

Usability and Acceptability Study on a Digital Speech and Language Therapy Platform

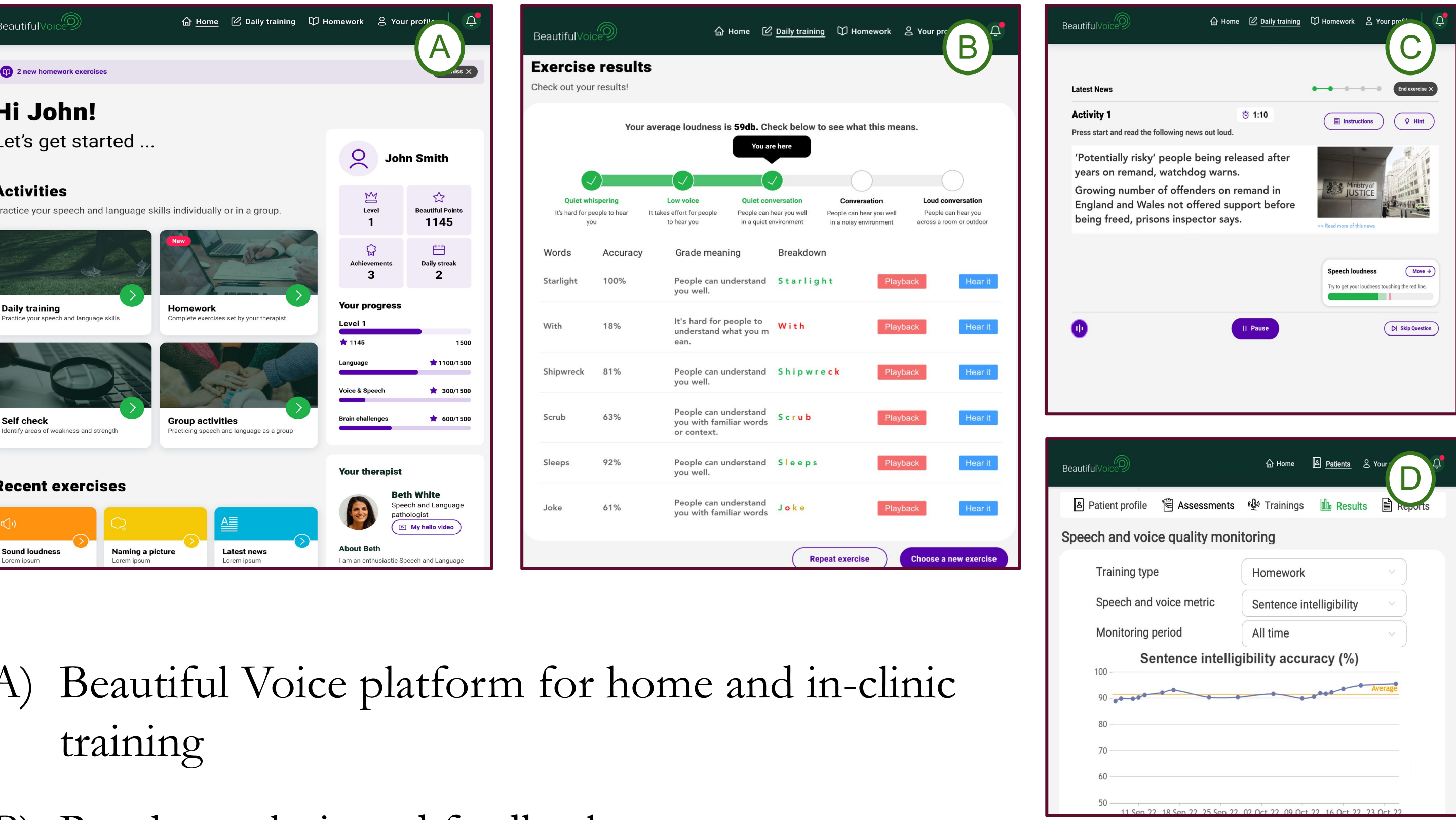
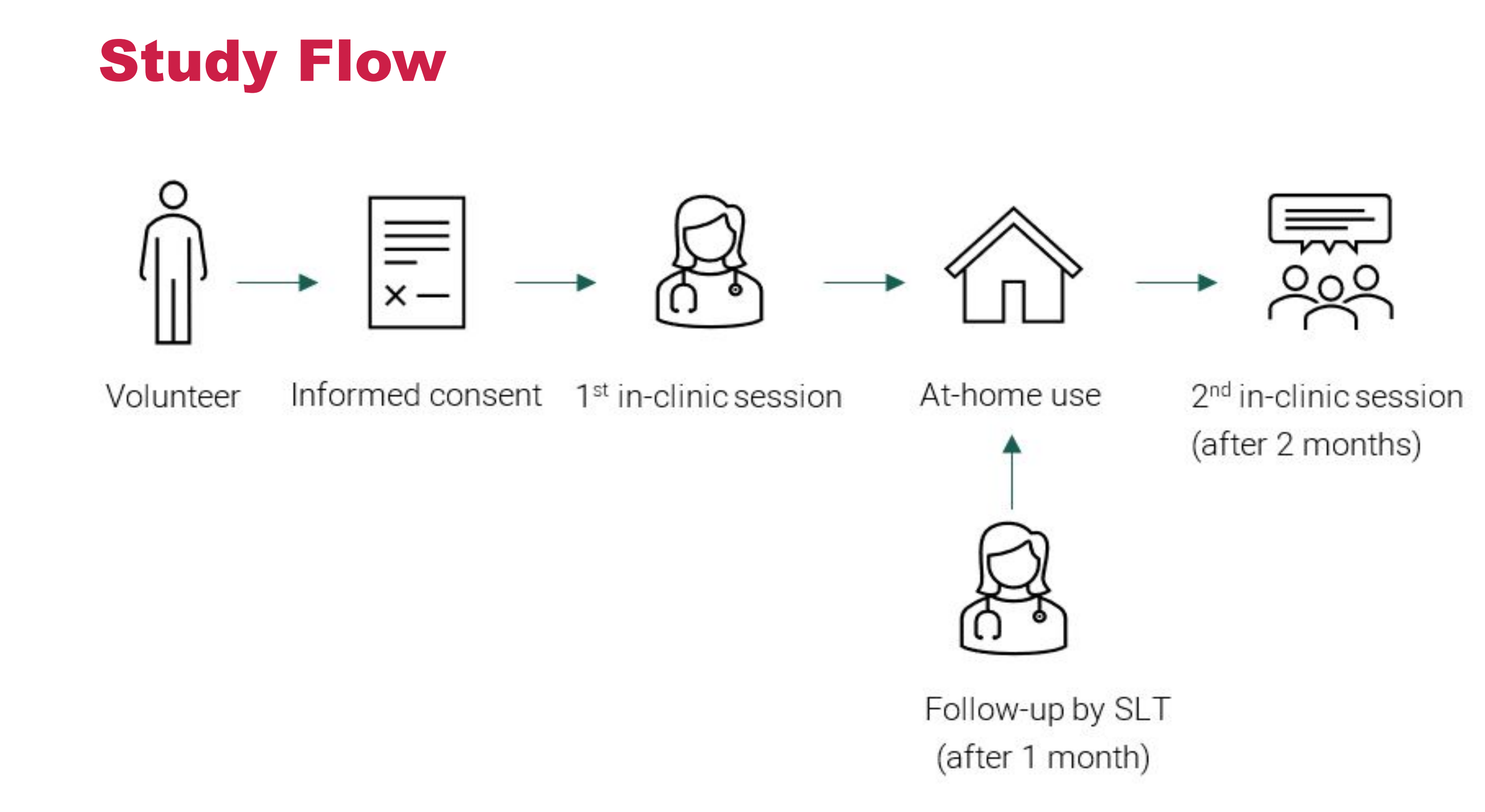
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Introduction

- Communication difficulties affect 350 million people worldwide, including 80 million adults with acquired neurological conditions
- High intensity and high frequency speech and language therapy is effective at improving the ability to communicate – guidelines recommend 3 hours a day of practice
- Home training is essential to complement clinical sessions to reach the necessary intensity and frequency
- Interactive, personalised, engaging and easy-to-use tools for home communication training are key to reach this level of adherence
- In this work we present a usability and acceptability study for Beautiful Voice, a speech and language therapy platform



- A) Beautiful Voice platform for home and in-clinic training
- B) Results analysis and feedback
- C) Interest-based exercises with biofeedback
- D) SLT monitoring of patients’ progress

Metric Improvements

- Voice, speech and language metrics analysed at the beginning and end of the study
- Quantitative improvements observed in all metrics in addition to self-reported subjective improvements
- Greater adherence to the platform correlated to greater improvement by the volunteer

+11%

Voice Volume

+12%

Speech Intelligibility

+40%

DDK Rate

+20%

Token Assessment

Methods

- 2-month home study
- 13 participants with voice, speech and language difficulties
 - 8 stroke survivors
 - 4 people with Parkinson’s disease
 - 1 encephalitis survivor
- 3 supervised sessions with SLTs (start, middle and end) to instruct participants on how to use the platform, collect feedback, assess their communication issues and assign targeted home training exercises
- Unsupervised use of the platform at their own will at home

Usability and Acceptability

- On average, the volunteers reported a three-fold increase of their home training time with the platform
- 69% of the volunteers felt that the platform was ready for use while 31% thought it required further improvements
- Acceptability and adherence was lower among patients with cognitive and physical/dexterity difficulties
- 92% participants stated that they would like to continue using the platform at home

“On occasions, it [my voice] seems to be quite weak. And it sort of pushes [me] to try and speak better”

B, Person with Parkinson’s

“It absolutely helped both my fluency my breathing”

B, Encephalitis Survivor

“I like that it being an exercise, I’m doing something to make my voice better, meanwhile I’m having fun doing that”

J, Stroke Survivor

Conclusion

- Using the platform increased intensity and frequency of home therapy input
- Usability difficulties are found with participants with more cognitive and physical/dexterity issues
- Based on user feedback, further development has been undertaken to include a wider range of difficulty levels and improved interface consistency throughout the platform
- Clinicians observed potential for accessing the platform at home to increase intensity of rehab
- Future development includes the addition of group therapy and tools to aid SLTs

[1] Mitchell, Claire, et al. "Prevalence of aphasia and dysarthria among inpatient stroke survivors: describing the population, therapy provision and outcomes on discharge." Aphasiology 35.7 (2021): 950-960.
[2] Stroke, ICSWP Intercollegiate, et al. "National Clinical Guideline for Stroke for the United Kingdom and Ireland." Royal College of Physicians of London, 2023.