Phonological Interference in Working Memory and Sentence Comprehension

Daniel Acheson and Maryellen MacDonald
Language and Cognitive Neuroscience Lab, University of Wisconsin-Madison

Background
- Replication of the phonological similarity effect in the word span task (Conrad and Hull, 1964); Participants worse at lists containing phonological overlap
- Evidence for role of phonological interference in sentence comprehension from question answering time, question accuracy, and reading times

Sentence Processing
- Evaluation of the role of phonological information in sentence processing: Working Memory Perspective
  - Relationship between measures of verbal working memory (i.e. Reading Span) and language processing mediated by an overlap in processing demands between the two tasks (Daneman and Tardiff, 1987; MacDonald and Christianson, 2002)
- Verbal working memory may be used to maintain the serial order of words while processing of complex sentences

Procedure
- Participants divided groups based on the word span lists containing phonological overlap
- Individuals with high word span list performance may use verbal working memory to process complex sentences (Baddeley, Eddington and Lewis, 1981)

Materials
- Experimental Sentences*
  - OR with Phonological Overlap
    - The player that the mayor met bet the editor
  - OR without Phonological Overlap
    - The coach that the mayor met aided the editor

Participants
- 104 Undergraduate psychology students participated for course credit. All were native speakers of English. Age range 18-23
- OR list: 2nd, 3rd, 4th, 5th, 6th, 7th
- List length began at 2 words and went up to 7
- Scoring: An individual's span score = 3 of 5 sets were correctly recalled, half credit was given for 2 of 5 correct sets correct
- Sentence Comprehension

Conclusion
- Ascertain the locus of phonological interference: central representation or production?
- Ascertain the relationship between measures of verbal working memory and sentence processing

Study
- Examine the role of phonological information in the processing of OR sentences by taxing the phonological system through the introduction of phonological overlap
- Explore the relationship between the short-term maintenance of phonological information and the processing of complex sentences

References

- A project was supported by NIH Grant P50 MH 64445 and the Vilas Trust, UW-Madison.