#ResearchersMatter

Dr. Anne Sophie Champod - Neuropsychology and Cognitive Health Research Laboratory, Gabrielle Haidar (Honour's Student), and Rachel Frank (Master's Student)

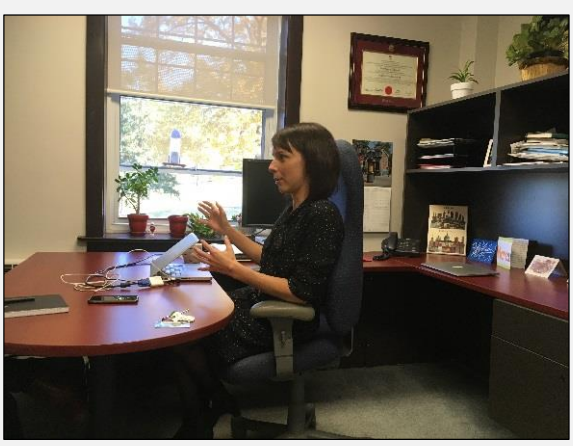
A new prism of research

iPad's and mobile devices have increasingly become a part of our daily lives – from paying for groceries to booking flights, they have undoubtedly have made our lives easier. However, more recent trends have seen the development of mobile applications (apps) focused on improving the health of users.

"It's estimated that up to 70% of patients who have had a stroke affecting the right side of the brain will experience symptoms of spatial neglect."

Combining this trend with her research focus, Dr. Anne Sophie Champod, an assistant professor at Acadia University cross-appointed to Dalhousie University and an Affiliate Scientist at the Nova Scotia Health Authority, has overseen the development and testing of a game-changing (pun intended) app called "Peg-the- Mole" to treat a common syndrome of those who have suffered a stroke – spatial neglect.

Spatial neglect is a chronic condition that is characterized by a failure to respond or orient to things happening on the left side. "It's estimated that up to 70% of patients who have had a stroke affecting the right side of the brain will experience symptoms of spatial neglect," says Anne Sophie. "Even mild symptoms can result in longer hospital stays and are linked to reduced independence in everyday tasks such as eating and dressing."



Treatments for spatial neglect exist, but they are tedious and expensive, requiring patients to be supervised by a clinician for 1-2 hours every day. Utilizing a technique known as prism adaptation, Anne Sophie's research aims to cut treatment time drastically, easing the burden on patients and the health care system.

"The advantage of prism adaptation over current treatments," says Anne Sophie, "is that instead of being supervised for 1-2 hours a day over several weeks by a clinician, prism adaptation only requires 10-15 minutes daily, which can be done at home."

The game is reminiscent of the popular arcade favourite "Whack-A-Mole", where players use a mallet to whack moles as they emerge from their hole. In "Peg-the-Mole", when a mole appears on the screen, players must quickly touch or "peg" the mole with their finger. The game is made challenging by the specially designed prism adaptation goggles used during the treatment, which alters the user's ability to correctly touch the screen.

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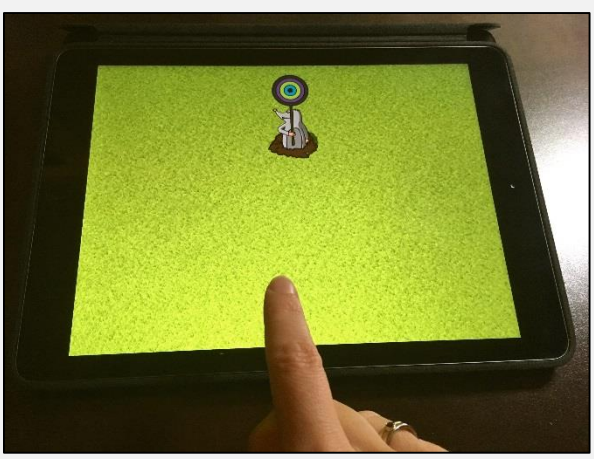
As the user attempts to "peg" the moles, their brain slowly compensates to adapt to the altered image it is receiving through the goggles.

Current experimental prism adaptation treatments use a similar technique, but additional equipment is required to prevent participants from self-correcting their movements when reaching for the target – which is necessary for the therapeutic effects to occur. In Peg-the-Mole, this extra equipment is not required due to an algorithm that adjusts the speed in which the moles appear based on the user's performance, making it easier for patients to use the game-like treatment at home.

Anne Sophie and her team are currently testing the effectiveness of the app on healthy participants. If a person suffering from spatial neglect has difficulty orienting to their left, then a healthy person's orientation would be more centred. Therefore, when a healthy participant plays Peg-the-Mole, their brain will over compensate to the left, throwing off their orientation. "When we test the app in healthy participants, the effects wear off in 15 minutes," says Anne Sophie. "Much faster than in stroke victims who can experience therapeutic effects lasting months."



“I realized that becoming a health researcher would really allow me to combine my research and clinical interests.”

While completing her clinical internship in Manitoba, Anne Sophie noticed that great treatment options didn’t exist for people living with spatial neglect. “I felt like we didn’t have the tools to assess the problems and treat them,” says Anne Sophie “I realized that becoming a health researcher would really allow me to combine my research and clinical interests – so I can continue to do what I like which is exploring how the brain works, and use this knowledge to create the clinical tools that are needed.”

Born and raised in Quebec, Anne Sophie now calls Nova Scotia home - evident from the partnerships she has created in the province. Anne Sophie began working on the development of the app as a postdoctoral fellow with Dr. Gail Eskes at Dalhousie University and is now continuing to collaborate with colleagues at Dalhousie on the development and testing of the app.

Furthermore, both the specially made goggles and the app itself have been created by Nova Scotian companies: Eyes on Optometry and TeamSpace, respectively. In addition to current support from the NSHRF, the development of the app was made possible with funding from Springboard Innovation Mobilization Program, Harrison McCain Foundation, Atlantic Innovation Fund, and Heart and Stroke Foundation.

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“What makes Nova Scotia unique is how open the researchers are in terms of collaborating with each other.”

Anne Sophie credits her successful Establishment Grant application to the collaborative nature of the Nova Scotia health research community. “I’ve lived in three different provinces,” says Anne Sophie. “What makes Nova Scotia unique is how open the researchers are in terms of collaborating with each other.”

Ongoing studies involve testing the Peg-the-Mole app in healthy children (over 8 years old), young and older adults. The app will be tested in stroke victims within the next year.

If you’re interested in learning more about “Peg-the-Mole”, or participating in studies conducted in Dr. Champod's lab, please contact:

Dr. Champod at anne.champod@acadiau.ca or visit http://psychology.acadiau.ca/dr-anne-sophie-champod-8287.html

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