



Changes in Aphasic Discourse After Contrasting Treatments for Anomia

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Purpose

To compare the effects of noun and verb training in two anomia treatments on the production of discourse using grammatical analysis that quantifies changes in the production of various grammatical units and forms.

Methods

Participants

- 14 adults with aphasia (11 nonfluent, 3 fluent)
- 38-81 y/o; avg 62 y/o
- Unilateral L CVA resulting in aphasia 4+ months prior to study
- Western Aphasia Battery: 21.3-77; avg 51.6
- Word retrieval impairment for both Nouns & Verbs
- Motor speech impairment no greater than moderate severity
- Gestural+Verbal Group: all found to have mild to moderate limb apraxia except one with severe apraxia

Treatment Design

- Multiple baseline design across participants and stimulus sets for 2 word retrieval treatments
- Stimuli in both treatments were imageable items matched for frequency and syllable length
- Participants were treated with either nouns or verbs (see below)
- Training: 10 sessions, 2-4/week
- (1) Gestural+Verbal Treatment (GV)
 - GV verb-1st treatment – 7 participants; GV noun-1st treatment – 5 participants
 - Examiner presents picture and word with gesture 3x → participant repeats word and gesture 3x
 - Examiner performs gesture only → participant repeats gesture 3x
 - Examiner displays word → participant repeats 3x
 - Examiner repeats word (by syllable if needed) pauses for 5 sec → participant says name and performs gesture; Reinforced or given correct response
- (2) Semantic Phonologic Treatment (SP)
 - SP verb-1st treatment – 2 participants; SP noun-1st treatment – 3 participants
 - Examiner presents picture & name → participant repeats name 3x
 - Examiner asks questions with pictures: 2 phonological, 2 semantic

Discourse Data Collection

- Language samples were elicited in 3 ways from aphasic subjects before and after they received treatment.
 - A "dinner table conversation" in which the caregiver asked scripted questions about their favorite foods and activities.
 - Scripted questions about personal pictures chosen by either the individual with aphasia or his or her family members.
 - Scripted questions about current events pictures of Elvis Presley, Bill Clinton, and the moon landing.
- Language samples were video and audio taped, and later transcribed verbatim using the Systematic Analysis of Language Transcripts (SALT) transcription format (Miller & Chapman, 2000).

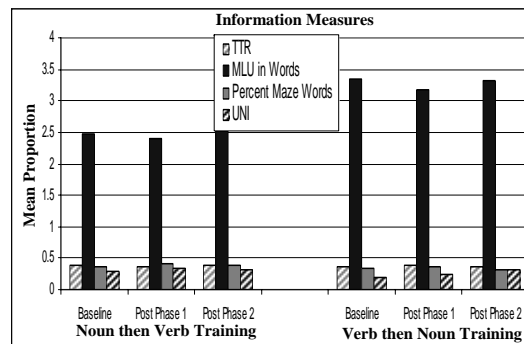
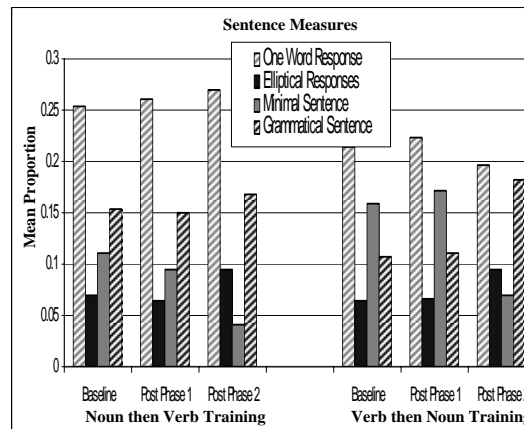
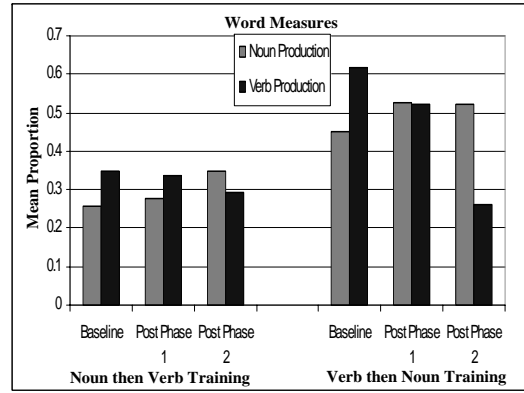
Discourse Scoring

- **Word level**
 - Nouns, verbs, and modifiers were coded.
 - Modifiers included adjectives, adverbs, and verbs or nouns that acted as an adjective or an adverb in context.
- **Sentence level**
 - 1- word responses: conversationally appropriate, linguistically and socially acceptable single word answers to questions
 - "What kind of pudding do you want?" "Vanilla."
 - yes/no responses
 - Elliptical response: conversationally appropriate, linguistically and socially acceptable answers to questions
 - "Watch TV." as a response to "What do you want to do tonight?"
 - Minimal sentences: utterances with a subject and verb including contractions; verb may be incomplete
 - Grammatical sentences: completely grammatical sentences that were relevant to the ongoing discourse.
- **Information level**
 - Utterance with New Information (UNI): response provided new information to the ongoing conversation.
 - Mean length of utterance in words (MLU)
 - Type-Token Ratio (TTR): number of different words/total words; a measure of lexical diversity.
 - Percent Maze Words (MAZE): Mazes included any words or utterances that were apparently not related to the participant's intended utterance including repetitions, rephrasing, or semantically unrelated interjections such as 'um' and 'uh'.

Analyses

- Repeated measures ANOVA was conducted comparing performance at three time points: baseline, after phase 1, and after phase 2.
- Treatment type (GV vs. SP) and treatment order (noun-verb, or verb-noun) were between groups measures.
- **There were no significant treatment effects, thus only effects of noun and verb training are discussed.**

Results



Discussion

Effects of Gestural+Verbal Treatment and Semantic-Phonologic Treatment

- **There were no significant effects of treatment type.** Previous analysis of baseline to the end of phase 1 indicated only treatment effects and not effects of noun or verb training. At the end of phase 1 participants had received only either noun or verb training.
- Comparing the three time-points includes two phases of each treatment, one focused on noun training and one focused on verb training. Thus, the greatest gains in discourse production resulted after training aimed at nouns and verbs.

Effects of Treatment on Discourse

- **Participant utterances included more information and grammatical forms after noun and verb training regardless of the order of training.**
 - Verb production increased incrementally over the course of treatment.
 - Percentage of maze words and TTR increased from baseline to phase 1.
 - Production of minimal sentences **increased (the graph shows they decreased???)** systematically from baseline to the end of phase 2.

Effects of Noun Training followed by Verb Training

- **Noun training facilitated lexical retrieval.**
 - Noun production increased as did one-word responses, elliptical sentences, and grammatical sentences, though not significantly (were any of these significant? Can't tell if only gram.snts were not sig). After noun training participants were able to produce longer, more coherent phrases and sentences as treatment progressed.
 - In addition, units of new information increased significantly suggesting participants were able to produce not only longer phrases and sentences but these sentences were meaningful, relevant, and informative.
 - However, verb production decreased significantly. This did not affect sentence and UNI production, because participants had greater verb production at baseline than noun production.

Effects of Verb Training followed by Noun Training

- **Verb training had variable effects on lexical production. (Tweaked! Is it correct?)**
 - Verb production was greater at baseline than noun production. Following treatment, nouns increased significantly, while verbs decreased significantly. Training verbs may have increased the semantic web of the trained verbs thereby increasing nouns.
 - Participants produced longer sentences, with a higher proportion of grammatical sentences with more of their sentences including new information.
 - However, none of these comparisons were statistically significant, due to patient variability.

Mazes

- **The percent of mazed words increased significantly from baseline to phase 1 but remained stable from phase 1 to the end of treatment.**
 - Stimulating the lexical system using semantically-based training may have led to the activation of many lexical alternatives, overburdening the sentence production mechanism.
 - Inter-word interference in the lexical system may have led to increases in mazed words.
 - The second phase of treatment may have strengthened the lexical system reducing the inter-word interference. If this is true, it suggests that treatment initially increased all lexical retrieval and additional treatment focuses the lexical system and strengthens semantic connections. **Can't say this—see comment**
- **Mazes are not typically coded and analyzed but may be important in the investigation of lexical access and sentence formulation.**
 - Increased mazes may be a positive indicator of increased lexical availability.
 - However, numerous maze words in conversation may contribute to frustration in the speaker and listener, discouraging conversation.
 - Thus, the common practice of ignoring and even deleting maze words from discourse samples may prevent us from noticing and investigating an important practical and theoretical effect of treatment.

Limitations

- **Small N in each group** limited our ability to identify significant results.
- **Analysis included different aphasia types**
- **Analysis was completed on groups and not individuals**
- **Analysis included different types of discourse**
 - Differences previously found between discourse with and without picture stimuli include: less verbal complexity with pictures, higher efficiency scores without pictures, and higher cohesive harmony without pictures (Glosser, Weiner, & Kaplan, 1998; Armstrong, 1988). Considering this, future analyses should limit themselves to a single discourse type.

Discourse as an outcome measure for treatment

- Grammatical analysis is a viable method for measuring discourse changes after treatment.
- Present methods of discourse analysis are cumbersome and impractical for clinical settings.
- Measuring changes in the amount of information communicated is particularly important.
 - The UNI is easy to use with minimal training, and may be particularly suited to aphasic discourse.
- Mazes are usually ignored, but may provide important information about the practical and theoretical effects of a particular treatment.
- **Discourse analysis is an important outcome measure for treatment, especially since improving conversational ability is the ultimate goal of any aphasia treatment.**

Slide 1

Cu2 you should be talking about the effects of GV vs. SP treatment here. Look at your heading!

This section doesn't make sense.

CLAS user, 5/15/2007

Cu3 did you combine over both types of noun training??? (GV vs. SP)??? regardless of order?

CLAS user, 5/15/2007

Cu4 Is the big increase due to one or two people? Is it sig in a wilcoxon?

CLAS user, 5/15/2007

Cu5 what do you really mean here?

Outcome at the end of treatment?

Is this just a baseline to POB comparison or are you combining all subjects into one big group?

CLAS user, 5/15/2007

Cu6 what is your info measure that increased? TTR has to do with lexical variety (number of different wds/total wds) not information.

What is your evidence they produced more grammatical forms after treatment? You don't say there were increases in grammatical snts or in elliptical sentences.

Note the incremental inc in vbs is due to increase

Slide 1 (Continued)

in one group at time A,
and increases in the other
group at time B, not to
incremental increases
over time.

CLAS user, 5/15/2007

Cu7 can't really say this if
the change was not sig.

CLAS user, 5/15/2007