Context and task effects on English past-tense marking: The case of bilinguals

Jessica A. Barlow, Sonja L. Pruitt-Lord, and Philip Combiths

Effect of phonological context on morphological accuracy
- Preceding context impacts overt marking of plural, 3rd-person singular (3s), and past tense (PT) morphemes: stem-final V > C (Ehinger & Zapf, 2011; Marshall & van den Bulk, 2007; Polite, 2011; Pruitt & Gerbing, 2009; Song, Sundara, & Demuth, 2009).
- Cooked [kʊk] → [kʊk] and cooks [kʊk], but played [pleɪd] → [pleɪd] and plays [pleɪz].

Conflicting findings:
- V = C for plural (Theodore, Demuth, & Shattuck-Hufnager, 2011)
- C > V for 3s in AAE, for plural and 3s in MAE (Barlow & Pruitt-Lord, 2014)

Effect of phonological context on morphological accuracy
- Less attention has been paid to following context
- Utterance-final > utterance-medial for plural and 3s (Barlow & Pruitt-Lord, 2014; Song et al., 2009; Sundara et al., 2011; Theodore et al., 2011)
- e.g., plays vs. plays a vs. plays the

Conflicting findings:
- Utterance-medial = final for plural in MAE (Barlow & Pruitt-Lord, 2014) and when stressed V follows plural (Theodore, Demuth, & Shattuck-Hufnager, 2011)
- C = V for plural (Polite, 2011) and plural, 3s in AAE (B & P-L, 2014)
- V > C for 3s in MAE (B & P-L, 2014)

Why conflicting results?
- Variation across studies may be attributable to...
  - Complexity of morpheme
  - Child demographics (linguistic background, age, typical/clinical)
  - Task and analysis
  - Inclusion/exclusion of specific following contexts

Motivation for current study
- No known study has evaluated the effects of following context for the regular past tense morpheme in English
- Few studies have considered effects of task on the overt marking of morphemes
- Need for continued typological study of the impact of phonology on morpheme marking across different English-speaking child populations
Current

• Evaluate past-tense morpheme accuracy in another population of children: Spanish-English bilinguals
  • Spanish has restricted final consonant inventory (θ, l, r, n), and no final clusters
  • Consider preceding and following contexts
  • Evaluate effects of task on performance

Participants

• 12 typically developing Spanish-English bilingual preschool children
  • 6 girls, 6 boys
  • Parent/teacher report confirmed English input and output

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>(n = 12)</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (months)</td>
<td>52.75</td>
<td>3.67</td>
<td></td>
</tr>
<tr>
<td>Maternal education (years)</td>
<td>10.6</td>
<td>1.65</td>
<td></td>
</tr>
<tr>
<td>English Heard (%)</td>
<td>45.45</td>
<td>24.23</td>
<td></td>
</tr>
<tr>
<td>English Spoken (%)</td>
<td>34.17</td>
<td>25.03</td>
<td></td>
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<tr>
<td>Overall Development – ASQ</td>
<td>272.08</td>
<td>19.48</td>
<td></td>
</tr>
<tr>
<td>Nonverbal IQ-Wechsler</td>
<td>11.64</td>
<td>1.85</td>
<td></td>
</tr>
<tr>
<td>KG Readiness – Lollipop Test</td>
<td>58.33</td>
<td>9.03</td>
<td></td>
</tr>
<tr>
<td>Vocabulary – PPVT-III</td>
<td>86.67</td>
<td>12.28</td>
<td></td>
</tr>
<tr>
<td>Syntax Quotient - TOLO</td>
<td>86.17</td>
<td>12.28</td>
<td></td>
</tr>
<tr>
<td>MLIw</td>
<td>3.32</td>
<td>0.37</td>
<td></td>
</tr>
<tr>
<td>Percent Intelligibility</td>
<td>93.00</td>
<td>7.75</td>
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</tbody>
</table>

Data

• Spontaneous language samples
  • Video elicitation probe (Pruitt & Detting, 2009)
  • Past-tense probe from Test of Early Grammatical Impairment (TEGI, Rice & Wexler, 2001)

Spontaneous language sample (LS)

• Collected using standard set of toys and pictures
• Transcribed using Systematic Analysis of Language Transcripts (SALT) software and guidelines (Miller & Iglesias, 2004)
• Average of 195.5 (SD = 84.83) complete and intelligible utterances per child
• Average intelligibility was 93% (SD = 7.75)
• Phonetically transcribed using narrow IPA notation

Video Probe

Probes:

• 21 items (14 Regular, 7 Irregular)
• Analyzed regularly according to stem-final consonant (C) and vowel (V) and following context
• Phonetically transcribed using narrow IPA notation

Adapted from Pruitt & Detting (2009)

TEGI past-tense probe

TEGI items

• 18 items (10 Regular, 8 Irregular)
• Analyzed regularly according to stem-final C and V and following context
• Phonetically transcribed using narrow IPA notation

Adapted from Rice & Wexler (2001)
Analysis

- 218 forms analyzed in total based on SALT transcripts and phonetically transcribed forms
- Each regular verb form analyzed for accuracy on past-tense morpheme according to context:
  - preceding C or V
  - following C or V (for utterance-medial forms)

Results

Overall accuracy: 44%

Results:

**Preceding context** (e.g., played vs. cooked)

Results:

**Following context** (e.g., played a vs. played the)

Summary

<table>
<thead>
<tr>
<th>Preceding Context</th>
<th>Following Context</th>
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<tbody>
<tr>
<td>LS V &gt; C</td>
<td>LS C = V</td>
</tr>
<tr>
<td>Probe C &gt; V *</td>
<td>Probe C = V</td>
</tr>
<tr>
<td>TEGI V &gt; C</td>
<td>TEGI C = V</td>
</tr>
</tbody>
</table>

Task item comparison

<table>
<thead>
<tr>
<th>Lang Sample</th>
<th>Probe</th>
<th>TEGI</th>
</tr>
</thead>
<tbody>
<tr>
<td>bounced</td>
<td>chewed</td>
<td>brushed (lifted)</td>
</tr>
<tr>
<td>bumped</td>
<td>dried</td>
<td>jumped (painted)</td>
</tr>
<tr>
<td>crashed</td>
<td>popped</td>
<td>glued</td>
</tr>
<tr>
<td>dropped</td>
<td>opened</td>
<td>picked</td>
</tr>
<tr>
<td>finished</td>
<td>played</td>
<td>cleaned</td>
</tr>
<tr>
<td>helped</td>
<td>showed</td>
<td>climbed</td>
</tr>
<tr>
<td>parked</td>
<td>tied</td>
<td></td>
</tr>
<tr>
<td>popped</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pushed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tried</td>
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stem-final segment:
- obstruent
- sonorant
- vowel
Influence of Spanish?

- Recall, Spanish has a reduced inventory of coda consonants and no coda clusters.
- Thus, we’d expect an even stronger effect of phonological context on accuracy, favoring preceding vowels.

Implications

- Task can impact performance on morpheme accuracy, and even may obscure the role of phonology.
- This may explain (in part) conflicting results across studies.
- Following context may favor a consonant, contrary to prior findings.
- Conflicting results also may be due to need to consider global context.

Follow-up analysis of global context

Follow-up analysis of global sonority context

How are segmental morphemes syllabified?

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Booij, 1995; Dell, 1995; Ewen & van der Hulst, 2001; Selkirk, 1982; Wilshire, 2006.

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Future directions

- Evaluate global context
- Consider role of sonority and nature of syllabification of final consonants and clusters (mono- and bi-morphemic)
- Identify appropriate task(s) for manipulating these different contexts

Thank you!

- Thanks to the children, families and teachers for their participation, Price Charities and the City Heights Educational Collaborative for making this research possible, and the dedicated research teams for devoting their time and effort to this project.