

Multitasking: The Cognitive Costs of Multitasking

Quick Overview:

- Multitasking can reduce productivity by approximately 40-percent according to some researchers.
- Switching from one task to another makes it difficult to tune out distractions and can cause mental blocks that can slow down your progress.

Take a moment and think about all of the things you are doing right now - obviously you are reading this article, but chances are good that you are also doing several things at once. Perhaps you're also listening to music, texting a friend, checking your email in another browser tab or playing a computer game.

If you are doing several different things at once, then you may be what researchers refer to as a "heavy multitasker." And you probably think that you are fairly good at this balancing act. According to a number of different studies, however, you are probably not as effective at multitasking as you think you are.

In the past, many people believed that multitasking was a good way to increase productivity. After all, if you're working on several different tasks at once, you're bound to accomplish more, right? Recent research, however, has demonstrated that that switching from one task to the next takes a serious toll on productivity. Multitaskers have more trouble tuning out distractions than people who focus on one task at a time. Also, doing so many different things at once can actually impair cognitive ability.

What the Research on Multitasking Suggests

First, let's start by defining what we mean when we use the term *multitasking*. It can mean performing two or more tasks simultaneously, or it can also involve switching back and forth from one thing to another. Multitasking can also involve performing a number of tasks in rapid succession.

In order to determine the impact of multitasking, psychologists asked study participants to switch tasks and then measured how much time was lost by switching. In one study conducted by Robert Rogers and Stephen Monsell, participants were slower when they had to switch tasks than when they repeated the same task.¹

Another study conducted in 2001 by Joshua Rubinstein, Jeffrey Evans and David Meyer found that participants lost significant amounts of time as they switched between multiple tasks and lost even more time as the tasks became increasingly complex.²

Understanding What the Multitasking Research Means

In the brain, multitasking is managed by what are known as mental executive functions. These executive functions control and manage other cognitive processes and determine how, when and in what order certain tasks are performed. According to researchers Meyer, Evans and Rubinstein, there are two stages to the executive control process. The first stage is known as "goal shifting" (deciding to do one thing instead of another) and the second is known as "role activation" (changing from the rules for the previous task to rules for the new task).

Switching between these may only add a time cost of just a few tenths of a second, but this can start to add up when people begin switching back and forth repeatedly. This might not be that big of a deal in some cases, such as when you are folding laundry and watching television at the same time. However, if

you are in a situation where safety or productivity are important, such as when you are driving a car in heavy traffic, even small amounts of time can prove critical.

Practical Applications for Multitasking Research

Meyer suggests that productivity can be reduced by as much as 40 percent by the mental blocks created when people switch tasks. Now that you understand the potential detrimental impact of multitasking, you can put this knowledge to work to increase your productivity and efficiency.

Of course, the situation plays an important role. The costs of switching tasks while texting a friend and watching a football game probably are not going to cause any major problems. However, that fraction of a second it takes to change tasks could mean life or death for someone driving down the interstate while trying to find a good radio station or talking on the phone.

The next time you find yourself multitasking when you are trying to be productive, take a quick assessment of the various things you are trying to accomplish. Eliminate distractions and try to focus on one task at a time.

References

¹Rogers, R. & Monsell, S. (1995). The costs of a predictable switch between simple cognitive tasks. *Journal of Experimental Psychology: General*, 124, 207-231.

²Rubinstein, Joshua S.; Meyer, David E.; Evans, Jeffrey E. (2001). Executive Control of Cognitive Processes in Task Switching. *Journal of Experimental Psychology: Human Perception and Performance*, 27(4), 763-797.

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