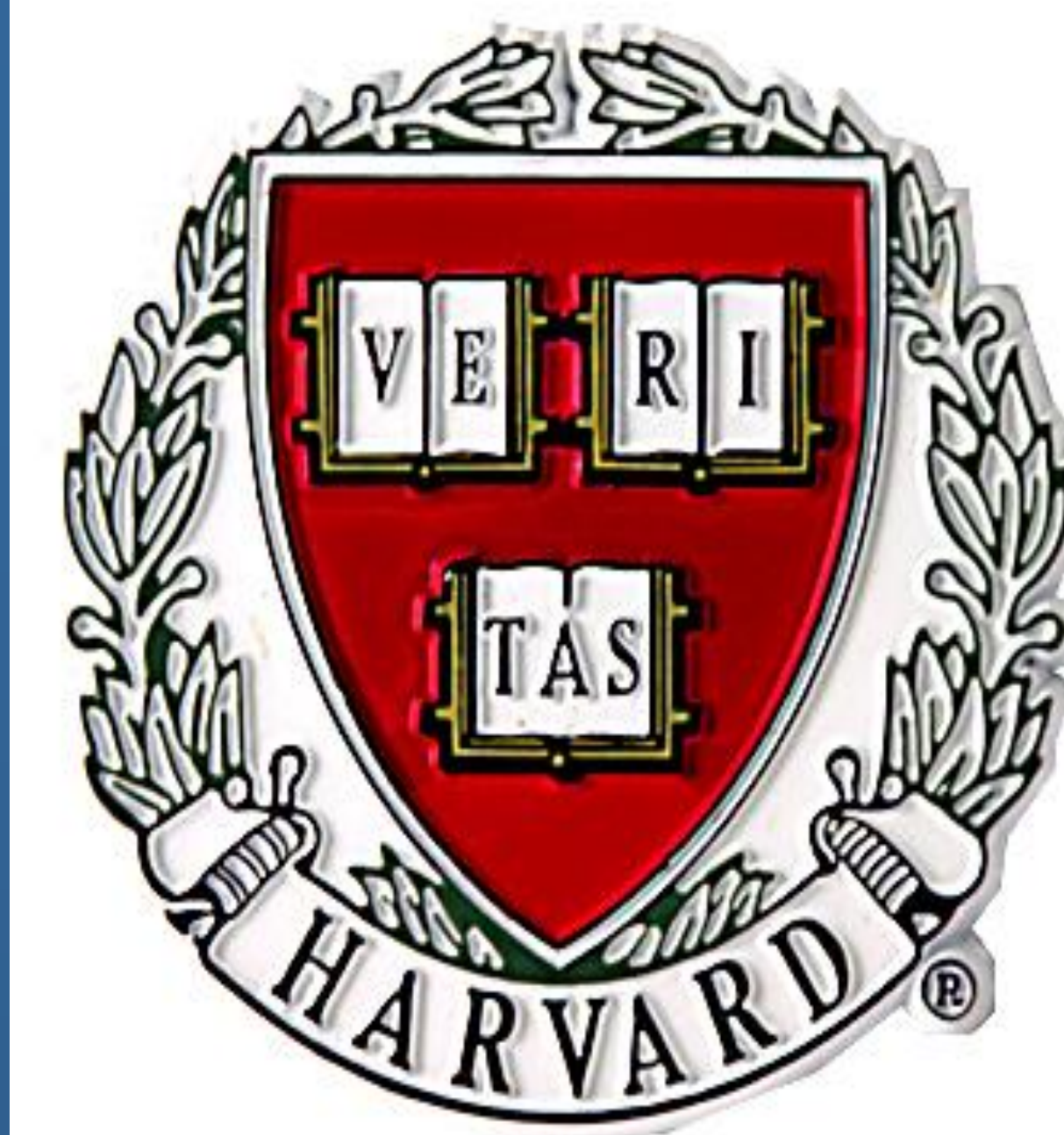


Steady – Not U-Shaped – Development in Ambiguous Pronoun Processing

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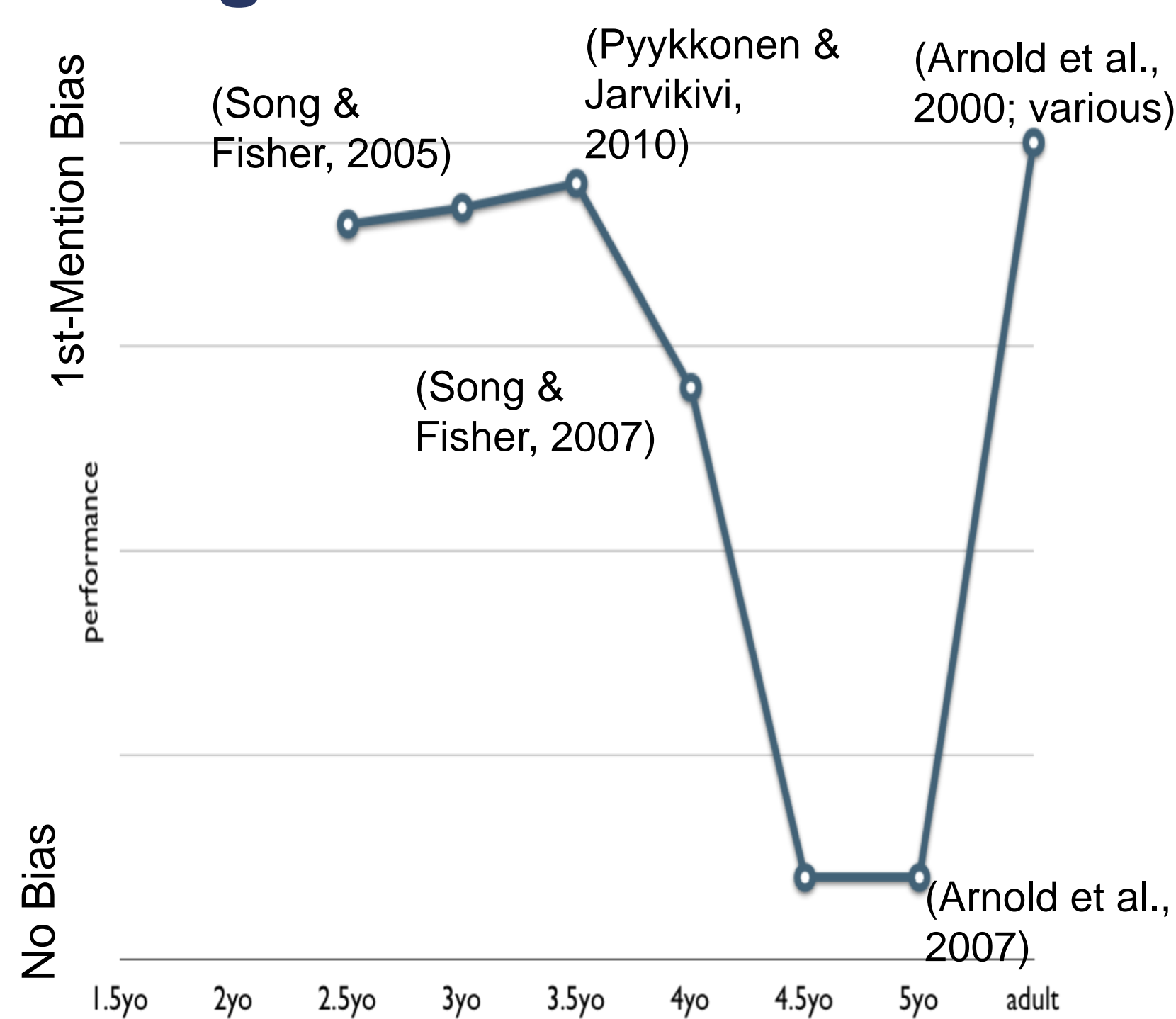
Abstract

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	Duration of Ambiguous Region	First Significant Window
2;6 (Song & Fisher, 2007)	3700 ms	3000-4000 ms
3;0 (Song & Fisher, 2005)	3700 ms	3000-4000 ms 1000-2000 ms
3;5 (Pyykkonen & Jarvikivi, 2010)	>4000 ms	1240-1760 ms
4;0-5;9 (Arnold et al., 2007)	650 ms	NA
Adult (Arnold et al., 2000)	650 ms	400-600 ms

Research Plan

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



Picture 1

First Mention

“Emily is playing in the park with Hannah. She wants to go on the swings. Can you point to her?”



Picture 2

Gender Unambiguous

“Emily is playing in the park with Jacob. She wants to go on the swings. Can you point to her?”

To broaden our understanding of children's use of discourse cues, we included 2 additional conditions (both use ambiguous stimuli like Picture 1)

First Mention + Repeated Mention (Short)

“Emily and Hannah are going to Disneyland. Emily has never been to Disneyland. She is really excited about going to Disneyland. Can you point to her?”

- Can 5-year-olds use immediate discourse status to resolve pronouns?

First Mention + Repeated Mention (Long)

“Emily and Hannah are going to Disneyland. Emily has never been to Disneyland. Disneyland has lots of fun activities. It also has great food. She is really excited about going to Disneyland. Can you point to her?”

-Can 5 year olds maintain representation of discourse focus over intervening clauses and use this information to resolve pronouns?

Results

5-year-olds succeed in all conditions

- At ceiling on Gender Unambiguous condition (as prior studies predict)

First Mention +

Repeated Mention (Short)

Emily and Hannah are going to Disneyland. Emily has never been to Disneyland. She is really excited about going to Disneyland. Can you point to her?

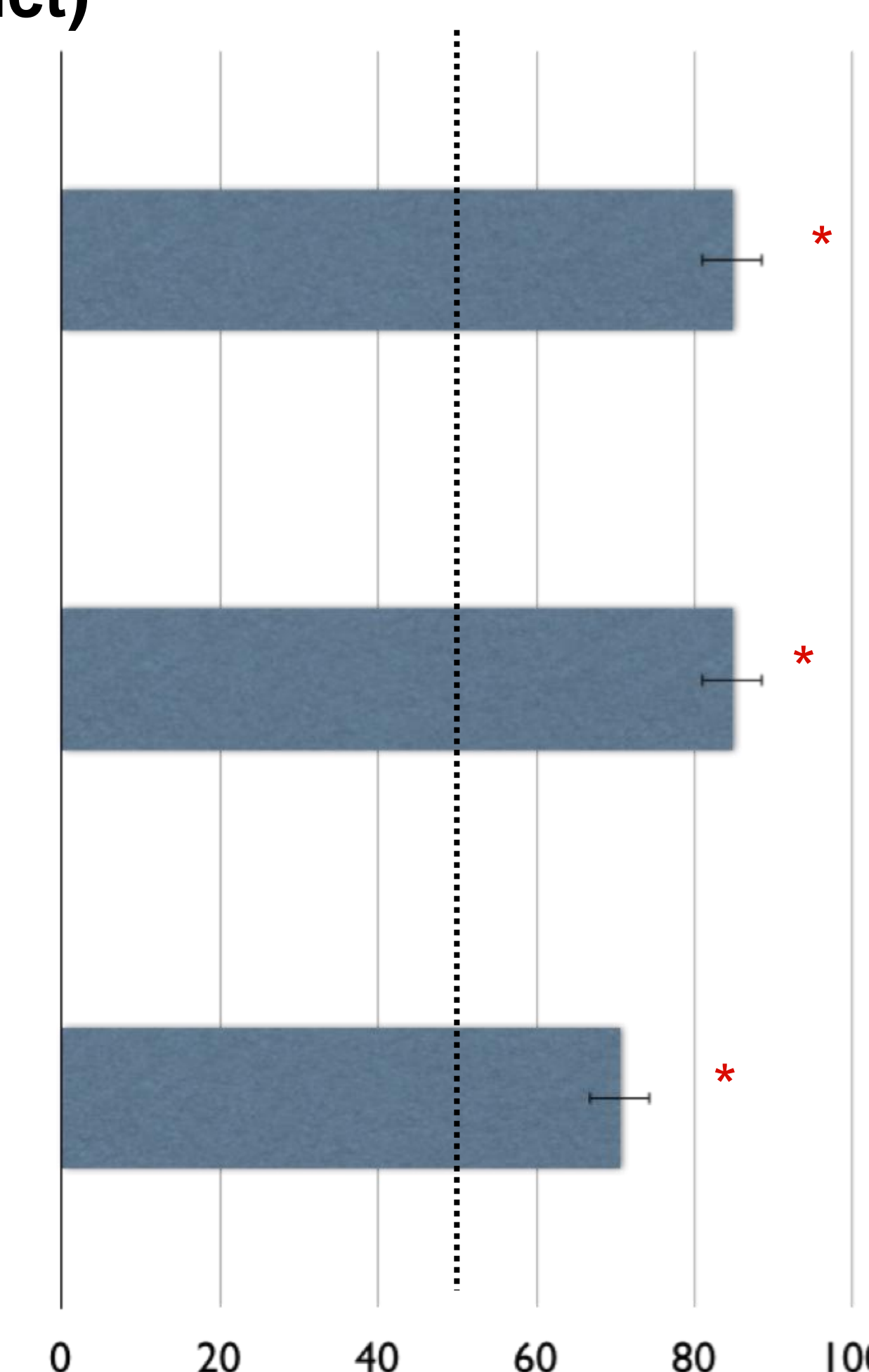
First Mention +

Repeated Mention (Long)

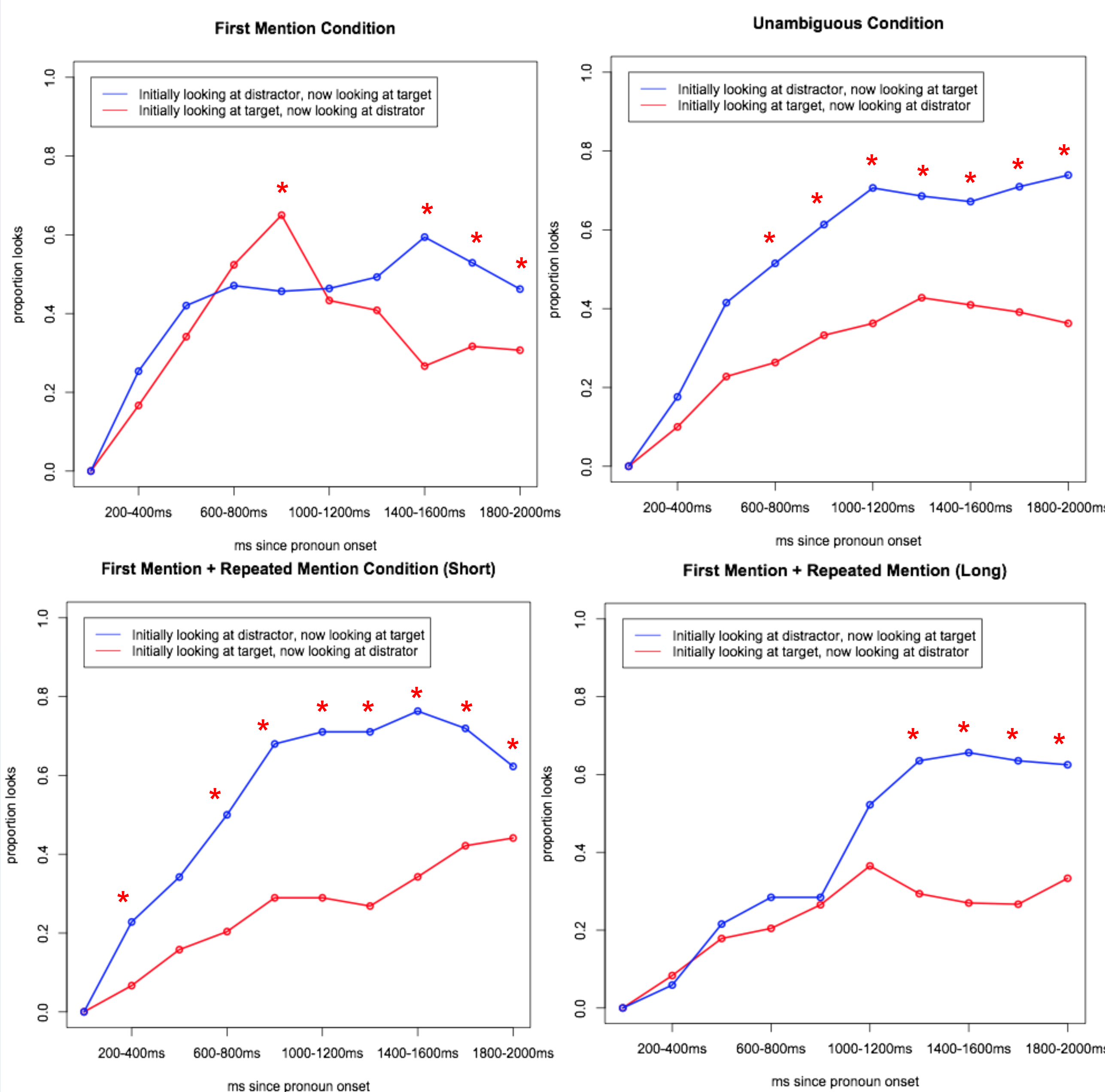
Emily and Hannah are going to Disneyland. Emily has never been to Disneyland. Disneyland has lots of fun activities. It also has great food. She is really excited about going to Disneyland. Can you point to her?

First Mention

Emily went to school with Hannah. She read ten books. Can you point to her?



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.

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