Study: Brief interruptions spawn errors

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A study by Erik Altmann, associate professor of psychology, found that brief interruptions doubled the error rate for participants performing a sequential task. Photo by G.L. Kohuth

Short interruptions – such as the few seconds it takes to silence that buzzing smartphone – have a surprisingly large effect on one's ability to accurately complete a task, according to new research led by Michigan State University.

The study, in which 300 people performed a sequence-based procedure on a computer, found that interruptions of about three seconds doubled the error rate.

Brief interruptions are ubiquitous in today's society, from text messages to a work colleague poking his head in the door and interrupting an important conversation. But the ensuing errors can be disastrous for professionals such as airplane mechanics and emergency room doctors, said Erik Altmann, lead researcher on the study.

"What this means is that our health and safety is, on some level, contingent on whether the people looking after it have been interrupted," said Altmann, MSU associate professor of psychology.

The study, funded by the U.S. Navy's Office of Naval Research, is one of the first to examine the effects of brief interruptions on relatively difficult

tasks. The findings appear in the Journal of Experimental Psychology: General.

Study participants were asked to perform a series of tasks in order, such as identifying with a keystroke whether a letter was closer to the start or the end of the alphabet. Even without interruptions a small number of errors in sequence were made.

Sometimes participants were interrupted and told to type two letters – which took 2.8 seconds – before returning to the task. When this happened, they were twice as likely to mess up the sequence.

Altmann said he was surprised that such short interruptions had a large effect. The interruptions lasted no longer than each step of the main task, he noted, so the time factor likely wasn't the cause of the errors.

"So why did the error rate go up?" Altmann said. "The answer is that the participants had to shift their attention from one task to another. Even momentary interruptions can seem jarring when they occur during a process that takes considerable thought."

One potential solution, particularly when errors would be costly, is to design an environment that protects against interruptions. "So before you enter this critical phase: All cell phones off at the very least," Altmann said.

Provided by Michigan State University

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