

Multitaskers may be falling behind

March 24 2010, By Jessica Yadegaran

As writer and editor of a biology journal, it's not unusual for Liza Gross to perform several tasks at once. "I'm thinking about articles that are right in front of me while planning upcoming (story) topics," says Gross, 50, of Kensington, Calif. "Oh, and what are we going to have for dinner tonight?"

But, when she's on deadline, Gross hones in on the article at hand. She shuts off her computer's instant messenger and screens phone calls and text messages. She'll answer e-mail if it's urgent.

"I have a little self-awareness," she says. "If you like to be productive, you better limit what you do."

If only the rest of us were so disciplined. [Multitasking](#) is certainly a part of modern life. But studies show that media multitasking in particular takes a toll on the brain. You might think you're accomplishing a lot -- updating a spreadsheet while text messaging and catching up on TiVo -- but a 2009 Stanford University study shows otherwise.

People who juggle multiple forms of [electronic media](#) have trouble controlling their memory, paying attention or switching from one task to another as effectively as those who complete one task at a time, says Eyal Ophir, a cognitive scientist and one of three Stanford researchers on the study.

The researchers split 100 Stanford students into two groups: Those who regularly juggle up to five forms of media at once and those who don't.

In three experiments, they were tested on their ability to focus on tasks, from judging the positions of flashing shapes to catching repeat sequences of letters and numerals. The low multitaskers completely outperformed the high multitaskers, Ophir says.

"The heavy media multitaskers were bad at filtering out irrelevant information," says Ophir, who works in Stanford's Communication Between Humans and Interactive Media Lab. "And, as we added more stimuli, their performance got worse and worse."

Jake Baynor of Concord, Calif., is guilty of texting in the middle of a sales meeting at work, but you won't find him surfing the Web while he's on the phone with a friend. He thinks it's rude and a waste of time on both fronts.

"I absolutely hate it when people do that to me," he says. "They are quiet and seem far away, and you know they're not really listening to you."

Multitasking and skills of control and organization occur in the brain's prefrontal cortex, which is fully developed in humans by the mid-20s, at which point it begins to decline, says Adam Gazzaley, a UCSF professor of neurology and psychiatry. Gazzaley calls multitasking a myth. Task switching is more accurate, he says.

"Our brains don't excel at doing too many things at once," Gazzaley says. "Chewing gum and walking isn't hard because it's repetitive. But driving and texting? You're not really driving anymore. Visual attention and motor skills are taken up by texting, so your car is basically on autopilot." Same goes for instant messaging while researching a paper. Or talking on the phone while watching a PowerPoint presentation.

Because media multitasking is becoming chronic, as Ophir says, he and his colleagues set out to explain what happens when it becomes a way of

life. Turns out, you sacrifice control of your environment.

"With media, it's all happening out of your control," Ophir says. "You're reacting to stimuli." As he explains it, when someone taps you on the shoulder, you acknowledge them. At the most, maybe two or three people in the room tap you on the shoulder, and you acknowledge them all in some way.

"Now (with things like texting and social media) the number of people who could tap you on the shoulder at the same time is unlimited," he says. "And they have no idea about the other people."

While the Stanford study proved that high performance is achieved by focusing on a single goal, it did not answer what cognitive scientists likely consider a million dollar question: Does multitasking change the way we think or are people who multitask predisposed to be less attentive and less able to control their memory?

What scientists do know is that this way of life raises concerns about safety, productivity and education. They are even studying the social implications of high-tech multitasking.

"Everyone feels the burden and weight of immediate responsivity," says Gazzaley, whose research focuses on distraction and aging. "It's leading to demands on our cognitive systems that are too great. If the way in which children are trained to multitask is not compatible with basic skills, like reading a book, we might even have to change how education is delivered."

MAXIMIZING MULTITASKING

Not all media multitasking is bad. Follow these tips from research

scientists Eyal Ophir of Stanford University and Adam Gazzaley of UCSF to ensure your high tech juggling is efficient and enjoyable.

- Regain control. Choose when to check your phone or e-mail rather than responding to everything or checking it every minute.
- Think about the advantages of multi-tasking. It's anti-boredom, engaging, and the results don't have to be perfect. So, shut off everything when writing a report for the boss. But when you're downloading photos and updating your iTunes, go ahead and hop on Facebook.

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