Huntington's disease—how brain training games could help
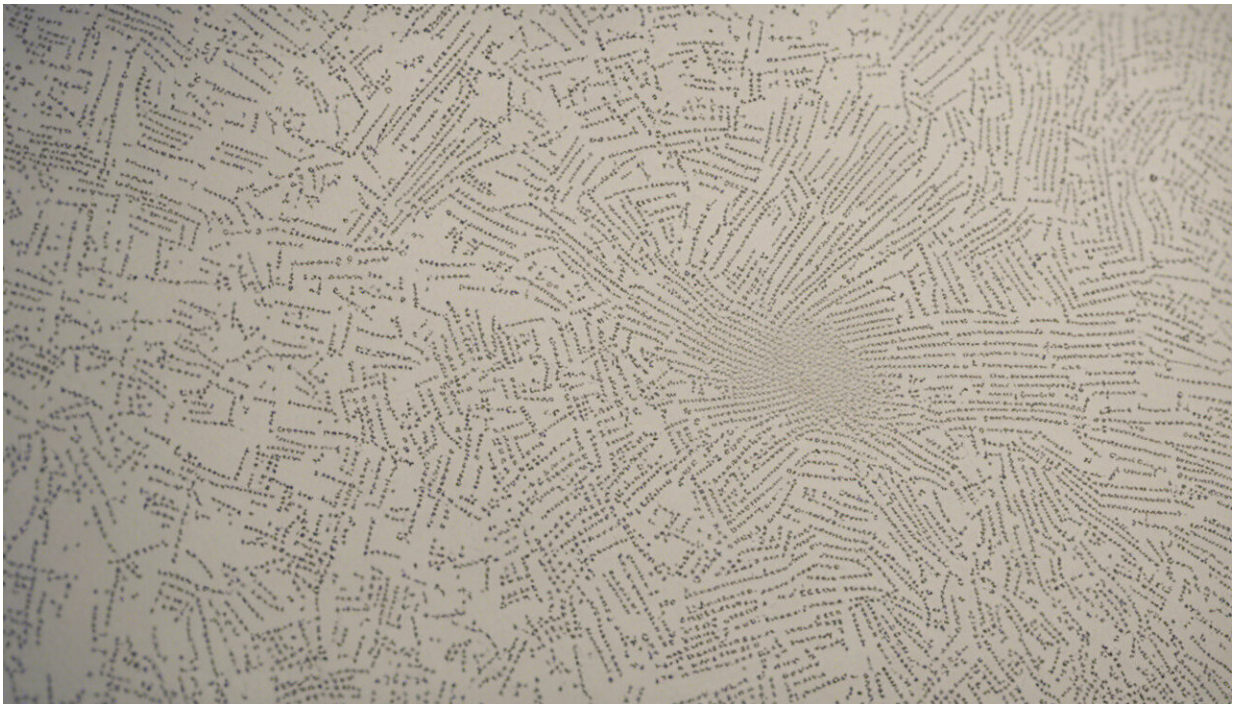
July 9 2018, by Emma Yhnell

Credit: AI-generated image (disclaimer)

In the search for new treatments, science often focuses on medication first. But drugs aren't the only way to fight illness, particularly when looking at brain diseases. My research looks into how playing specially designed computer games might help people who are living with Huntington's disease.

Huntington's is a [brain] disorder that gets progressively worse over time, leading to problems with [movement and thinking]. We know that the [disease] is caused by a single faulty gene, which in itself is very unique. Often if you have particular genes, your risk of developing certain diseases might increase or decrease, but it is very rare for a disease to be caused completely by a single gene. Although research is currently ongoing, unfortunately at present there are no treatments for the underlying cause of Huntington's, or to prevent the disease getting worse.

You might be wondering how brain training games can possibly help those with Huntington's disease if there aren't yet any effective treatments for the disease. But, as my mum always used to say to me, "practice makes perfect" – if you practice something repeatedly you will generally get better at it.

This principle applies to brain training, too. If you practice tasks or games that are designed to help with thinking, you will probably get better at thinking. This is sometimes referred to as the "use it or lose it" approach. If you use your thinking skills and keep them active, you will probably be able to maintain them. But if you don't practice something regularly you may forget it and not be as good at it as you once were. This is particularly relevant if you know that your thinking ability is going to get worse.

Using computer games to train the brain has been studied [in the healthy ageing population], and also with other diseases which affect the brain such as [Alzheimer's] and [Parkinson's]. These studies have generally found that brain training is beneficial for improving thinking – although there is [much debate] about whether brain training could improve movement problems or improve quality of life for [people] living with these brain diseases.

At present, there is very little evidence about computer [game] training

and how it might impact people with Huntington's disease. But we are now conducting a feasability study to work out whether the research can actually be done before progressing to a bigger study. Full scale studies require lots of participants and funding, so it is important to demonstrate that the research can actually work with a small number of people first.

Using this initial study, we want to demonstrate that computer game brain training is acceptable for people who are impacted by Huntington's disease. We know that lack of motivation and apathy can be characteristic symptoms of Huntington's disease. So we are asking people who have the disease to play brain training computer games to see how they get on.

Half of the participants will be asked to play the brain training computer games and half will continue as normal, in a control group. This is important as it will allow us to compare the results of the people who played the brain training games to those who did not. We are asking the participants playing the brain training [computer](link) games to play them for three 30-minute sessions a week, for 12 weeks. We will then be asking them how they got on with playing the games and what they liked and disliked so that we can improve the study in the future.

Not all games marketed as brain training are equal – most are designed to specifically test or train your thinking skills but some are designed purely for entertainment and pleasure. So we have carefully chosen the games our participants will play to make sure that the games specifically train thinking skills. The brain training games that we are using are focused on training thinking skills of executive function – the higher [thinking skills](link) of the brain. These include number puzzles, word games and tasks that measure attention.

Although our study is focused on Huntington's disease, it will help us learn about [brain training](link) more generally, too. We already know that the

more often you play a game, the better you get at it. If you play the card game Snap!, for example, you might get much quicker at pairing the cards and beating your opponent, but how does this translate to the rest of your life?

Brain training will not be able to change the faulty gene that causes Huntington's, but it might just help improve day to day life for people who are impacted by the disease.

For further information about Huntington's disease and support, visit The Huntington's disease association, *or* HDBuzz, *which provides excellent summaries of current Huntington's research.*

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