Remediation of language processing in aphasia: Improving activation and maintenance of linguistic representations in verbal short-term memory

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Introduction
- Although aphasia is commonly viewed as a language impairment, verbal short-term memory (STM) impairments are pervasive in individuals with aphasia.
- Recent evidence supports the association between STM recovery and language deficits in aphasia (Martin, Saffran, & Dell, 1996).
- Impaired ability to maintain activation of linguistic representations is a fundamental component of aphasia (Martin & Gupta, 2004).
- Researchers are beginning to develop treatment programs for STM impairments in aphasia (Majerus, Van der Kaa, Renard, Van der Linden, & Poncelet, 2005).
- We report a novel treatment for word processing impairments in aphasia that incorporates varying time intervals and load to strengthen the ability to maintain activation of semantic and phonological representations of words and sentences to improve language function.

Participants
- 2 speakers with mild to moderate chronic fluent aphasia

Measures
- Administered Temple University Language/Short-Term Memory Diagnostic Battery
- Battery uniquely incorporates a STM component of time intervals and load with measures of language processing
- Includes comprehensive set of measures that probe semantic and phonological abilities
- Both participants demonstrated profiles consistent with phonological impairments
- Both showed a decline in performance as time intervals and memory load increased

Method
- Both participants assigned to Phonological Module 1 (see Figure 1)

Results
- Participant # 1 FS: During treatment and maintenance trained words showed medium to large effect sizes for all variables and intervals except in non-word 5 second Unfilled condition.
- Participant # 2 BC: During treatment and maintenance trained words showed small to medium effect sizes for all variables and intervals.

Discussion Points
- Results indicate this treatment program can improve the ability to access and maintain activation of phonological representations in people with aphasia.
- Results can be interpreted as evidence that treatment of STM abilities can improve language processing deficits.
- Currently administering this treatment program using more semantically-based stimuli to demonstrate its efficacy with other types and severities of aphasia.
- Further research is needed to test the efficacy of approaches for language treatment in aphasia that engage short-term memory processes.
- This is a promising approach for aphasia rehabilitation.

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References

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