

In search of pragmatic discounting: Lessons from direct discourse and causal adjuncts

A collection of recent studies discuss an apparent novel effect of pragmatic representation on low-level processing behavior. [1-4] find that appositive relative clauses (ARCs) (1a) exhibit less influence in later parsing and decision-making than restrictive relative clauses (RRCs) (1b), a pattern we here call **discounting**. E.g., ARCs generate less interference during filler-gap [2] and subject-verb [3,4] dependency resolution. [2] entertain a hypothesis we call **Pragmatic Discounting**, holding that online comprehension depends on the construction of roughly sentence-sized units of meaning, as in [5], and after these units are complete, their content is discounted in later operations, as in [6].

This hypothesis predicts discounting effects for constructions that furnish similar pragmatic units. In this study, we test that prediction by investigating the reading of **direct discourse** reports and **causal adjuncts** in English. Diagnostics supplied by the theoretical literature show that these constructions contribute the same independent segments as ARCs in two different systems of pragmatic organization: (i) direct discourse reports provide an independent speech act, and (ii) causal adjuncts provide their own discourse units. Nevertheless, we find no evidence of ARC-like discounting for either, complicating the outlook for Pragmatic Discounting.

Expt. 1 aims to replicate [1]'s finding that complexity within an ARC is less influential in judgments than complexity within an RRC. 48 native speakers of English provided 7-point naturalness judgments to 32 items based on [1]. Items (1) crossed the form of a critical RC (RRC vs. ARC) and whether that RC featured extra internal complexity (Short vs. Long). Ordinal mixed-effects models were fit to responses in brms. See Fig. 1. We replicate [1]'s critical interaction: a simple effect of length within the RRC conditions is reduced for ARCs. We take this to be a simple, reliable discounting effect, and use it as a barometer going forward.

Expt. 2 looks for the same effect with direct discourse speech reports (DD). DD reports, like ARCs, meet the diagnostics for a sentence-internal **speech act**, the minimal linguistic unit which may carry communicative purpose. Both constructions—and not their unmarked minimal pairs, RRCs and indirect discourse (ID)—may host a restricted set of speech act adverbials (2) [7], and feature illocutionary force which is unaffected by the force of their host clause (3) [8].

We collected judgments of 32 items featuring DD (4a) or ID (b) using the same methodology as Expt. 1, manipulating the complexity of the target speech report. See Fig. 2. We fail to observe a credible interaction, leaving us with no evidence that DD material is discounted. Two replications and a study using [2]'s filler-gap paradigm similarly fail to find any interaction. We conclude that pragmatic discounting cannot be said to hold for all subordinate speech acts.

Expt. 3 looks for these effects within causal adjuncts headed by *because*. *Because* clauses, like ARCs, meet the diagnostics for a sentence-internal **discourse unit**, the minimal linguistic unit which may participate in discourse coherence relations [9]. Intuitions suggest that ARCs are more available for such relations, while RRCs are prototypically unavailable [10, though cf. 11]. Likewise, *because* clauses are often taken to be discourse units that instantiate a mandatory *Explanation* relation with their matrix. They can be compared to *when* clauses, which cannot do so when modifying a sentence with a temporal quantifier (5b), where they are only restrictive.

We collected judgments of 32 items featuring a *because* (6a) or restrictive *when* clause (b), manipulating complexity as above. See Fig. 3. We again fail to observe a credible interaction, leaving us with no evidence that *because* clause material is discounted. We conclude that pragmatic discounting cannot be said to hold for all subordinate discourse units.

In sum, we fail to support the predictions of Pragmatic Discounting in terms of either speech acts or discourse units. Discounting effects, perhaps, do not extend beyond ARCs. While this study cautions against what would be a novel and interesting effect of pragmatic structure on processing, we hope that it shows the value of careful semantically-informed processing research.

- (1) a. That man, the one on the cruise (Mary took to the Pacific Islands), ... (ARC*)
 b. That man who was on the cruise (Mary took to the Pacific Islands), ... (RRC)
 tried to throw a waitress overboard.
- (2) a. The nurses, who, confidentially, were hired in July, got paid for June.
 b. Rebecca said, "Confidentially, the nurses in my ward are well-paid."
- (3) a. Did the nurses, who were hired in July, receive a housing stipend?
 b. Did Rebecca say "The nurses in my ward are well-paid"?
- (4) a. Evan said, "The cruise (Mary took to the Pacific Islands)... (DD)
 b. Evan said that the cruise (Mary took to the Pacific Islands)... (ID)
 departed three hours behind schedule."
- (5) a. George is dishonest because he's a politician.
 b. George is always dishonest when he's running for office.
- (6) Evan often complains to the travel agent...
 a. because storms delay the cruises (Mary takes to the Pacific Islands). (because)
 b. when storms delay the cruises (Mary takes to the Pacific Islands). (when)

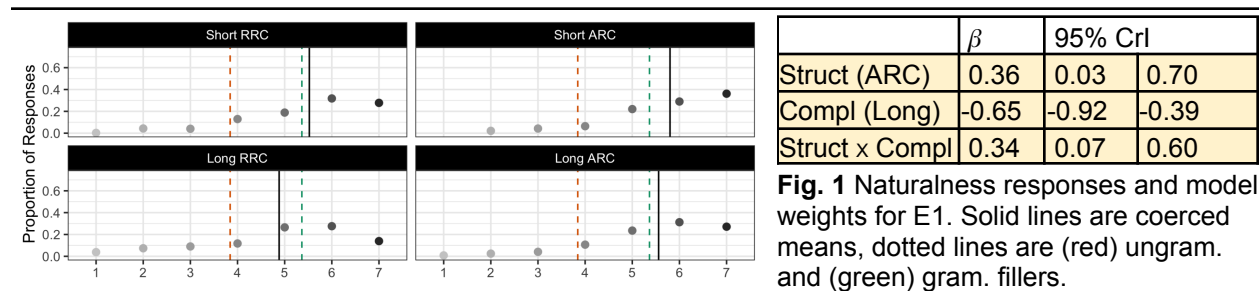


Fig. 1 Naturalness responses and model weights for E1. Solid lines are coerced means, dotted lines are (red) ungram. and (green) gram. fillers.

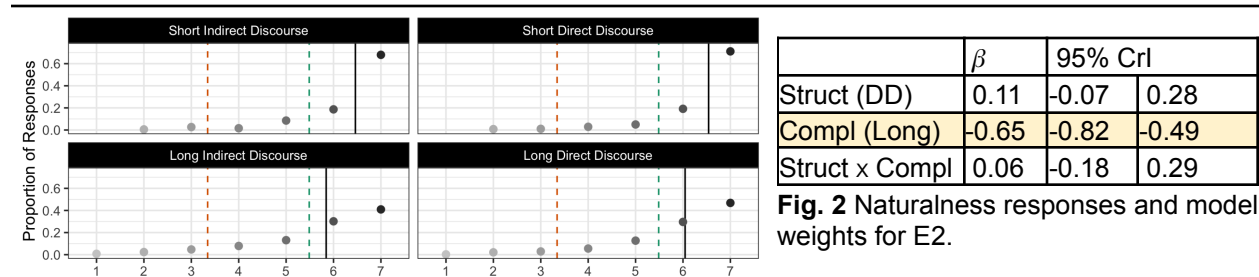


Fig. 2 Naturalness responses and model weights for E2.

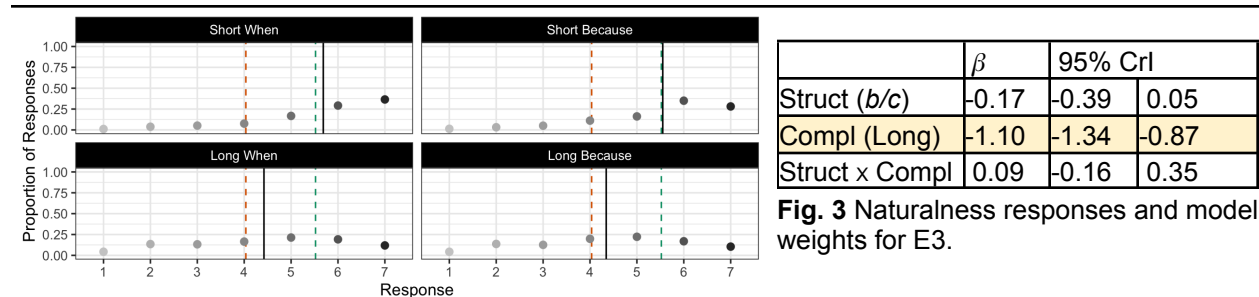


Fig. 3 Naturalness responses and model weights for E3.

References [1] Dillon et al. (2014) *Lang. Cog. Neuro.* [2] Dillon et al. (2017) *J. Mem. Lang.* [3] McInerney & Atkinson (2020) Talk at CUNY 33, UMass Amherst. [4] Kim & Xiang (2022) Talk at HSP 35, UC Santa Cruz. [5] Grosz & Sidner (1986) *Comp. Ling.* [6] Potter & Lombardi (1990) *J. Mem. Lang.* [7] Thorne (1972) *Ling. Inq.* [8] Peterson (2004) *Proc. of LFG04.* [9] Asher & Lascarides (2003) Cambridge. [10] Burton-Roberts (1999) In *The clause in English.* [11] Hoek et al. (2021) *Lang. Cog. Neuro.*

*This literature sometimes conflates nominal appositives (1a) with true ARCs; both have been demonstrated to show discounting.