Word-finding in aphasia: Confrontation versus generative naming

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Introduction

Although it is known that aphasia affects verbal expression abilities and that word-finding is difficult in all types of aphasia, there are limited data that directly compare the degree of difficulty among word retrieval tasks in persons with aphasia (PWA). Two types of naming consistently identified in aphasia batteries and language assessments are confrontation naming and generative naming. Confrontation naming (object naming) involves naming a picture or tangible object. Generative naming (word fluency) involves naming as many items in a category as possible. Gordon and Kindred (2011) put forward the task constraint hypothesis regarding these two types of naming. This hypothesis states that the more constraint on a task, the more difficult it will be. Applying this hypothesis to naming, the task of confrontation naming is more highly constrained than generative naming. Therefore, according to Gordon and Kindred (2011), confrontation naming should be more difficult. Alternatively, Linebaugh (1997) considers difficulty among word retrieval tasks in regard to top-down versus bottom-up lexical access. Confrontation naming involves bottom-up lexical access, whereas generative naming requires top-down access. No declaration of which is more difficult has been made.

We reviewed several studies that addressed confrontation and generative naming in aphasia. Abhishek and Rao Prema (2013) compared PWA's confrontation and generative naming abilities. The PWA (n=8) performed better on confrontation than on generative naming tasks for 5/7 semantic categories. Helm-Estabrooks (2002) also included PWA in her study that compared linguistic and nonlinguistic skills. Confrontation naming was measured using 10 pictured items, and generative naming was measured using two tasks: naming animals and words that begin with "m." Although no direct comparison between these two types of naming was calculated, the results stated that generative naming was the most difficult of the linguistic tasks.

Research Questions

1) Do persons with aphasia perform differently on confrontation naming, generative naming, and responsive speech tasks?
2) Does type of aphasia have an effect on whether one type of naming task is more difficult than another?

Hypotheses

1) Generative naming will be more difficult than confrontation naming for persons with aphasia.
2) Prior research and clinical knowledge of aphasia did not allow us to generate a hypothesis about whether type of aphasia influences performance on various naming tasks differentially.

Subjects

PWAs who participated in the AphasiaBank project were administered the WAB-R Object Naming, Word Fluency, and Responsive Speech subtests. AphasiaBank contained test results from 321 unique PWAs when the database was accessed in October, 2015 (www.talkbank.org).

Participation Inclusion/Exclusion Criteria:

- Diagnosis of aphasia
- Left hemisphere cortical damage due to stroke
- Aphasia duration of at least 6 months
- Sufficient vision and hearing
- No history of other neurological conditions

Anomic	Broca's	Conduction	Wernicke's	TOTAL
45	46	25	14	134

Time Post-Onset M = 5 years 7 months (SD = 5.17)
Years of Education M = 15.13 years (SD = 2.48)
Age M = 61.91 years (SD = 11.14)
Gender 56 Female, 78 Male
Ethnicity 118 Caucasian; 15 African American; 1 Asian
Handedness 124 Right, 9 Left, 1 Ambidextrous

Procedure

To collect data for this study, test scores and demographics of participants were extracted from the AphasiaBank online database. The scores for three WAB-R naming subtests were extracted:

- Object Naming (Max. score of 60)
- Word Fluency (Max. score of 20)
- Responsive Speech (Max. score of 10)

As a result of these different denominators, percentage correct was utilized to compare performance on each subtest.

Analyses Using All 134 Subjects with Aphasia

The results of a repeated measures ANOVA using the Greenhouse-Geisser correction revealed a statistically significant difference among the three WAB-R naming subtests ($F = 237.627$, $df = 1.704$, $p < .0005$).
Pairwise comparisons showed:

- Object Naming was significantly better than Word Fluency
- Responsive Speech was significantly better than Word Fluency
- Object Naming and Responsive Speech did not differ significantly

Performance on WAB-R Naming Subtests Within Each Type of Aphasia

Each of four separate repeated measures ANOVAs (one for each type of aphasia) using the Greenhouse-Geisser correction revealed a statistically significant difference among the three WAB-R naming subtests. Pairwise comparisons showed:

- The same results as above were found for three of the types of aphasia (Broca's, Wernicke's, and Conduction)
- For subjects with Anomic aphasia, the first two results above were obtained, and in addition, Responsive Speech was significantly better than Confrontation Naming

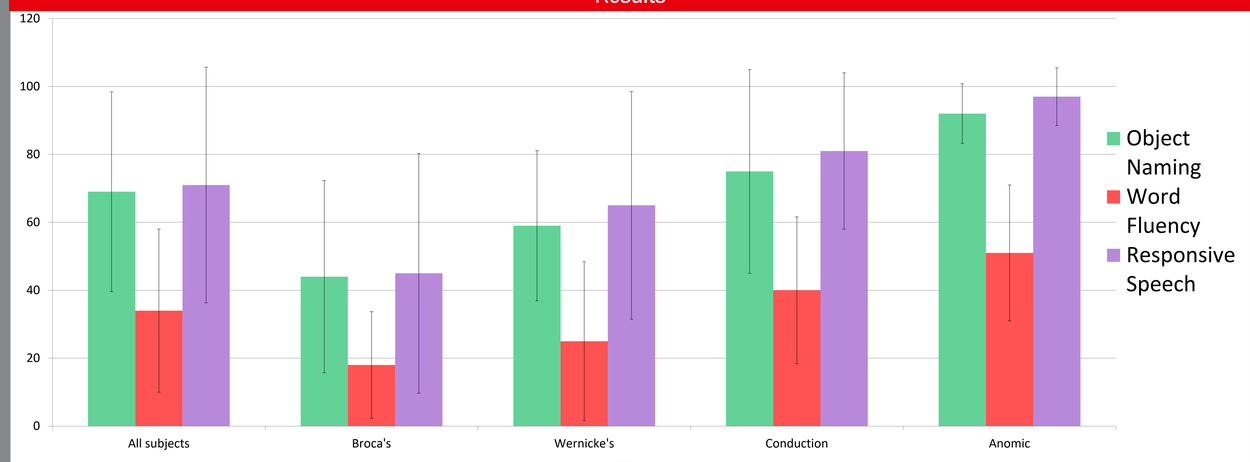
Effect Size Data for Pairwise Comparisons

We used the following effect size benchmarks for within-subject factors (Barcikowski & Robey, 1985): small- d= 0.63, medium- d=1.58, and large- d= 2.53.

The statistically significant comparisons had a small effect size with the following exceptions:

- Between Object Naming and Responsive Speech there was less than a small effect size in all groups
- Between Object Naming and Word Fluency and between Responsive Speech and Word Fluency, there was a large effect size for Anomic aphasia and a medium effect size for Conduction aphasia

Results



Discussion

- Generative naming was worse than confrontation naming.
- These results do not support Gordon and Kindred's (2011) task constraint hypothesis, which states that object naming should be more difficult as it involves more constraint on response options.
- When applying these results to Linebaugh's (1997) top-down versus bottom-up lexical access framework, the bottom-up task (confrontation naming) was easiest.
- Performance on the Word Fluency subtest (generative naming) was worse than the performance on the Responsive Speech subtest across all types of aphasia.
- For subjects with Anomic aphasia only, performance on the Responsive Speech subtest was better than confrontation naming. Perhaps this result was obtained because the standard deviations in the Anomic aphasia group were much smaller than the standard deviations in the other groups.
- If clinicians are employing a least-to-most difficult task hierarchy when targeting word retrieval in therapy, they should begin with confrontation naming.
- Conversation (the context in which most communication occurs) requires top-down lexical access; thus, it will be important to engage PWAs in tasks that provide an opportunity for top-down processing for optimal generalization to real-life communication.
- Naming subtest scoring differences could have affected the results of this study; Object Naming and Responsive Speech subtest responses may be awarded partial credit (e.g., for cued or paraphasic responses), but no partial credit is awarded for Word Fluency subtest responses.

References

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Disclosure

Financial Relationships: Susan Jackson was an employee at the University of Kansas when we analyzed the test results and demographics of persons with aphasia from the AphasiaBank database. She has been an employee of the University of Kansas for the past 25 years.
Non-financial Relationships: Susan Jackson is an AphasiaBank consortium member. The test results of persons with aphasia from the AphasiaBank database were analyzed as part of a research practicum experience for Alexandra Bode and Holly Lamb while they were graduate students in speech-language pathology at the University of Kansas under the supervision of Susan Jackson.