



PART 1

Read the text below and answer questions 1–13.

THE EVOLUTION OF MEMORY RESEARCH

For much of human history, memory was approached as a philosophical problem rather than a measurable psychological process. Plato compared remembering to impressions made on a wax tablet: clear traces endured when the wax was smooth and stable, while weak or distorted impressions faded. Aristotle also treated memory as fundamental to learning and identity, but his discussions relied on observation and reasoning rather than controlled tests. Such metaphors captured an important intuition—that experience can leave a lasting mark—yet they could not explain why forgetting is often rapid, why practice sometimes fails, or why confidence can coexist with error. Modern memory research emerged when scientists began to treat remembering as an object of experiment: something that could be described in reproducible terms, tested under standard conditions, and explained through models rather than imagery.

A decisive shift occurred in the late nineteenth century with the work of Hermann Ebbinghaus, who attempted to study memory in its simplest form. In 1885 he published systematic experiments in which he learned lists of “nonsense syllables,” such as consonant–vowel–consonant combinations, designed to minimise meaning and reduce the influence of prior knowledge. By measuring how many repetitions were needed to learn and relearn these lists, Ebbinghaus introduced a quantitative approach to retention. One of his most enduring findings was the “forgetting curve”: forgetting was steep soon after learning and then slowed over time. The implication was that memory loss followed a lawful pattern rather than a random decline, and that the timing of review could be planned strategically. His methods also encouraged later researchers to use standardised materials and timed procedures so that results could be compared across laboratories.

In the early twentieth century, however, some psychologists argued that memory in everyday life was not adequately captured by lists of syllables. Frederic Bartlett, working in Britain, emphasised that remembering is shaped by meaning, culture, and expectation. In a series of studies later discussed in his 1932 book *Remembering*, Bartlett asked participants to reproduce stories after delays, noting that their accounts often became shorter, more coherent, and more consistent with familiar beliefs. His best-known demonstration involved an unfamiliar narrative now commonly referred to as the “War of the Ghosts” experiment, in which details that did not fit the participant’s background tended to be omitted, transformed, or rationalised. Bartlett proposed that memory depends on a mental “schema”: an organised framework of knowledge that guides how



information is interpreted and later reconstructed. In this view, retrieval is not a replay of a stored record; it is an active rebuilding process that can be efficient but can also introduce systematic distortions.

By the 1960s, researchers increasingly proposed that memory is not a single system but a set of interacting components. A major influence was the multi-store model associated with Atkinson and Shiffrin, first outlined in 1968, which distinguished Short-Term Memory (STM) from Long-Term Memory (LTM). STM was described as a limited-capacity system that holds information briefly, with performance depending heavily on attention and rehearsal. LTM, in contrast, was proposed to store information more durably and in more complex forms. The model helped explain why people can maintain a phone number for a few seconds yet fail to retain it later, and why distraction can disrupt immediate recall. It also encouraged researchers to investigate the stages of encoding, storage, and retrieval, recognising that forgetting may result from problems at any of these stages rather than from simple “decay” alone.

Neuroscience later strengthened and refined these ideas by linking memory functions to specific brain structures and networks. One of the most influential cases was Patient H.M., the name used to protect the identity of Henry Molaison. In 1953, severe epilepsy led surgeons to remove large parts of his medial temporal lobes, including the hippocampus. After the operation, H.M. could hold a conversation and showed normal intelligence, yet he could not form new episodic memories of daily events. Strikingly, he could still learn certain motor skills, improving on tasks such as mirror drawing despite having no conscious recollection of practising them. This dissociation suggested that long-term memory is not unitary: systems supporting conscious recall differ from those supporting skill learning and habits. The case also highlighted the hippocampus as crucial for forming new episodic memories, while other circuits contribute to procedural learning and established knowledge.

Contemporary research has expanded further, focusing both on the brain’s capacity to change and on the environments in which remembering now occurs. Studies of neuroplasticity show that experience can reshape neural connections across the lifespan, supporting rehabilitation after injury and informing targeted training for older adults. At the same time, digital technology has altered what people choose to store internally. Because smartphones, search engines, and cloud services can act as external memory, individuals may prioritise knowing where information can be found rather than retaining the details themselves, a phenomenon often discussed as “digital amnesia.” Researchers investigate how reliance on devices affects attention, encoding, and retrieval, and whether constant access to prompts and notifications changes what is consolidated during sleep. Across



these developments, the field retains a central insight: memory is not simply a container of the past. It is an adaptive process that supports prediction, planning, and decision-making—yet it remains vulnerable to bias, context, and the limits of human cognition.

Questions 1–7

Choose **TRUE** if the statement agrees with the information given in the text, choose **FALSE** if the statement contradicts the information, or choose **NOT GIVEN** if there is no information on this.

- 1 Plato used the behaviour of marks on wax to illustrate how memories can persist or fade.
- 2 Ebbinghaus deliberately chose material with little inherent meaning so that existing knowledge would have less influence on learning.
- 3 The systematic experiments described in the passage were published in the 1890s.
- 4 Bartlett regarded remembering as the faithful recovery of a fixed stored record.
- 5 In the unfamiliar-story study, participants tended to reshape details that conflicted with what was already familiar to them.
- 6 Bartlett compared participants from several cultural groups in the “War of the Ghosts” study.
- 7 Atkinson and Shiffrin tested their model by comparing the memory performance of children and adults.

Questions 8–13

Complete the notes below. Choose **ONE WORD ONLY** from the text for each answer.

Timeline of Memory Research

- Ebbinghaus reduced the role of meaning by learning verbal items known as nonsense **8**
- The changing rate of memory loss became known as the forgetting **9**
- Bartlett used the term **10** for the organised framework of knowledge that shapes reconstruction.
- The neurological case discussed in the passage referred to the patient by the initials **11**
- Evidence from this case identified the **12** as essential for forming new episodic memories.



- Research into **13** examines how experience can reshape neural connections throughout life.

Answer Key

1. TRUE
2. TRUE
3. FALSE
4. FALSE
5. TRUE
6. NOT GIVEN
7. NOT GIVEN
8. syllables
9. curve
10. schema
11. H.M.
12. hippocampus
13. neuroplasticity