Demanding an Explanation: Implicit Causality Biases in Discourse Interpretation
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Abstract

Problem: Previous passage-completion studies report strong biases regarding who will be mentioned next following implicit causality (IC) verbs with a ‘because’ prompt. However, these biases are reduced/eliminated with a full-stop prompt.

2. Previous work on Implicit Causality

Passage completions: strong IC bias to particular referent with ‘because’ prompt (Caramazza, Grober, Garvey, Yates 1974; McKoon, Greene, Ratcliff 1993; see also)

(1) a. IC-1 John annoyed Mary because (bias to NP1-John)
   b. IC-2 John scolded Mary because (bias to NP2-Mary)
   c. Non-IC John babysat Mary because (mixed biases)

However, next-mention bias reduced/eliminated with full stop prompt (Au 1986, inter alia)

(2) a. IC-1 John annoyed Mary
   b. IC-2 John scolded Mary
   c. Non-IC John babysat Mary.

What role of ‘because’?

• Modifying salience of event participants directly (Stevenson, Knott, Overlander, & McDonald 2000)
• Signaling an Explanation coherence relation (Hobbs 1979, Kehler 2002)

3. Using coherence to model next-mention biases

We generalize Rohde, Kehler, & Elman’s (2007) pronoun model to next mention: Biases towards upcoming coherence relations (CRs) combine with biases for which event participant will be mentioned again, conditioned on coherence

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<th>Res</th>
<th>Elab</th>
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<td>85</td>
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<td>p(subject)</td>
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4. Story continuation experiment

2 x 3 design: verb type (IC vs. Non-IC) x continuation type (full stop vs. because vs. dialog prompt – dialog results not discussed here)

Materials: 40 IC verbs (20 IC-1, 20 IC-2) and 40 Non-IC verbs

Evaluation: judges annotated for next mention & coherence relation

6. IC-1 Results

Next-mention biases were statistically indistinguishable when only ‘because’ prompts and freely generated Explanations were considered

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7. IC-2 Results

Again, next-mention biases statistically indistinguishable when only Explanations are considered ‘because’ or freely generated

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8. Non-IC Results

Again, next-mention biases statistically indistinguishable when only Explanations are considered ‘because’ or freely generated

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9. A new IC bias

IC verbs create an expectation regarding the direction the discourse is likely to take – specifically a bias towards an upcoming Explanation

Findings for full-stop prompt: IC verbs yield more Explanation continuations than do Non-IC verbs

10. Conclusions

Like Rohde et al.’s results, overall statistics conceal a consistent system of stronger biases once coherence relations are conditioned on.

In contrast to previous results:
- Connective alone does not affect referent salience – mediated by coherence
- There are actually two strong biases that differentiate IC and Non-IC verbs:
  \( P(CR=\text{Explanation}) \) is high for IC-1 and IC-2
- There is no significant difference for IC-1 and low for IC-2

The presence of a second bias had gone unnoticed because previous studies had not categorized their data by coherence.

References


References

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