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Coherence-Driven Expectations in Discourse and Dialog

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Abstract

Problem: Different models have been proposed to capture the relationships that underlie a coherent discourse, with some models applied to monologue (Hobbs 1979, Kehler 2002) and some to dialog (Roberts 1996). This work considers whether the coherence relations that have been posited to implicitly structure a monologue can be linked to the questions-under-discussion (QUDs) that have been posited to explicitly structure a dialog.

Proposal: Using story and dialog continuations, we test whether people write story continuations that answer the questions that they are likely to pose for similar contexts in dialog continuations. Results: We find that biases toward particular questions in dialog continuations are reliably correlated with biases for particular coherence relations in story continuations. The results suggest that paraphrases can be drawn between two different types of discourse models and between the continuations in a single-speaker passage and the discourse moves in a dialog.

1. Goals
- To draw a parallel between coherence-driven and question-under-discussion (QUD) models of discourse
- To test whether people’s expectations about upcoming story continuations match their expectations about upcoming questions.

2. Two Related Models: Coherence & QUD

Coherence Model: adjacent sentences or discourse segments are related by coherence relations (Hobbs 1979, Kehler 2002)

QUD Model: discourses are structured with answers to overt or inferrable questions (Roberts 1996, Buring 2003)

(1) Floyd took a train to North Carolina.
He wanted to get away from some of his colleagues.

Coherence: (1) is analyzed as an Explanation relation
QUD: implicit Why? question intervening between (1a-b)

- QUD arguably more general: used to analyze question-answer pairs in dialog and implicit questions in monologue

3. Previous Work: Effects of Discourse on Pronouns

The likelihood of upcoming coherence relations has been shown to influence patterns of pronoun interpretation (Rohde, Kehler, & Elman 2007)

(2) John handed a book to Bob. He (∑)

Story continuation results:
- Instructions to “answer why”? yield bias to interpret ‘He’ as ‘John’
- Instructions to “answer what next”? yield bias to interpret ‘He’ as ‘Bob’
- Argued for COHERENCE-driven biases using QUESTIONS

4. Story/Dialog Continuation Experiments

Biases toward particular questions in dialog continuations correlate with biases for particular coherence relations in story continuations

- Prediction: People answer in story continuations the questions that they are likely to pose in dialog continuations
- Methodology: participants were instructed to imagine a conversation with a friend and write continuations for either:
  - Story continuation: what the friend was likely to say next
  - Dialog continuation: question they would be likely to pose
- Evaluation: judges annotate responses for coherence & QUD

5. Study 1: Explanation ~ Why

Implicit causality (IC) manipulation: verb class (IC / Non-IC)

Hypothesis: more Explanation coherence relations and more Why? questions following IC verbs than Non-IC verbs

(3) Story Continuation
  Friend: John scolded Mary. ____________________
  (4) Dialog Continuation
  Friend: John scolded Mary. You: ____________________

As predicted, % ‘Why’/‘What next’/‘How’ type questions were significantly correlated with % Explanations [F(1,94)=43.6, p<0.001], Occasions [F(1,94)=4.352, p<0.04], and Elaborations [F(1,94)=11.31, p<0.002], respectively.

6. Study 2: Explanation ~ Why

Verbal aspect manipulation: transfer verbs (perfective / imperfective)

Hypothesis: different coherence/question distributions with perf / imp

(5) Story Continuation
  Friend: John handed a book to Bob. ____________________
  (6) Dialog Continuation
  Friend: John handed a book to Bob. You: ____________________

As predicted, % ‘Why’/‘What next’/‘How’ type questions were significantly correlated with % Explanations [F(1,94)=43.6, p<0.001], Occasions [F(1,94)=4.352, p<0.04], and Elaborations [F(1,94)=11.31, p<0.002], respectively.

7. Conclusions

We find that people write story continuations that answer the questions that they are likely to pose for similar contexts in dialog continuations.

The results suggest that paraphrases can be drawn between two different types of discourse models and between continuations in a single-speaker passage and discourse moves in a dialog.

References

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