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Implicit Causality Biases Influence Relative Clause Attachment

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Abstract

Problem: As comprehenders combine words to form a sentence, they must also combine clauses and sentences to form a coherent discourse. Is the resolution of local syntactic ambiguity sensitive to the process of inferring a coherent discourse?

Proposal: Bring together 3 observations about the pragmatic functions of relative clauses (RCs) and the biases associated with implicit causality (IC) verbs, and test whether these types of factors influence the resolution of local structural ambiguity in relative clause attachment:

(i) John detests/babysits the children of the musician who …

Results: An off-line sentence-completion study and an on-line self-paced reading study examined comprehenders’ expectations for high/low RC attachments following IC and non-IC verbs. In both studies, IC verbs shifted readers’ attachment preferences from low to high. In the completion study, most high-attaching RCs following IC verbs encoded explanations of the matrix-clause event. These results suggest that comprehenders use pragmatic cues mid-sentence to generate expectations about the structural analysis of the rest of the sentence.

1. Questions

• Do comprehenders bring expectations from the discourse level to bear on the resolution of syntactic ambiguity?
• Do these expectations impact online processing?

2. Phenomenon

Relative Clause Attachment Ambiguity

Previous work suggests low attachment in English is preferred (Gullo & March 1988; Frazier & Clifton 1994; Carrière & Clifton 1999; Fernández, 2003; but see also Traxler, Pickering, & Clifton, 1998)

• Primarily analyzed in terms of syntactically-driven biases
• Some previous work on discourse-driven biases

Discourse context is referential context
• RC pragmatic function is to modify or restrict identity of referent
• RC attaches to host with more than one referent (Desmet et al. 2002; Zagar et al. 1997; Papadopoulou & Chollian 2006)

3. Constructing Examples to Test Discourse Biases

• Observation #1: RCs can also provide an explanation

(4) The boss fired the employee who always showed up late.

(Cancelable) implicature that the employee’s lateness is the reason for the boss’ firing

• Observation #2: Bias towards explanations following IC verbs

(5) IC: John detests Mary. She is arrogant and rude.
(6) NonIC: John babysits Mary. Mary’s mother is grateful.

• Observation #3: w/explanation, IC verbs have next-mention bias

(7) IC: John detests Mary because She is arrogant.
(8) NonIC: John babysits Mary because Mary’s mother is grateful.

4. Predictions for IC Biases in RC Attachment

(9) Non-IC: John babysits the children of the musician who…
• Discourse Hypothesis: IC verbs will increase comprehenders’ expectations for a high-attaching RC
• Null Hypothesis: Verb type will have no effect on attachment

(10) IC: John detests the children of the musician who…
• Discourse Hypothesis: IC verbs will increase comprehenders’ expectations for a high-attaching RC
• Null Hypothesis: Verb type will have no effect on attachment

5. Observations from the Discourse Hypothesis

• Observation #1: RCs can also provide an explanation

(4) The boss fired the employee who always showed up late.

(Cancelable) implicature that the employee’s lateness is the reason for the boss’ firing

• Observation #2: Bias towards explanations following IC verbs

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(7) IC: John detests Mary because She is arrogant.
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6. Off-line Sentence Completion Results

More-high-attaching RCs following IC verbs than NonIC

More explanation-providing RCs following IC than Non-IC

7. On-line Self-Paced Reading Results

• Online results match offline results: bias to high attachments following IC verbs

As predicted, high-attaching RCs were read faster than low-attaching RCs in IC condition, while reverse was true in NonIC condition:

Crossover interaction

Effects persist in comprehension-question accuracy: Crossover interaction (by subj)

low-attaching RC in IC condition yielded worst accuracy

8. Conclusions

• Do people use discourse-level expectations and biases as they resolve local syntactic ambiguity?

• YES, in RC processing

• Where else might comprehenders be using discourse-level expectations?

• Processing models need to incorporate these types of discourse-level biases

References


Au (1986) A verb is worth a thousand words: The causes and consequences of interpersonal events implicit in language. JML, 25, 104-122.


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