Predicting strict vs. sloppy reflexives in VP ellipsis

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The problem and the main results. The VP ellipsis (VPE) 'remnants' *did too/did* in sentences like (1-a) and (1-b) below can have two different readings depending on whether the reflexive pronoun *himself* covertly recovered at the VPE site is interpreted as referring back to John (the **strict** reading) or to Bill (the **sloppy** reading).

(1) a. John blamed himself and Bill did too. [Bill blamed: John (strict)/Bill (sloppy)]
b. John blamed himself because Bill did. [Bill blamed: John (strict)/Bill (sloppy)]

Generally both strict and sloppy readings are available in (1-b) while the strict reading in (1-a) is marginal or inaccessible. Hestvik 1995's approach to VPE argues that this asymmetry arises because of the difference in syntactic configurations between the two clauses (*parallel* vs. *subordinate*). In contrast, Kehler 2002's discourse-based account of VPE argues the asymmetry derives from a difference in rhetorical relations (*resemblance* vs. *cause-effect*). Partial experimental support for the syntactic approach is provided by Experiment 1 in Kim and Runner 2009.

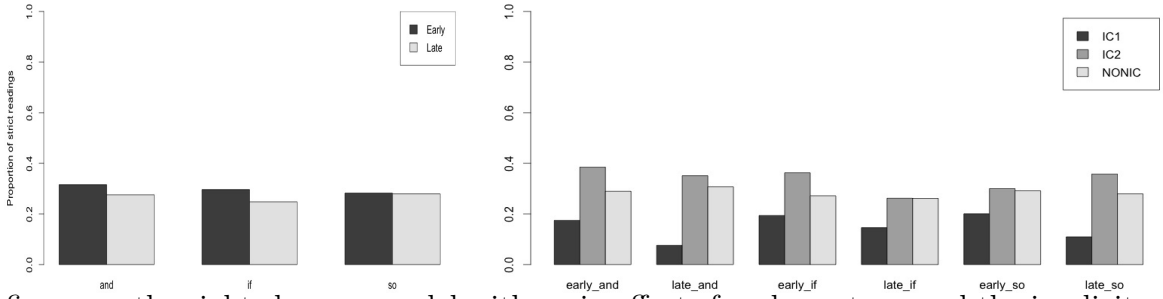
This paper reports a series of two experimental studies with two related goals. **The first goal** is to empirically evaluate the syntactic and discourse accounts, building and improving on the experimental investigation in Kim and Runner 2009. The results strongly suggest that discourse-based accounts are empirically more adequate. **The second goal** is to argue that a heretofore ignored lexical factor, namely the meaning of the ellided verb, is in fact a strong predictor of strict vs sloppy readings. We found that so-called *implicit-causality* verbs which are object-oriented are much more likely to have strict readings than subject-oriented implicit-causality verbs.

Experiment 1: *If-then* clauses. 31 participants completed a binary-choice task asking them to select strict vs. sloppy readings for biclausal constructions involving 3 connectives AND, IF and SO in 2 orders EARLY (e.g., the *if*-clause was sentence-initial) and LATE (e.g., sentence-final *if*-clause), i.e., a 2×3 (latin-square) design. The disambiguation task was presented as part of a conversation between a concise, somewhat unclear detective reporting to her police chief, with the participants playing the role of the police chief. The order of the answers was randomized. We exemplify 4 (out of 6) conditions below.

(2) a. Detective: John blamed himself and Bill did too. AND & EARLY
You take this to mean that John blamed himself and Bill blamed ☐John ☐Bill
b. Detective: John blamed himself so Bill did too. SO & EARLY
You take this to mean that John blamed himself so Bill blamed ☐John ☐Bill
c. Detective: If John blamed himself, Bill did too. IF & EARLY
You take this to mean that if John blamed himself, Bill blamed ☐John ☐Bill
d. Detective: John blamed himself if Bill did too. IF & LATE
You take this to mean that John blamed himself if Bill blamed ☐John ☐Bill

We selected IF as one of the connectives of interest (unlike Kim and Runner 2009) because we have a much better handle on the syntax of *if* clauses than on the syntax of *because* clauses: *if* clauses are higher than the matrix subject in the EARLY condition and lower than the subject in the LATE condition (the paper provides independent evidence to this effect). Hestvik 1995's account predicts that (2-c) prohibits strict readings while (2-d) allows them. Kehler 2002's account predicts that both (2-d) and (2-c) allow strict readings.

Given that the data is binary categorical, we used mixed-effects logistic regression models to analyze it and extract the generalizations. The figures below provide a graphical summary of the results. The figure on the left shows the main effects for the connectives (AND, IF and SO) and clause order. The results support the discourse theory: we found no significant difference in bias toward strict readings between the IF & EARLY and IF & LATE conditions – or between these conditions and AND (or SO).



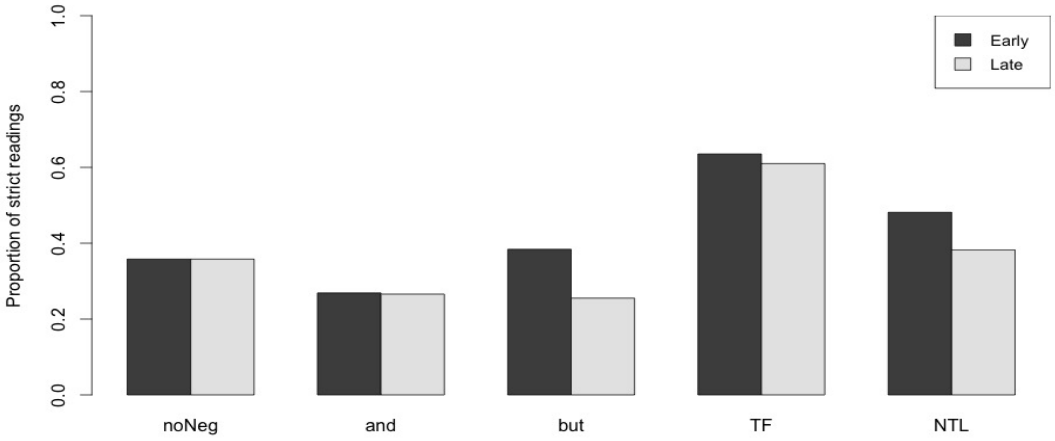
The figure on the right shows a model with main effects for clause type and the implicit-causality (IC, Rohde 2008 a.o.) type of the main verb. IC refers to an underlying causal event inherent in the meaning of a verb that manifests itself in the discourse by strongly biasing the resolution of pronouns in *because*-clauses toward either (*i*) the subject of the main clause—IC1 verbs, e.g., *John* ***scared*** *Bill because he (i.e., John)* . . . , or (*ii*) towards the object—IC2 verbs, e.g., *John* ***blamed*** *Bill because he (i.e., Bill)* . . . . IC2 verbs have a significantly higher bias for strict readings ($p < .03$) than IC1 verbs, with NON-IC verbs roughly between IC1 and IC2. This is a novel finding since there is no obvious connection between IC types and reflexive disambiguation in VPE, especially in AND constructions.

The main proposal (detailed in the paper) is that IC2 but not IC1 verbs contribute a strong causal-event presupposition as part of their meaning (John blamed Bill for/because of something). This presupposition gives an extra salience boost to the subject of the first clause, making strict readings for VPE reflexives more likely.

Experiment 2: Negation. Further support for the discourse account comes from the interaction of negation with clause type. 31 participants completed a task similar to Experiment 1, save that the conditions crossed presence of negation in the 1st or 2nd clause (EARLY, LATE) versus 4 connective types (AND, BUT, NEVERTHELESS, THEREFORE).

(3) a. John **didn't** (EARLY) blame himself, and/but/therefore/nevertheless Bill did.
b. John blamed himself, and/but/therefore/nevertheless Bill **didn't** (LATE).

The results, depicted in the figure below, show a significant depressing effect of late negation on strict readings for BUT, TF/THEREFORE, and NTL/NEVERTHELESS connectives ($p < .01$). At the same time, THEREFORE and NEVERTHELESS connectives showed a significantly higher proportion of strict readings than AND and BUT ($p < .001$). This indicates that discourse relation (*causal* vs. *parallelism*) is an important factor in determining strict/sloppy bias. Also, AND & EARLY/LATE are lower than the NONEG condition (which also involves *and*), suggesting that the *Violated Expectation* discourse relation most likely present in the negated constructions also has an effect on strict/sloppy disambiguation.



Conclusion. Discourse and lexical, but not syntactic, factors play a significant role in disambiguating strict vs. sloppy reflexives in VPE. Experiments 1 and 2 above build and improve on Kim and Runner 2009, who also looked at discourse relations and reflexives in VPE but did not control for IC verb type and did not investigate *if*-clauses or negation.

References: **[1]** Hestvik, A. (1995) Reflexives and Ellipsis, *Natural Language Semantics* 3, 211237. **[2]** Kehler, A. (2000) Coherence and resolution of ellipsis, Linguistics and Philosophy, 23:6, pp. 533-575, 2000.**[3]** Kim, C. and Runner, J. (2009) Strict identity, coherence, and parallelism in VP ellipsis. In *Proceedings of Semantics and Linguistic Theory 19*, ed. S. Ito & E. Cormany, 275287. Columbus, OH: CLC Publishing. **[4]** McKoon, G., Greene, S., & Ratclif, R. (1993). Discourse models, pronoun resolution, and the implicit causality of verbs. *Journal of Experimental Psychology*, 19, 1040-1052. **[5]** Rohde, H. 2008. *Coherence-Driven Effects in Sentence and Discourse Processing.* PhD diss., UCSD.