

Discourse structure and parallelism in VP ellipsis
Christina Kim and Jeffrey Runner, University of Rochester

Sentences containing VP ellipsis (VPE) must find a matching antecedent VP for the elided VP. This is a condition associated with recoverability: when a VP-gap is encountered, a VP representation from the preceding context must be copied into the empty VP position for the sentence to be interpreted. What kind of representation this is has long been debated—syntactic identity [1-3] has been argued for based on sentences where syntactic non-identity results in ill-formedness (1). However other cases seem to need a semantic identity condition to rule in acceptable sentences containing some form of syntactic non-identity (2) [4-5].

One approach to such observations has been to assume syntactic and semantic recovery mechanisms are available to the processor, and which is used depends on how the meanings of the antecedent and ellipsis clauses are related; for Kehler [6], establishing a Resemblance relation between two clauses requires aligning their arguments, and as such enforces syntactic identity (1), while clauses related by Cause-Effect (CE) are parallel at a level of representation that encodes meaning at a propositional or property level, so it's possible for parallelism to be satisfied despite syntactic non-identity (2). A different approach is to associate different (syntactic, semantic) mechanisms for resolving VPE based on the domain where the parallelism condition applies; for example, Frazier and Clifton (F&C) [7] propose different well-formedness conditions apply to VPE within connected syntactic structures (1-2) versus across sentences (3). Finally, parallelism might hold at a single level of representation that has the appropriate combination of properties—the types of non-identity possible would result from whether or not particular kinds of information are encoded at the relevant level of representation (see e.g. suggestions in [8]).

We present three experiments (two magnitude estimation, one 2-alternative forced choice) that argue for a parallelism condition on VPE that is violable, and applies at the level of discourse structure. Differences in the antecedent-ellipsis relations permitted within and across sentences follow from the unavailability of reflexive-binding across sentences.

Experiment 1 tests Kehler's predictions that the acceptability of syntactic mismatch will depend on the coherence relation between the antecedent and ellipsis clauses. Sentences with VPE were compared, with antecedent and elided VP either matched (1a) or mismatched (1b) in voice, and where clauses were related by Resemblance (1) or CE (2); all conditions had corresponding no-ellipsis controls. Participants gave sentences acceptability scores relative to a self-chosen standard. There was an Ellipsis-Match interaction such that mismatch was judged worse than match only when the second clause contained ellipsis ($F=103$, $p<.0001$). In addition, a 3-way Coherence-Ellipsis-Match interaction indicated the Match-Ellipsis effect was stronger when clauses were related by Resemblance than CE ($F=4$, $p<.05$). Thus while acceptability was degraded across the board by violating syntactic identity, discourse coherence modulated how strongly parallelism was enforced. This is inconsistent with the strictest interpretation of Kehler, where CE cases do not use syntactic mechanisms for ellipsis resolution, and therefore should be categorically insensitive to syntactic non-identity. These data suggest the identity condition is violable since the extent of degradation due to mismatch can be alleviated without being categorically eliminated in certain discourse contexts.

According to F&C, syntactic constraints should apply only to within-sentence VPE, since syntactic information is not available at the discourse level. **Experiment 2** tests this hypothesis, extending Experiment 1 to include both within (1-2) and cross-sentence (3) VPE. As before, Coherence interacted with Match ($F=188$, $p<.0001$): mismatch resulted in less degradation with CE than Resemblance. However there was no interaction of Coherence with EllipsisDomain ($F=.9$, $p=.3$): within-sentence acceptability patterned like cross-sentence acceptability, indicating structural mismatch had the same magnitude effect modulated in the same way by discourse coherence. This rules out a strict interpretation of F&C, but is

compatible with Kehler, since coherence relations should not differ whether they hold between two clauses or two sentences—in both cases, the relevant units are discourse units.

Given the identical effects of structural mismatch at the discourse and syntactic levels, it seems necessary for representations of sentences in discourses to encode structure at least resembling the internal syntactic structure of sentences, perhaps along the lines of Hardt and Romero's (H&R) [9] discourse trees, where nodes are connectives representing different coherence relations. We could think of the H&R-type structures as forming an additional tier alongside syntactic representations. The fact that voice mismatch affects VPE acceptability at this level suggests that these representations are sufficiently well-articulated for actives and passives to differ.

Is it possible to reduce the syntactic parallelism condition on VPE to discourse structural parallelism? **Experiment 3** addresses this by looking at the availability of strict and sloppy identity readings of VPE containing reflexives. Hestvik [10] noticed that strict readings of reflexives are possible when VPE appears in subordinate but not coordinate structures. His account links strict identity to the first subject c-commanding the self-variable only in the subordinate structure, but in fact the majority of these cases involve CE relations, while coordination typically involves Resemblance. If syntactic identity included identity of binding relations, sloppy but not strict interpretations would satisfy parallelism; the availability of strict readings might then increase when clauses are related by CE. Further, if the parallelism condition modulated by coherence is really *discourse* structural, the interaction between non-parallelism and coherence should not depend on the presence of syntactic structure, and therefore should not be limited to the sentence domain. Unlike Experiments 1-2, we found that VPE depended on whether the antecedent and elided VPs were in the same sentence or different sentences: there were more strict interpretations within vs. across sentences ($F=6$, $p<.05$). Importantly, this interacted with Coherence: the proportion of strict interpretations was greater for CE than Resemblance—in line with both Kehler's and Hestvik's accounts—but only within (not across) sentences ($F=17$, $p<.001$).

The absence of a Coherence effect at the discourse level suggests that an irreducible syntactic component to how strict interpretations are established. Following Hestvik, we take the results of Experiment 3 to indicate that strict readings of reflexives come about by true variable binding (not e.g. accidental coreference). Because the c-command relation cannot hold of elements in different syntactic structures, strict identity is ruled out—independent of the parallelism condition—when VPE spans a sentence boundary.

Based on these data, we conclude that VPE is subject to a violable parallelism condition applied at the level of discourse structure; we propose to enrich the discourse representations from H&R with topic-focus information that reflects the discourse-level difference between active and passive meanings. Further, if strict identity can be assumed to involve variable binding, syntactic identity does not need to be invoked to account for the distribution of strict and sloppy readings of reflexives in VPE within and across sentences.

- (1) a. Bill was criticized by Matt, and Dan was (criticized by Matt) too.
b. *Bill was criticized by Matt, and Dan did (criticize Bill) too.
- (2) a. Bill was criticized by Matt, so Dan was (criticized by Matt).
b. ?Bill was criticized by Matt, so Dan did (criticize Bill).
- (3) Bill was criticized by Matt. Dan did (criticize Bill) too.
- (4) a. Ann voted for herself in the election, {and, so} Jill did too.
b. Ann voted for herself in the election. (So) Jill did too.
c. Who did Jill vote for? (A) Jill (*sloppy*) (B) Ann (*strict*)

References: [1] Sag 1976. [2] Williams 1977. *LI*. [3] Arregui et al 2006. *JML*. [4] Dalrymple et al 1991. *LP*. [5] Hardt 1993. [6] Kehler 2000. *LP*. [7] Frazier & Clifton 2005. *Syntax*. [8] Tanenhaus & Carlson 1990. *LCP*. [9] Hardt & Romero 2004. *JOS*. [10] Hestvik 1995. *NLS*.