UC SANTA BARBARA

THE Current

January 12, 2026
Debra Herrick

Even brief lapses in attention can weaken memory

Thoughts are fleeting by nature, but their effects may not be. New research from UC Santa Barbara shows that mind-wandering — those moments where our attention drifts away from a task at hand — can leave measurable gaps in memory, offering new insight into how conscious experience influences learning.

In the first of two experiments published in the journal Memory & Cognition, images encountered during mind-wandering were significantly less likely to be recognized later. In a follow-up experiment, participants drew scenes from memory, and the researchers compared those drawings with ones made while the scenes were still in view. The deeper the mind-wandering episode, the more visual details were missing from memory.

“You could literally see the cost of mind-wandering on the page,” said the study’s first author, Shivang “Shibu” Shelat, a doctoral student in cognitive neuroscience. “Task-unrelated thoughts absorb attention and leave cracks in memory.”

To examine this link between inner experience and memory, Shelat worked with co-authors and psychological and brain sciences professors Barry Giesbrecht and Jonathan Schooler, using a technique called experience sampling during a memorization task. As participants studied complex scenes, the task periodically paused and asked them to report on the content and qualities of their thoughts at that exact moment. This approach allowed the team to connect subtle fluctuations in

attention during learning with later memory performance.

“What Shibu (Shelat) has done with these studies is to paint an intricate picture of how our moment-by-moment experiences depend on the interplay between spontaneous fluctuations of attention and other critical cognitive processes,” Giesbrecht said.

The researchers also investigated the role of memorability, an intrinsic property that predicts how likely an image is to be remembered. Highly memorable images were associated with better recognition memory regardless of whether participants were fully focused or mind-wandering. But when the memory task was more demanding, such as drawing scenes from memory, that advantage appeared to depend on focus. In those cases, participants benefited most from memorability when they remained attentive during learning.

Recognizing that attention is more nuanced than simply being on task or off task, the team then turned to a deeper question: whether the specific qualities of conscious experience influence memory. In a companion paper published in the journal Consciousness and Cognition, co-authors Shelat, Brecken Marome ’25 (now at the University of Chicago) and Schooler asked participants to report on features of their task-relevant thoughts such as inner speech, visual imagery and emotionality while studying sequences of words and images.

One of the first findings was that the external material itself shaped inner experience. “Participants reported completely distinct patterns of thought when viewing images versus words. This confirms that the objects of our attention dictate how we think,” Shelat said. “As an experimental technique, experience sampling was sensitive enough to capture this shift in consciousness.”

Certain thought qualities were linked to stronger memory. When participants’ focus was accompanied by a clear awareness of their own mental state or by inner speech, they were significantly more likely to recognize the material later. In contrast, some evidence suggested that moments of unguided thinking — when thoughts felt loose or unstructured despite being directed at the task — predicted poorer memory performance.

“Whether the mind stays on task matters, but so does how thought is organized in those moments,” Shelat noted. “Even the subtlest differences in our ongoing

thoughts can decide whether something is going to stick or fade away.”

Media Contact
Debra Herrick
Associate Editorial Director
(805) 893-2191
debraherrick@ucsb.edu

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.