SUPPLEMENTAL MATERIAL

Therapy Description

Participants performed the therapy for 90 minutes (3 30-minute sessions) daily, 6 days a week, for 6 weeks. One of these sessions was done in a university laboratory with a clinician present. The rest of the sessions were performed in the participants' homes. Participants were lent a laptop for the duration of therapy. This laptop was programmed to initiate the therapy when turned on.

The therapy consisted of presentation of audio stimuli (real words and phrases) each of which was recorded by six different talkers. Each stimulus was presented consecutively by each of the six talkers, in combination with video or still images of their faces. Participants then repeated the stimulus six times, either once following each presentation, or six times following the block of presentations.

The therapy program had twelve levels of complexity. At lower levels, stimuli consisted of phonologically simpler words and shorter phrases. Each participant started therapy at the level judged appropriate given their pre-therapy repetition ability. The therapy was then advanced by one level each week, unless repetition of a level was judged to be necessary by the clinician supervising the weekly session performed in the laboratory. At each level, some variability in stimulus complexity was provided by occasionally providing simpler stimuli at higher levels and more difficult stimuli at lower levels, according to a probabilistic algorithm.

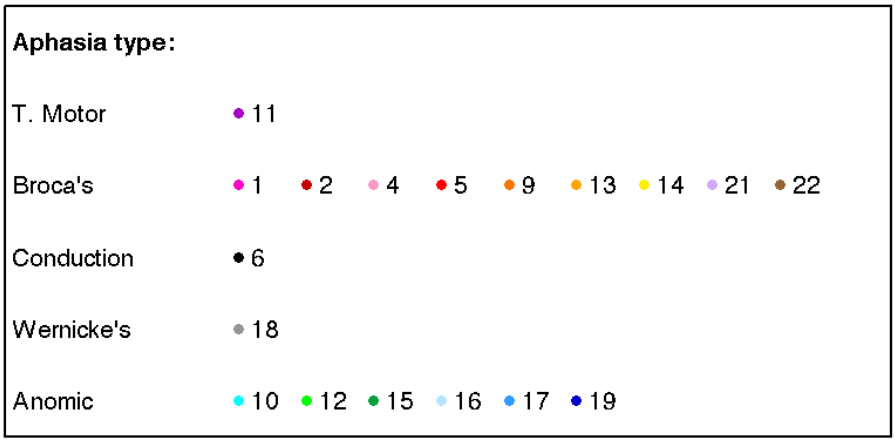
Participant performance was monitored by recording sessions via the laptop camera and microphone. These recordings were reviewed to ensure compliance and to determine the number of sessions completed over the course of therapy. Performing the full number of sessions at home (17) was verbally encouraged during the session with the clinician.

Stimuli Selection

Lexical stimuli were selected using an algorithm that considered various linguistic and ecological parameters: number of letters, phonemes, and syllables; part of speech; written frequency; familiarity; frontal and total visibility; and phonemic complexity. Combining all criteria yielded a final pool of 2568 words (e.g., “blue”, “chair”, “Monday”). Words contained between 1 and 4 syllables (mean = 1.42) and between 1 and 12 phonemes (mean = 4.09).

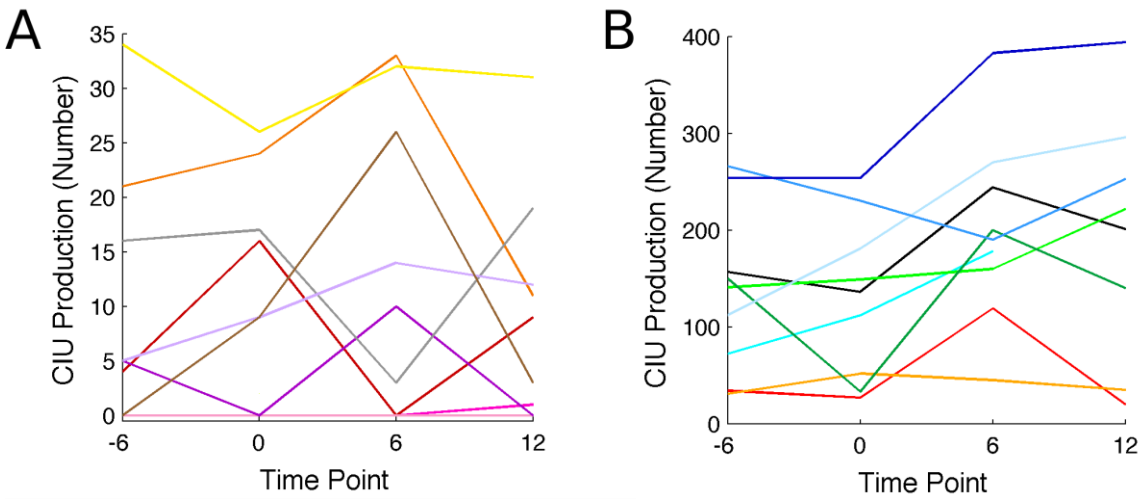
Phrasal stimuli were selected from a large variety of English language textbooks, travel guides, and intuition, with the goal of common use and high functional utility for people with aphasia. This yielded a pool of 405 phrases (e.g., “watch out”, “nice to see you”, “please pass the salt”). Phrases contained two to nine syllables (mean = 4.03) and two to five words (mean = 3.36).

Supplementary Figure 1. Individual participants by aphasia classification. These colors are used to identify individual participants in Figures 3-5.

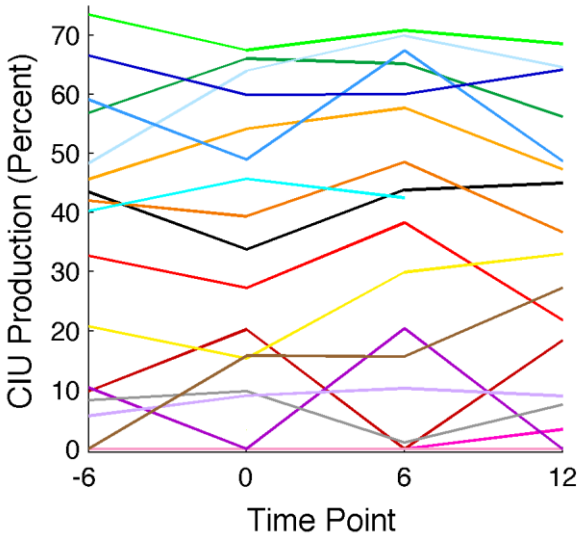


Supplementary Figure 2. Study design. Narratives were recorded at four time points, which were equally spaced over 18 weeks. Participants participated in intensive imitation therapy during the middle six weeks.

Supplementary Figure 3. Number of correct information units (CIUs) produced at each of the four time points. Higher and lower performing individuals are separated to permit visualization. Individual participants are identified by color as indicated in Figure 1. A: Lower performing participants, producing fewer than 35 CIUs at all time points. B: Higher performing participants, producing at least 50 CIUs for one time point.



Supplementary Figure 4. Percent of correct information units (CIUs) produced at each of the four time points. Percent of correct information units are calculated by dividing the number of correct information units by the number of total words produced, and thus reflect the ratio of successful communication to total communication attempts. Individual participants are identified by color as indicated in Figure 1.



Supplementary Figure 5. Relationship between number of therapy sessions completed and change in percent of CIUs (correct information units) produced. Baseline percent on Cinderella narrative task (average of two pre-therapy time points) was subtracted from percent obtained immediately following therapy (Week 6) to obtain the change in percent of CIUs produced. Individual participants are identified by color as indicated in Figure 1.