Combined Oral Reading Method and Copy-Recall Treatment in Broca’s Aphasia

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INTRODUCTION

• Grapheme-phoneme and phoneme-grapheme conversions are critical to access phonological and graphemic output lexicons (Ellis & Young, 1988)

• Studies have used this approach to address both reading and writing (Beeson & Egnor, 2006; Kiran, Thompson, & Hashimoto, 2001; Viswanathan & Kiran, 2005)
INTRODUCTION

- Kiran et al. (2001) reported progress both in oral reading and in oral naming with no generalization to untrained items

- Beeson & Egnor (2006) showed improvements in both written spelling and oral naming, but no generalization to untrained items

- Viswanathan & Kiran (2005) noted improvement in oral reading and written naming, with generalization to untrained items
INTRODUCTION

- Several factors, including type and severity of aphasia, seem to influence the generalization outcomes.

- Patients with fluent aphasia participated in the previous studies.

- The focus of the present study was the treatment outcomes in a non-fluent, moderately impaired, chronic aphasic patient.
OBJECTIVES

- Will grapheme - phoneme conversion training improve oral reading in a chronic non-fluent aphasic patient?

- Will the improvement generalize to verbal naming?

- Will the combination of grapheme - phoneme conversion training and Copy and Recall Treatment (CART - Beeson, Rising, & Volk, 2003) result in improved outcomes?

- Will outcomes of either treatment method generalize to untrained words?
TREATMENT DETAILS
(February – April 2008)

Participant
- Male
- Age: 67 years
- Pre-morbid Handedness: Right
- Caucasian
- Broca’s Aphasia
  - Etiology: CVA
  - Onset: 1996

Frequency, Duration
- 1 hour, once a week for 8 weeks
- Home program (CART)
  - 10 target words written 15 times daily
- Spouse-lead home practice
  - 45 minutes daily
  - Final 2 weeks of treatment only
TREATMENT DETAILS

- 3 Lists w/ 10 nouns each (Tx, Probe & Generalization Lists)
  - Lists are balanced using several factors:
    - Word frequency, imagery, concreteness, meaningfulness, number of syllables & number of letters (Paivio et al. 1968, Word List Generator)

- Treatment list: used every session
- Probe list: used every other session
- Generalization list: used only as pre- & post-testing of treatment period
**TREATMENT DETAILS**

- **Phoneme-grapheme Conversion**
  - Kiran et al., 2001
  - Verbally name object, write name of object, present letters found within the word **AND** an equal number of distracter letters, verbally name each individual letter and repeat (x2)

- **Modified CART Home Program**
  - Random selection from both the treatment & probe list (5 each)
  - 10 target words written 15 times each day
    - Picture stimulus with spelling on the back of the picture.
    - Spelling reviewed **ONLY** after writing the word or if cues were needed

- **Spouse-lead home program**
  - Spouse followed the clinical program with the 10 treatment list words each day
PRE-POST TREATMENT RESULTS: Oral Spelling

- Graph showing pre-post treatment results for oral spelling.

- Baseline and outcome measures for Tx List, Probe List, Generalization List, and Overall.

- Chart indicates improvement in spelling performance from baseline to outcome.
PRE-POST TREATMENT RESULTS:
Written Spelling

![Graph showing pre-post treatment results for written spelling. The graph compares baseline and outcome metrics across different lists (Tx List, Probe List, Generalization List, Overall). The graph indicates improvements in spelling accuracy post-treatment.]
PRE-POST TREATMENT RESULTS:

Oral Naming

Graph showing the results of pre- and post-treatment for oral naming. The x-axis represents different lists: Tx List, Probe List, Generalization List, and Overall. The y-axis represents the percentage of correct responses, ranging from 0 to 100.

- **Baseline** line (light orange) shows the performance on each list before treatment.
- **Outcome** line (dark orange) shows the performance on each list after treatment.

The graph indicates a decrease in performance on the Probe List and Generalization List post-treatment, with a slight recovery towards the end of the intervention period.
PRE-POST TREATMENT RESULTS:

Written Naming

![Graph showing pre- and post-treatment results for written naming. The graph compares baseline and outcome measures across different lists: Tx List, Probe List, Generalization List, and Overall.](image)
PRE/POST MEASURES

PALPA (Subtests) 53 / WAB (Naming Subtest)

- Reading of Picture Names (25%)
- Spoken Picture Naming (13%)
- Spelling to Dictation (10%)
- Written Naming (15%)
- WAB Naming (8%)
RESULTS

- **Oral Reading and Naming Outcomes**
  - Remarkable progress in oral naming and oral spelling of trained items; no generalization to untrained items
  - Marked progress seen on oral reading in PALPA
  - No improvements seen on oral naming in PALPA
  - Outcomes consistent with Kiran et al. (2001)

- **Written Naming**
  - Generalization to untrained items in TX
    - Supports Viswanathan & Kiran (2005), but not Kiran et al. (2001)
  - Improvements in written naming on PALPA

- **Written & Oral Spelling**
  - Improvements seen only on trained items
  - Increase in both high and low frequency trained words
  - Improvements in spelling to dictation on PALPA
DISCUSSION

• Unlike the results of Viswanathan & Kiran (2005), strengthening the sub-lexical conversion improved only oral reading but not oral naming
  
  ◦ Possibly due to the lack of specific semantic treatment (SFA) in this study

• Improvements were seen in the written naming of both trained and untrained words
DISCUSSION

- While CART could have played a significant role in the mastery of trained words, the improvements seen in the untrained exemplars may be due to the model-based strengthening approach of sub-lexical grapheme – phoneme conversion;
  - CART by itself, is reported to have limited generalization to untrained exemplars (Beeson et al., 2003)

- Results support that when treatment methods are matched to the deficits, there is better learning and generalization (Plaut, 1996; Stanczak et al., 2006; Rangamani, Saxton and Hilsgen, 2008)
CONCLUSIONS

- The combined oral reading and CART approaches may be useful in treatment of oral reading in chronic non-fluent aphasic individuals
  - Results in greater generalization and improvement of untrained exemplars

- Better learning and generalization occurs when treatment is specifically tailored to match the deficits (Plaut, 1996; Stanczak et al., 2006; Rangamani, Saxton and Hilsgen, 2008)

- Training the underlying processes through model-based approaches appear to result in improved outcomes of trained and untrained exemplars
FUTURE DIRECTIONS

- Study the utility of the approach/es on a larger number of non-fluent aphasic clients with varying severity to determine candidacy.
- Increase the number of non-fluent aphasic subjects with varying degrees of severity participating in the combined approach.
- Establish efficacy and effectiveness of combined effects of oral reading + semantic treatment versus oral reading + a repetitive training method such as CART with a different group of clientele.
REFERENCES