

LIFE & WELLNESS

The Cognitive Debt We Accumulate Every Time We Use AI

Every prompt may be coming at the cost of cognitive efficiency and creativity.

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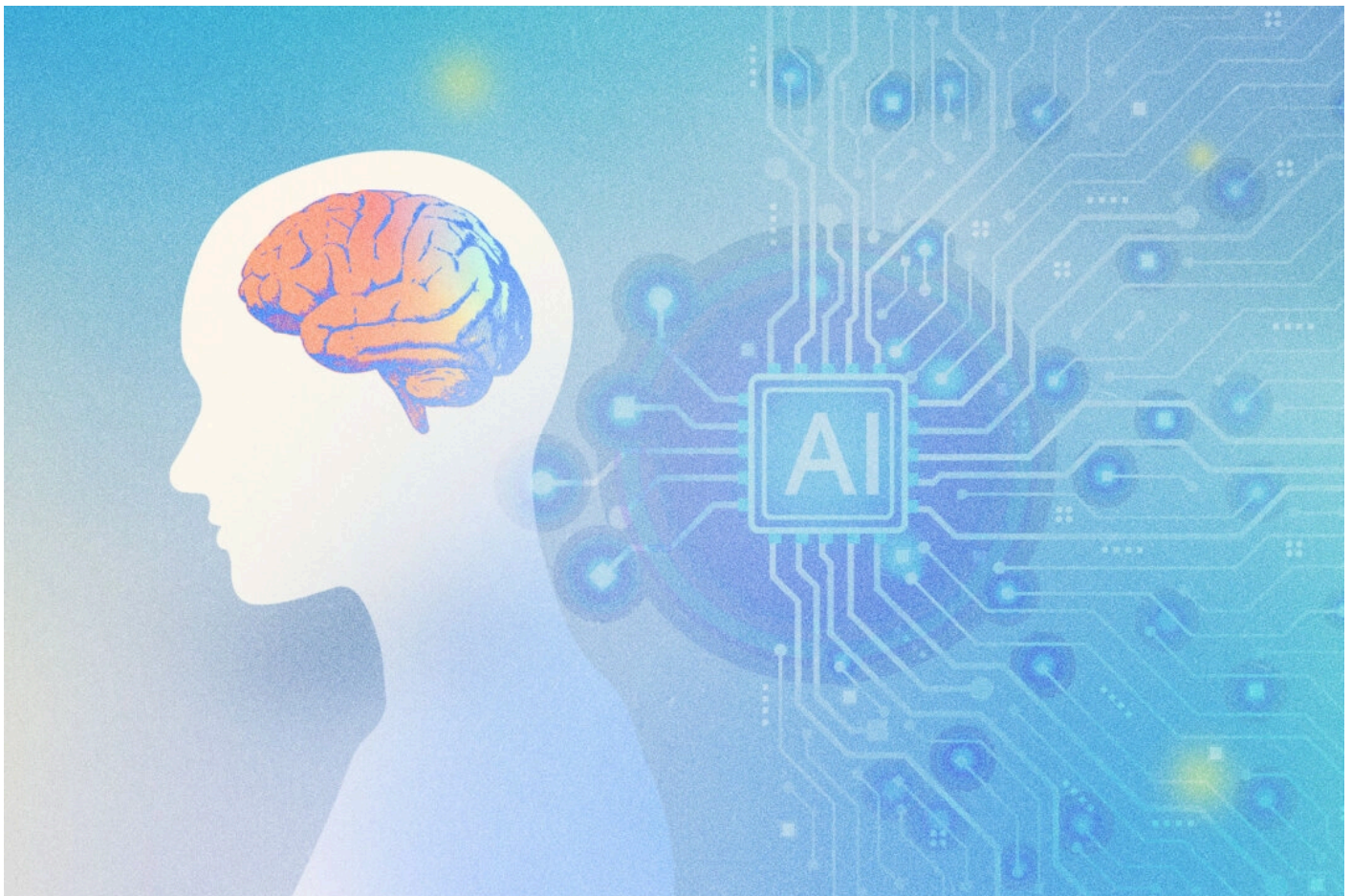


Illustration by The Epoch Times, Shutterstock



By Makai Allbert

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When MIT researchers asked students to write essays with and without ChatGPT, the outcomes were concerning: 83 percent of those who used AI to draft their work couldn't recall a single sentence, even though they had written it just minutes before.

The AI-induced amnesia exemplifies more than just a side effect of artificial intelligence. ChatGPT and similar AI-powered tools are now used daily and widely for everything from emails to essays. Yet, as the new study indicates, we may be sacrificing cognitive capacity and creativity for short-term convenience.

AI-Induced Amnesia

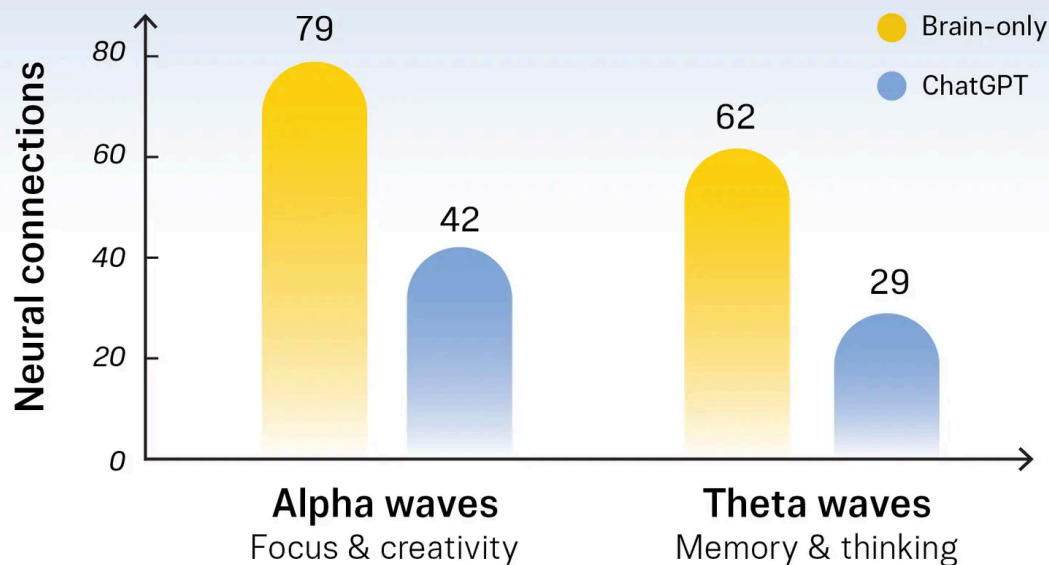
The MIT [study](#) included 54 participants from the Boston area. The students wrote essays under three conditions: using ChatGPT, using Google for research, or drawing entirely on their knowledge and reasoning. The researchers examined them in terms of memory, neural activation, and feelings of ownership.

Memory deficit was just one part of a broader pattern.

When researchers monitored brain activity, they discovered that AI users showed significantly decreased neural engagement. The brain-only writers generated nearly double the amount of connections in the alpha frequency band, associated with focused attention and creativity, compared to ChatGPT users.

In the theta band, related to memory formation and deep thinking, the gap was greater: 62 connections for the brain-only writers versus 29 for those using AI.

Writing With ChatGPT Reduces Brain Activity



Source: "Your Brain on ChatGPT: Accumulation of Cognitive Debt when Using an AI Assistant for Essay Writing Task," Nataliya Kosmyna, et al., arXiv 2025

EPOCH HEALTH

Illustration by The Epoch Times

Like GPS systems that **gradually erode** our navigation abilities, AI writing tools give way to our brain's natural tendency to conserve energy by stepping back when an external system handles cognitive work.

In and of itself, it isn't necessarily a bad thing. After all, we build tools and technologies to delegate processes and conserve effort. However, when it comes to the MIT findings, in which students forgot what they wrote just minutes before, it's concerning, according to Steven Graham, a Regents and Warner professor in the Division of Leadership and Innovation at Arizona State University's Teachers College, who researches how writing affects learning.

Students are supposed to be using writing as a tool for learning, Graham said.

"If you can't recall the basic information in your texts, it begs the question, 'What did you learn?'" he said.

People who overuse ChatGPT for routine cognitive tasks deprive their memory of the essential stimulation it needs to stay fit, according to Mohamed Elmasry, emeritus professor of computer engineering at the University of Waterloo, who writes about AI use and human intelligence.

“Yes, even though the human brain is an organ with no moving parts, it still needs exercise!” Elmasry said. He worries that reliance on AI technology could lead to more concerning long-term effects.

The Long-Term Effects

Four months after the first essay, the same participants in the AI group from the MIT study were asked to write one final essay using only their minds. However, even when told to think independently, EEG scans showed that their neural networks were less activated compared to those who had been thinking and writing independently all along.

The researchers termed the phenomenon a “cognitive debt”—like financial debt, AI assistance offers immediate benefits while potentially creating long-term costs.

Writing is hard work, according to Graham.

“Some ideas are difficult and hard to get a handle on, and require that we engage at various levels, and so if a machine does it for us, then we’re not going to reap the benefits that we likely would from our own engagement,” he said.

Writing forces you to step back and decide which information is important—it pushes you to make decisions. You have to organize information coherently, personalize it, put it in your own words, and “handle it,” Graham said. The algorithm may be subtly weakening—or simply changing—the neural pathways that support independent reasoning, creative synthesis, and original expression.

“By taking the easiest and fastest way through daily cognitive tasks using shortcuts such as ChatGPT, we gradually erode our brain’s smart memory features,” Elmasry said.

Cognitive underuse could have serious consequences.

“When the human memory atrophies through lack of stimulation and challenge, as we age, we become more vulnerable to earlier and more severe dementia and other forms of cognitive decline,” he said.

It’s important to note that there is currently no direct evidence linking AI use to dementia. However, the concern is that if our brains adapt to less mental challenge, they may become less resilient in the long run.

Perfectly Uniform, Predictably Boring

The study also reflected a subtle, yet no less troubling, effect of AI-assisted essays—loss of individuality and creativity.

The prompts given to students were fundamentally human-centered questions, such as “Does true loyalty require unconditional support?” and “Should people who are more fortunate than others have more of a moral obligation to help those who are less fortunate?”

These prompts should have stimulated responses imbued with personal experience and reasoning. Instead, the AI essays demonstrated algorithmic homogenization. Students unknowingly adopted similar phrases, sentence structures, and perspectives—their individual voices subsumed into a predictable template.

“[These observations are] not surprising,” Graham said, “because these models replicate what they see in the database that they’re trained on. It’s formulaic for the most part—it may use the same words over and over.”

English teachers who reviewed the essays, blind to which were AI-generated, described the ChatGPT work as having “close to perfect use of language and structure while simultaneously failing to give personal insights or clear statements.” The teachers found these essays “soulless” because “many sentences were empty with regard to content, and essays lacked personal nuances,” the researchers wrote.

The uniformity of expression raises serious questions about individual thinking. As we outsource the struggle of finding our own words, are we outsourcing the formation of our own thoughts?

Outsourcing Dwindles Your Autonomy

Thinking is expensive. Cognitive work consumes significant neural energy, and our brains naturally seek to conserve resources when alternatives exist.

Yet when we can instantly summon AI to handle our mental tasks, our brains may be acclimating to be passive consumers of our own thoughts.

For centuries, our capacity for independent thought has been considered fundamental to human dignity. Many have argued that autonomy requires the ability to reason for ourselves.

Some participants in the study described feeling “guilty” about using AI, even when it produced better immediate results. This guilt may be an important signal, suggesting an intuitive understanding that something valuable is being lost in the exchange. A common sentiment in using AI, as one participant put it, is that it “feels like cheating.”

What happens to autonomy when reasoning becomes a service we purchase from algorithms? The MIT study suggests that every prompt that outputs convenience dampens the fire of human creativity—and possibly reasoning.

AI use is inevitable.

“The train is out of the station,” Graham said. “But we have to decide how we let the train roll.”

There may be a right time, place, and use for AI in writing, he said. With careful, intentional use, AI can boost **productivity** and even enhance **creativity**. The key is vigilance and intention, to encourage students and users to be critical thinkers who engage their minds first, and use AI as a tool—not a crutch.



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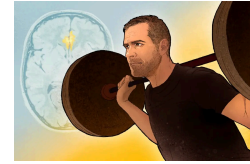
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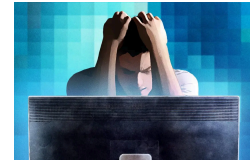
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