INTRODUCTION

• Goal
  — To consider the proposal that sign languages display special syntactic properties due to modality-specific factors

• Data
  — ASL & Libras – adding more naturalistic connected discourse, to supplement previous data based on individual sentences
  — Other sign languages – from literature

The Structure of WH-Questions in Sign Languages

• On-going debate:
  — Do (some) sign languages employ structures apparently not found in spoken languages?
  — In particular, is WH-movement to a right-ward [Spec, CP] due to the nature of the sign language modality?

Italian Sign Language – LIS

Cecchettto, Geraci & Zucchi (2009)

• WH-non-manual marking (WH-NMM) marks WH-dependencies (modality-specific)
• If WH-phrases moved to the left periphery, WH-NMM could not properly mark the WH-dependency
• Therefore, sign languages employ a structure in which the default linearization value is overridden

CGZ, 281, 302
**ASL & Libras Data**

- Sample of naturalistic data
- Native signing Deaf consultant encouraged to ask questions
- YN and WH questions extracted with consideration of context
- Non-manual markers carefully coded
- Positions of WH-phrases categorized

<table>
<thead>
<tr>
<th></th>
<th>YN</th>
<th>WH</th>
<th>YN-WH</th>
<th>Total Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASL</td>
<td>67</td>
<td>63</td>
<td>20</td>
<td>150</td>
</tr>
<tr>
<td>Libras</td>
<td>15</td>
<td>92</td>
<td>0</td>
<td>107</td>
</tr>
</tbody>
</table>

**Position of WH-element**

- Naturalistic data replicates our previous results with individual sentences
- Initial and final may be in situ (ambiguous)
- Null includes PRT; excludes common / lexicalized forms (e.g., WH-FOR, WH-MANY)

<table>
<thead>
<tr>
<th></th>
<th>Alone</th>
<th>Initial</th>
<th>Final</th>
<th>Double</th>
<th>In situ</th>
<th>Null</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASL</td>
<td>19</td>
<td>44 (13)</td>
<td>8 (5)</td>
<td></td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Libras</td>
<td>17</td>
<td>24 (2)</td>
<td>26 (23)</td>
<td>23</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Summary of Position Data**

- WH-elements may be able to stay in situ
- Non-subject WH-elements do show up in the sentence-initial position, even long-distance
- We have no examples of non-doubled subject WH-elements in the sentence-final position
- WH-elements – and non-WH elements – may be doubled, in both initial and final position

**WH-NMM**

- ASL:
  - Brows furrowed
  - Head forward / moving side to side
  - Eyes semi-open
  - Gaze to addressee
- Libras:
  - Brows furrowed+raised
  - Head back
  - Eyes semi-open
  - Gaze to addressee

**ASL Example: What did you buy?**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Libras Example: What laptop did you buy?**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>


YN-NMM

- ASL:
  - Brows raised
  - Head forward/down
  - Eyes wide open
  - Gaze to addressee

- Libras
  - Brows raised
  - Head forward/down
  - Eyes open
  - Gaze to addressee

ASL: Did you go shopping?

Libras: Did you already buy it?

NMM vs. Affective Facial Expressions

- Scope and timing differences (Baker-Shenk 1983; Sandler 2009a, b; numerous others)
- Acquisitional differences (Reilly 2006)
- General conclusion: NMM are linguistic

NMM and Syntax

- Some researchers take NMM to be overt realization of syntactic features (Petronio & Lillo-Martin 1997; Neidle et al. 2000; Wilbur 1999)
- Others argue that NMM is analogous to intonation, and dissociated from syntax (Sandler and colleagues)
- CGZ: NMM is intonation, but also plays a syntactic role (marking WH dependencies)

Facial Expression as Intonation

- Same pragmatic functions as intonation (e.g., illocutionary force, continuation, shared information)
- Temporally aligned with prosodic units rather than syntactic ones (must have independent evidence for a particular structure)
- Can be dissociated from syntax – pragmatic force can override expected NMM

Sandler 2009
Implications

- WH-NMM need not be in a one-to-one association with WH-structures:
  - WH-structure with different NMM
    - Embedded / indirect questions

ASL: I don’t know why.

Libras: I want to know why, then I will be relieved.

Implications

- WH-NMM need not be in a one-to-one association with WH-structures:
  - WH-structure with different NMM
    - Embedded / indirect questions
    - WH-question with affective overlay

ASL: How do you know my size?

Libras: How can they cut (the budget)?
Lillo-Martin & Quadros

Implications

• WH-NMM need not be in a one-to-one association with WH-structures:
  – WH-structure with different NMM
    • Embedded / indirect questions
    • WH-question with affective overlay
  – WH-like NMM with different structures
    • Null WH- or yes/no-questions seeking more information

ASL: (Do you want me to) bring some food? Should I bring anything?

Libras: (Which) place do you like best?

Implications

• WH-NMM need not be in a one-to-one association with WH-structures:
  – WH-structure with different NMM
    • Embedded / indirect questions
    • WH-question with affective overlay
  – WH-like NMM with different structures
    • Null WH- or yes/no-questions seeking more information
    • Non-WH-question with puzzled affect

ASL: She should not have any problems with me.

Intonational Analysis

NMM serves pragmatic functions
• WH-NMM seeks a content response
  – WH-questions
  – Yes-no questions
  – Declaratives with an implied question
• YN-NMM seeks a yes/no response or confirmation (cf. Dachkovsky & Sandler 2009)
  – Yes-no questions
  – Declaratives seeking confirmation
Timing generalizations

- For the most part, brows and head markers coincide with sign transitions
- Blinks indicate utterance boundaries (Wilbur 1994; Nespor & Sandler 1999; Leite 2008)
- Eye gaze to addressee remains while waiting for the answer

Scope & Timing of NMM

- Although the prosodic unit is generally coextensive with syntactic, there are exceptions
  - Choice questions (cf. Sandler & Lillo-Martin)

ASL: What flavor (cake do you want) – chocolate, vanilla, layer, or what?

Scope & Timing of NMM

- Although the prosodic unit is generally coextensive with syntactic, there are exceptions
  - Choice questions (cf. Sandler & Lillo-Martin)
  - Hold at beginning/end of question

ASL: Did you buy something for me?

Libras: How did you fix that?
Summary

• WH-NMM is not a syntactic marker of WH-dependencies
• WH and YN NMM are prosodic markers used for pragmatic functions (following Sandler)

CONCLUSION

There is no need to claim that sign languages are different from spoken languages with respect to WH-movement and phrase structure universals.

ACKNOWLEDGMENTS

• This research is supported by the U.S. National Institutes of Health – NIDCD grant #DC00183 and NIDCD grant #DC009263; and by the Brazilian National Council for Research, CNPq Grant #CNPQ #200031/2009-0 and #470111/2007-0.
• We thank the Deaf consultants and research assistants who work with us in our research.
• Thanks to the TISLR 10 Sign Language interpreters!