Preliminary results: Evaluating Clinician and Patient Perspectives on the EyeFocus AI-Guided Digital Therapy for Spatial Neglect

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Background

- Acquired brain injury (ABI) often results in "hidden" cognitive impairments [1-2].
- One of the most common and disabling of these is **spatial neglect**, affecting approximately **one in three** ABI survivors [3-4].
- Neglect involves a reduced ability to attend to stimuli on the affected side of space. Including one's own body, people, and objects [3-4].
- **Neglect receives limited rehabilitation support** and remains a major unmet clinical need [9-14].
- Providing personalised digital interventions would fill a major gap in cognitive rehabilitation for ABI, particularly for conditions such as neglect.

"it's frightening"

"I can't watch TV or read a book"

"there is not enough support"

What we will investigate

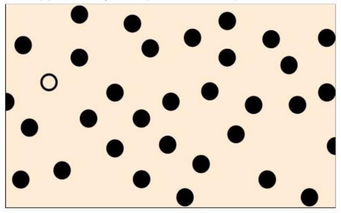
This study evaluates the **clinical usability and feasibility** of implementing EyeFocus in hospital settings with ABI patients.

→ Patient and clinician **interview transcripts** will be analysed using **thematic analysis** to capture key end-user perspectives

→ **System usability scale** (SUS) will provide quantitative measures of usability.

Intervention Method

- **EyeFocus is a novel AI-guided tablet-based application designed to support neglect rehabilitation** through personalised, gamified Smooth Pursuit eye movement therapy (SPT), a form of attention training.
- 9 participants received EyeFocus for 5 days + TAU, over a 7-day period: Eligibility criteria aimed to match the 'real' clinical population that would use EyeFocus, as thought it is part of routine NHS stroke rehabilitation.



Results

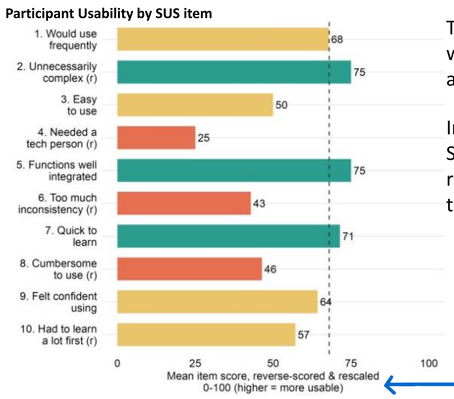
Thematic analysis

- A top-down Thematic Analysis was undertaken, based the Gupta et al.'s (2017) Usability Framework, covering the following themes:

Efficiency EyeFocus is resource efficient, easy to use and welcomed by clinicians as a treatment.	**Memorability** Patient levels of understanding and independent engagement varied, and were relative to their cognitive and motor capacity.
Effectiveness How effective the app was depended on participant characteristics. E.g. height and motor capability were barriers when calibrating eye tracking.	**Security** The app was felt to be safe to use, with few risks other than ensuring head support was comfortable.
Satisfaction Clinicians and patients were satisfied with the app. Although, holding still caused some patients fatigue, and technical issues were frustrating.	**Universality** Patients with severe cognitive impairment or physical characteristic found app setup challenging. EyeFocus is currently only in English (all participants were English speaking).

System Usability Scale (SUS)

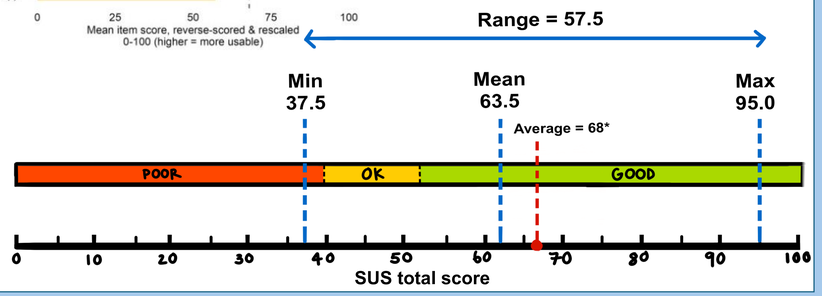
- Clinicians and participants on average had **good** user satisfaction and perceived usability.



This mix-method approach allows us to identify why SUS scores varied and reflect on strengths and areas for improvement of EyeFocus usability.

In line with findings from the Effectiveness and Satisfaction theme, the lowest on SUS scores related to challenges using the equipment and technical issues.

A higher score = more usable.



Quotes

Efficiency
'I really liked how easy it is to kind of set up anywhere […] and in terms of following the programme, it was really good because it was very simple instructions and quite easy to use the iPad.' Clinician 12

Satisfaction
'I think he found it quite the same every day. So it became a bit dull is what he said. […] I don't know if it's possible to make it a bit more interesting, maybe, or different colours or different things to try and encourage perhaps more active engagement' Clinician 1

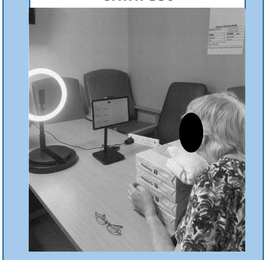
Satisfaction
'I guess everything they're doing in here is trying to make me better and find out reasons for certain things […] and that can only be a good thing.' Patient 01_004

Effectiveness
'… it's very simple from my point of view. All I had to do was sit and look at the screen so it's not that difficult.' Patient 01_004

Satisfaction
'…it was difficult because ….., when it keeps pausing because they move their head, the gentleman I was doing it on kept getting quite frustrated, because it kept pausing and then reconnecting because he had a bit of a head tilt.' Clinician 5

Effectiveness
'…then, throughout the using the app, at times it felt like it wasn't tracking the eye movement…So when the patient needed a break and took their chin off, it would just keep going.' Clinician 7

Example of makeshift chinrest



Conclusions

This data provides critical insights into the real-world feasibility of deploying AI-guided digital tools in hospitals.

- **EyeFocus was viewed positively by both clinicians and patients, suggesting this AI-guided therapy is a feasible approach to rehabilitating patients with neglect.**
  - Clinicians saw EyeFocus being useful along side existing rehabilitation treatments.
  - Patients generally found treatment acceptable. There were varying levels of success and engagement, depending on individual characteristics.

Future research will consider accessibility, limitations of eye-tracking technology, engagement and intervention delivery with the goal to implement EyeFocus as part of routine NHS treatment post-stroke.

Lab website:

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