Name recall get a big shock

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It's an experience shared by everyone: You run into someone you know, but his or her name escapes you. Now, Temple psychologist Ingrid Olson has found a way to improve the recall of proper names.

Olson dedicates her research to understanding human memory. In a recent study, she found that electric stimulation of the right anterior temporal lobe of the brain improved the recall of proper names in young adults by 11 percent. Her study will be published in the journal *Neuropsychologia*.

"We know a lot about how to make people's memory worse, but we don't know very much about how to make people's memory better," said Olson. "These findings hold promise because they point to possible therapeutic treatments for memory rehabilitation following a stroke or other neurological insult."

Olson is currently conducting a follow-up study in older adults, in collaboration with David Wolk at the University of Pennsylvania's Penn Memory Center. Because memory decline is part of normal aging, the difficulty in remembering proper names is exacerbated as we get older. Olson predicts that the memory gain will be even more significant among the older research subjects because they start with a lower baseline recall level.

For the study, subjects received electric stimulation to their anterior temporal lobes while looking at photos of faces of known or semi-famous people and landmarks. Her findings support previous research suggesting that the anterior temporal lobes are critically involved in the retrieval of people's names. She did not find any improvement in the recall of the names of the landmarks.

The electrical stimulation was delivered using transcranial direct current stimulation (tDCS), a technique by which small electric currents (e.g., 1-2 milliamps) are applied to the scalp via electrodes. Depending on the desired effect, the small currents can either temporarily disrupt or enhance brain functions in a localized brain region.

In recent years, tDCS has been rediscovered as a rehabilitation and research tool. In her work, Olson collaborates with at the University of Pennsylvania's Laboratory of Cognition and Neural Stimulation. Led by Branch Coslett, the group is one of just a few in the country studying the technique.

According to Olson, it is important to distinguish tDCS from electroconvulsive therapy (ECT), made famous in movies such as *One Flew over the Cuckoo's Nest*. ECT is used to treat serious mental illnesses by passing pulses of approximately 1 ampere of electricity into the brain in order to provoke a seizure. By contrast, tDCS uses a much smaller current (e.g. 1-2 milliamps) with effects that typically last just one hour. The technique is painless, and there are no known adverse effects.

"As we age, the connections between the neurons in our brains weaken," said Olson. "In our study, tDCS works by increasing the likelihood that the right neurons will fire at the moment when the research subject is trying to retrieve a particular name," she said.

"One question for further research is whether or not repeating tDCS may lead to longer lasting effects," she said.

Olson added that future tDCS applications could prove useful in the treatment of a range of conditions that includes dyslexia, attention deficit hyperactivity disorder (ADHD) and depression.

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