**Supplemental Material**

**Supplemental Testing**

The Western Aphasia Battery-Revised (WAB-R) Part 1 (Kertesz, 2007) was used as the primary measure of language and the Apraxia of Speech Rating Scale (ASRS; Strand et al., 2014) served as an explicit means to distinguish speech errors related to aphasia, AOS, and dysarthria. Nevertheless, additional assessments were given to further characterize each participants' speech and language abilities. Language tests included: the Writing subtest from Part 2 of the WAB-R (Kertesz, 2007) to serve as a language expression measure that was not dependent on speech output; the Boston Naming Test (BNT; Kaplan, Goodglass, & Weintraub, 2001) and the Philadelphia Naming Test (PNT; Roach, Schwartz, Martin, Grewal, & Brecher, 1996) to provide a thorough measure of confrontation naming abilities of nouns; the Revised Token Test (McNeil & Prescott, 1978) for additional assessment of comprehension; and verbal fluency tasks (Action/Verb Fluency; Woods et al., 2005, and Letter/FAS Fluency; Loonstra et al., 2001) as measures of word retrieval within restricted search parameters.

To provide further characterization of speech difficulties, participants also completed the Motor Speech Evaluation (MSE; Duffy, 2005; adapted from Wertz et al., 1984) as well as non-speech oral motor movements, repetition of sentences of increasing length, and reading of the Grandfather Passage (Darley et al. 1975).

**Supplemental Behavioral Data**

To complement the behavioral characteristics described in the manuscript, scores for additional language and speech testing are provided in Supplementary Table 1 and Supplementary Figure 1, respectively. In addition, the following section describes additional clinical findings for each participant based on the supplementary testing described above.

*AOS1*: Mild difficulties were noted for letter fluency and confrontation naming. Moderate impairment was noted for DDKs and repetition of increasing word lengths. Mild difficulties were noted for oral apraxia, the production of repeated trials, as well as an increase in utterance time (i.e., duration from the initiation of speech production until completion).

*AOS2*: Only participant to demonstrate intact word fluency on both tests (FAS test and verb fluency). Performance for naming was slightly below average. Mild difficulty was noted with written output, but may be attributed to use of the non-dominant hand for writing due to hemiparesis of the dominant hand following stroke. Mild to moderate impairment was noted repetition of increasing word lengths. Mild difficulties were noted for DDKs and the production of repeated trials.

*AOS+AA1:* Mild to moderate difficulties were noted for measures of verbal fluency and naming. Moderate difficulties were noted with writing. Moderate impairment was noted for DDKs and severe impairment was noted for repetition of increasing word lengths. Mild difficulties were noted for the production of repeated trials.

*AOS+AA2:* Mild to moderate difficulties were noted for naming measured by the PNT and verbal fluency (action and letter fluency). Moderate difficulties were noted for writing. Moderate to severe impairment was noted for repetition of increasing word lengths and severe impairment was noted for the production of repeated trials. Mild difficulties were noted for DDKs and the length of utterance time.

*AA1:* Mild difficulties were noted for verbal fluency (letter and action) and naming. Mild impairment was noted for DDKs and repetition of increasing word lengths.

Supplementary Table 1: *Scores for additional language assessments for each participant.*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Language assessment** | | **AOS1** | **AOS2** | **AOS+AA1** | **AOS+AA2** | **AA1** | ***Median (Range)*** |
| **RTT** | Subtest VI PR | 95-100 | 58 | 19 | 46 | 52 | *52 (19-95)* |
|  | Subtest VIII PR | 78 | 54 | 27 | 67 | 69 | *67 (27-78)* |
|  | Subtest X PR | 43 | 72 | 16 | 65 | 18 | *43 (16-72)* |
| **Word** | Action Total | 13 | 15 | 7\* | 1\* | 7\* | *7 (1-15)* |
| **Fluency** | Action - Unintelligible Productions | 0 | 0 | 1 | 5 | 0 | *10 (6-13)* |
|  | Action # Incorrect+ | 0 | 1 | 2 | 0 | 1 | *1 (0-2)* |
|  | Letter Total (FAS) | 16\* | 32 | 5\* | 9\* | 8\* | *9 (6-32)* |
|  | Letter - Unintelligible Productions (FAS) | 0 | 2 | 3 | 4 | 0 | *13 (10-26)* |
| Letter # incorrect+ | 0 | 2 | 2 | 0 | 3 | *2 (0-3)* |
| **Naming** | Boston Naming Test (/60) | 51 | 54 | 50 | 55 | 51\* | *51 (50-55)* |
|  | PNT Spontaneously Correct (/175) | 159 | 148 | 132\* | 74\* | 167 | *148 (74-167)* |
|  | PNT Self-Corrections | 13 | 22 | 14 | 5 | 5 | *13 (5-22)* |
|  | PNT Semantic Errors | 1 | 0 | 4 | 0 | 1 | *1 (0-4)* |
|  | PNT Phon Errors | 1 | 0 | 23\* | 0 | 0 | *0 (0-23)* |
|  | PNT Mixed Errors | 0 | 0 | 0 | 0 | 0 | *0 (0)* |
|  | PNT No Response | 0 | 0 | 0 | 1 | 1 | *0 (0-1)* |
|  | PNT Artic Errors | 1 | 5 | 0 | 95\* | 1 | *1 (0-95)* |
|  | PNT Neologisms | 0 | 0 | 0 | 0 | 0 | *0 (0)* |
| **WAB** | Writing Request (/6) | 6 | 6 | 6 | 5.5 | 6 | *6 (5.5-6)* |
| **Writing** | Writing to Dictation (/10) | 8 | 10 | 0 | 8 | 7 | *8 (0-10)* |
|  | Writing Dictated Words (/10) | 8 | 10 | 7 | 6 | 10 | *8 (6-10)* |
|  | Writing Letter/Number (/7.5) | 7.5 | 7.5 | 6.5 | 7.5 | 6.5 | *7.5 (6.5-7.5)* |
|  | Copying (/10) | 10 | 10 | 10 | 9.5 | 10 | *10 (9.5-10)* |
|  | Writing Alphabet/Numbers (/22.5) | 22.5 | 22.5 | 21.5 | 18 | 22.5 | *22.5 (18-22.5)* |
|  | Writing Output (/34) | 33 | 20 | 1.5 | 9.5 | 30 | *20 (1.5 - 33)* |
|  | Writing Subscore (/10) | 9.5 | 8.6 | 5.25 | 6.4 | 9.2 | *8.6 (5.25-9.5)* |

\*Denotes below average performance

+Productions that were intelligible but were either a neologism, perseveration, or incorrect for the task (e.g., proper noun, repeated word with different ending).

Supplementary Figure 1: *Apraxia Battery for Adults-2 subtest severity scores for each participant*.

**Supplemental References**

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