Predicting Speech Errors in Young Children

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Speech Errors
- One-time error in speech production and/or planning
- Occur on structures already acquired by children
- Lexical Error
- Substitution of meaningful lexical items
- Phonological Error
- “Tricky, please rub my back.”
- Semantic Error
- “Uh huh, I mean hit me.”
- Mixed Error
- “That hit me… I mean hurt me.”

Importance of Studying Speech Errors
- Window into normal language production
- Phonological Representations: Indicators of phonological awareness
- Lexical Representations: Indicators of semantic memory
- Whole word form as integrated sound sequence
- Semantic Representations
- Meaningful information about a referent

Phonological Representations
- Phonotactic Probability (Vitevitch & Luce, 1999)
- Characteristics of meaningful words
- Number of similar sounding words
- Adult & Child Word Recognition (Garlock, Watley, & Merzola, 2001; Vitevitch & Luce, 1999)
- Phonological Errors
- Adult & Child Speech Production (Garlock et al., 2001; Vitevitch, 2002)
- Semantic Errors
- Normal Language Development (Storkel, 2004)
- Mixed Errors
- Derived from: Normal Language Development (Storkel, 2004)
- Adult & Child Speech Errors (German & Newman, 2004)
- Semantic Density (Nelson, et al., 1998)
- Target words have fewer neighbors than substitutes and words in the lexicon
- Syntactic Category Representation
- Semantic Density: Indicators of semantic memory
- Number of neighbors as control words
- Phonological errors have more neighbors than words with semantic errors

Questions
Do phonotactic probability, neighborhood density, and semantic density predict speech errors in young children? Do these characteristics exhibit different effects across phonological versus semantic errors in young children?

References

Syntactic Category Representation
- Semantic Density
- Number of neighbors as control words
- Phonological errors have more neighbors than words with semantic errors

Current Study
- Lexical Paradigmatic Errors
- Phonological Errors
- Semantic Errors
- Mixed Errors
- Examined target words across children/age

Variables
- Phonotactic Probability
- Phonological Errors
- Semantic Errors
- Mixed Errors
- Examined target words across children/age

Neighborhood Density
- Lexical Paradigmatic Errors
- Phonological Errors
- Semantic Errors
- Mixed Errors
- Examined target words across children/age

Semantic Density
- Differentiation phonological versus semantic error in young children
- Words with a phonological error had fewer neighbors than words with a semantic error

Target Words vs. Control Words
- Words with a phonological error have a similar number of neighbors as control words
- Incorrect with Vitevitch (1997)

Future Directions
- Compare targets and substitutes to a random selection of words from a child lexicon
- Fit a structural equation model to the data
- Analyze additional errors in the corpus
- Calculate phonotactic probability, neighborhood density, and semantic density using a child lexicon

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Analyzed a subset of lexical errors from a larger corpus (N = 96)

Semantic Errors occur primarily on common nouns
- Semantic density: Indicators of semantic memory
- Number of neighbors as control words
- Phonological errors have more neighbors than words with semantic errors

Graphs
- Neighbors Density
- Semantic Density
- Phonotactic Probability

10 20 30 40 50 60 70 80 90 100
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

50 75 100 125 150 175 200
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

Pre-Processed Data