FarmApp: a new assessment of cognitive control and memory for children and young people with neurodevelopmental difficulties.


What did we do?

- Cognitive processes such as attention and memory contribute to diverse aspects of everyday skills and learning.
- Current assessments of cognitive abilities are often not accessible or designed for individuals with neurodevelopmental difficulties.
- We have designed and developed FarmApp – a new gamified tablet-based assessment tool that measures cognitive abilities.
- FarmApp is designed to be accessible to young people who may not understand complex verbal instructions.
- The games are played several times by each participant over a period of days or weeks, and task difficulty is adjusted over time in order to understand each child’s best possible performance and how performance changes over time.
- In our first evaluation of FarmApp, we road-tested the system to find out whether it was user-friendly and whether it generated meaningful information.
- Children and young people with neurodevelopmental difficulties were introduced to FarmApp by a research assistant. Following that, the tablet was left with each family for a period of two weeks, so that children could play the games for about 20 minutes every day. Game activity and performance were monitored remotely.

What did we find?

- In this initial evaluation, we found that FarmApp is a practical assessment tool. Children’s performance matched parental reports of everyday skills and learning, meaning that it may be a valid assessment of cognitive abilities for people with neurodevelopmental difficulties.
- Performance improved over a period of two weeks, with stronger improvement observed in children and young people with higher hyperactivity and/or lower everyday skills.
- We compared the performance of children and young people with different types of genetic conditions. We found that some aspects of FarmApp performance were different between groups, meaning that the genetic cause of a person’s neurodevelopmental difficulty may be one factor influencing their cognitive abilities.

How can this research help?

- FarmApp has the potential to be a useful tablet-based assessment of cognitive abilities in children and young people with neurodevelopmental difficulties, which can be used remotely and over a period of days/weeks.
- The differences in performance observed between different types of genetic conditions suggest that FarmApp can be used as a research tool to improve our understanding of the links between genetic diagnoses and specific cognitive abilities.

What is next?

- We have updated FarmApp (now known as Farm2) by adding animated demonstrations to make it more engaging and easier to understand.
- We want to find out if Farm2 is practical for families to use at home, without a research assistant carrying out an introductory session.
- We also want to make sure that Farm2 is accessible for young children, and those with persistent motor, language and concentration difficulties who cannot complete traditional assessments.
- In the longer term, we hope that Farm2 (or its more advanced versions!) could be useful in clinical and educational settings, to better understand the different cognitive pathways linked to learning and behaviour in children and young people with neurodevelopmental conditions.