Researchers Aim to Create Virtual Speech Therapist

KATHY MATHESON, Associated Press

Philadelphia (AP) — Debi Green is trying to book a vacation, but she's having a hard time getting the words out. Even though it's been nearly nine years since she suffered a stroke, language sometimes fails her.

"I would like ... um ... um ...," she said, faltering.

Luckily, the computerized travel agent has all the time in the world. It's an avatar being tested at Temple University in Philadelphia, where researchers are working to develop a virtual speech therapist.

Cyber-clinicians can be a crucial tool in overcoming the language disorder known as aphasia, experts say. While the verbal impairment can be life-long, health insurers only pay for a limited amount of therapy. Yet patients like Green need to continuously practice their skills.

"It's the adage of 'use it or lose it'," said Nadine Martin, a communication sciences professor at Temple.

The university's two-year study will add to the emerging field of virtual rehabilitation. About 1 million people in the U.S. are affected by aphasia, mainly as the result of strokes, according to the American Speech-Language-Hearing Association.

Whereas previous cyber-therapy options involve patients practicing conversational scripts with an avatar, Temple's approach challenges patients to spontaneously generate speech, said physical therapy professor Emily Keshner.

"They are actually put in a situation, which we hope is going to be natural, that requires that they come up with the correct words in the correct order," Keshner

said.

In Green's case, she has been given a "brochure" so that she is forced to make choices about the trip. As Green responded, a doctoral student sitting behind her in the language lab quickly cut and pasted bits of dialogue for the virtual therapist to speak.

The goal is to build the avatar's vocabulary so that it can recognize all possible pronunciations of various words and respond with appropriate dialogue, Keshner said. A bigger test — to come later — is whether the avatar could be programmed to correct users who misspeak.

Another challenge is getting the character's lip movements right, said Leora Cherney, a researcher at the Rehabilitation Institute of Chicago.

"People with aphasia often get a lot of cues and assistance by watching the mouth movements of the therapist," said Cherney, who helped develop and market an early version of a cyber-clinician that uses the script approach.

Researchers also want to study whether patients respond differently to cyber- and human therapists. In addition, they are experimenting with the avatar's gender, ethnicity and voice texture.

Deb Diraddo, a speech-language pathologist at Magee Rehabilitation in Philadelphia, is not involved in Temple's project but said she's excited by its premise. She said she'd be "interested to see what the virtual therapist can pick up on and how it adapts."

But, she noted, "communication is not just the words — it's the body language, the tone, the gesturing."

After booking her "trip" to Florida, the 49-year-old Green said it doesn't make a difference to her whether the therapist is human. She just wants to improve her communication skills.

"I guess I'll try anything," Green said. "Anything."

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