

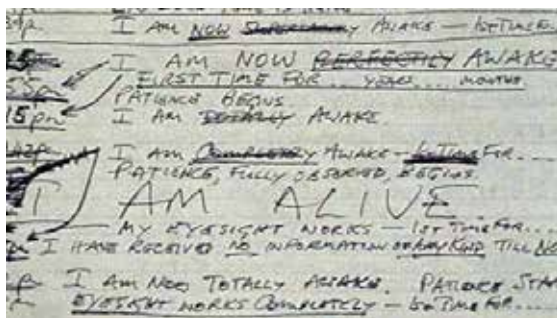
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# Memory Myths

## Key words

memory  
psychology  
falsifiable theory

**M**emory is crucially important in everything we do. Without memory we would not know who we are, whom we love, where we come from or even how to do simple tasks like get out of bed, brush our teeth or make tea. This is very clearly shown by the case of Clive Wearing who is unable to keep memories for more than thirty seconds. His diary, for example, consists of multiple entries where he records, time after time, having just woken up.

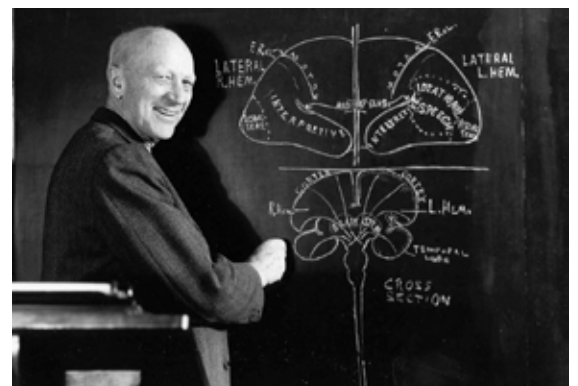


Clive Wearing suffered almost total loss of an ability to make memories after having viral encephalitis in 1985. He keeps a detailed diary of his thoughts.

There are different kinds of memory and each is very important. Memory for facts is important for students taking GCSE exams when they must recall names, dates or equations. Memory for emotions reminds us of how we felt on our first day in a new school, or when we shared a special moment with our family. Memory for events allows us to picture the scene and recall the details of our last birthday party. Memory for movement and coordination allows us to walk, talk and ride a bicycle. While it is clear that memory is essential in so many ways, there are many myths about how memory works. In this article, we explore some of these fairytales and explain what modern psychological science has discovered about how memory really works.

## Myth 1: Memory works like a video recorder

This idea would lead you to believe that all experience is recorded and we can then 'play it back' when we want to remember it. This idea became especially popular after the 1950s when brain surgeon Wilder Penfield was trying to treat epilepsy. In a quite shocking procedure, he electrically stimulated the brains of his patients before surgery and some reported vivid memory fragments coming back to



Wilder Penfield, Canadian neurosurgeon

them. Penfield made the mistake of thinking that this meant all experience is stored in the brain in the form in which it is to be retrieved.

**What the Science says:** Psychology experiments have shown that we store very little of what we actually see, and these details fade with time. When we remember something, we put the memory together (reconstruct it) out of the fragments we did manage to store. Sometimes we fill in the gaps incorrectly - which leads us to the next myth.

## Myth 2: Memory can not be changed

Many people think that memory of past events does not change, and therefore it is very reliable. In a court of law, if a witness points a finger at a suspect and says, "That's the thief, I remember that face!" most people assume the witness is correct. Similarly, there is a widely held belief that memory for our emotions remains the same, and is still completely accurate even many years later.

**What the Science says:** Memory for both past events and emotions can actually be changed. Many psychological studies show that misleading suggestions can completely change a memory. Misleading suggestions can also plant entire events into a person's mind. If your mother incorrectly told you that, as a young child, you had caused a scene by spilling a drink all over a relative at a wedding, there is a real chance that you could develop a memory of this made-up event.

Similarly, memory for our past emotions can change over time. How we remember our feelings 10 years ago depends on how we are feeling today, and also on how we now think about that past situation.

## Myth 3: Traumatic memories are blocked out

Over a century ago, the famous psychoanalyst Sigmund Freud suggested that traumatic experiences were repressed, which means they are blocked out immediately after the trauma so that they cannot be recalled at all. Freud thought traumatic memories were so painful that they are walled off from consciousness and that, years later, in a safe place, the blocked memories can be remembered in great detail.

**What the Science says:** It is possible for people to not think about a past event for a while and be reminded about it later. However, there is no credible scientific evidence that traumatic memories can be completely walled away for many years and then can come back in great detail much later on. In fact, traumatic memories are usually remembered all too well. For example, people who have gone through terrifying events, such as war, often remember the trauma even when they do not want to. Highly emotional memories tend to be well remembered, but are not always remembered completely accurately. Distressing memories do fade with time, although often more slowly than non-emotional events.

You might ask: why would the brain evolve so that memory is faulty? Memory errors are the result of a flexible memory system, and that flexibility is usually beneficial. Changing past memories may improve future behavior and problem solving. It also makes sense in terms of evolutionary adaptation that the essence of traumatic events are well remembered to avoid situations like that in the future.



### You are the witness

Test yourself. This image was shown in a classic misinformation study in the 1970s. It shows a car which, moments later, was involved in an accident. Study the photograph and remember the details. Your memory will be tested later in the article.

## Why memory is important

At the beginning of this article, we pointed out just how important memory is in everything we do. We know that memory does not record everything like a video recorder, that memory can be changed, and that terrifying events are usually remembered all too well. In light of this knowledge what could this mean for society? It is important in the legal system, the treatment of traumatized people and the way we all think about our lives. For example, this knowledge affects how we judge someone accused of a crime. If the police know how changeable memory can be, they can avoid giving leading suggestions to witnesses during questioning or when viewing an identity parade or lineup.



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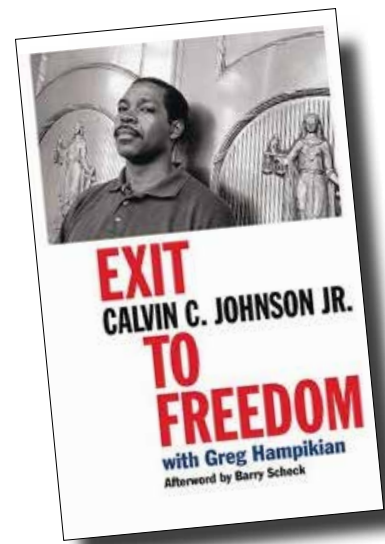


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A photo identity lineup (or parade) where all six faces are shown all at once. Not only is it important that the police do not use leading questions; research also suggests that memory is more accurate if the witness is shown the series of photos one at a time rather than all at once. (Photos: Lifespan Database of Adult Facial Stimuli; Minear & Park, 2004).

Just as important, police should be careful not to change the memory of a criminal suspect as this has led to false confessions in the past. Examples illustrating these problems can be found at the website of the Innocence Project ([InnocenceProject.org](http://InnocenceProject.org)), which documents heartbreaking stories of wrongful imprisonment. Knowing how traumatic memory really works can improve the treatment for those traumatized by war or abuse. Knowing that memory can change affects the fundamental way we all look back at our own lives. Think about it.



Calvin Johnson's book describes how he was wrongly identified as a rapist and spent 16 years in jail. DNA evidence eventually showed that his accuser's memory was unreliable.

How do we know the old myths are wrong? Over the last 100 years, the field of psychology has gradually become more scientific as it has moved towards theories that can actually be tested (these are known as falsifiable theories). This approach has contributed, in part, to faster scientific progress in recent decades.

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### In the witness box

Think back to the old photo of the car on page 7. Don't look back! An accident occurred just a few seconds later, and the police ask you this question:

*Can you remember if there was another car passing along the road as the car waited at the give-way sign?*

*Think carefully. Was there another car? Think back and recall as much detail as you can of the picture on page 7. Do you remember a stop sign or a give-way sign?*

If you pictured a give-way sign then your memory has been changed by suggestion contained in the question. The image is taken from a classic misinformation experiment performed by Loftus et al. (1978). For a detailed account of the research see also the book *Eyewitness Testimony* (Loftus, 1979).

### Look here!

60 Minutes episode Eyewitness: [www.cbsnews.com/video/watch/?id=5153451n](http://www.cbsnews.com/video/watch/?id=5153451n)

A BBC interview with Elizabeth Loftus: <http://www.bbc.co.uk/programmes/b00yhv36>