Consistent Distraction May Not Hinder Learning

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Distraction may not always impair our ability to learn, according to new research in *Psychological Science*, a journal of the Association for Psychological Science. The research shows that people who are distracted in a similar way when learning a motor task and when trying to recall it later show no impairment in their ability to learn the task.

Many of the motor tasks we learn to carry out on a daily basis — such as driving, playing sports or musical instruments, even walking again after injury — don't happen in a vacuum, they're performed while other things are going on. Given the messiness of our existence, said lead researcher and assistant professor Joo-Hyun Song of Brown University, the brain may be able to integrate the division of attention during learning as a cue that allows for better recall when a similar cue is present.

"The underlying assumption people have is that divided attention is bad – if you divide your attention, your performance should get worse," said Song, who teaches in Brown's Department of Cognitive, Linguistic and Psychological Sciences. "But learning has a later, skill-retrieval part. People haven't studied what's the role of divided attention in memory recall later."

The new research, conducted by Song and neuroscientist Patrick Bédard, included two main experiments.

In the first experiment, 48 volunteers manipulated a stylus on a touchpad to virtually reach for targets on a computer screen. Importantly, the computer would bend the virtual world by 45 degrees, so the participants had to learn to compensate. Some volunteers also had to perform another task, counting symbols that moved by on the screen, as they made their awkward reaches. Other volunteers saw the symbols but were told they could ignore them.

Later, the participants demonstrated their new reaching skills; again, some had to count symbols while

reaching, while others didn’t.

Participants who had their attention equally divided during both learning and recall did as well as the participants who never had their attention divided, while the other groups all struggled. It was as if those who were denied the same degree of distraction during learning and testing suffered a disadvantage.

A second experiment showed that the distraction at recall didn’t have to be the same kind as the distraction during learning. Song and Bédard put another 50 participants through a similar set of experiments — this time, the distraction during recall for some volunteers was shapes, for some it was shapes of differing brightness, and for some it was sounds.

In the end it didn’t seem to matter what the distraction was during recall, as long as there was also distraction during learning. Everybody who had consistently divided attention beat those who were distracted while learning, but undistracted during recall.

Notably, the effect did not depend on keeping the external context, such as the ambient surroundings, consistent. Thus, rather than simply repeating the accepted phenomenon of context-dependent learning, in which people remember better when they are in the same context as before, the new findings suggest that divided attention may be an even more powerful cue in prompting the kind of recall measured.

Song is continuing to study the effects of attention on learning. For example, she is curious about whether understanding the effect could improve rehabilitation. It may be better, for instance, to help patients learn to walk not only in the clinic, but amid the degree of distraction they’d encounter on their neighborhood sidewalk.

“Without consideration of attentional contexts in real-life situations, the success of learning and rehabilitation programs may be undermined,” she said.

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