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.

(1) a. John scolded Mary because ____________ . [strong bias to Mary]
   b. John scolded Mary. ____________ . [mixed biases]

Proposal: In light of recent results showing two types of coherence-driven expectations in pronom formation, we examine responses to contexts like (1a-b). We predict that IC biases depend both on expectations about upcoming coherence relations (P(coherence)) and on biases for which event participant will be mentioned again conditioned on continuation type (P(next_mention)).

Results: By categorizing responses by coherence relation, we localize the previously reported IC bias to Explanation relations. We find an additional IC bias concerning P(Explanation). This bias has gone unnoticed because previous work has not categorized responses by coherence.

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)

Task: construct natural continuation to context sentence and prompt

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 (F(1,70)=0.0221, p=0.8822; F(1,19)=0.0322, p=0.8680).

Prompt: 'because'

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<thead>
<tr>
<th>Subject</th>
<th>Exp</th>
<th>Res</th>
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<tbody>
<tr>
<td>Because</td>
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<td>IC-1</td>
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<td>IC-2</td>
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<tr>
<td>Non-IC</td>
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8. Non-IC Results

Again, next-mention biases statistically indistinguishable when only Explanations are considered (because or freely generated) (F(1,61)<1, p=0.982; F(1,36)=1.4598, p=0.2348).

Prompt: 'because'

p(next_mention=NP1 | 'because') = p(next_mention=NP1 | Explanation)

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(Explanation) is high for IC-1 and IC-2

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

References


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