English Language Learners: Language growth within structured/sheltered English immersion programs

Background

The language growth of English Language Learners (ELLs; Rojas & Iglesias, under review) Modeled the language growth of 1,723 (Spanish-English) ELLs. Fall of kindergarten to spring of second grade +12,248 Narrative retell language samples: 
- 6,516 Spanish; 5,732 English 
- Covariates: Gender; summer vacation 
- Outcome measures: Mean length of utterance in words (MLUw); Number of different words (NDW)

Purpose & Method

What is the effect of program type on ELLs’ language growth? Structured/sheltered English immersion programs involve all academic instruction in English. 
- Goal of SEI programs is to attain fluency in English 
- Language growth of ELLs in SEI programs was contrasted with the language growth of “overall” ELLs across a variety of programs

Participants

Subset of ELL children from overall sample used in Rojas & Iglesias, under review 
- 419 ELLs: 198 girls; 221 boys 
- 65% of ELLs provided language samples in 4 semesters

Method (continued)

Growth curve modeling (GCM) 
- Maximum likelihood estimation method to handle missing data and estimate fixed effects and variance components 
- Academic semester served as time metric 
- Centering relative to fall of kindergarten as initial status 
- GCM testing to determine final GCMs for each outcome measure: 
  - Unconditional means model: Unconditional growth models (linear, quadratic, and cubic; fixed and randomly varying slope configurations) → Conditional growth models (gender and discontinuous time; gender x slope interactions) 
  - Goodness of fit indices (e.g., BIC for non-nested models) and Pseudo-R² statistics with χ² testing estimated and tested across models 
- Prototypic growth curve trajectories generated from final GCM parameter estimates

Final growth models

Table 1: Comparison of conditional and dispositional growth curve initial status and linear slope variability (ELLs in SEI programs vs. overall sample, N = 419 ELLs; age at kindergarten fall, 5 years) 

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Gender</th>
<th>Continuity</th>
<th>Direction</th>
<th>Nonmonotonicity</th>
<th>Covariance</th>
<th>Linearity</th>
<th>Nonlinear</th>
<th>Non-systematic relationship</th>
<th>Covariance</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEI</td>
<td>Girls</td>
<td>Continuous</td>
<td>Curvilinear</td>
<td>Linear</td>
<td>n/a</td>
<td>Positive</td>
<td>Non-linear</td>
<td>Negative</td>
<td>n/a</td>
</tr>
<tr>
<td>Overall</td>
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<td>Continuous</td>
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Summary

ELLs’ language growth in Spanish and English: Overall sample

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Conclusions & Next steps

ELLs in SEI programs differed from overall sample

- Based on systematic, academic instruction in English, some growth patterns were expected: 
  - Boys’ MLUw- and NDW-Spanish slower than overall sample 
  - Girls’ NDW-Spanish slower than girls in overall sample 
  - Girls’ and boys’ NDW-English faster than overall sample 
- However, other growth patterns were unexpected:
  - Girls’ MLUw-Spanish faster than overall sample 
  - Girls’ NDW-English with similar growth rates to overall sample 
- Boys’ MLUw-English slower than overall sample

Necessary to model bilingual programs

- Transitional bilingual education programs involve initial instruction in the native language, which gradually transitions to English 
- Beyond “program type”, could also consider the fidelity of language instruction by teacher in order to use actual language of instruction as a covariate of language growth