

Acknowledgements

- AphasiaBank (www.talkbank.org/AphasiaBank/)
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INTRODUCTION

- PWA are assumed to have mostly preserved semantic representations but impaired semantic control (Jefferies et al., 2010; Noonan et al., 2013) as demonstrated by phonemic cueing effects (Jefferies et al., 2008)
- PWA often have access deficits for less shared features (Marques et al. 2013) and low-importance distinctive features (Mason-Baughman & Wallace, 2014)
- Semantic Feature Based (SFB) Treatment has been successful in strengthening connections between the lexicon and semantic memory, which improves word retrieval (Kiran & Roberts, 2010) and discourse (Rider et al. 2008)
- Few researchers have examined semantic knowledge use in discourse, which could provide PWA with more difficulty and reduced access to certain types of semantic knowledge
- Armstrong (2001) examined lexico-semantic verb categories and found PWA had restricted use, producing few mental and relational verbs

Purpose and Hypothesis

- Purpose: determine if semantic knowledge and category types are used differently in discourse by participants with anomic aphasia and controls
- Hypothesis: Persons with anomic aphasia differ in distribution of semantic knowledge compared to controls

Semantic Knowledge Types

Semantic Knowledge Types

- Visual-Color
- Visual-Motion
- Visual Parts/Surface
- Sound
- Smell
- Tactile
- Taste
- Function
- Encyclopedic
- Internal

Category Types

- Living Things
- Nonliving Things

METHOD

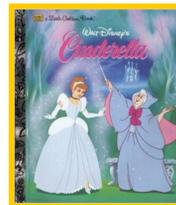
Participants:

	Anomic Aphasia (N=19)	Control (N=19)
F:M	10:9	10:9
Age (SD)	62.74 (13.90)	62.95 (14.25)
Education (SD)	15.79 (2.92)	16.21 (2.92)
WAB AQ	88.83 (8.66)	N/A

- PWA had left hemisphere damage, anomic aphasia, no reported history of neurodegenerative disorders, and passed hearing and visual screeners
- Controls had no history of stroke or head injury, passed hearing and visual screenings, and had normal cognitive function as indicated by MMSE

Discourse Measure:

- Wordless picture book: *Cinderella* (Grimes, 2005)



Semantic Knowledge Procedures:

(1) Divide c-units into phrases:

Cinderella / is sent / to work / in this castle

(2) Remove proper nouns and function words:

Cinderella / is sent / to work / in this castle

(3) Group content words into concepts that correspond to the semantic knowledge and category types:

Cinderella / is <sent> / to <work> / in this <castle>

(4) Code the semantic knowledge and category types:

Cinderella / is <sent>[* visual-motion] / to <work>[* function] / in this <castle>[* nonliving][* encyclopedic]

RESULTS

Proportion of Semantic Knowledge Types

- Wilcoxon Signed Rank with Bonferroni Correction

	Anomic Aphasia %	Control %
Visual-Motion	10.27 (6.32)	11.16 (3.71)
Sound	2.92 (1.93)	3.96 (2.10)
Tactile	4.22 (3.26)	4.46 (1.55)
Function	10.47 (5.64)	10.07 (2.84)
Encyclopedic	47.11 (9.65)	44.44 (5.24)
Internal	14.75 (7.76)	14.99 (3.83)

- No significant differences between groups

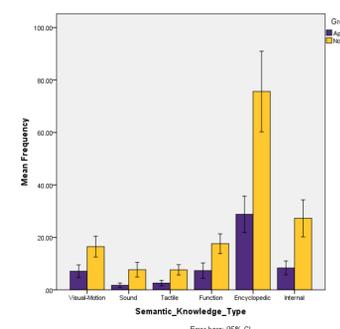
Proportion of Category Types

- Wilcoxon Signed Rank Test

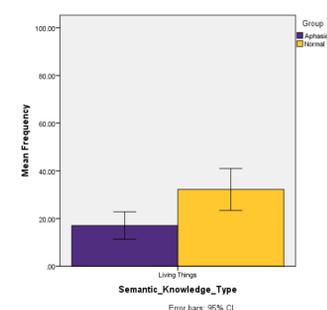
	Anomic Aphasia %	Control %
Living Things	48.04 (9.58)	46.27 (7.03)

- No significant group difference

Average Frequency of Semantic Knowledge Types



Average Frequency of for Living Things



DISCUSSION

- PWA had a blanket decrease in the amount of lexical items and information produced

Semantic Memory and Lexical Access

- Because of the similar distribution of semantic knowledge types and category types, PWA appear to be able to maintain a semantic simulation of the story
- Decrease in all semantic knowledge types and category types, despite similar distributions, indicate a possible lexical access problem
- Findings support previous research suggesting that semantic difficulty is not in semantic representations but the ability of PWA to control the lexical-semantic system
- Findings disagree with Armstrong (2001); however, Armstrong used lexical-semantic categories and we used pure semantic knowledge type which may account for the differences

Semantic Feature Based Treatment

- Researchers have found feature access difficulty at the lexical level that might lead to better SFB treatments for word recall
- The present study found no semantic knowledge access difficulty at the discourse level
- Problems within the samples appear to be lexical access problems
- Improvements from SFB treatment in discourse may result from improved lexical access

Future Research

- Replicate the study with different discourse tasks and different protocol
- Use a more fine-grained semantic knowledge coding system
- Expand to populations with degraded semantic memory such as adults with dementia

REFERENCES

- Armstrong, E. (2001). Connecting lexical patterns of verb usage with discourse meanings in aphasia. *Aphasiology*, 15(10-11), 1029-1045. doi:10.1080/02687040143000375
- Jefferies, E., Patterson, K., & Ralph, M. A. L. (2008). Deficits of knowledge versus executive control in semantic cognition: Insights from cued naming. *Neuropsychologia*, 46(2), 649-658. doi:10.1016/j.neuropsychologia.2007.09.011
- Jefferies, E., Rogers, T. T., Hopper, S., & Lambon Ralph, M. A. (2010). 'Pre-semantic' cognition revisited: Critical differences between semantic aphasia and semantic dementia. *Neuropsychologia*, 48(1), 248-261. doi:10.1016/j.neuropsychologia.2009.09.011
- Kiran, S. & Roberts, P.M. (2010). Semantic feature analysis treatment in Spanish-English and French-English bilingual aphasia. *Aphasiology*, 24(2), 231-261.
- Marques, J. F., Mares, I., Martins, M. E., & Martins, I. P. (2013). The hierarchical organization of semantic knowledge in stroke aphasia: The role of feature sharedness and executive function. *Journal of Neurolinguistics*, 26(5), 552-560. doi:10.1016/j.jneuroling.2013.03.005
- Mason-Baughman, M., & Wallace, S. E. (2014). Role of importance and distinctiveness of semantic features in people with aphasia: A replication study. *Communication Disorders Quarterly*, 35(3), 158-166. doi:10.1177/1525740113518342
- Noonan, K. A., Jefferies, E., Eshana, S., Garrard, P., & Ralph, M. A. L. (2013). Demonstrating the qualitative differences between semantic aphasia and semantic dementia: A novel exploration of nonverbal semantic processing. *Behavioural Neurology*, 26(1-2), 7-20. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2012-35210-002&site=ehost-live>
- Rider, J.D., Wright, H.H., Marshall, R.C., & Page, J.L. (2008). Using semantic feature analysis to improve contextual discourse in adults with aphasia. *American Journal of Speech-Language Pathology*, 17, 161-172.