Verb Phrase Ellipsis as Discourse Reference

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Introduction

> Can you <u>see the remote control</u> anywhere?

> I can't, sorry!

2 broad questions

→ **Acceptability:** under what conditions is VPE grammatical?
→ **Meaning:** how does it obtain its meaning?

Identity analysis

I can't [**VP see the remote**].
→ **Acceptable** iff elided VP is identical to antecedent VP
→ **Meaning** derived from elided VP

Referential analysis

I can't **<PRO>**.
→ **Acceptable** when referent available or "accommodatable"
→ **Meaning** through reference

(Merchant, 2013; Kehler, 2015; Liptak, 2015; among many others)

Aggregate Results

Acceptability

Paraphrase Task

(Dashed lines indicate elliptical fillers.)

CHANGE items:
1. few antecedent verbs: VPE meaning did deviate from antecedent!
2. higher entropy in verb choice
3. relatively acceptable (but see control experiment, testing non-elliptical variants)

Control experiment

(Purpose: test non-elliptical CHANGE items)

The role of world knowledge

(2) **Spectator:** Can I please <u>see that card trick one more time</u>?
Magician: I'm sorry, I can't **<PRO>**.
>> 50% [**show** you the card trick again]
>> 50% [**do** the card trick again]

(3) **A:** Before Trump got elected, people demanded to <u>see his tax returns</u>, but he refused.
B: And now that he's president, I don't think he ever will **<PRO>**.
>> 63% [**release** his tax returns]
>> 27% [**show** his tax returns]
>> 9% [**provide** his tax returns]

Discussion

- <u>Identity analysis:</u> CHANGE items should be ungrammatical
- <u>Referential analysis:</u> CHANGE items require "bridging inferences" (Clark, 1975)
- <u>Extended ID analysis:</u> inferring syntax
  - Recycling (Arregui et al. 2006; Frazier, 2013)
  - Antecedent Accommodation (Thoms, 2015; Van Craenenbroek, 2013)
- <u>However:</u>
  - inferring syntax requires discourse-level inferences
  - VPE does *not* resist pragmatic control
- Bridging inferences and accommodation remain poorly understood – work to be done!

Bridging inferences

(4) He arrived to <u>the court house</u> and climbed **the stairs**.
(5) I got into <u>the cab</u> and told **him** where to go.

We have...

- Demonstrated that VPE meanings *can* be inferred
- Developed experimental task for tackling meaning question

References

Arregui, A., Clifton, C., Frazier, L., and Moulton, K (2006). Processing elided verb phrases with flawed antecedents: The recycling hypothesis. Journal of Memory and Language, 55(2):232–246.
Clark, H. (1975). Bridging. In Proceedings of the 1975 workshop on Theoretical issues in natural language processing, Stroudsburg, PA, USA. Association for Computational Linguistics.
Culicover, P. and Jackendoff, R. (2005). Simpler syntax.
Frazier, L. (2013). A recycling approach to processing ellipsis. In Cheng, L. L.-S. and Corver, N., editors, Diagnosing Syntax.
Kehler, A. (2015). Ellipsis and Discourse.
Merchant, J. (2013). Ellipsis: A survey of analytical approaches. In The Oxford handbook of ellipsis, pages 1–43. Oxford University Press, Oxford.
Liptak, A. (2015). Identity in ellipsis: An introduction. Lingua, 166(October 2015):155–171.
Thoms, G. (2015). Syntactic identity, parallelism and accommodated antecedents. Lingua, 166(Pt. B):172–198.
Van Craenenbroeck, J. (2013). Ellipsis, identity, and accommodation.
Webber, B. L. (1978). A formal approach to discourse anaphora. PhD thesis.

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Experiment

Goal: find acceptable VPE where meaning deviates from antecedent

Antecedent VP

(1) **Spectator:** Can I please see that card trick one more time?
a. **Magician:** I'm sorry, you can't.   (NO-CHANGE variant)
b. **Magician:** I'm sorry, I can't.   (CHANGE variant)

↳ Experimental Manipulation

Acceptability Judgment Task

Spectator: Can I see that card trick one more time?
Magician: **I'm sorry, I can't.**

(Consider what the second speaker says. Is this an acceptable English sentence/question in this context?)

(unacceptable) 1 2 3 4 5 *(fully acceptable)*

Use number keys or click boxes to answer.

Paraphrase Task

A: Can I borrow your textbook over the weekend?
B: **I can't, sorry: I'll need it myself.**

(What exactly does the second speaker mean?)

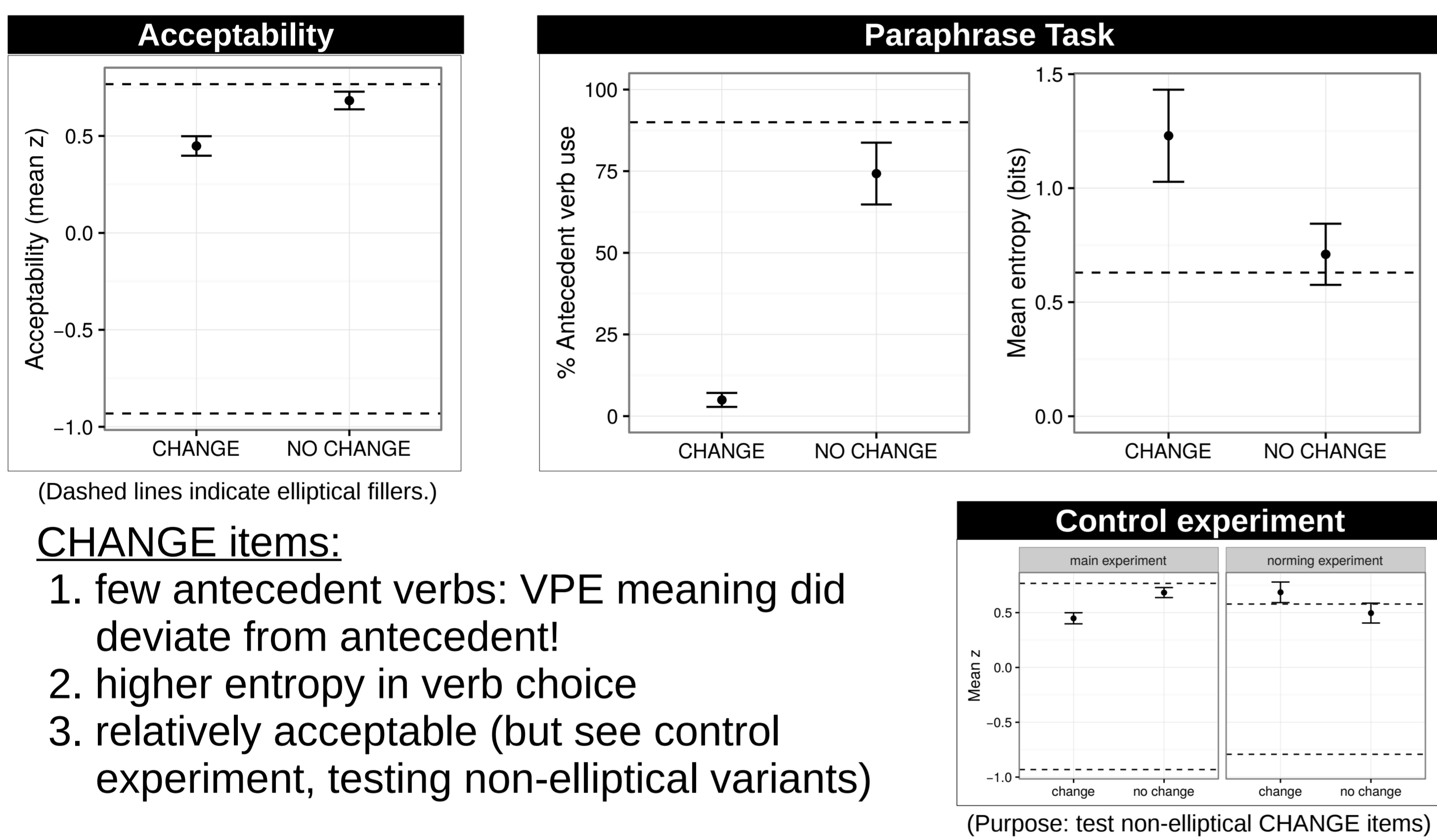B: **"I can't** lend it to you , **sorry: I'll need it myself."**

→ Click here to continue

Methods
- 20 participants (Mturk), 10 items
- 40 filler items
  - 10 upper-bound elliptical fillers
  - 10 lower-bound elliptical fillers
  - 10 upper-bound non-elliptical fillers
  - 10 lower-bound non-elliptical fillers
- Block design:
  1. Acceptability judgment task;
  2. Paraphrase task;

Sample paraphrases

Elliptical filler item
see it anywhere
see it
see it
see it
find it
see it
see it anywhere
see the remote control anywhere
see it
see the remote control anywhere
see the remote...

% antecedent verb: 95%
Entropy in verb choice: 0.19 bits

NO-CHANGE item
borrow the textbook
borrow it
borrow my textbook
borrow my textbook over the weekend
borrow it
borrow it
borrow my textbook
borrow my textbook

% antecedent verb: 100%
Entropy in verb choice: 0 bits

CHANGE item
lend you the book
let your borrow the textbook
lend it to you
lend it
lend it to you
let you borrow it
lend you the book
loan you it
lend you my textbook over the weekend
lend you my textbook.

% antecedent verb: 0%
Entropy in verb choice: 1.2 bits

VPE patterns with nominal reference

	Nominal Reference	**VPE**
Non-local antecedents	<u>Jon</u> collapsed into the arm chair. This had been a particularly long day at work. Not knowing what to do now that it was over, **he** turned on the TV.	The thought came back, the one nagging at him these past four days. He tried to <u>stifle it</u>. But the words were forming. He knew he couldn't **<PRO>**. (Hardt, 1990)
Cataphora	If **she** calls you, <u>Hailey</u> is probably bored.	If you really want to **<PRO>**, we can <u>go to the mall</u>. (Kehler, 2015)
Exophora	Did you hear **that**?!	Don't **<PRO>**! (Miller & Pullum, 2013)
Split antecedents	<u>Hailey</u> met up with <u>Jordan</u> so **they** could have lunch together.	Bruce can <u>walk</u> and he can <u>chew gum</u>. Sarah can **<PRO>**, too, but not at the same time. (adapted from Webber, 1978)

Partee's marbles

(6) a. I dropped 10 marbles and found all but <u>one of them</u>. **It** might be under the sofa.
b. I dropped 10 marbles and found 9 of them. **# It** might be under the sofa.

(due to Barbara Partee)

The pants/scissors effect

(7) a. Have you seen my grey <u>pants</u>? I can't find **them**/***it**.
b. Can you pass me the <u>scissors</u>? – Here **they** are (***it** is).

(Jackendoff & Culicover, 2005)

An outstanding puzzle & future research

(8) After the test I wasn't sure if I had <u>passed</u> or not? As it turns out…
a. …I did **<PRO>**.   [pass][*fail]
b. …I didn't **<PRO>**.   [pass][*fail]
c. …**it**'s less likely than I thought. [pass][*fail]

Question: why is it OK to infer [show] from *see*, but not [fail] from *pass*?

<u>Next steps:</u>
- replicate effect with larger item set
- compare explicitly to bridging inferences in nominal domain
- extend referential analysis to other "mismatches"