

Coherence inferences

- Discourse-level (i.e., cross-clausal) coherence inferences (see (a)) are well-studied in discourse coherence theories [1,2].
- Less is known about clause-internal coherence (CIC) inferences (see (b)) [3,4], but adjectives may participate in CIC inferences with verbs [5,6].

(a) Alice fell. Betty pushed her. (b) A scared mouse was chased by a cat.

Research questions

Can nouns give rise to causal clause-internal coherence inferences?

(c) A runner was hit by a car. vs. (d) A teacher was hit by a car.

- If so, do they behave like adjectives with respect to, e.g., cause/effect order?

How might we formally account for CIC inferences involving nouns?

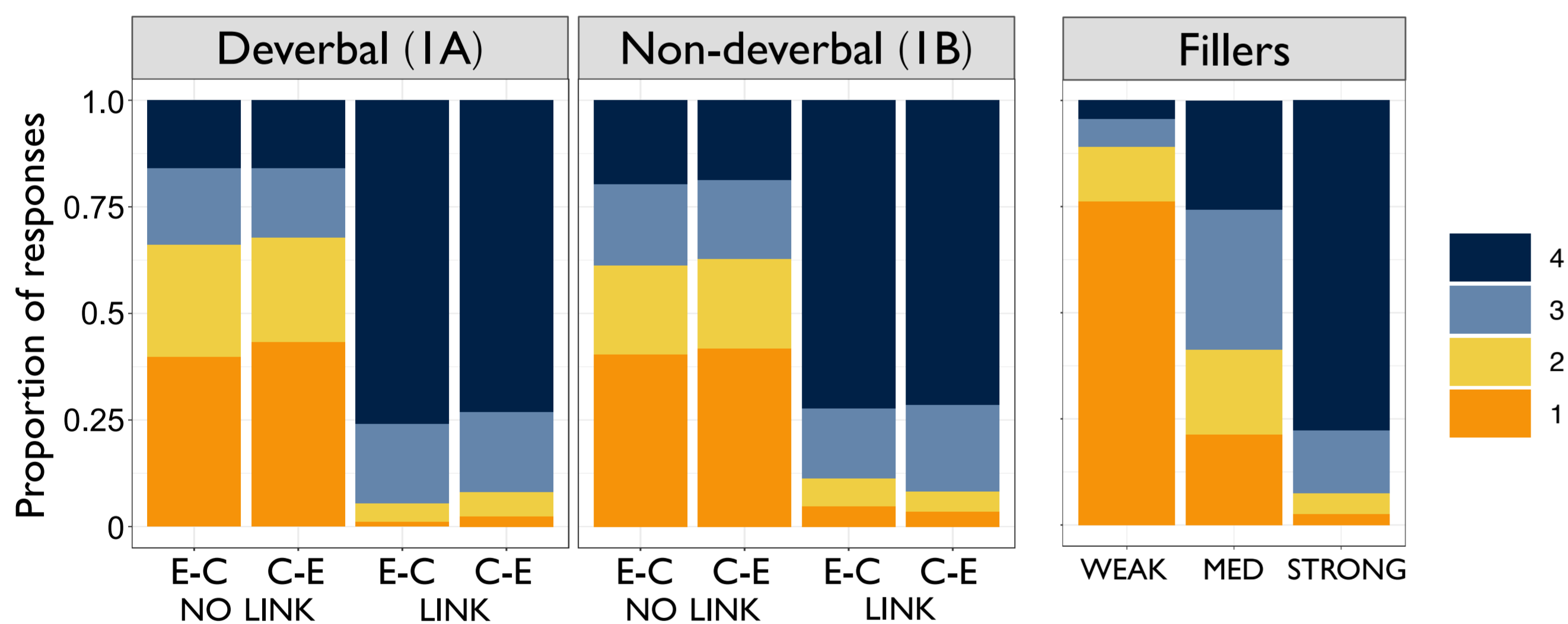
Experiments IA & IB (n = 40 per study)

Key finding: Clause-internal causal inferences can be drawn between nouns and verbs, regardless of linear cause/effect order and—potentially—the (non-)deverbal nature of the noun.

2x2 Likert task crossing Expected Causal Inference (LINK, NO LINK) and Cause/Effect Order (CAUSE-EFFECT, EFFECT-CAUSE) for 40 items (+40 fillers).

Deverbal (IA)	LINK E-C	NO LINK E-C	Non-deverbal (IB)	LINK E-C	NO LINK E-C
	Anjali chased after a(n)...	...evildoer (Quinton).		...villain (Quinton).	...cyclist (Quinton).
Non-deverbal (IB)	LINK C-E	NO LINK C-E	LINK C-E	NO LINK C-E	
	An evildoer...	A villain...	A cyclist...	A pedestrian...	
	...(Quinton) was chased after by Anjali.		...(Quinton) was chased after by Anjali.		

Rate likelihood of a causal relationship (1–4 scale): How likely do you think it is that Anjali chased after Quinton because he was a villain?

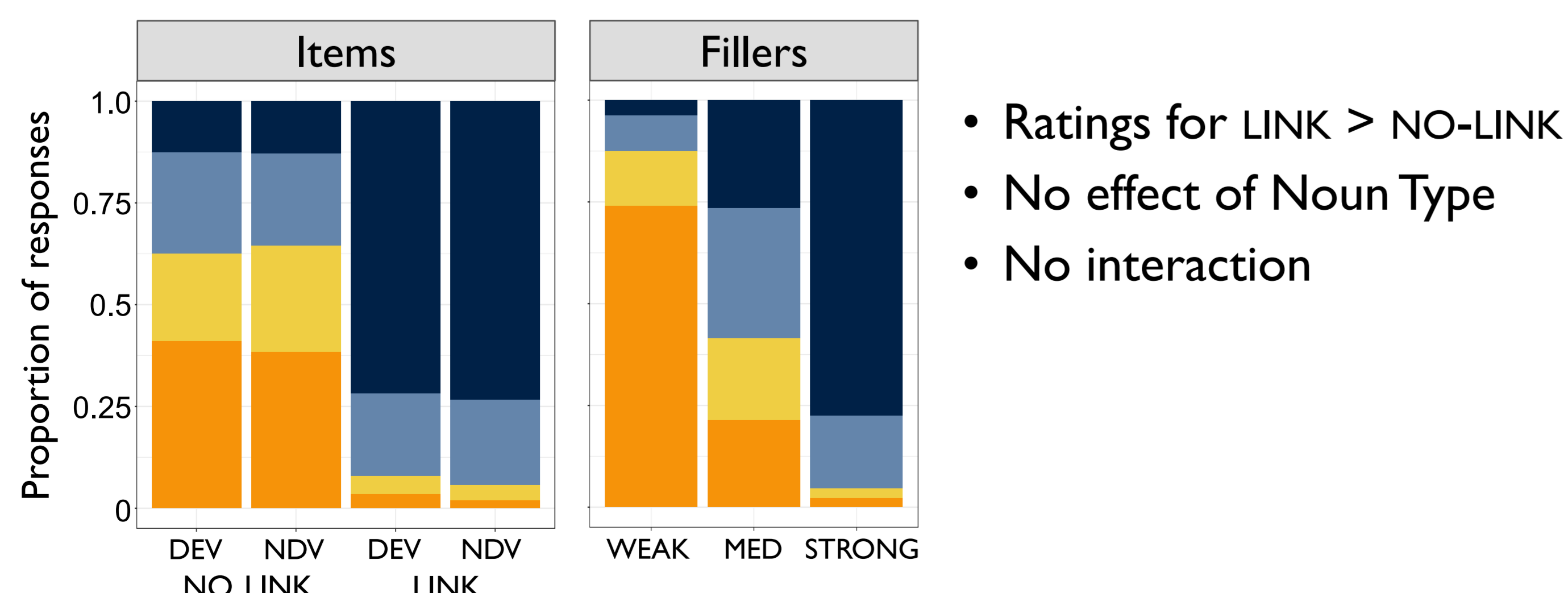


- Ratings for LINK > NO-LINK; no effect of Cause/Effect Order; no interaction.
 - Unlike previous finding of E-C > C-E for adjectives [5]
- Post hoc comparison: No effect of Noun Type.
 - Unlike previous finding of Deverbal > Non-deverbal for adjectives [5]

Experiment 2 (n = 40)

Key findings: More evidence that CIC inferences can be drawn between nouns and verbs; no effect of noun's (non-)deverbal-ness within subjects.

2x2 Likert task crossing Expected Causal Inference (LINK, NO LINK) and Noun Type (DEVERBAL, NON-DEVERBAL) for 40 items (+40 fillers).



- Ratings for LINK > NO-LINK
- No effect of Noun Type
- No interaction

Modeling clause-internal coherence: Formal assumptions

In Segmented Discourse Representation Theory (SDRT) [1,5]:

- Arguments of coherence relations (discourse units) are eventuality descriptions.
- VPs and AdjPs are eventuality descriptions (hence can be discourse units).

In Pure Event Semantics (PES) [8]:

- All NPs (e.g., *Anjali*, *villain*) are state descriptions.
- Thematic relations describe states that event participants are in during the course of the event [7]—in (e), *Anjali* is in an agent state and the *villain* is in a patient state.

(e) *Anjali* chased after a *villain*.

Modeling CIC: Two analytical paths

Path I: PES

CIC amounts to pragmatically specifying a relation between eventualities described by VPs, NPs, AdjPs, etc.

In PES, we can analyze the semantic content of (e) as follows. There is:

- A state s_1 of being a villain and a state s_2 of being *Anjali*
- An event e of chasing
- An agent state of e —call it s_3 —such that $s_2 \oplus s_3$
- A patient state of e —call it s_4 —such that $s_1 \oplus s_4$
- A relation R such that $R(s_1, e)$

The pragmatics specifies that $R = \text{Cause}$ (being a villain caused the chasing) or Background (being a villain is the background for the chasing).

Path II: SDRT & PES

CIC amounts to pragmatically specifying a relation between eventuality descriptions, i.e., semantic representations of VPs, NPs, AdjPs.

Combining SDRT and PES, we could have two semantic representations:

- π_a : There is a state s_1 of being a villain
- π_b : There is a state s_2 of being *Anjali* and an event e of chasing
 - There is an agent state of e —call it s_3 —such that $s_2 \oplus s_3$
 - There is a patient state of e —call it s_4 —such that $s_1 \oplus s_4$
- There is a coherence relation R such that $R(\pi_a, \pi_b)$

The pragmatics specifies that $R = \text{Cause}$ or Background .

Further data

CIC with nouns extends to Narration/Occasion:

(c) A runner was hit by a car.

Also, it's sometimes unclear whether it is a state or an event associated with the noun that coheres with an event described by the verb.

CIC with adjectives and CIC with nouns seem to be different:

- (f) i. A {wet | drenched} child was hit with a water balloon.
 ii. A water balloon hit a {wet | drenched} child.

- With adjectives, deverbals > non deverbals; Effect-Cause > Cause-Effect.

Conclusions

We find evidence that nouns can trigger causal CIC inferences, adding to evidence from adjectives that CIC inferences are robust.

We offered two paths for analyzing CIC inferences with nouns. Key to the analysis is that NPs, like VPs and AdjPs, are eventuality descriptions.

- CIC arises from pragmatically enriched relations between eventualities
- CIC arises from pragmatically enriched coherence relations

Need to consider subtle differences in interpretation between different kinds of nouns (*runner* vs. *villain*) and between nouns and adjectives.

References [1] Asher, N. & A. Lascarides (2003). *Logics of conversation*. CUP. [2] Kehler, A. (2002). *Coherence, reference, and the theory of grammar*. CSLI. [3] Hobbs, J. (2010). Clause-internal coherence. *Constraints in Discourse*, 2. [4] Cohen, J. & A. Kehler. (2021). Conversational eliciture. *Philosophers' Imprint*, 21. [5] Sasaki, K. & D. Altshuler. (2023). Clause-internal coherence: a look at deverbal adjectives. *Proceedings of SuB 27*. [6] Yao, R., E.M. Husband, & D. Altshuler. (2024). Topichood and temporal interpretation of DPs guide clause-internal, causal coherence. *Proceedings of SuB 28*. [7] B. Schein. 'And' Conjunction Reduction Redux. MIT Press. [8] R. Schwarzschild. (Forthcoming). Pure Event Semantics. *Philosophical Perspectives* (earlier version available at lingbuzz/006888).