Syntactic Priming in American Sign Language

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Syntax is invisible.

- I don’t think Indiana has any trees.
The speaker gave some papers to the interpreter.

The speaker gave the interpreter some papers.
An ASL Alternation

After MacLaughlin (1997)

pre-nominal

post-nominal
Sample Trial

Participant’s View

Experimenter’s View
Semantic boost?

Prime

unrelated

related

Target

Boost

After Cleland & Pickering (2003)
Semantic Boost?

related

unrelated

pre-nominal

related

post-nominal

unrelated

unrelated
Phonological boost?

ENGLISH
unrelated
minimal pair
homophone

ASL
unrelated
minimal pair
homophone

Target

Boost?
Phonological Boost?

- related
  - pre-nominal
    - unrelated
    - related
    - unrelated
  - post-nominal
    - unrelated

[Diagram showing the relationship between related and unrelated terms with pre-nominal and post-nominal positions.]
### Experiment 1: Design

After Cleland & Pickering (2003)

<table>
<thead>
<tr>
<th>ASL Prime</th>
<th>Prime Structure</th>
<th>Stimulus Set</th>
<th>Relatedness</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>PURPLE BREAD</td>
<td>Pre-nominal</td>
<td>Semantic</td>
<td>Unrelated</td>
<td></td>
</tr>
<tr>
<td>BREAD PURPLE</td>
<td>Post-nominal</td>
<td>Semantic</td>
<td>Unrelated</td>
<td></td>
</tr>
<tr>
<td>PURPLE PIG</td>
<td>Pre-nominal</td>
<td>Semantic</td>
<td>Related</td>
<td></td>
</tr>
<tr>
<td>PIG PURPLE</td>
<td>Post-nominal</td>
<td>Semantic</td>
<td>Related</td>
<td></td>
</tr>
<tr>
<td>PURPLE FORK</td>
<td>Pre-nominal</td>
<td>Phonological</td>
<td>Unrelated</td>
<td></td>
</tr>
<tr>
<td>FORK PURPLE</td>
<td>Post-nominal</td>
<td>Phonological</td>
<td>Unrelated</td>
<td></td>
</tr>
<tr>
<td>PURPLE STAR</td>
<td>Pre-nominal</td>
<td>Phonological</td>
<td>Related</td>
<td></td>
</tr>
<tr>
<td>STAR PURPLE</td>
<td>Post-nominal</td>
<td>Phonological</td>
<td>Related</td>
<td></td>
</tr>
</tbody>
</table>

48 critical trials  
24 fillers
Distractor Task

Participant’s View

Experimenter’s View
Participants

- Deaf Native (DN): n = 10, AoA ≈ birth
- Deaf Non-Native (DNN): n = 10, AoA ≈ 7
- Hearing L2 (HL2): n = 16, AoA ≈ 16
Experiment 1

- Do signers show evidence of syntactic priming?
- Does syntactic priming vary as a function of early language experience?
- Is there a semantic or phonological boost to syntactic priming?
Signers do show priming

Main Effect of Prime Type:
F(1,33) = 7.17, p < .02
Signers do show priming

No Group x Prime Type Interaction: 
\[ F(2,33) = 0.002, p < 0.997 \]
Signers do show priming

Main Effect of Group: $F(2,33) = 5.82, p < .01$
No Boosts

Semantic Items

Phonological Items

No interaction: $F(1,33) = 1.18$, $p = .18$

No interaction: $F(1,33) = .81$, $p = .45$
Unexpected effect

Prime Structure x Stimulus Class x Group: $F(2,33) = 4.05, p < .03$

Deaf Native

Deaf Non-Native

Hearing L2

NOT about Relatedness
Experiment 1: Discussion

- Signers do use abstract syntax, like speakers
- Early language experience did not modulate priming
- Why no semantic boost?
Lexical boost?

Prime

unrelated

related

same

Target

strong boost!
### Experiment 2

**Hearing L2 Signers: n = 16**

<table>
<thead>
<tr>
<th>ASL Prime</th>
<th>Prime Structure</th>
<th>Noun Type</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREEN BREAD</td>
<td>Pre-nominal</td>
<td>Different</td>
<td></td>
</tr>
<tr>
<td>BREAD GREEN</td>
<td>Post-nominal</td>
<td>Different</td>
<td></td>
</tr>
<tr>
<td>GREEN COW</td>
<td>Pre-nominal</td>
<td>Same</td>
<td></td>
</tr>
<tr>
<td>COW GREEN</td>
<td>Post-nominal</td>
<td>Same</td>
<td></td>
</tr>
</tbody>
</table>

**48 critical trials**

**24 fillers**
Lexical Boost

Main effect of Prime Structure:  
\[ F(1,15) = 15.00, p < .01 \]

Prime Structure x Noun Type:  
\[ F(1,15) = 8.29, p < .02 \]
Summary & Conclusions

- Do signers use abstract syntactic representations?  **YES.**
- Do early language experience modulation syntactic priming?  **NO.**
- Are the same mechanisms involved in priming for sign and speech?  **PROBABLY.**
Thanks!

- UCSD Division of Social Sciences
- NIH Grant HD015030
- Marla Hatrak
- Deaf Community Services of San Diego
- Language Production Lab
- Laboratory for Comparative Language Acquisition