

Help beat Alzheimer's with the click of a mouse

November 25 2014, by Alexis Blue



UA researchers Lee Ryan (left) and Betty Glisky created an online memory test that they hope will provide data that helps them better understand Alzheimer's disease. Credit: Beatriz Verdugo/UANews

The ambitious MindCrowd project, which includes two UA researchers, aims to gather data from 1 million people across the globe.

If you've got 10 minutes and an Internet connection, you may be able to help researchers answer pressing questions about Alzheimer's disease.

As many as 5 million Americans are living with Alzheimer's, and while scientists are learning more about the disease every day, its exact cause remains unknown.

Researchers, including two neuropsychologists from the University of Arizona, are now leveraging the power of the Internet to collect information they hope will help them to better understand the human memory and possible risk factors for Alzheimer's.

The ambitious project, called MindCrowd, aims in its first phase to engage an unprecedented 1 million people across the globe in online memory testing. Anyone can take the test, which takes about 10 minutes to complete on the [MindCrowd website](#).

Those who meet certain criteria in the first phase of testing may later be invited to participate in the project's second phase, which will include additional online memory tests, as well as [genetic testing](#) of participants' saliva.

Researchers ultimately hope to be able to identify genetic markers that are linked to learning and memory, which could be a major step toward understanding and treating Alzheimer's disease and other brain disorders.

A global reach

MindCrowd is a collaborative effort among the Translational Genomics Institute in Phoenix (also known as TGen), the UA and the Alzheimer's Prevention Initiative.

Professors Elizabeth Glisky, head of the UA psychology department, and Lee Ryan, associate head of the UA psychology department and associate director of the UA's Evelyn F. McKnight Brain Institute, developed the online test.

More than 50,000 people have taken the test as of this month, which is National Alzheimer's Disease Awareness Month.

"We're pretty excited about this. We don't know of anybody else who's done anything like this or been able to get this many people participating in a research study," said Glisky, also a member of the UA's Evelyn F. McKnight Brain Institute.



As many as 5 million Americans are living with Alzheimer's disease. Researchers are using the Internet to conduct memory testing that may help them solve the puzzle of what causes the disease.

The MindCrowd website was created with the average Internet user in mind. Anyone can take the test from the comfort of home, and they will

instantly see their results and how they stack up against others.

"We designed our study site from a marketing and user experience perspective, very much as if we were a business asking our customers to 'do something,' instead of designing it to look and feel like what it really is, a scientific study run by scientists who work in academia," said MindCrowd principal investigator Matt Huentelman, an associate professor in TGen's Neurogenomics Division. "That really is part of our success, I believe—the user experience was foremost in our mind because that would drive participation."

The MindCrowd test is now being translated into as many as 10 different languages to make it more accessible to people across the globe.

"Most studies are done in a confined area, but this is an opportunity to get data from all over the world," Glisky said. "Using the Internet, we have an opportunity to see across really large numbers of people with really different ages, different backgrounds, different histories, different everything. It really gives us an opportunity to look at a lot of variables that we can't look at as easily with a population that's confined to one region."

The study's cross-cultural findings could be a significant contribution to the Alzheimer's literature, Ryan said. "The majority of the studies out there focus on Caucasian individuals, so we don't really know as much about cognitive functioning in other groups."

Initial findings on gender, education, family history

The MindCrowd team already has some initial findings, which Huentelman presented last week during the Society for Neuroscience's annual meeting in Washington, D.C.

Among those findings: Women performed better on the memory test than men across all age groups, from 18 to 85. Individuals who reported having a higher level of education also tended to have higher scores. And people who reported having a [family history](#) of Alzheimer's disease scored consistently lower than those who did not report a family history of the disease.

"When you control for all other factors, you see that individuals with a family history of Alzheimer's disease do more poorly on the test, even in the youngest ages, and we're very interested in that," Ryan said.



Anyone can take the MindCrowd test, developed by UA researchers to collect information about the brain and memory.

The first-phase testing focuses only on verbal memory, asking participants to memorize word pairings. Phase-two tests, which also are being developed by Glisky and Ryan, will look at verbal, visual and spatial memory, for a broader scope.

Also during phase two, which is expected to launch sometime in the spring, TGen will conduct genetic testing of saliva samples mailed in by selected participants. Additional data will be collected through brain scans of certain participants, done at the UA.

"The ultimate goal is to figure out to what extent there is a genetic component here," Glisky said. "We know there are some genetic components but not one that's absolute."

The gene variant ApoE4 is a known genetic risk factor for Alzheimer's disease. However, not everyone with the gene variant will develop the disease, and not everyone who develops the disease has the gene variant.

"A significant number of people—about half—with a family history of Alzheimer's are not E4 positive, so it's a mystery," Ryan said. "Maybe there's another specific gene that nobody's found yet, or it's a cluster of genes or some combination or profile of genes. You would need really large numbers of people to find those kinds of patterns, so we're pretty excited about exploring that."

By evaluating the memory test results alongside genetic data, the researchers also will be able to look at possible relationships between genetics and demographic or environmental factors, Glisky said.

"The answers to the questions about Alzheimer's disease are going to be very complicated," she said. "So far, we haven't been wildly successful at coming up with treatments, and that is at least partly because we don't fully understand the disease and the factors that are involved."

Using the Internet to crowdsource such a large and diverse number of study participants hopefully will give researchers enough data to start answering some of the many questions that remain about Alzheimer's, Glisky said.

"I think this study could lead towards improved genetic treatments, drug treatments, environmental treatments, cognitive treatments, behavioral interventions down the road," she said. "It could be the first step to be able to think about prevention and treatment."

Provided by University of Arizona

Citation: Help beat Alzheimer's with the click of a mouse (2014, November 25) retrieved 24 April 2024 from <https://medicalxpress.com/news/2014-11-alzheimer-click-mouse.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.