QUD-Driven Expectations in Discourse Interpretation

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Analyzing discourse coherence

- **Coherence Relations** (Mann & Thompson, 1988; Webber & Joshi, 1998; Hobbs, 1990; Kehler, 2002; Asher & Lascarides, 2003; Webber, 2006; reviews in Knott, 1996 and Hutchinson, 2005)

   Comprehender infers a relationship to hold between propositions

    | (1) Mary scolded John. He was late again. | Explanation |
    | (2) Mary scolded John. She did so loudly. | Elaboration |

- **Question-Under-Discussion models** (Roberts, 1996; Van Kuppevelt, 1995; Büring, 2003; Larsson, 1998; Ginzburg & Sag, 2000)

    An utterance is coherent insofar as it answers a question relevant to the proceeding discourse

    | (1) Mary scolded John. He was late again. | Why? |
    | (2) Mary scolded John. She did so loudly. | How? |

Verbtype affects coherence (Kehler et al. 2008)

- Implicit causality (see also Garvey et al. 1964; McKoon 1993, inter alia)

  (3) Mary scolded John. _____ . [IC]
  (4) Mary saw John. _____. [non-IC]

- Tested whether the distribution of coherence relations differed following IC/non-IC

- Passage-completion task: write a natural continuation

- Evaluation: judges assessed coherence relation

Coherence evaluation (Kehler et al. 2008)

(5) Mary scolded John. He was late again.

[Explanation: $S_2 \rightarrow S_1$]

(6) Mary scolded John. He was offended by the scolding.

[Result: $S_1 \rightarrow S_2$]

(7) Mary scolded John. He wasn't offended at all.

[Violated-Expectation: $S_1 \rightarrow \neg S_2$]

Coherence evaluation cont.

(8) Mary scolded John. She did so loudly.

[Elaboration: infer P from both S_1 and S_2]

(9) Mary scolded John. She punished Sue.

[Parallel: infer related P from both S_1 and S_2]

(10) Mary scolded John. She then called his mother.

[Occasion: infer initial state of event described in S_2 to be final state of event described in S_1]

Effect of verbtype on coherence

(Kehler et al. 2008)

IC (scold)
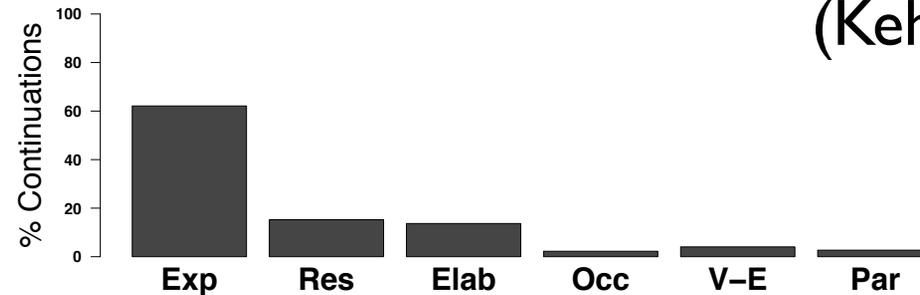
Non-IC (see)
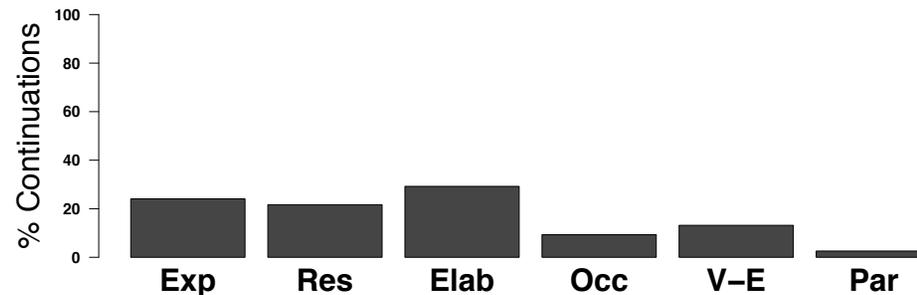
→ IC verbs generate expectation for upcoming Explanation
(if no Explanation preceding, see Simner & Pickering 2005)

Coherence ~ QUD

"[Coherence] relations can often...be characterized in terms of questions and answers, e.g. the use of a why-question and its answer to characterize explanations"

(Roberts 1998, p. 50)

Just as comprehenders have expectations about upcoming coherence relations, do they also have expectations about what question the next utterance is likely to answer?

→ Test this hypothesis using dialog continuations

Experiment I: Explanations~Why

- Task: imagine a phone conversation, write either

(12) *Monologue continuation*
    Friend: Mary scolded/saw John. _____.

(13) *Dialog continuation*
    Friend: Mary scolded/saw John.
    You: _____?

- Prediction: bias to Explanations ~ bias to Why
- Participants: 75 monolingual English speakers
- Materials: 40 IC and 40 non-IC
- Evaluation: judges annotated relation & question

Dialog annotation examples

(14) Friend: Ryan hates Amy.
    You: <u>What has she done</u> ?

(15) Friend: James charmed Amber.
    You: <u>Did she blush</u> ?

(16) Friend: Greg corrected Sally.
    You: <u>When did this happen</u> ?

(17) Friend: Laura values Luis.
    You: <u>Does Luis value Laura</u> ?

(18) Friend: Craig reproached Kate.
    You: <u>What happened next</u> ?

Explanation

Result

Elaboration

Parallel

Occasion

- Same annotation process for non-IC verbs
- No Violated-Expectation questions

Expt I results: Explanation ~ Why

IC verbs: bias to Explanations
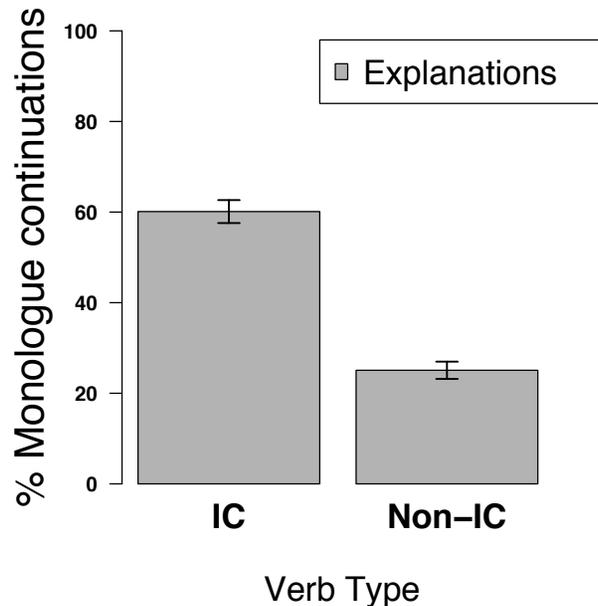
IC verbs: bias to 'Why?'
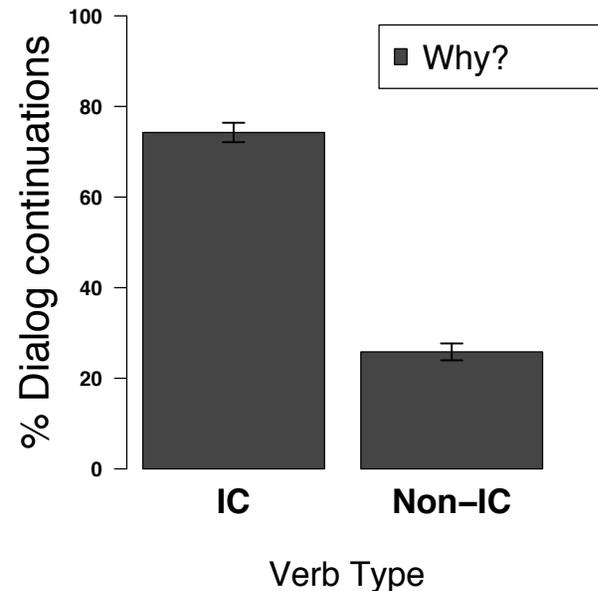
Adjusted $R^2=0.289$, $F_1(1,223)=92.23$, $p<0.001$
Adjusted $R^2=.488$, $F_2(1,78)=76.3$, $p<0.001$

→ both coherence & questions sensitive to same contextual cues... but beyond Explanations?

# Aspect affects coherence (Rohde et al. 2006, 2007)

- Based on earlier work on transfer-of-possession

  (19) John handed a book to Bob. He _____.   [perf]
  (20) John was handing a book to Bob. He _____.   [imp]

- Found that the distribution of coherence relations differed following perfective/imperfective sentences.

Effect of aspect on coherence

(Rohde et al. 2006, 2007)

Perfective (handed)
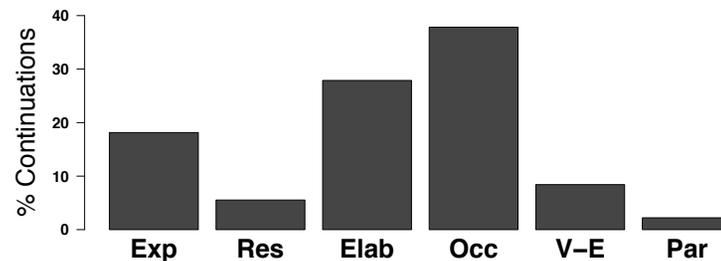
Imperfective (was handing)
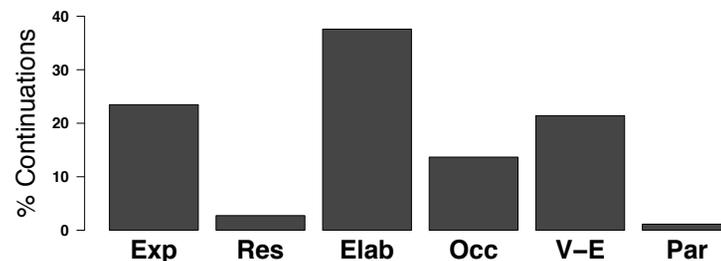
→ Completed events yield more Occasions; incomplete events yield more Explanations and Elaborations

→ Do aspectual cues affect questions in a similar way?

Experiment 2: coherence~QUD

- Task: imagine a phone conversation, writing either

  (21) *Monologue continuation*
  Friend: Mary handed/was handing a book to John. ___.

  (22) *Dialog continuation*
  Friend: Mary handed/was handing a book to John.
  You: _____?

- Prediction: Explanation~Why, Occasion~What next,
  Elaboration~Where/When/How
- Participants: 75 monolingual English speakers
- Materials: 40 transfer verbs
- Evaluation: judges annotated relation & question

Dialog annotation examples

(23) Friend: Heather refunded $30 to Roger.
   You: Why did she owe him money ?

Explanation

(24) Friend: Amanda shifted some poker chips to Scott.
   You: How did Scott react?

Result

(25) Friend: Tim floated a life vest to Jessica.
   You: Where were they ?

Elaboration

(26) Friend: George slapped a beachball to Sarah.
   You: Did she hit it back ?

Parallel

(27) Friend: Keith mailed a fruitcake to Barbara.
   You: Did she throw it away ?

Occasion

Experiment 2 results

Explanations ~Why
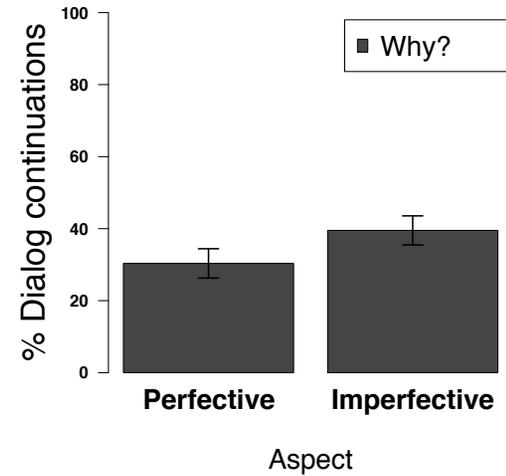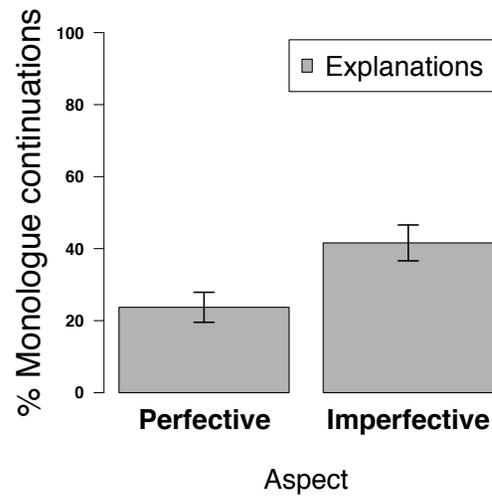
Adjusted R^2=0.279
$F_2(1,94)$=37.82,
$p<0.001$

Elaborations ~When/ Where/How
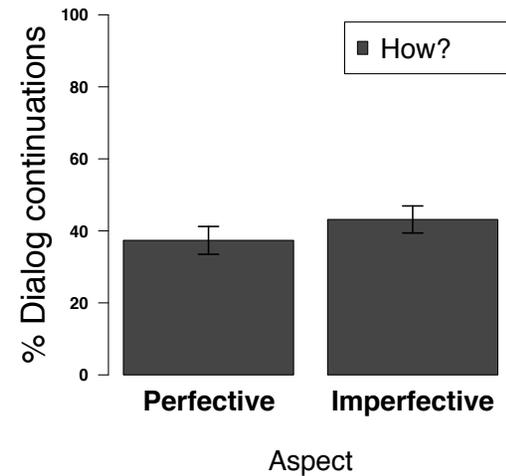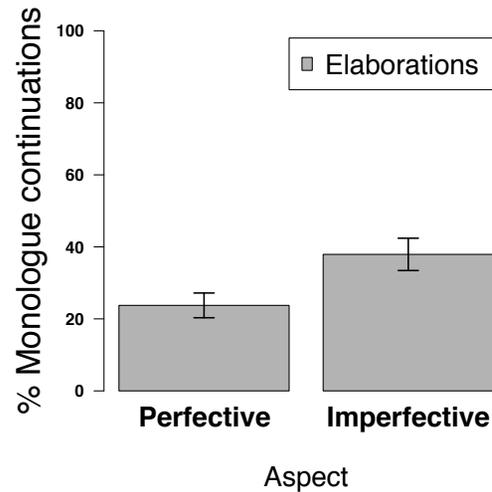
Adjusted R^2=0.089
$F_2(1,94)$=10.24,
$p<0.002$

Error Bars: +/− 1 SE

Experiment 2 results cont.

Occasions
~What next

R²=0.074
F₂(1,94)=8.638
p<0.005
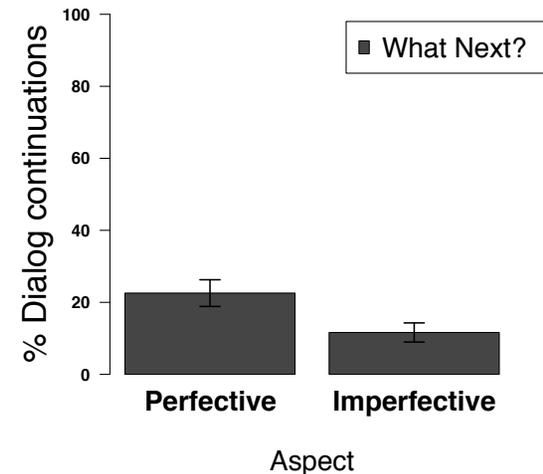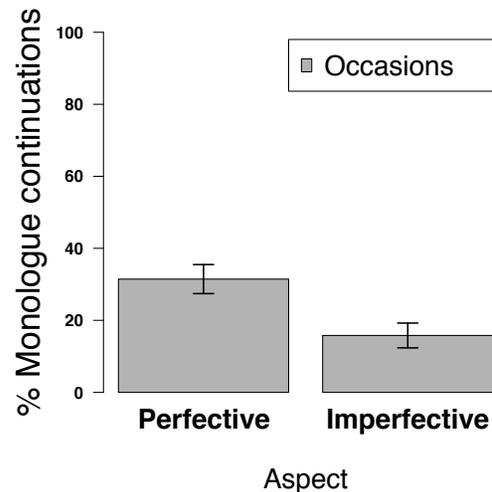
$R^2=0.074$
$F_2(1,94)=8.638$
$p<0.005$

Error Bars: +/− 1 SE

→ Pattern from Expt 1 generalizes beyond Explanation

→ Again, coherence expectations correlate with question expectations... both sensitive to contextual cues

Summary

- Comprehenders' QUD expectations (as measured by their explicit questions in dialogs) mirror their coherence expectations (as measured by their continuations in monologues).

- Coherence and QUD models address a variety of phenomena. Future studies of these phenomena will need to account for the influence of these top-down expectations.

- Results fit within larger body of research on expectation generation (sound/word/syntax... now 'units of discourse').

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