

# N8 CIR Research Case Studies

## Fiona Menger, Julie Morris, Matt Forshaw and Becky Osselton

**Dr Fiona Menger** is a speech and language therapist who worked in the NHS for many years with clients with acquired neurological difficulties. She moved to Newcastle University to work as a Stroke Association Fellowship researcher in 2012. She has since lectured at Newcastle University and Queen Margaret University Edinburgh on speech and language therapy.

**Becky Osselton** is a research software engineer at Newcastle University. Becky has worked as a full stack web developer for many years in a mix of private and public sector roles, before joining the RSE team at Newcastle in 2019.

### Can you give us an overview of the project?

People with aphasia (communication difficulties after stroke or brain injury) commonly have difficulties with writing and spelling and with using online technologies.

DAAWN (Digitised Assessment for Aphasia of Written Naming) is a pilot digitised assessment tool developed following a collaboration between Speech and Language Therapy (SLT) researchers Dr Fiona Menger and Dr Julie Morris and Data Science researcher Dr Matt Forshaw at Newcastle University. DAAWN is a web-based application that carries out a simple assessment by asking people with aphasia to type the name of an object picture.

The tool produces a downloadable report that automatically scores final performance, and captures data on the process of writing, including editing behaviours such as deleting and re-typing and speed of response.

### Did you work with an RSE from the beginning of the project?

The DAAWN tool was originally developed as part of a student Computing Science MSc project and was then extended thanks to funding from the Newcastle University Humanities and Social Sciences Faculty Research Software Engineering Fund.

### Once you started working with the data did you encounter any specific problems or challenges?

Initially the researchers were uncertain of the functionality and types of data that DAAWN would utilise. After discussions with the RSE, the tool was developed to create both a clinician-targeted PDF that summarised assessment findings, and a raw data file that could be used for statistical analysis of any future research participant data.

These functions support clinicians to have a greater understanding of client performance and demonstrate potential for sophisticated data collection in speech and language therapy research.

### What tools and software did you use for your analysis?

The tool was developed purely as a client side browser application using Vue.js. Due to data sensitivity, no data is stored permanently.

The tool had to be kept very clear and simple to follow guidelines for Aphasia technology users, so the CSS library Bulma was used to create a clean and consistent interface. A JavaScript library was used to create the downloadable PDF documents.

The software is available under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License. The code is publicly accessible at: <https://github.com/NewcastleRSE/DAAWN>.

### Can you tell us more about current or future projects?

DAAWN has been trialled by SLTs across the world. DAAWN is likely to be developed further based on feedback from SLTs, clinical researchers and consultation with people with aphasia.

The team are exploring possibilities around data visualisation for clinicians and clients and building collaborations with international researchers interested in acquired impairments of writing and typing.