Using transitional information in sign and gesture prediction
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Purposeful vs. Transitional movements:
Intentional actions vs. Transitional preparations for subsequent action.

• Manual languages have large, overt articulators compared to spoken lang.
• Transitions between signs are overt; transitions take place in the same visual signal and cannot be hidden (5).

How are transitions incorporated in sign language comprehension?
• Previous studies show signers can utilize transition info to predict (1; 3; 4).

Research Questions
1. Does sign language experience impact the utility of transitions in body motion perception?
2. Which phonological features facilitate this process?
3. Are these effects limited to linguistic stimuli?

Results

<table>
<thead>
<tr>
<th>Group by Condition</th>
<th>GGuess</th>
<th>PSign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non signer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>N female</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Age (Mean SD)</td>
<td>35.3 (9.8)</td>
<td>29.0 (11.2)</td>
</tr>
<tr>
<td>Sign Exposure</td>
<td>Before age 6</td>
<td>Minimal</td>
</tr>
</tbody>
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Methods

• Task
  – See picture of target
  – Watch video of Grooming Gestures or Pseudosigns, strings of 8
  – Press a button to the target
  – TAM-h, hand motor imagery (2)

• Stimuli by Type
  – Grooming Gestures (GGest): noncommunicative adjusting action
  – Pseudosign (PSign): ASL phonology without semantics.

• Stimuli by video Condition
  – Normal (Norm): video plays as filmed
  – Blurred Hands (Blur): hands blurred during transitions
  – Held Frame (Hold): final frame of previous sign held for transition

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<thead>
<tr>
<th>Conditions:</th>
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<tbody>
<tr>
<td>Norm</td>
</tr>
<tr>
<td>Blur</td>
</tr>
<tr>
<td>Hold</td>
</tr>
<tr>
<td>Preceding PSign</td>
</tr>
<tr>
<td>Transition</td>
</tr>
<tr>
<td>Target PSign</td>
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<th>Statistics:</th>
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| Dependent variable: RT (ms) from target onset
| Linear Mixed Effects model in Stata software:
  Fixed effects: Group, Type (GGest, PSign), Condition (Norm, Blur, Hold)
  Random effects: Subject * (Type, Cond), Item ID, Item w/in string (1-8)

Discussion

• All participants used transitional movements to facilitate target detection
• Sign language experience did not increase sensitivity to transitional movements for grooming gestures
• Sign language experience increases the use of transitional handshape information during linguistic target detection
• Nonsigners may rely on motor imagery abilities, perhaps due to increased cognitive demand
• Future questions
  – How do L2 learners develop native-like abilities? (e.g., 3)
  – Does skilled signing incorporate more pronounced handshape transitions?

References

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