

Perspectives Of A Diverse Community Using A Digital Spatial Memory Test To Detect Early Alzheimer's Disease: A Qualitative Study

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Background

- Alzheimer's Disease (AD) develops decades before symptoms become clinically apparent.
- Current diagnostic practices rely on cognitive tests which are affected by cultural, educational and linguistic confounds.
- Spatial memory tests offer a promising solution as they do not suffer from the same biases as legacy cognitive tests and demonstrate high sensitivity & specificity for pre-dementia AD by assessing hippocampal function.

We developed a digital spatial memory test, the 4 Mountains Test (4MT), and explored the acceptability & usability of this test.

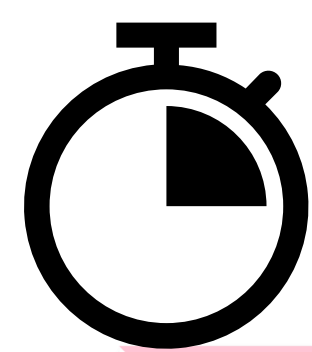
Method

- Participants were recruited via community organisations across the North East of England, UK.
- Interested individuals completed a demographic questionnaire to assess their eligibility and monitor equity & diversity.
- Participants were presented with the 4MT on a digital tablet, asked to follow a set of instructions, & participate in a semi-structured interview
- A reflexive thematic analysis approach was used to analyse the transcripts.



Results

4 themes identified...



The ability of the test to gather valid results was questioned due to...

- The short duration
- Potential influence of individual differences, such as familiarity with mountain landscapes, neurodivergences, health and wellbeing.

Trust



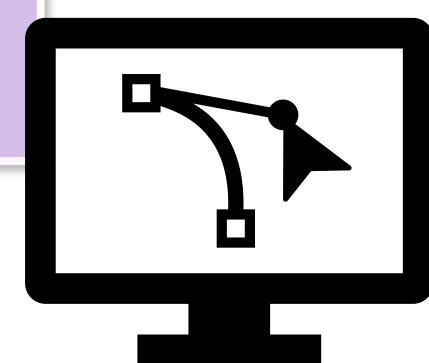
System intuitiveness



- Touchscreen was easy to use for most, but occasionally unresponsive for older adults.
- Providing alternatives (e.g., stylus & touch pad mouse) supported navigation when the touchscreen was unresponsive.

Participants liked the short text & worked examples, but suggested...

- Removing arrow annotations demonstrating distance between mountains as it looked confusing.
- Clarifying transition from worked examples to test.



Clarity of information



Inclusivity

- Suggested improvements to promote inclusion:
- A paper version should be available for those with digital anxiety.
 - Contrast & image size to be increased to support those with visual impairments.
 - Different languages & audio needed to support those who cannot read English.



Conclusion

- We described a diverse range of perspectives on the factors affecting acceptability (trust) and usability (system intuitiveness, inclusion, information clarity) of the digital 4MT which will inform its planned future use as a diagnostic test for early AD.
- This information can be used to guide researchers and digital health technology developers in co-designing and developing digital tests that meets the needs of diverse communities and help overcome the limitations of currently used legacy tests.

