

Why some people can multitask online and others can't

4 January 2017, by Peggy Alexopoulou



Many hands, light work. Credit: Shutterstock

The internet may be the most comprehensive source of information ever created but it's also the biggest distraction. Set out to find an answer on the web and it's all too easy to find yourself flitting between multiple tabs, wondering how you ended up on a page so seemingly irrelevant to the topic you started on.

[Past research](#) has shown that we have a very limited capacity to perform two or more tasks at the same time and brainpower suffers when we try. But my new study suggests that some people are better at multitasking online than others. Being able to switch between multiple web pages and successfully find what you want all comes down to how good your [working memory](#) is.

Working memory is the [part of the brain responsible](#) for the storage and processing of [information](#), decision making, and planning. It is responsible for the attention, quality, and quantity of information that is stored and processed in both the [short and long-term memory](#). Many

psychologists describe working memory as the [ability to retain](#) a specific amount of information while intervening with other information or tasks.

Previous studies have suggested that working memory plays an important role in multitasking. For example, [one study](#) showed interruptions reduced people's ability to multitask. This suggests our working memory can only hold a limited amount of information at any one time, limiting our capacity to think about multiple things at once.

[My new research](#) focuses on, among other things, how people's different levels of working memory influence their multitasking behaviour while using the web. I assessed the working memory of 30 students using an [automated operation span test](#) that asked them to remember a series of written characters while solving maths questions. I then asked them to use the web to research four topics of their choice, two they had prior knowledge of and two they didn't. This was particularly important as [research has shown](#) that having prior knowledge of a subject means you can study it with less effort from your working memory.

I found that participants with high working memory switched between their information topics and web search results more often than those with low working memory. This seemed to enable them to test and retest different strategies for finding the answers they wanted. This means that they were able to divert more of their attention between different tasks.

The people with high working memory also reported that they were able to coordinate existing and new knowledge, multiple topics and deal with interruptions more easily. And they had a better grasp of trying different strategies, such as using different search engines, formulating search queries, evaluating webpages and saving results.

What's more, those with low [working memory](#)

[capacity](#) thought the previously unfamiliar topics they were researching became more complex as they went on. They also reported that they could not generate more strategies to complete the task or evaluate and judge the content of the webpages they were looking at in the same way as they did for the topics they had prior knowledge.

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Attention limits

This research confirms [previous studies](#) that have suggested that people with low working memories have more limited abilities to keep their attention on relevant information. More specifically, it also suggests that people with low working memory cannot easily give their attention to different pieces of information in a way that would allow them to effectively multitask. This is especially true for topics they have no prior knowledge of.

What all this means is that people with low working memory abilities probably don't find multitasking as easy as they would like. Luckily, there are ways to expand your working memory capacity through [practice and exercise](#). For example, Cogmed Working Memory Training involves completing tasks such as remembering visual sequences for rewards, and [has been linked](#) with enhancements in working memory in children and adults.

But technology has the greatest impact when it is designed around its users' abilities and limitations – not when people have to train themselves to use it. For example, elderly people or people with cognitive impairments such as dementia often see a decline in their working memory. My research shows that these people will have to work harder when they search for information on the web, especially for topics that have no [prior knowledge](#) of. Understanding this could help lead to better website or browser designs for these groups, and helps to build their confidence online.

More information: An investigation of multitasking information behavior and the influence of working memory and flow, aip.scitation.org/doi/abs/10.1063/1.4907815

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