Get & Stay Brain Fit

Women's Brain Health Initiative (WBHI) launched the free BrainFit mobile application (app) on Women's Brain Health Day, December 2, 2022. BrainFit was designed to help users improve their lifestyle habits across the Six Pillars of Brain Health - stress management, exercise, mental stimulation, social activity, nutrition, and sleep.

BRAINFIT - HABIT TRACKER IS THE ONLY APP WITH A SPECIFIC FOCUS ON EXTENDING COGNITIVE VIGOUR AND CREATED WITH WOMEN IN MIND.

An essential part of designing, developing, and refining any new technology is studying its performance after it launches. Mind Over Matter® (MOM) spoke with lead researcher Dr. Lora Appel, Assistant Professor of Health Informatics in the Faculty of Health at York University in Toronto, and a collaborating scientist at University Health Network's OpenLab, where she leads the Prescribing Virtual Reality (VRx) lab.

Dr. Appel and her team are investigating how BrainFit performed in its first three months since launch. We discussed the research goals, the information she and her team are collecting and analyzing, what they hope to find, and what they plan to do with their findings.

MOM: What is the overall goal of the BrainFit research?

DR. APPEL: My work focuses on designing interventions people can use in everyday lives

and see a result, so I'm excited to evaluate how BrainFit performs. We're assessing whether it increases the awareness of brain health habits among early adopters and encourages them to make positive lifestyle changes across the Six Pillars of Brain Health. We plan to incorporate our findings in future upgrades and versions of the app.

MOM: Are lifestyle behaviours easy to modify?

DR. APPEL: Changing behaviours is difficult. However, studies have shown that achieving small, bite-sized goals generates more momentum than one big goal. For example, many studies show it's psychologically more motivating to pay off several smaller pockets of debt than one big amount, even though that doesn't make sense from a financial perspective.

BrainFit allows people to start with a few small goals and build momentum over time, according to their personal motivations and preferences. For example, consider differences in preferences for doing household chores. I prefer doing dishes because I like things clean and the results are immediate and consistent, whereas cooking can be messy, and I don't know how it will turn out.

MOM: What information did you collect, and how are you analyzing it?

DR. APPEL: There are three parts to our research. The first part is a pilot trial. We asked 30 volunteers to answer comprehensive surveys on their habits before and three months after they used BrainFit.
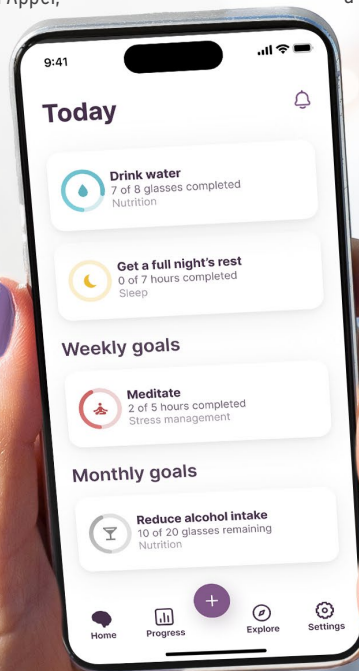
Our analysis will determine whether the app led to positive habit changes over time. However, measuring self-reported improvements can be tricky since there is often a lack of consensus on the ideal amount of a healthy behaviour.

For example, some people do well with only six hours of sleep per night, while others need eight hours. So, we spent a lot of time looking at what positive impacts would look like and updated validated scales we're using to collect information in each pillar to ensure they're relevant in today's world.

We also conducted in-depth interviews with a few outliers – those who used the app very often and those who dropped off early – to look for deeper insights into common characteristics that may make the app more usable.

The second part of our research is a scoping review of the literature and other lifestyle behaviour trackers that are currently available. The aim is to identify features and benefits that set BrainFit apart from other apps and pinpoint things we should incorporate.

The third part of our research is a smaller evaluation to assess whether BrainFit raises awareness and reduces stigma related to dementia. Our funder, the Public Health Agency of Canada, provided a simple set of questions and scales for each of these two areas. We asked almost 100 participants to fill out two questionnaires at baseline.

They chose to listen to a podcast episode or watch a video in the app within one week, and then repeated the questionnaires. Beyond the app's ability to increase awareness and reduce the stigma associated with dementia, it will be interesting to see whether age, cultural characteristics, or other demographic differences defined the likelihood of selecting one medium over another.

EXAMPLE SURVEY QUESTIONS FOR MEASURING HABIT CHANGES

Research participants rated their current health and how often they engaged in healthy habits across all Six Pillars of Brain Health. For example, here are the questions from the mental stimulation pillar. Dr. Appel and colleagues adapted these scales from the Multifactorial Memory Questionnaire, a validated research tool.

1. **How would you rate your memory when compared to other people your age?**
   -2 = Poor; -1 = Fair; 0 = Good; 1 = Very Good; 2 = Excellent

2. **I have confidence in my ability to learn new things.**
   -2 = Strongly disagree; -1 = Disagree; 0 = Neutral; 1 = Agree; 2 = Strongly Agree

MOM: Does your research and refinement process take diversity and cultural sensitivity into account?

DR. APPEL: Diversity and cultural sensitivity have historically been overlooked in many aspects of research and development. However, there is a growing recognition of their importance, especially on modifiable risk factors and behaviour change strategies related to healthy lifestyles.

OUR GOAL IS TO ENSURE BRAINFIT MEETS THE UNIQUE NEEDS OF PEOPLE OF ALL BACKGROUNDS IN THEIR REAL LIVES.

We are intentionally engaging with diverse stakeholders (age, culture, ethnicity, language, income, location) so we can see if patterns emerge that we can use to better tailor the education and habit suggestions in the app.

For example, the Mediterranean diet is the most recommended diet for good brain health, but suggesting it to an individual from a southeast Asian community will likely be ineffective. Learning what's in their kitchen and making realistic suggestions they can implement will be much more successful.

MOM: What do you plan to do when the research is complete?

DR. APPEL: We will use the learning to refine BrainFit and plan to publish our results. The pilot trial (part one) is also a test of our research methods, so we plan to refine them before launching a more extensive study among a larger group of participants in the future.

MOM: Are there any preliminary findings you can share?

DR. APPEL: Midway through our scoping review (part two), I'm convinced most other apps target only one or two behaviours and focus on managing chronic conditions. By contrast, BrainFit is more comprehensive, allowing users to target behaviours in all Six Pillars of Brain Health and add habits aligned with their cultural preferences.

SO FAR, BRAINFIT IS THE ONLY APP THAT TRACKS PREVENTATIVE LIFESTYLE CHANGES LONG BEFORE BRAIN HEALTH PROBLEMS ARISE.

Learn more about the Prescribing Virtual Reality lab at prescribingvr.com.

BrainFit – Habit Tracker is available at no cost for both iPhone and Android devices. For more information, visit BrainFit.org.

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