Steady – Not U-Shaped – Development In Ambiguous Pronoun Processing
Joshua Hartshorne, Rebecca L. Nappa & Jesse Snedeker
Harvard University

Abstract
In previous studies 2- to 3-year-olds have succeeded in using order-of-mention as a cue to pronoun resolution while 5-year-olds have failed. This raises the possibility of discontinuous (or U-shaped) development in this domain. We find that 5-year-olds succeed in using order of mention in a task with a longer ambiguous region, but do so more slowly than adults. We explore the alternate hypothesis that this reflects task differences and continuous changes in processing speed.

Research Question
Are there discontinuities in the development of pronoun resolution?

Background

Why the Apparent U-Shaped Developmental Curve?
1) Children learn broad patterns, then must learn more complicated contingencies (verbs and context)?
2) Learning is not U-shaped, and we have underestimated the pronoun resolution skills of 5-year-olds?

These results come from eyetracking studies, with varying durations of ambiguity:

Age of Participant | Ambiguous Region Duration | First Significant Region Duration | Window Duration
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<tbody>
<tr>
<td>2.6 (Song &amp; Fisher, 2005)</td>
<td>3700 ms</td>
<td>3000-4000 ms</td>
<td>1000-2000 ms</td>
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<tr>
<td>3.0 (Song &amp; Fisher, 2007)</td>
<td>3700 ms</td>
<td>3000-4000 ms</td>
<td>1240-1760 ms</td>
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<tr>
<td>3.5 (Pyykkonen &amp; Jarvikivi, 2010)</td>
<td>&gt;4000 ms</td>
<td>1240-1760 ms</td>
<td>NA</td>
</tr>
<tr>
<td>4.0-5.9 (Arnold et al., 2007)</td>
<td>650 ms</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Adult (Arnold et al., 2007)</td>
<td>650 ms</td>
<td>400-600 ms</td>
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Present 5-year-old children with globally ambiguous pronouns, to explore:
1) Ultimate interpretations
2) Eye movement patterns

Experiment Conditions
To compare with past investigations, we used an order-of-mention condition, and an unambiguous (gender) control

Results
5-year-olds succeed in all conditions
- At ceiling on Gender Unambiguous condition (as prior studies predict)

Eyetracking Results

Conclusions
1) No evidence for discontinuity in development of pronoun resolution
- 5-year-old children use order-of-mention (and other discourse focus cues) to resolve pronouns
2) This ability speeds up over the course of development
- Possible explanations:
  - Practice leads to faster / more finely-tuned responses
  - Practice leads to adoption of different, faster strategy
  - Improved executive control helps resolve competition between possible referents

References