Raised Signing

Heritage Language Effects

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June 10, 2019

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Part 1: Codas as Heritage Language Users

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Ronice Müller de Quadros
Jeffrey Palmer
Wanette Reynolds
95% of deaf children are born to hearing parents

80% of children born to Deaf parents are hearing

CODA: Child of Deaf Adults

Unique context of language transmission (Compton 2014)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Deaf native signers</th>
<th>Bimodal bilingual heritage signers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home language status</td>
<td>Minority</td>
<td>Minority</td>
</tr>
<tr>
<td>Language in education</td>
<td>Sign Language</td>
<td>Spoken Language</td>
</tr>
<tr>
<td>Language settings</td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>Proficiency in home sign language</td>
<td>Variable?</td>
<td>Highly variable</td>
</tr>
</tbody>
</table>

Heritage signers language context
Examples: Variable proficiency in sign

- Interviewer: Are you involved in the Deaf community?
- Participant: Well, I’ve been living in a place different from the one where I grew up. So, yes, I’m involved, but it’s not like it would be if I were in my home area, where I’ve known people for a long time. So yeah, I’ve been involved in some different things, but it’s not like it would be at home.
Examples: Variable proficiency in sign

- Interviewer: Are you involved in the Deaf community? (several times)
- Participant: So I don’t know what that means.
- ‘Interpreter’: So what do you do in the community.
- Participant: Oh, that’s ‘community’?
- Interpreter: Yeah
- Participant: I never knew the sign for that. What do I do?
Examples: Variable proficiency in sign

- Interviewer: The Deaf community
- Participant: Oh, the Deaf community!
- Interviewer and Interpreter: Do you have any involvement in the Deaf community?
- Participant: No!
- Interviewer: What work do you do?
- Participant: I drive a truck. I’m a truck driver.
- Interviewer: Do you like your work?
- Participant: Do I like working? NO! I want to retire. I’m finished. I’m 55. I’m finished. I’m full.
Examples: Variable proficiency in sign

- Interviewer: What languages do you use?
- Participant: Well, English – you know, with my friends in the hearing world. Yeah, English, right.
- Interviewer: What about sign language?
- Participant: Signing? Yeah, with my parents – not in the community. You know: “I’m hungry,” ”I’m cold;” “it’s hot;” you know, “left” and “right”, ”eat”, “leave”, “come home”, “sleep”. I was a small child!
Brazilian Bimodal Bilinguals
Monolingual Task

<table>
<thead>
<tr>
<th>Group</th>
<th>Participant</th>
<th>Interpreter?</th>
<th>Sign Rating *</th>
<th>Speech Rating *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bimodal bilinguals</td>
<td>CL</td>
<td>yes</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>MR</td>
<td>no</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>JB</td>
<td>no</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>NT</td>
<td>no</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Deaf signers</td>
<td>RM</td>
<td>no</td>
<td>7</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>FR</td>
<td>no</td>
<td>7</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>no</td>
<td>7</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>MS</td>
<td>no</td>
<td>7</td>
<td>n/a</td>
</tr>
<tr>
<td>Hearing non-signers</td>
<td>ZE</td>
<td>no</td>
<td>n/a</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>SZ</td>
<td>no</td>
<td>n/a</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>AR</td>
<td>no</td>
<td>n/a</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>VS</td>
<td>no</td>
<td>n/a</td>
<td>7</td>
</tr>
</tbody>
</table>

* Ratings are based on the observation of a native bimodal bilingual.

Quadros & Lillo-Martin (2018)
Brazilian Bimodal Bilinguals
Monolingual Task

<table>
<thead>
<tr>
<th>Group</th>
<th>Participant</th>
<th>Sign MLUw</th>
<th>Speech MLUw</th>
<th>% Sign VMorph Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bimodal bilinguals</td>
<td>CL</td>
<td>5.50</td>
<td>7.46</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>MR</td>
<td>3.63</td>
<td>6.40</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>JB</td>
<td>3.70</td>
<td>6.47</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>NT</td>
<td>2.54</td>
<td>5.00</td>
<td>59</td>
</tr>
<tr>
<td>Deaf signers</td>
<td>RM</td>
<td>7.27</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>FR</td>
<td>6.68</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>6.04</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>MS</td>
<td>5.64</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Hearing non-signers</td>
<td>ZE</td>
<td>n/a</td>
<td>9.88</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>SZ</td>
<td>n/a</td>
<td>9.00</td>
<td>n/a</td>
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<td></td>
<td>AR</td>
<td>n/a</td>
<td>8.96</td>
<td>n/a</td>
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<tr>
<td></td>
<td>VS</td>
<td>n/a</td>
<td>6.37</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Quadros & Lillo-Martin (2018)
Part 1 Conclusion

- There is a great deal of variability in the outcomes of heritage SL acquisition for Codas
- Some Codas have very high proficiency in their SL; others do not
- (Our research with children shows that these differences sometimes are present from early stages; at other times they emerge around the time we suspect that dominance shifts)
Part 2: Code-blending
Code-blending

- Simultaneous production of (aspects of) an utterance in sign and speech
- Bimodal Bilingual Codas ((hearing adult) child of Deaf adults)

Bishop & Hicks (2005); Emmorey, Borinstein, Thompson & Gollan (2008); Pyers & Emmorey (2008); Emmorey et al. (2012); et seq.
Heritage languages and code-mixing

- Heritage language speakers use code-switching
- Code-switching is more systematic with higher degrees of proficiency
- Code-blending is the bimodal bilingual analogue to code-switching
Research Questions

- Do we see differences in code-blending for those with higher and lower degrees of proficiency in their heritage sign language?
- What are the linguistic constraints on code-blending?
How similar/different are speech and sign in code-blending?

- **Congruent**
  - sign
  - speech

- **Non-congruent**
  - sign
  - speech
Constraints on Code-blending
Language Synthesis model

- Numeration: List 1 \((L_a \cup L_{\alpha})\)
- Syntactic Operations
- Spell-out
- Morphological adjustments: \((L_a \cup L_{\alpha})\)
- Vocabulary Insertion: List 2 \((L_a \cup L_{\alpha})\)
- Encyclopedia: List 3 \((L_a \cup L_{\alpha})\)
- LF
- Phonology:
  - Speech
  - Sign

Lillo-Martin, Quadros & Chen Pichler (2016)
Constraints on Code-blending
Participants

- Coda Adults

<table>
<thead>
<tr>
<th>Group</th>
<th>N (US)</th>
<th>N (BR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 High sign fluency</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>2 Low sign fluency</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>COMBINED</td>
<td>14</td>
<td>18 (+8)</td>
</tr>
</tbody>
</table>
Procedure

- Acceptability Judgment
Procedure

- Acceptability Judgment
Materials

Production

- Co-insertion
- Word order
- Possible language contrasts
  - Passive
  - Causative
  - Idiom
- * Fillers

Judgment
The average scores for the lower proficiency groups are more compressed compared with the higher proficiency groups.
Results: Coinserction

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>BR</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speech</td>
<td>1.77</td>
<td>1.38</td>
</tr>
<tr>
<td>SIGN SIGN</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Speech</td>
<td>2.74</td>
<td>2.55</td>
</tr>
</tbody>
</table>
Results:
Full blending with matrix language

- Across most item types - high rating for
  - Both languages follow sign structure 2.67 2.64
  - Both languages follow structure compatible with both 2.66 2.75
Results:
Order inversions

- Generally high ratings for inversions under one node

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>BR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.57</td>
<td>2.62</td>
</tr>
</tbody>
</table>

SON   HAVE  EYE+ BLUE
My son has   blue   eyes

PICK   CHOCOLATE  ICE-CREAM  VANILLA  NOT
He picked chocolate    ice cream, but not   vanilla
Results: Causative

- Spoken and sign language transitive causative

STORY FINISH  FS(Dorothy) MELT  WITCH
At the end of the story Dorothy melted the witch

US  2.49  BR  2.50
Results: Causative

- Spoken language transitive causative with signed intransitive change-of-state
  
  *WOOD LOGS LEFTOVER BURN*
  He burned all the leftover logs

<table>
<thead>
<tr>
<th>US</th>
<th>BR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.69</td>
<td>1.67</td>
</tr>
</tbody>
</table>
Results: Passive

- Spoken language passive with signed OV
  
  MAN WALLET STEAL
  The man’s wallet was stolen

US  BR
2.62  2.78
Results:

Passive

- Spoken language passive with signed OV
  MAN WALLET STEAL
  The man’s wallet was stolen

- Spoken language passive with signed SVO
  FAMILY BUY DOG
  The dog was bought by a family

<table>
<thead>
<tr>
<th>US</th>
<th>BR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.62</td>
<td>2.78</td>
</tr>
<tr>
<td>1.67</td>
<td>1.58</td>
</tr>
</tbody>
</table>
Results: Idioms

- Spoken language idiom with signed literal translation equivalents
  WE SHOOT+ WIND
  We were shooting the breeze

- Spoken language idiom with signed meaning equivalent
  NOT WORRY SMALL PROBLEM
  Don’t cry over spilt milk

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>BR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.41</td>
<td></td>
<td>1.52</td>
</tr>
<tr>
<td>3.00</td>
<td></td>
<td>2.72</td>
</tr>
</tbody>
</table>
Discussion

- Productivity of code-blending
  - One language as matrix usually accepted
  - Short linear reversals OK
Discussion

- Linguistic constraints
  - Coinserterion not always acceptable
  - Congruent structures preferred
  - Structural compatibility (passive and topic) vs. incompatibility (passive and active)
  - Semantic compatibility (idioms)
Discussion

- Heritage effects
  - Judgment: Lower fluency signers have more compressed scores overall,
  - but no clear group effects on particular structures
  - In progress:
    - elicited production blending study;
    - coding of speed, MLU, and other characteristics in each language separately
Conclusion

- “The bilingual is not two monolinguals in one person”
  – Grosjean (1989)
- Code-blending reveals complex rule-governed interactions between languages
- Codas – *display characteristics of heritage language users*
Acknowledgments

- Many thanks to: participating Coda adults; Deaf comparison participants; families in earlier developmental studies

- Collaborators and research assistants on the projects reported here and other projects: https://slla.lab.uconn.edu
Acknowledgments

- Pictures of signs from ASL Signbank (Hochgesang, Crasborn & Lillo-Martin 2018): https://aslsignbank.haskins.yale.edu

- This material is based upon work supported by the National Science Foundation under Grant No. (NSF grant number). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.
Thank you