

## The Effect of Lexical Representations on Morphosyntax in Preschool Children

Jill R. Hoover & Holly L. Storkel  
 University of Kansas  
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### Grammatical Development

- **Morphosyntax: Subset of grammatical morphemes that marks tense and agreement**
- **Typically developing preschoolers optionally omit tense and agreement morphemes: "Optional Infinitive Stage"** (Rice et al., 1998; Wexler, 1994, 1996)
- **Lexical Verbs:**
  - » Third Person Singular: \*Everyday she dance vs. She **dances**
  - » Past Tense: \*Yesterday she dance vs. She **danced**
- **Copula and Auxiliary Be/Do Verb Forms:**
  - » \*She \_\_ dancing vs. She **is dancing**
  - » \*She \_\_ nice vs. She **is nice**
  - » \***Do** she dance? vs. **Does** she dance?

### Optional Infinitive Stage cont.

- **Optional omission represents incomplete/emerging knowledge** (Wexler, 1994)
- **Optional omission of tense markers is resolved between 3- and 5-years in typical language learners**
- **Are there linguistic factors outside of the morphosyntactic domain that predict the optional omission of tense and agreement morphemes?**

### Grammatical Morphology & the Lexicon

- **Lexical Size & Grammatical Morphology**
  - » The relationship between the size of the lexicon and growth in grammatical morphology has not been consistently observed (e.g., Marchman & Bates, 1994; McGregor et al., 2005; Moyle et al., 2007; but see Hadley & Holt, 2006; Rice et al., 2006)
- **Lexical Representations & Grammatical Morphology?**

### Lexical Representations

- **Neighborhood Density:**
  - » The number of similar sounding words based on a one sound substitution, addition, or deletion (Dense vs. Sparse; Luce & Pisoni, 1998)
    - e.g., Neighbors of the word "kick" include "lick" "kiss" "click"
    - Dense → kick
    - Sparse → move
  - » Dense words have more complete/stable representations than sparse words (e.g., Storkel, 2002; Metsala & Walley, 1998)

### Neighborhood Density & Normal Language Development

- Children’s early vocabularies consist of more dense, than sparse words (Storkel, 2004)
- Children learn dense words better than sparse words (e.g., Storkel, 2001, 2003)
- Dense words facilitate sound production (e.g., Gierut et al., 1999; Lee & Storkel, 2008; Morrisette & Gierut, 2002)
- The effect of neighborhood density on morphosyntax production has not been examined

### Research Question

- Are certain verbs more vulnerable to optional omission of morphosyntactic forms than others?
  - » Do lexical representations influence the production of morphosyntax by typically developing children in the OI stage.
    - Third person singular accuracy in two morphosyntax production tasks:
      - » Sentence Imitation
      - » Spontaneous Elicitation

### Participants

	Children with Typical Development (n = 16) 6 boys, 10 girls
Chronological Age (months)	39 (35-47)
Receptive Vocabulary (PPVT-4 Standard Score)	114 (96-138)
Third Person Singular Accuracy (TEGI)	47% (13-78)

- All children were native English speakers
- All children had normal hearing
- All children correctly articulated word final [s, z]

### Stimuli

- 30 early-acquired verbs
  - » 15 dense: 18 neighbors
  - » 15 sparse: 10 neighbors
- Matched on phonological (e.g., phonotactic probability), lexical (e.g., age of acquisition) & syntactic (e.g., argument structure) characteristics

### Sentence Imitation Task

- Children were asked to repeat 30 pre-recorded sentences including the third person singular structure
  - » 15 sentences with a dense verb
    - The woman kicks the ball
      - » Kicks: 21 neighbors
  - » 15 sentences with a sparse verb
    - The woman moves the ball
      - » Moves: 5 neighbors

### Spontaneous Elicitation Task

- Children were asked to generate a sentence after hearing a prerecorded script.
  - » 15 scripts including sentences with a dense verb
  - » 15 scripts including sentences with a sparse verb


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"Here is a woman and this is the ball. The woman's job is to kick the ball. Now you tell me what the woman does every day at her job. Everyday she\_\_\_"



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"Here is a woman and this is the ball. The woman's job is to move the ball. Now you tell me what the woman does every day at her job. Everyday she\_\_\_"



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### Scoring

- Sentences in both tasks were scored as:
  - » Correct
    - Moves
  - » Incorrect
    - Move\_\_
  - » Unscorable
    - Non-target verb
    - Different tense marker (e.g., past-tense)
    - No-response

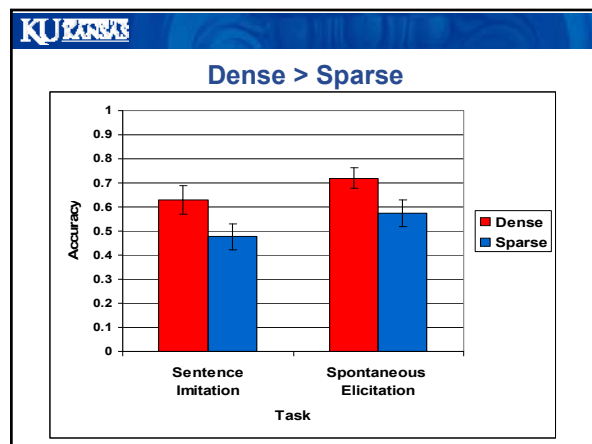
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- **Independent Variable:**
  - » Neighborhood density of the target verbs
    - Dense versus sparse
- **Dependent Variable:**
  - » Accuracy of third person singular production on a target verb in both tasks
    - Only responses that included the target verb were used to calculate accuracy

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### Preliminary Results

- 2 task (imitation vs. elicitation) x 2 neighborhood density (dense vs. sparse) ANOVA
  - » **Main Effect of Neighborhood Density**
    - $F(1, 14) = 28.891, p < .001, \eta_p^2 = .674$
  - » **Main Effect of Task**
    - $F(1, 14) = 2.778, p = .118$
  - » **Interaction between Task and Density**
    - $F(1, 14) = .009, p = .927$



### Summary & Conclusions

- Verbs with dense neighborhoods, or more complete lexical representations, facilitate morphosyntax production
  - » Verbs with stable lexical representations may be easier to retrieve and facilitate morphosyntax production
- The quality of lexical representations may further inform the lexicon-morphosyntax relationship

### Ongoing Data Collection

- Lexical Representations & Language Impairment
- Lexical Representations & Morphosyntactic Change
  - » Does manipulating neighborhood density increase gains in morphosyntax for typically developing children and children with SLI?

## Thank you!

Contact Information:

Jill Hoover

[jrhoover@ku.edu](mailto:jrhoover@ku.edu)

<http://www2.ku.edu/~wrdrng/hoover.html>