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Use of Semantic Activation in Rehabilitation of Naming in Fluent Aphasia

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Introduction

The effect of REST (Reduced Error Semantic Therapy) on word retrieval was compared with a hierarchical cuing intervention requiring overt speech. Prior work suggests that the intensive practice and decreased opportunity for error provided by REST may provide improved word retrieval equivalent to that of conventional methods (Davis, Harrington, and Baynes, 2006). This computer-based method is intended as an adjunct to traditional therapy that is amenable to use on a home computer. This study compared the effectiveness of two methods differing only in whether or not production was required. To understand whether either method of training had an effect on the organization of semantic fields, the flags-task developed for use with persons with Alzheimer's disease was used to compare semantic judgments to a normative group (Ober and Shenaut, 1999).

Subject

DK was a 64 year-old left-handed male seven months post a left hemisphere CVA at the initiation of therapy. Pre-testing with the Western Aphasia Battery classified him as a conduction aphasic. He scored 4/60 on the BNT, but retrieved an additional 9 items with a phonemic cue. Performance on Pyramids and Palmtrees indicated that he retained sufficient access to semantic knowledge to profit from semantic therapy.

Materials

In this intervention, materials were drawn from two superordinate categories (natural and manmade) that were each subdivided into 10 subcategories of at least 10 items. Two items from each category were selected to be used in the flags task and were not exposed for training or probes. Thirty-six training and sixteen probe items for the two superordinate categories were selected based on three attempts at naming the set of 235 color pictures. Both treatments used identical 4-choice templates presented on a touch screen. REST only required that the participant touch the correct picture to answer a category or associative level question. Order was random. For hierarchical cuing, the categorical templates for each training item preceded the associative level templates. DK was trained for one hour daily for 10 days with each method. The criterion of 90% correct for two consecutive days was never reached.

Results and Conclusions

Neither visual inspection nor effect size data indicated significant improvement based on probe results. The largest effect size was d= 1.64. Post-testing indicated modest improvement. DK retrieved more items spontaneously on the BNT scoring 6/60 correct with an additional 7 items retrieved with a phonemic cue. Pre- and post-administration of the entire training list including probed items showed a modest improvement for spontaneous retrieval of words used in REST training (z=1.46, binomial p= .07) (Figure 1). The flags-task revealed greater patient similarity to controls for natural than for man-made items, and no change due to treatment. Non-linguistic factors such perseveration and working memory limitations played a role in response to treatment.

References

Davis, C.H., Harrington, G. and Baynes, K. (2006). Intensive semantic intervention in fluent aphasia: A pilot study with fMRI. 2006. *Aphasiology, 20*, 59-83.

Ober, B.A. and Shenaut, G.K. (1999). Well-organized conceptual domains in Alzheimer's disease. *Journal of the International Neuropsychological Society, 5*, 676-684.

Figure 1. Percentage of items from training sets retrieved spontaneously and with a cue.