Verb Phrase Ellipsis is discourse reference: novel evidence from dialogue

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Plan for this talk

(I) Verb Phrase Ellipsis (VPE) and Identity
(II) Experiment: VPE meanings beyond Identity
(III) A discourse reference model of VPE

Introduction

1.1 Identity theories of Verb Phrase Ellipsis (VPE)

(1) a. After the exam, I wasn’t sure if I had passed it.
   As it turns out, I did. \(\exists[I \text{ passed it.}]\)
   *\([I \text{ failed it.}]\)
   *\([\ldots]\)

   b. After the exam, I wasn’t sure if I had failed it.
   As it turns out, I did. \(\exists[I \text{ failed it.}]\)
   *\([I \text{ passed it.}]\)
   *\([\ldots]\)

Identity theories of Verb Phrase Ellipsis (VPE)

<table>
<thead>
<tr>
<th>Syntactic Identity theories</th>
<th>Semantic Identity theories</th>
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<tbody>
<tr>
<td>require that elided material be syntactically identical to the antecedent.</td>
<td>require that the meaning of the elided material be semantically identical to the meaning of the antecedent.</td>
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Both model VPE dependency within the linguistic context.

1.2 Challenges for Identity theories of VPE

(2) a. Lexical “mismatches:” John didn’t see anyone, but Mary might. [see someone]²

   b. “Split antecedents:” John wanted to go to Bolivia and Mary \(\emptyset\) to Peru, but because it’s expensive, neither of them can. [go to Bolivia or Peru, respectively]³

   c. Exophora: I will, if you will. [jump]⁴

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¹ Thanks to Roger Levy as well as members of Semantics Babble and the Experimental Syntax Lab at UCSD for helpful comments and discussion.

² Adapted from Merchant (2013a)

³ Adapted from Webber (1978)

I.3 **Strategy I: the “representational” approach**

(3) a. John didn’t see anyone, but Mary did. [see someone]
b. John saw someone, but Mary didn’t. [see anyone]

(4) a. Need to show that: \[ \text{VP see anyone} = \text{VP see someone} \]
b. Analysis (Merchant, 2013a, ex. 3):\(^6\)

```
TP
Mary
\\Sigma_P
\Sigma[Pol:Pos]
\\Sigma_P
\nu
< VP_E >
see
DP
\\Sigma_P
\\Sigma[Pol:Pos]
\vP
```

\(^5\) Merchant (2013a, ex. 1 and 2)

\(^6\) Merchant (2013b) applies a similar strategy to Voice mismatches; Elbourne (2005) proposes a “representational” account of split-antecedent cases like (2-b).

I.4 **Strategy II: inferring antecedents**

Thoms (2015) applies Katzir’s (2007) algorithm\(^7\) to ellipsis:

(5) **Accommodating**\(^8\) alternative antecedents for ellipsis\(^9\)

a. A set of additional antecedents, Ad(A), may be accommodated on the basis of the original (overt) antecedent A.

b. The members of Ad(A) are alternatives derived from A by

(i) deletion
(ii) contraction
(iii) substitution

c. **Semantic constraint:** All members of Ad(A) must be semantically identical to A

(6) a. John didn’t see anyone, but Mary did. [see someone]
b. Non-identical: \( [vP_A \text{ see anyone} ] \neq [vP_E \text{ see someone} ] \)
c. But “accommodatable”: \( [vP_E \text{ see someone} ] \in \text{Ad}([vP_A \text{ see anyone} ]) \)

**Interim summary**

1. **Identity** theories of VPE capture strong dependency between ellipsis clause and antecedent
2. Strategies for dealing with cases of (apparent) non-identity:
   (a) Reanalyzing how “mismatching” elements are represented
   (b) Proposing mechanisms for inferring suitable antecedent

\(^7\) Katzir (2007) applies this algorithm to the problem of generating alternatives for computing implicatures.

\(^8\) **Antecedent Accommodation** \neq **Discourse Accommodation** !!

\(^9\) My (5) is adapted from Thoms’ (51).
Experiment: VPE meanings beyond the antecedent

2.1 Materials

(7) Spectator: Can I please see that card trick one more time?
   a. Magician: I’m sorry, you can’t. [see it again] (No Change)
   b. Magician: I’m sorry, I can’t. [show it to you] (Change)

2.2 Acceptability judgment task

Figure 1: Screenshot (A) and results (B) from the acceptability judgment task. Raw scores were transformed into by-subject z-scores. Dashed lines indicate upper- and lower-bound elliptical fillers.

2.3 Paraphrase task

Figure 2: Screenshot of the paraphrase task. Paraphrase verbs were analyzed in terms of (i) % antecedent verb (Fig. 3A; here: 0%), and (ii) entropy (Fig. 3B; here: 1.2 bits).
2.4 Results from the paraphrase task

![Graph A](image1.png)

![Graph B](image2.png)

Summary of results

1. Change items yielded few antecedent verbs in paraphrases
2. Change items triggered higher entropy in verb choice
3. Change items were relatively acceptable

2.5 A qualitative look at the data

(8) Spectator: Can I please see that card trick one more time?

Magician: I’m sorry, I can’t. \( \begin{cases} \text{“show you the card trick again” (≈ 50\%)} \\ \text{“do the card trick again” (≈ 50\%)} \end{cases} \)

(9) A: Before Trump got elected, people demanded to see his tax returns, but he refused. B: And now that he’s president, I don’t think he ever will. \( \begin{cases} \text{“release his tax returns” (≈ 63\%)} \\ \text{“show his tax returns” (≈ 27\%)} \\ \text{“provide his tax returns” (≈ 9\%)} \end{cases} \)
Implications for theories of VPE

3.1 Strategy I: applying the “representational” strategy

Recall Merchant’s analysis of some/any:

\[ \text{some} = \text{any} = \text{Pol}_{} \text{ prior to post-syntactic lexicalization.} \]

(10) Need to show that:

\[ [VP_{A} \text{ see } \ldots] = [VP_{E} \text{ show } \ldots] \]
\[ = [VP_{E} \text{ do } \ldots] \]
\[ = [VP_{E} \text{ release } \ldots] \]
\[ = [VP_{E} \text{ provide } \ldots] \]

Problem: Whatever representational strategy gets this done, it will inevitably generate lots of unattested identities by transitivity, for example: \[ [VP \text{ do } \ldots] = [VP \text{ provide } \ldots] \].

3.2 Strategy II: Inferring antecedents?

Can we infer the antecedent we need? Sure, but:

1. Replacing verbal heads will violate semantic identity\(^{10}\), so the Thoms (2015) algorithm won’t work.
2. Even if we did allow substituting show, do, release, etc. for see: how do we prevent overgeneration?
3. Constraining linguistic-inference mechanism adequately will require pragmatic reasoning.

3.3 VPE as discourse reference

Sketch of a discourse-reference theory of VPE

1. VPE is a discourse-referential device that gets its meaning from the discourse model
2. Most canonically, VPE referents are introduced by the linguistic antecedent
3. Linguistic and non-linguistic contextual information jointly determines what referents can and cannot be accommodated

Properties that VPE shares with other discourse-referential devices:

(11) a. Exophora: I will, if you will.
   b. “Split antecedents”: I can walk, and I can chew gum. Bill can, too, but not at the same time. \(^{11}\)
   c. Cataphora: If you really want to, we can go to the mall today. \(^{12}\)
   d. Non-local antecedents: The thought came back, the one nagging at him these past four days. He tried to stifle it. But the words were forming. He knew he couldn’t. \(^{13}\)

\(^{10}\) Recall semantic identity condition in (5-c): every member of the set of accommodated antecedents must be semantically equivalent to the overt antecedent.

\(^{11}\) adapted from Webber (1978)

\(^{12}\) a.k.a. “backwards” anaphora

\(^{13}\) Hardt (1990)
An outstanding puzzle: pass/fail vs. see/show

After the test I wasn’t sure if I had passed or not. ≈ (1-a)

As it turns out,

\[
\begin{cases}
\text{I did} & \text{[pass]*fail]}
\text{I didn’t} & \text{[pass]*fail}
\text{it’s less likely than I thought.} & \text{[pass]*fail}
\end{cases}
\]

A reviewer points out that [fail] does become available for VPE when the antecedent is changed to passed or failed.

That is precisely the point: it seems impossible to recover the meaning unless it is introduced explicitly.

Conclusion

1. VPE meanings *can* be inferred beyond the linguistic antecedent.
2. Those inferences may operate at the discourse level and result from Discourse Accommodation.
3. Having documented that VPE meanings *can* be inferred, the next challenge is to explain when such inferences are possible and when they aren’t, and why (not).

References


Experimental Materials

A.1 Experimental items

1. Spectator: Can I please see that card trick one more time? Magician: I’m sorry, I (you) can’t.
2. Driver: Please officer, I mustn’t get another speeding ticket. Officer: Relax, I wasn’t (you weren’t) going to.
3. Fan: Can I get an autograph? Star: I wish you could, but my agent won’t let me.
4. Guest: Can I get another drink on the house? Waiter: I’ll check with my boss, but I don’t think I’m (you’re) supposed to.
5. Father: Will your mother and I get a post card while you’re abroad? Son: I promise I (you) will, but probably not during the first 2 weeks, OK?
6. Fan A: I really want to hear at least one Justin Bieber song before the set is over. Fan B: Given the kind of music the DJ seems to be into tonight, I don’t think he (you) will.

7. Wife: I want to know what the classified meeting was about. Please? Husband: You know I’m (you’re) not supposed to.

8. A: Can I borrow your textbook over the weekend? B: I (you) can’t, sorry: I’ll need it myself.

9. Wife: That’s great news. I just wish I had gotten it from you directly, rather than your secretary. Husband: I know, and I (you) would have, but I was in meetings all morning.

10. A: Before Trump got elected, people demanded to see his tax returns, but he refused. B: And now that he’s president, I don’t think he ever will.

A.2 Filler items

**Upper-bound elliptical:**

1. Reader A: For what it’s worth, that decision wasn’t made by the president. Reader B: Are you sure? I heard it was.

2. Police chief: The thief was arrested. Reporter: And his brother was as well, right?

3. Boyfriend: Can you see the remote control anywhere? Girlfriend: I can’t, sorry.

4. Mother: I thought your brother was going to cook dinner tonight. Daughter: Me too, but he refuses to.

5. Host: Others brought food to the party. Guest: I thought we didn’t have to.

6. Twin A: Here, I got you flowers. I hope you like them. Twin B: You shouldn’t have!

7. Accountant: You know that housing prices will likely increase in the future, right? CEO: Of course I do.

8. Voter: I understand she was angry, but she shouldn’t have insulted the reporter. Congressman: Yes, but she did, and now we have to deal with the consequences.

9. Journalist: The flora and fauna of West Africa has fascinated travelers and explorers for centuries. Tourist: It really has, and for good reason, it’s beautiful.

10. Reporter: Are you going to the party tonight? Agent: I am; wouldn’t miss it for the world.

**Upper-bound non-elliptical:**

1. Teacher: Sometimes John has a hard time keeping up in class. Parent: Is it because he reads too slowly?

2. Audience member A: I can’t hear what he’s saying. Audience member B: I don’t care.

3. A: You didn’t answer my question. B: I told you: I don’t know.

4. Panelist: Why didn’t you stop him when his time was up? Moderator: I tried, but he wouldn’t listen to me.

5. Lawyer: You said your firm was going to hire someone? Client: Yes, but Mr. Jones just isn’t qualified enough.

6. Daughter: I’m hungry! Father: I know honey, I’m working on it.

7. A: I told you a million times, I don’t want to hear your complaints. B: I don’t care, I’m going to tell you anyways.

8. Secretary: The coach knows that James can play well under pressure. Associate: Yes, he’s his favorite.

10. Son: Wasn’t Dad going to fix the fridge? Mother: Yes, but he says he doesn’t feel like it today.

**Lower-bound non-elliptical:**
1. Pedestrian: You almost ran me over! Truck driver: If it hasn’t so dark, I would have saw you earlier.
2. Employee: I’m telling you, I didn’t get your email. Boss: That’s impossible, whose did you get email?
3. Restaurant guest A: Please tell me who it was! Restaurant guest B: I can’t tell you whose I took picture, even if you knew her.
4. A: The woman Wallace met last week said she hates that. B: What did he meet a woman that hates?
5. Visitor: What’s this? Guide: This is the painting that the journalist claimed he knows who stole.

**B Statistical analyses**

All results are based on linear or logistic mixed-effects models with maximal random-effect structure (Barr et al., 2013).

1. There was strong tendency for *change* items like (7-a) to deviate in their interpretation from the preceding VP: only 5% of paraphrases employed the antecedent verb, compared to 74% for their *no-change* counterparts ($\beta = 4.47$, $p < .001$; see Fig. 3A).
2. Despite this deviation, *change* items were much more acceptable than lower-bound elliptical fillers ($\beta = 1.39$, $p < 0.001$), and only slightly less acceptable than their *no-change* counterparts ($\beta = -0.22$, $p = 0.011$; cf. Fig. 1B).
3. *Change* items were also associated with significantly more uncertainty (entropy) in paraphrase verb choice ($t = 2.14$, $p = 0.048$).
4. Entropy in verb choice:

$$H(V) = - \sum_{v \in V} P(v) \log P(v)$$