

Why we don't always learn from our mistakes

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If you are struggling to retrieve a word that you are certain is on the tip of your tongue, or trying to perfect a slapshot that will send your puck flying into a hockey net, or if you keep stumbling over the same sequence of notes on the piano, be warned: you might be unconsciously creating a pattern of failure, a new study reveals. The research appears today in *The Quarterly Journal of Experimental Psychology*.

Karin Humphreys, assistant professor in McMaster University's Faculty of Science, and Amy Beth Warriner, an undergraduate student in the Department of Psychology, Neuroscience & Behaviour, suggest that most errors are repeated because the very act of making a mistake, despite receiving correction, constitutes the learning of that mistake.

Humphreys says the research came about as a result of her own experiences of repeatedly getting into a tip-of-the-tongue (or TOT) state on particular words.

“This can be incredibly frustrating – you know you know the word, but you just can't quite get it,” she said. “And once you have it, it is such a relief that you can't imagine ever forgetting it again. But then you do. So we began thinking about the mechanisms that might underlie this phenomenon. We realized that it might not be a case of everyone having certain words that are difficult for them to remember, but that by getting into a tip-of-the-tongue state on a particular word once, they actually learn to go into that incorrect state when they try to retrieve the same word again.”

Humphreys and Warriner tested 30 students to see if their subjects could retrieve words after being given a definition. e.g. “What do you call an instrument for performing calculations by sliding beads along rods or grooves” (Answer: abacus). They then had to say whether they knew the answer, didn’t know it, or were in a TOT. If they were in a TOT, they were randomly assigned to spend either 10 or 30 seconds trying to retrieve the answer before finally being shown it. Two days later, subjects were tested on those same words again. One would assume that having been shown the correct word on Day 1 the subject would still remember it on Day 2. Not so. The subjects tended to TOT on the same words as before, and were especially more likely to do so if they had spent a longer time trying to retrieve them. The longer time in the error state appears to reinforce that incorrect pattern of brain activation that caused the error.

“It’s akin to spinning one’s tires in the snow: despite your perseverance you’re only digging yourself a deeper rut,” the researchers explained.

There might be a strategy to solve the recurrence of tip-of-the-tongue situations, which is what Warriner is currently working on for her honours thesis.

"If you can find out what the word is as soon as possible—by looking it up, or asking someone—you should actually say it to yourself,” says Humphreys. “It doesn't need to be out loud, but you should at least say it to yourself. By laying down another procedural memory you can help ameliorate the effects of the error. However, what the research shows is that if you just can't figure it out, stop trying: you’re just digging yourself in deeper."

Source: McMaster University

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