

Supplemental Material S1. By-participant description of individualized BEARS training.

Participant 1 consistently benefited from cues to "Let the dust settle" (i.e., to allow for overactive lexical information in short-term memory to decay). This was because after multiple trials, he was noted to become perseverative, especially when he responded too quickly. Discussed "tool drawer" analogy (see Appendix 1). He was also observed to either build up too much tension prior to retrieving the target or move on too quickly without enough time for an attempt. Therefore, additional education was provided regarding balancing the right amount of time with the right amount of effort. He was cued to "breathe and slow down" as opposed to always saying "move on." Participant 1 also benefited from discussion about understanding and working *with* your aphasia. Discussed his apparent maladaptive habits of trying to force a word out through increased tension or trying to "sneak up on it" by trying to produce it as quickly as possible (which often resulted in errors), as opposed to a more adaptive approach of easing into word retrieval. Additional feedback regarding his level of initiation speed and apparent tension was provided as needed.

Participant 2 had a tendency to make impulsive errors and benefited from cues to "breathe and slow down." Frequent tension feedback was provided when he became tense after missing multiple targets consecutively. Tension and frustration appeared to be his biggest battle. He benefited from discussion about understanding and working *with* your aphasia. Also discussed easing into retrieving a word rather than trying to "spit it out."

Participant 3 benefited from education regarding how to modulate his naming speed. He was encouraged to slow down when he saw a picture that he knew gave him more difficulty. Discussed putting in the right amount of effort and being aware of his output (tool drawer analogy). He was encouraged to slow down if he found himself coming up with other treatment targets (i.e. visor for eggplant; both treated items). He was noted to become more aware of his output in the treatment game but not as much in conversation with the clinician. As a treatment session went on, he benefited from additional cues to breathe and relax, as tension would build up if he began missing treatment targets he could typically access. Of note, when increased difficulty was noted in a treatment session, it was frequently in conjunction with self-reports of poor sleep or stress in his personal life. Upon final follow up, participant's wife reported increased confidence. Participant reported that he was now ordering his own food at the deli counter without difficulty. Per wife, both of his children also reported noticeable improvements in his language.

Participant 4 was good at providing his own life examples and analogies in relation to his experience of aphasia. He required a lot of cues and education to learn when to move on when a retrieval attempt was not going to be successful and when to give himself more time when he had a good chance of succeeding. Increased naming difficulty was noted during step 3 of each trial (after questions) compared to other participants. He was noted to be impulsive during his second attempts, frequently producing a word within the category but not the target item. He benefited from frequent cues to relax, as frustration was a barrier for his naming. Education was provided regarding the differences between intensive drill-based practice to improve his language system vs. typical total communication. He was encouraged to continue to use circumlocution strategies in his day-to-day life, but to only provide one word during the treatment game. Upon exit, participant reported that he did not feel like he improved much in his speech/language but really enjoyed the treatment sessions.

Participant 5 required multiple and frequent cues to provide a single word to name the item, as he provided constant commentary about his performance and was frequently tangential (e.g., sharing stories about his own life). Commentary and tangential stories were considerably reduced over the course of treatment. Frequent encouragement was provided to increase speed for semantic feature questions, as he often got distracted by commenting on the question or by responding quickly verbally but not selecting the button. Commentary was reduced with training, but speed did not seem to improve. He was encouraged to remain silent until he decided to attempt the word or move on. Noted improvement was made on this skill throughout treatment. He had a tendency to attempt to name a target word a number of times, which appeared to increase his chance of subsequent perseverative errors. He was instructed to

name the picture only one time, and his ability to do so improved over the course of treatment. He appeared to benefit more from concrete examples and practice rather than from abstract analogies. He seemed to improve his ability to wait until he was ready before attempting to say the word. Tangential behavior (commentary and stories) was noted to increase with fatigue. Per wife, both his sister and brother-in-law commented on how much his language improved. Wife reported that his language was the best it has been since his stroke, and that he started to initiate more conversation in the car as opposed to sitting quietly.

Participant 6 benefitted significantly from cues to "relax" (i.e., to self-monitor level of tension in her shoulders). She was encouraged to slow down, the difference between feeling rushed vs. not rushed as she attempted to retrieve a word. Overall, she was very motivated to earn feedback points and get through many treatment trials. She was encouraged to self-monitor her output for sound errors. She was encouraged to use the "most efficient road" for word retrieval (natural access vs. compensatory strategies) during the treatment game. This was because she occasionally attempted to visualize and then read the spelling of a word in her head, which took longer and resulted in sound errors for irregularly spelled words. She was educated about modulating her speed as needed, and that she did not need to slow down for every picture, just when she encountered retrieval difficulty. She was also trained to only provide a single naming attempt once she was ready, as she often attempted to retrieve a word too quickly and then produced multiple self-corrected errors.

Participant 7 was encouraged frequently to speed up his overall responses. He became extremely frustrated during more difficult tasks and would often take the maximum amount of time to respond. Used an education strategy related to his former law enforcement experience to illustrate the need to make a quick "gut decision" instead of seeking to "build a case" like a detective. Trained on ways to "clear the static" (i.e., taking a breath when the task became difficult, slowing down, counting to 10 to try to clear instances of perseveration). Encouraged him to be aware of output to reduce perseverations or unrelated responses. Both his wife and participant reported that his day-to-day language performance improved after treatment. Improved speed was evident in overall duration of exit testing.

Participant 8 benefitted from education regarding modulating his naming speed. He was encouraged to slow down when he saw a picture that he knew gave him more difficulty. Discussed putting in the right amount of effort and self-monitoring output. He was encouraged to slow down if he found himself coming up with unrelated treatment targets (i.e., "visor" for "eggplant" which were both treated items). He implemented several strategies to relax and slow down without clinician prompting. Given comprehension impairments, he benefitted most from training using direct strategies as opposed to abstract scenarios or analogies. He was very motivated by treatment game feedback. As treatment progressed and his performance accuracy increased, he was instructed to continue to balance speed and accuracy, performing at a faster rate that occasionally resulted in an error instead of slowing down significantly to achieve 100% performance accuracy.

Participant 9 required significant encouragement throughout treatment. Following a few sessions of treatment, his increased awareness of errors and choosing to "move on" was observed to over-generalize to conversation, resulting in reduced output. Therefore, a distinction was drawn between the treatment game and general conversation, and he was encouraged to continue to focus on getting his point across despite sound errors (and to shift to alternative communication strategies, if necessary). Discussed putting in "the right amount" of effort and time before moving past a picture. Obvious tension was observed when he attempted a word before he was "ready." He was encouraged to "break the tension" by taking a deep breath and sitting back in his chair before trying again. With moderate cueing to complete these techniques, he had good success retrieving his target in instances of increased difficulty.