

## Guidelines for Translation

We provide below guidelines for translation however after reading and considering these points, you may wish to contact Drs Thomas Bak and Dr Sharon Abrahams to coordinate all language and culturally specific issues, [thomas.bak@ed.ac.uk](mailto:thomas.bak@ed.ac.uk) [s.abrahams@ed.ac.uk](mailto:s.abrahams@ed.ac.uk)

Good practice would require a naïve researcher who is fluent in both the language of translation and in English to back-translate the new version into English, in order to see that any translation accurately matches the original English version.

### Language - Naming

If items are not easy to translate into local language and culture choice of items for selection can be made via the following criteria: half the items should be living, and half non-living. Within the non-living category, manipulable and non-manipulable objects should be included. One option would be to include one tool, one musical instrument, one item of clothing and one vehicle (as is the case in ECAS English version). Frequency of items selected should be low enough that items are not easy to name, yet not so high that they cannot be named by all controls.

Note: monochrome drawings are recommended to facilitate photocopying.

### Language - Comprehension

Items should include questions where understanding depends on a verb (for example, "*something used for chopping*", "*something that you can fly in*"). Ideally comprehension should include different grammatical constructions (for example, "*something with a sharp edge*").

Note: it is better to avoid having one question pertaining to each naming item because patients can then predict later answers by a process of elimination rather than comprehension.

### Memory – Immediate recall

Story should be adapted to local culture where necessary.

### Language - Spelling

Items should include, in comparable numbers, nouns, verbs and compound words. Compound words should consist of noun-verb combinations.

Items should be of a low-to-medium frequency such that most controls should be able to spell items yet not so high that all controls can spell all items.

In alphabetic languages words should be mid-length, polysyllabic words.

In morphologically complex languages we would encourage use of different grammatical forms of words (past tense, continuous, inflected nouns etc.)

### Verbal Fluency - Letter

Letters to use are at the discretion of the researcher however, the prevalence of words beginning with the letter should have a similar frequency in language of conversion to that of words beginning with letter S in English.

In our experience written and spoken verbal fluency performance is comparable after VFI calculation. Data is, however, still being collected and this opinion may be revised in light of data collected in 2013.

Each translated ECAS should collect relevant control data and corresponding conversion tables should be constructed. The technique for producing conversion tables is provided below and should be derived from the data of at least 40 healthy controls, with 20 of these healthy controls providing spoken responses and the other 20 healthy controls providing written responses. If the control data has a large variance/standard deviation which would make the table unworkable an alternative would be to use percentile ranks to produce equivalent scores of between 0 and 12.

Performance bracket	Converted score
$> X + 6.75 \text{ SD}$	<b>0</b>
$X + 5.25 \text{ SD to } X + 6.74 \text{ SD}$	<b>2</b>
$X + 3.75 \text{ SD to } X + 5.24 \text{ SD}$	<b>4</b>
$X + 2.25 \text{ SD to } X + 3.74 \text{ SD}$	<b>6</b>
$X + 0.75 \text{ SD to } X + 2.24 \text{ SD}$	<b>8</b>
$X - 0.75 \text{ SD to } X + 0.74 \text{ SD}$	<b>10</b>
$< X - 0.76 \text{ SD}$	<b>12</b>

Where X = healthy control mean, and SD = healthy control standard deviation

### Verbal Fluency – Letter and restricted number of letter

**IT IS VERY IMPORTANT IN THIS LETTER FLUENCY CONDITION TO SPECIFY THE NUMBER OF LETTERS (e.g. in English, words consisting of 4 letters, beginning with the letter T). THIS IS BECAUSE RESTRICTED VERBAL FLUENCY IS MORE DEMANDING THAN UNRESTRICTED VERBAL FLUENCY**

Letters to use are at the discretion of the local researcher who will have knowledge on typical letters used in fluency in their local language. However, **the prevalence of words beginning with the given letter and consisting of the specified amount of letters should have a similar frequency in language of conversion to that of words beginning with letter T and consisting of four letters in English.**

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### Executive – Sentence completion

Translation of this task requires a language specialist and researchers should contact Dr Thomas Bak, as above.

#### REFERENCE

Abrahams, S., Newton, J., Niven, E.H., Foley, J. & Bak, T.H.B. Screening for cognitive and behavioural changes in ALS (2013). Amyotrophic Lateral Sclerosis and Frontotemporal Degenerations. Posted online June 13, 2013. doi:10.3109/21678421.2013.805784

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