"Demanding an Explanation: Implicit Causality Biases in Discourse Interpretation"

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3. Using coherence to mode next-mention biases

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

\[
P(CR=\text{Explanation}) = P(CR) \times P(\text{next mention} = \text{CR})
\]

\[
P(\text{next mention} = \text{NP1} | \text{because}) = P(\text{next mention} = \text{NP1} | \text{Explanation})
\]

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

5. IC-1 Results

Next-mention biases were statistically indistinguishable when only ‘because’ prompts and freely generated Explanations were considered (\(F(1,170)=0.0221, p<0.8822; F(1,19)=0.032, p<0.86\))

6. IC-2 Results

Again, next-mention biases statistically indistinguishable when only Explanations are considered (‘because’ or freely generated) (\(F(1,61)<0.0221, p<0.982; F(1,36)=1.4598, p<0.2348\))

7. Non-IC Results

Again, next-mention biases statistically indistinguishable when only Explanations are considered (‘because’ or freely generated) (\(F(1,61)<0.0221, p<0.982; F(1,36)=1.4598, p<0.2348\))

8. 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

9. 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:

\( \rightarrow \text{Connective alone does not affect referent salience – mediated by coherence} \)

\( \rightarrow \text{There are actually two strong biases that differentiate IC and Non-IC verbs:} \)

\( P(CR=\text{Explanation}) \) is high for IC-1 and IC-2

\( P(\text{next mention} = \text{NP1} | \text{Explanation}) \) is low for IC-1 and high for 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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