user Guide

DAAWN is a **D**igitised **A**ssessment for **A**phasia of **W**riti**N**g. **DAAWN** was initially developed as an assessment of single word typed naming as part of a Newcastle University MSc Computing Science dissertation by **Alex Smith**, following a collaboration between Computing Science and Speech and Language Sciences. The software in its current form contains an expanded set of writing assessment tasks and was produced thanks to funding from the **Newcastle University Humanities and Social Sciences Faculty Research Software Engineering Fund**.

DAAWN Team

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# About DAAWN

DAAWN provides tools for the assessment of typed written language designed to be used by **Speech and Language Therapists** with people with aphasia. DAAWN is a set of assessment tools designed to be used by **Speech and Language Therapists** with people with aphasia. This website currently contains: 1. A single word typed naming task, 2. A sentence level copy task for words and non-words, and 3. A free text generation task with a choice of stimulus prompts.

These tools are not intended to be final polished versions of assessments. Instead, we have developed pilot them to demonstrate the type of information that could be available as part of a digitised clinical assessment. Our longer-term aim is to continue to develop DAAWN and to explore the potential for the technology, so it can be of use in clinical practice and for research.

Please feel free to use the DAAWN tools as much as you like. They can be conducted face to face with people with aphasia but may also be carried out via telehealth assessment. This would be possible via screenshare and remote-control using Zoom, Microsoft Teams, Jistsi or Google Meet with a Chrome extension. Please see the RCSLT

guidance on telehealth for [further support](https://www.rcslt.org/members/delivering-quality-services/telehealth/telehealth-guidance#section-5).

If you are using DAAWN, please do get in touch to let us know.

For further information or to get in touch about DAAWN, please contact **fiona.menger@ncl.ac.uk**.

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# Daawn tools

## Written naming task

The SLT can choose from one of four stimulus picture sets to carry out the assessment.

**Sets 1-3** contain:

* 7 x 3-letter words
* 7 x 4-letter words
* 5 x 5-letter words
* 4 x 6-letter words
* 3 x 7-letter words
* 1 x 8-letter words
* 1 x 9-letter words
* 1 x 10-letter words

The sets are matched for frequency and concreteness (See appendix one). Data on spelling regularity is not currently available for this set as the images were obtained from a study on spoken naming. However, we have attempted to include a mix of regular and irregular orthographic forms. The items within the sets will be presented in random order.

**Set four** only contains three and four-letter words (42 items in total). We have offered this set as an option for assessment with people with severe writing difficulties who may struggle beyond this level. The items will appear in order with three-letter words first. For information on the word sets, see Appendix one.

The word sets could be used to compare performance using different types of text entry, e.g., mobile phone vs keyboard. They might also be used to provide control and treatment sets for therapy (alongside personally selected vocabulary). If you would like to assess more than 30 items, you would currently need to repeat the test using a different set each time.

# Daawn output

#### Process response

The process response records the keys pressed by the client when typing the word. This allows the SLT to see whether errors have been self-corrected during the typing process. It will also record any pause longer than one second. For example, the word ‘anchor’ could be typed as follows: [a, n, k, Backspace, c, (2.3secs), o, r] with the end result ‘ancor’.

#### Automated Scoring

The application automatically calculates a score based on the system used in the writing section of the Comprehensive Aphasia Test. For information, please see the CAT manual [1].

#### Damerau-Levenshtein distance

Damerau-Levenshtein distance [2-4] (LD) is a measure of how close the final attempt at writing the word is to the target item. The LD score is based on the number of single-character changes needed to transform the client’s attempt into the target word. Changes can be either insertions, omissions, transpositions or substitutions. DAAWN calculates LD automatically. The larger the number, the greater the distance between the attempt and the target word.

| **Target word** | **Final attempt** | **Scoring** |
| --- | --- | --- |
| CAT | CAR | 1 x substitution = **LD 1** |
| SMILE | SIMILES | 2 x insertions (I,S) = **LD 2** |
| SHOE | SOE | 1 x omission (H) = **LD 1** |
| SOAP | TAOP | 1 x substitution, 1 X transposition = **LD 2** |
| GIRAFFE | GIFAG | 2 x substitutions (R to F and F to G), 2 x omissions (F, E) = **LD 4** |

Clinicians should be aware that LD does not take errors of meaning into account. People with aphasia may, therefore, make some errors for which LD is not a good measure of accuracy. This would be problematic if a person produced a semantic error that was orthographically similar to the target, e.g, a target word of MONKEY and final attempt DONKEY. This example would lead to a LD of one.

Both CAT and LD scoring is automatically calculated from the person's final response. This includes items where the first letter has been provided by a hint. Where a hint was given, items are denoted with an [\*] in the assessment results.

#### Inter-key typing speed

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# USEFUL READING

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# Appendix one: DAAWN Word sets

