Semantic Feature Analysis Treatment as a Bridge to Narrative

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ABSTRACT

BACKGROUND: Semantic feature analysis (SFA) treatment has been found efficacious for improving naming for persons with aphasia (Boyle, 2004; Coehlo, McHugh, & Boyle, 2000; Kiran & Thompson, 2003; Lowell, Beeson,& Holland, 1995) but carry-over of the re-learned lexicon to conversation had been difficult to show. Cameron, Wambaugh, Wright & Nessler (2006) used semantic and phonological cuing hierarchies with 5 participants with aphasia and found that 4 were successful retrieving their target words in treated stories, but this did not carry-over to untreated stories or conversation.

AIMS: We explored retrieving previously re-learned words in story re-telling for a participant with moderate fluent aphasia. This was motivated by the notion that repetition of words targeted in SFA coupled with their use pragmatically might increase their successful retrieval in stories. We looked for increased rate and percentage of correct information units (CIUs; Nicholas & Brookshire, 1993) in treated stories, other stories using SFA words, fairy tales, picture description, and conversation.

METHODS: A single subject multiple baseline AB design was used with auditory-picture span as a control task. The participant received SFA for a series of words. After treatment target words were embedded in simple stories along with some of their semantic features. First the participant named pictures of the embedded target words while using SFA as needed. He was then told the story with the embedded words and some of their features. He repeated the target words with their features, heard the story again, then told the story himself. He also was asked to tell fairy tales, describe Norman Rockwell pictures, or converse to determine whether generalization occurred. Pre- and post-treatment assessments of language impairment and function were performed.

RESULTS: The participant successfully used all the treated words in a story re-telling task. He initially appeared to improve in rate and percent of CIUs for treated and untreated generalization probe stories. However, he reached a plateau, and significant results were not achieved to demonstrate improvement in untreated stories. However, post-treatment assessment suggested that some gains were attained as measured by CIUs/min. Lessening of impairment as measured by the WAB was also indicated.

DISCUSSION: Treatment was successful for retrieval of words in structured story re-telling, but generalization to story telling, picture description, or conversation did not occur. Our results resembled those of Cameron et al.

Participant's History

- 52-y-o man
- Medical
  - 1st stroke June 2004- no residual effects, 2nd stroke October 2004
  - 20 mos. post-onset of aphasia at time of study (June 2006)
  - Bilateral mild-mod high freq hearing loss (noise exposure), no hearing aids
  - Hx of prostate CA
- Education
  - BS, RN
- Employment
  - Navy nurse
  - Nurse anesthetist
  - Now unemployed
- Family
  - married to RN
  - 2 adult children
- History of SLP Tx
  - After inpt. rehab, received 2x/wk 1:1 Tx at outpt. clinic for 1 yr.
  - Added 2x/wk Tx at BSC Clinic

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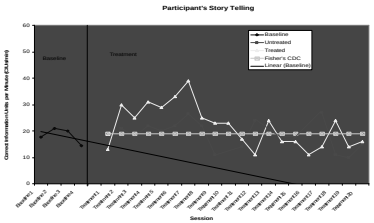
METHODS

AB Multiple Baseline Treatment Design

- Pre-treatment assessment
  - Language impairment - WAB (Kertesz, 1982)
  - Language function - CADL-2 (Holland, Frattali, & Fromm, 1999)
  - Use and understanding of sentence structure - selected subtests of PALPA (Kay, Lesser, & Coltheart, 1992)
  - Language sample analysis for CIUs (Nicholas & Brookshire, 1993)
    - Fairy tale
    - Picture description of Norman Rockwell paintings
    - Conversation
- Baseline – language sampling over 3 mos.
  - Fairy tale
  - Picture description
  - Conversation
  - SFA target word stories presented once (different words from those targeted in treatment)
- Treatment – 2x weekly sessions for 1 hr. over 11 weeks for 20 sessions
  - Story re-tell treatment task
    - SFA words embedded in short stories along with features, e.g., pairing the target *watermelon* with 2 features, *juicy, red. Participant re*
  - Generalization probes - fairy tale, picture description, conversation
  - Control task – auditory-to-picture span, similar to PALPA's, e.g., *Point to apple-cut*
- Post-treatment assessment

Sample Lesson

1. Clinician showed pictures of target words for the participant to name. SFA used as needed.
   Ex. Leopard
   Penguin
   Peacock
2. Clinician read the story as she showed pictures again.
   I went to the *zoo* yesterday. I saw a *spotted* **leopard** and a *black and white* **penguin**. I also saw a *color*ful **peacock** spread his fan-like *tail*.
3. Participant repeated target words and their feature(s)
4. Clinician re-read the story
5. Participant told the story usually while pointing to the pictures



Test	Time 1 (6 mos. post-onset)		Time 2 (18 mos. post onset)		Pre-treatment (24 mos. post-onset)		Post-treatment (36 mos. post-onset)	
	%CIU	CIU/min	%CIU	CIU/min	%CIU	CIU/min	%CIU	CIU/min
Story Telling (fairy tale, picture description)	5%	2.9	24%	15	27%	11	45%	29

Test	Time 1 (6 mos. post-onset)	Time 2 (18 mos. post onset)	Pre-treatment (24 mos. post-onset)	Post-treatment (36 mos. post-onset)
	Score	Score	Score	Score
WAB				
Information Content	5	8	7	6
Fluency	1	5	5	6
Comprehension	2.7	5.75	5	6.45
Repetition	0.4	3.4	5	4.8
Naming	0.9	4.2	5.5	6.1
Aphasia Quotient	20	52.7	55	58.7
Type	global	Wernicke's	Wernicke's	Wernicke's
	Percentile Rank	Percentile Rank	Percentile Rank	Percentile Rank
CADL-2	9	40	51	To be assessed

RESULTS

Outcomes

- Participant successfully retrieved all target words in treated and untreated stories
- No change over baseline in #CIUs/min. for treated or untreated generalization probe stories
  - Mean Baseline = 18 CIUs/min.
  - Mean of last 4 sessions = 17 CIUs/min.
  - Range = 14 to 32 CIUs/min.
  - Fisher's Conservative Dual Criteria (CDC) further indicate no change
- Improvement on control task of auditory-picture span from 2 pictures to 4 pictures, e.g. *apple-hat-cut-walk*
- Possible improvement on post-treatment assessment in story telling
- Possible improvement on WAB

Reliability

- Inter-rater reliability for CIUs was calculated for >90% of the language samples
- The average inter-rater reliability = 80%
- Clinicians then discussed areas of disagreement to reach a consensus of understanding
- Disagreements resulted from the same 3 difficulties noted by Oeshlaeger & Throne (1999)
  - Interpretations of informativeness
  - Need for more rules
  - Human error in the application of scoring rules

DISCUSSION

- Repetition of semantic cues and pragmatic use of SFA was thought to be a method to improve word retrieval in story telling. This was successful.
- This success did not translate into generally improved increase in number or percent of CIUs/minute.
  - Early strong increase in CIUs/ min. did not last
  - Thus, no significant increase in CIUs/min. on treated stories as measured by Fisher's CDC
  - Like Cameron et al. generalization beyond treatment is difficult to achieve
- Further, there was a loss of experimental control because the control task of auditory-picture span improved.
- This could be viewed as an effect of the treatment focus on repetition.
- Caveats – The participant received other treatment besides ours and was the only participant

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