

When We Forget to Remember – Failures in Prospective Memory Range From Annoying to Lethal

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A surgical team closes an abdominal incision, successfully completing a difficult operation. Weeks later, the patient comes into the ER complaining of abdominal pain and an X-ray reveals that one of the forceps used in the operation was left inside the patient. Why would highly skilled professionals forget to perform a simple task they have executed without difficulty thousands of times before?

These kinds of oversights occur in professions as diverse as aviation and computer programming, but research from psychological science reveals that these lapses may not reflect carelessness or lack of skill but failures of prospective memory.

In an article in the August issue of [Current Directions in Psychological Science](#), a journal of the [Association for Psychological Science](#), R. Key Dismukes, a scientist at the NASA Ames Research Center, reviews the rapidly growing field of research on prospective memory, highlighting the various ways in which characteristics of everyday tasks interact with normal cognitive processes to produce memory failures that sometimes have disastrous consequences.

Failures of prospective memory typically occur when we form an intention to do something later, become engaged with various other tasks, and lose focus on the thing we originally intended to do. Despite the name, prospective memory actually depends on several cognitive processes, including planning, attention, and task management. Common in everyday life, these memory lapses are mostly annoying, but can have tragic consequences. “Every summer several infants die in hot cars when parents leave the car, forgetting the child is sleeping quietly in the back seat,” Dismukes points out.

Many examples of prospective memory involve intending to do something at a particular time, such as going to a doctor’s appointment, or on a particular occasion, such as congratulating a friend the next time you see her. However, much of what we intend to do in our everyday lives, whether at home or at work, involves habitual tasks repeated over time. And when it comes to these kinds of habitual tasks, our intentions may not be explicit. We usually don’t, for example, form an explicit intention to insert the key in the ignition every time we drive a car—the intention is implicit in our habitual routine of driving.

In previous research, Dismukes and colleagues identified several types of situations that can lead to prospective memory failures. They found that interruptions and disruptions to habitual processes, which are irritating enough in everyday life, can be fatal in some occupational settings. In fact, several airline catastrophes have occurred because pilots were interrupted while performing critical preflight tasks – after the interruption was over, the pilots skipped to the next task, not realizing that the interrupted tasks hadn’t been finished.

For all the negative attention that multitasking has received in recent years, it is perhaps no surprise that multitasking is also a major cause of prospective memory failures. We seem to have adapted fairly well

to juggling several tasks simultaneously. But research shows that when a problem arises with whatever task we're currently focused on, we become vulnerable to cognitive tunneling, forgetting to switch our attention back to the other tasks at hand.

To defend against prospective memory failures and their potentially disastrous consequences, professionals in aviation and medicine now rely on specific memory tools, including checklists. Research also reveals that implementation intentions, identifying when and where a specific intention will be carried out, can help guard against such failures in everyday life. Dismukes points out that having this kind of concrete plan has been shown to improve prospective memory performance by as much as two to four times in tasks such as exercising, medication adherence, breast self-examination, and homework completion.

Along with checklists and implementation intentions, Dismukes and others have highlighted several other measures that can help to remember and carry out intended actions:

- Use external memory aids such as the alerting calendar on cell phones
- Avoid multitasking when one of your tasks is critical
- Carry out crucial tasks now instead of putting them off until later
- Create reminder cues that stand out and put them in a difficult-to-miss spot
- Link the target task to a habit that you have already established

“Rather than blaming individuals for inadvertent lapses in prospective memory, organizations can improve safety by supporting the use of these measures,” argues Dismukes. He suggests that scientists should combine laboratory research with observations of human performance in real-world settings to better understand how prospective memory works and to develop practical strategies to avoid lapses.