


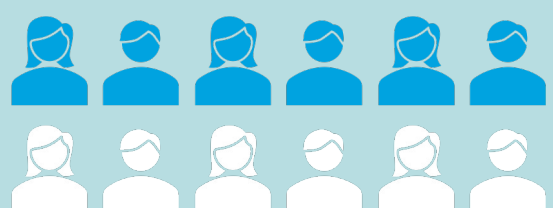


User-led Design of a Self-administered Smartphone-based Learning and Memory Assessment

Background



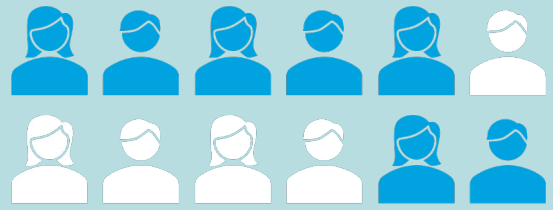
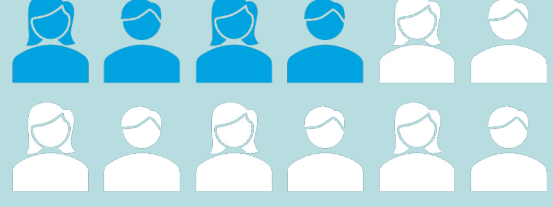
The International Shopping List test (ISLT) is a verbal word list learning assessment set within a realistic shopping list context, supporting ease of cultural adaptation, and addressing content validity and patient relevance. Improvements to and the wide adoption of natural language processing (NLP) software has enabled the possibility for self-administered tests of verbal learning. A beta version of a self-administered, smartphone-application (app) was developed, using the virtual assistant and NLP: the “List Learning and Memory Assessment (Lila™)”.

Positive Participant Feedback

Usability

-  **Eleven (11)** participants reported that pictures were all clear and easy to see.
-  **Six (6)** participants noted that the touchscreen was accurate when logging answers. No participants believed the phones to be inaccurate in logging responses, but many were frustrated by the delay between response and logging of the response for the Lila app.
-  **All participants** noted that the response buttons were easy to reach and that the size of the response buttons was “just right”.
-  **All participants** preferred light mode over dark mode.

Concept Elicitation

-  **Twelve (12)** participants reported that the welcome screen was clear and easy to see.
-  **Twelve (12)** participants noted that the microphone and speakers worked well.
-  **Five (5)** participants noted that the test was not too long, and **two (2)** reported enjoying the experience.
-  **Four (4)** participants commented that the instructions were clear.

Method

To ensure usability of the app, a user led design process was followed. A beta version was created via several rounds of focus group development in older adults. 12 older adults were then recruited for interviews (8 healthy and 4 with Mild Cognitive Impairment). Participants were pseudo-randomly assigned to participate in interviews during test performance, using either iPhone or Nokia devices. Each participant completed the test and provided concept elicitation feedback. Qualitative analysis of the interview results was performed using thematic coding.

Results

Key positive themes included the ease with which the app could be navigated, and the clarity of visual display and instructions

An important negative theme was the length of time between different components of the test