised the important bits.

When the people/software were given a set of materials that were EITHER emotional OR neutral (so that these did not compete against each other) memory was equivalent. This is really the key message: better memory for emotional and motivational things is a result of the ability of these materials to 'squash' other materials during recall. In fact, when information was *all* seen as important, people did not seem to recall it any better than information that was *all* seen as *unimportant*.

WAIT A MINUTE!

Here, we assumed that the motivation to learn didn't affect the way people organise the target material in their minds as they learned it. But in reality, people might be motivated to discover additional links between different pieces of information.

WHAT DOES THIS MEAN FOR EDUCATORS?

- Items that evoke emotion can be remembered more easily than neutral information. However, if all the information evokes emotion then this effect is reduced. So, teachers could try to make **key** learning points more emotionally significant. In other words, they can make key learning points stand out and be better remembered by presenting them in a way that might encourage children to experience a different emotion from the norm. Maybe teachers could use humour when making a key point, or create a sense of surprise by using different teaching techniques to make key learning points better remembered.
- These findings could have implications for the design of reward schemes in educational settings, because it suggests that motivating learners to memorise material by promising a prize may be unlikely to improve their ability to remember it!
- In learning activities, it may be that learners prioritise the information that they think is important, which might make them less likely to remember the rest of the information. It might be that thinking about what we most want pupils to learn can help us develop more effective learning strategies.