Are syntactic effects in VP ellipsis really discourse effects?

Recent work on verb phrase ellipsis (VPE) has shown sentence acceptability (1) depends on the extent of syntactic mismatch between the antecedent and the elided material [1,2,3]. However this sensitivity to syntactic mismatch can be modulated in various ways. E.g. (1b) contains a Voice mismatch, but using the connective so can improve acceptability [4,5]. The current study asks to what extent discourse relations between the antecedent and ellipsis clauses can account for patterns of acceptability at both the discourse level (3), as well as in coordinate structures (1). Three experiments on syntactic mismatches in VPE and strict and sloppy interpretations show that syntactic and discourse structure do influence each other, but only in limited cases; in other cases, different intra- and cross-sentential interpretive patterns suggest a boundary between sentence-internal syntax and discourse-level structure.

In addition to providing experimental support for a syntactic identity condition on VPE [6,7], psycholinguistic work suggests syntactic effects may be conditioned on extra-syntactic factors such as discourse coherence [3,5], presupposition-triggered constraints [8], the assertive content of sentences in discourse [9], or information structure [2]. Experiment 1 asks whether syntactic effects interact with discourse coherence, by comparing the effect of Voice mismatch on VPE acceptability where antecedent and ellipsis were related by Resemblance (‘and’) or Cause-Effect (‘so’), in a magnitude estimation experiment [10]. According to Kehler [4], Resemblance depends on alignment of syntactic arguments and should be sensitive to mismatch; in contrast, CE relates sentences at the propositional level and should be insensitive to mismatch. Ellipsis-Mismatch cases (1b) were compared to both Matched (1a) and NoEllipsis controls (2). Results: There was an Ellipsis-Mismatch interaction: Mismatch was judged worse than Match with Ellipsis (F(1,23)=103.p<.0001). There was also a 3-way DiscourseRelation-Ellipsis-Mismatch interaction: the Mismatch-Ellipsis effect was stronger when clauses were related by Resemblance vs. CE (F(1,23)=4,p<.05); see (4). Thus while syntactic mismatch effects persist across coherence relations, discourse structure modulates the strength of these syntactic effects.

Experiment 2 (magnitude estimation) compared the effect of mismatch on VPE within (1) and across (2) sentences. Frazier and Clifton [9] suggest different constraints apply to syntactic domains (within a sentence) and discourse structure (across sentences); if so, cross-sentential VPE should be insensitive to syntactic mismatch. This prediction is not borne out—the same Mismatch-Ellipsis interaction was found as in Exp1 (F(1,23)=90.p<.0001), with no difference between the cross-sentential and coordinated VPE; see (5). The mismatch effect across sentences could really be a discourse effect disguised as a syntactic one (e.g. there is a discourse-level parallelism condition analogous to the intrasentential parallelism condition), but this result shows that the discourse representation must be at least structurally rich enough to encode the difference between passive and active syntax.

Is it always the case that discourse structure and syntactic structure interact with each other as suggested by Experiments 1-2? Experiment 3 shows that a different ellipsis phenomenon—strict vs. sloppy identity—patterns differently from Voice mismatch. The Coherence proposal would predict strict identity to be ruled out for Resemblance (assuming syntactic identity includes variable-binding relations), while both strict and sloppy are possible for CE. But Resemblance and CE also differ syntactically: while Resemblance structures are conjoined TPs, CE involves a reason or result clause attached at the VP level. After reading a sentence like (6a) or (6b), participants answered a 2-choice question (6c); their answer indicated how they had interpreted the sentence. There were main effects of EllipsisType (Intra-/Cross-sentence) (F(1,17)=5.7,p<.05) and DiscourseRelation (Resemblance/CE) (F(1,17)=4.5,p<.05), and an EllipsisType-DiscourseRelation interaction: proportion of strict interpretations was greater for CE than Resemblance, in Intra- but not Cross-sentence ellipsis (F(1,17)=16.9,p<.001); see (7). The asymmetry in the Intrasentential data is consistent with either a difference in coherence relation or syntactic structure. But the lack of asymmetry in Cross-sentence conditions suggests the Coordination effect is not due to Coherence. If we permit a non-local variable-binding operation as in [11], the change in c-command structure causes the increase the likelihood of the matrix subject binding the variable in the second clause.

Taken together, our experiments suggest that constraints on VPE cannot be uniformly syntactic or discourse structural, but instead vary depending on the syntactic phenomena examined.
(1) a. Kurt blamed Frank for the terrible performance, {and, so} Pat did (blame Frank) too.
   b. Kurt blamed Frank for the terrible performance, {and, so} Pat was (blamed by Kurt) too.

(2) Kurt blamed Frank for the terrible performance, {and, so} Pat blamed him too.

(3) a. Kurt blamed Frank for the terrible performance. Pat did (blame Frank) too.
   b. Kurt blamed Frank for the terrible performance. So Pat was (blamed by Kurt) too.

(4) **Mean log acceptability estimates (standard deviation)**

<table>
<thead>
<tr>
<th></th>
<th>Ellipsis Match</th>
<th>Ellipsis Mismatch</th>
<th>No Ellipsis Match</th>
<th>No Ellipsis Mismatch</th>
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</thead>
<tbody>
<tr>
<td><strong>Resemblance</strong></td>
<td>-.26 (.35)</td>
<td>-.96 (.49)</td>
<td>-.29 (.36)</td>
<td>-.29 (.35)</td>
</tr>
<tr>
<td><strong>Cause-Effect</strong></td>
<td>-.28 (.40)</td>
<td>-.71 (.55)</td>
<td>-.13 (.28)</td>
<td>-.11 (.28)</td>
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(5) **Mean log acceptability estimates (standard deviation)**

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<thead>
<tr>
<th></th>
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<th>Ellipsis Mismatch</th>
<th>No Ellipsis Match</th>
<th>No Ellipsis Mismatch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coordination</strong></td>
<td>-.26 (.48)</td>
<td>-1.31 (1.74)</td>
<td>-.34 (.37)</td>
<td>-.32 (.38)</td>
</tr>
<tr>
<td><strong>Cross-sentence</strong></td>
<td>-.26 (.48)</td>
<td>-1.12 (1.34)</td>
<td>-.25 (.32)</td>
<td>-.34 (.48)</td>
</tr>
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(6) a. Julia voted for herself in the election, and Amy did too.
b. Julia voted for herself in the election, so Amy did too.
c. Who did Amy vote for?
   (A) Julia
e. Amy

(7) **Mean proportion Strict Identity responses (Ellipsis conditions only)**

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<thead>
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<th>Cross-Sentential</th>
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<tbody>
<tr>
<td><strong>Resemblance</strong></td>
<td>.37</td>
<td>.44</td>
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<tr>
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<td>.69</td>
<td>.35</td>
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**References**