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A wandering mind reveals mental processes and priorities

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Odds are, you're not going to make it all the way through this article without thinking about something else.

In fact, studies have found that our minds are wandering half the time, drifting off to thoughts unrelated to what we're doing – did I remember to turn off the light? What should I have for dinner?

A new study investigating the mental processes underlying a wandering mind reports a role for working memory, a sort of a mental workspace that allows you to juggle multiple thoughts simultaneously.

Imagine you see your neighbor upon arriving home one day and schedule a lunch date. On your way to add it to your calendar, you stop to turn off the drippy faucet, feed the cat, and add milk to your grocery list. The capacity that allows you to retain the lunch information through those unrelated tasks is working memory.

The new study, published online March 14 in the journal Psychological Science by Daniel Levinson and Richard Davidson at the University of Wisconsin–Madison and Jonathan Smallwood at the Max Planck Institute for Human Cognitive and Brain Science, reports that a person's working memory capacity relates to the tendency of their mind to wander during a routine assignment. Lead author Levinson is a graduate student with Davidson, a professor of psychology and psychiatry, in the Center for Investigating Healthy Minds at the UW–Madison Waisman Center.

The researchers asked volunteers to perform one of two simple tasks – either pressing a button in response to the appearance of a certain letter on a screen, or simply tapping in time with one's breath – and compared people's propensity to drift off.

"We intentionally use tasks that will never use all of their attention," Smallwood explains, "and then we ask, how do people use their idle resources?"

Throughout the tasks, the researchers checked in periodically with the participants to ask if their minds were on task or wandering. At the end, they measured each participant's working memory capacity, scored by their ability to remember a series of letters given to them interspersed with easy math questions.

In both tasks, there was a clear correlation. "People with higher working memory capacity reported more mind wandering during these simple tasks," says Levinson, though their performance on the test was not compromised.

The result is the first positive correlation found between working memory and mind wandering and suggests that working memory may actually enable off-topic thoughts.

"What this study seems to suggest is that, when circumstances for the task aren't very difficult, people who have additional working memory resources deploy them to think about things other than what they're doing," Smallwood says.

Interestingly, when people were given a comparably simple task but filled with sensory distractors (such as lots of other similarly shaped letters), the link between working memory and mind wandering disappeared.

"Giving your full attention to your perceptual experience actually equalized people, as though it cut off mind wandering at the pass," Levinson says.

Working memory capacity has previously been correlated with general measures of intelligence, such as reading comprehension and IQ score. The current study underscores how important it is in everyday situations and offers a window into the ubiquitous – but not well-understood – realm of internally driven thoughts.

"Our results suggest that the sorts of planning that people do quite often in daily life – when they're on the bus, when they're cycling to work, when they're in the shower – are probably supported by working memory," says Smallwood. "Their brains are trying to allocate resources to the most pressing problems."

In essence, working memory can help you stay focused, but if your mind starts to wander those resources get misdirected and you can lose track of your goal. Many people have had the experience of arriving at home with no recollection of the actual trip to get there, or of suddenly realizing that they've turned several pages in a book without comprehending any of the words.

"It's almost like your attention was so absorbed in the mind wandering that there wasn't any left over to remember your goal to read," Levinson says.

Where your mind wanders may be an indication of underlying priorities being held in your working memory, whether conscious or not, he says. But it doesn't mean that people with high working memory capacity are doomed to a straying mind. The bottom line is that working memory is a resource and it's all about how you use it, he says. "If your priority is to keep attention on task, you can use working memory to do that, too."

Levinson is now studying how attentional training to increase working memory will affect wandering thoughts, to better understand the connection and how people can control it. "Mind wandering isn't free – it takes resources," he says. "You get to decide how you want to use your resources."

Provided by University of Wisconsin-Madison