Domain Narrowing: Interpreting *Only* in Context

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Introduction

The interpretation of sentences with focus-sensitive elements like *only* depends on context to restrict the domain of relevant alternatives for evaluating the focused expression [1]. For instance, in the following pair of sentences, the speaker can be construed as meaning she only owns a bike *of the set of things relevant to the current situation* (excluding the implausible reading that a bike is the only thing in the universe that she owns).

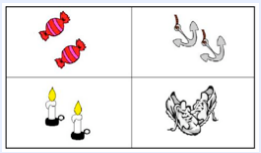
Jill has a car and a bike, plus she lives near a bus line.
I only have a bike.

But what kinds of contextually available information do listeners actually use to restrict interpretive domains? Two visual world eyetracking experiments show that listeners use both preceding linguistic context (Experiment 1) and implicit conceptual knowledge (Experiment 2).

Experiment 1

Do comprehenders interpret 'only' with respect to the items mentioned in the preceding linguistic context?

On each trial, participants heard a *context sentence* mentioning two items followed by a *target sentence* mentioning one item; the target item was either discourse-new, or overlapped with a previously mentioned item. The target sentence also varied in the presence or absence of *only*.



Context sentence
Mark has some candy and some pencils

Target sentence
Mention-NoOnly: Jane has some candy.
Mention-Only: Jane only has some candy.
NoMention-NoOnly: Jane has some anchors.
NoMention-Only: Jane only has some anchors.

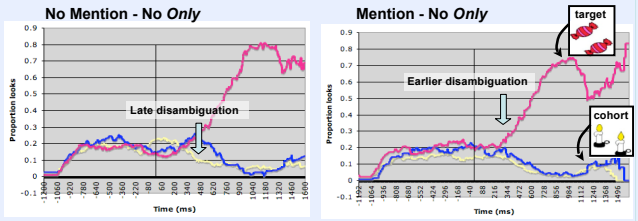
A four-picture display appeared concurrently with the target sentence. Participants were instructed to click on the items Jane had, and their eye movements were tracked as they listened to the sentence and performed the task.

In experimental trials, two of the four pictures were members of the same phonological cohort (here, *candy* and *candles*). In the absence of any biasing cues, phonological overlap leads to late disambiguation between target and competitor. Early disambiguation in favor of the target indicates the presence of some additional cue

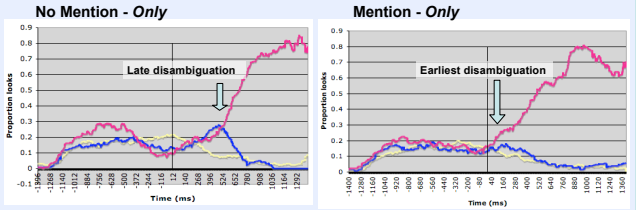
Predictions for Experiment 1:
- Late looks to target item--no bias due to Mention or *Only*
- Early looks to target item--bias toward target due to Mention and/or *Only*

Experiment 1 results

There is a main effect of Mention ($F(1,21)=15.2$, $p<0.001$) 200-500 ms post target word onset (vertical line), which is strengthened by the presence of *only* (Mention x Only interaction, $F(1,21)=4.0$, $p<0.05$)



In the No *Only* conditions, looks to the target item relative to the cohort competitor rise earlier (375 ms) in the Mention condition compared to the No Mention condition (450 ms).



When the target sentence contained *Only*, the advantage for the target item due to Mention increases: looks to the target start increasing relative to the competitor even earlier (200 ms) in the Mention condition compared to the No Mention condition (600 ms).

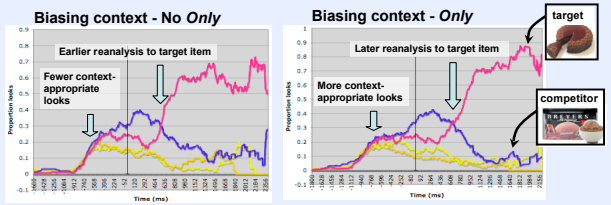
Experiment 2

Experiment 1 showed that listeners tend to interpret *only* with respect to recently mentioned items--that is, they use the discourse context to restrict their interpretive options. Experiment 2 replaces the Mention factor from Experiment 1 with a Context Type manipulaion, to ask whether providing a biasing context (here, 'bakesale') will have a similar restricting effect on the interpretation of *only*.

Context sentence
Biasing: Bill is at the grocery store. He has to buy some things for the bakesale.
Unbiasing: Bill is getting some things at the grocery store.
Target sentence
No *Only*: He's getting some chocolate cake.
Only: He's only getting some chocolate cake.

Experiment 2 results

Context effect: In Biasing Context conditions, looks to context-appropriate items rise relative to looks to distractors earlier with *Only* compared to No *Only*, 700-600 ms pre target word onset ($t=2.1$, $p<0.05$). As in Experiment 1, *only* prefers to be interpreted with respect to preceding linguistic material.



Contextual information about a specific scenario (e.g. bakesale) resulted in a referential garden-path. Recovery was slower when the presence of *only* required committing to a referential domain that could serve as an alternative set (600-800 ms post target onset: target-competitor difference greater for No *Only* vs. *Only*, $t=2.3$, $p<.05$), suggesting that reanalyzing contextually-sourced domains is most costly when those domains are required for interpretation.

Experiment 3 (in progress)

Problems with Experiment 2:
- Experiment 2 doesn't have the same coherence relation as Experiment 1 (Cause-Effect or Narrative vs. Resemblance/Parallelism; [2]). Effect of mention and/or the dependence of only on mention may be strongest in the case of Resemblance/Parallelism.
- Visual complexity asymmetries: quadrants had either 1 or 2 referents.

Experiment 3: Biasing/Unbiasing Context x Mention x Only

Embed Experiment 1 (Mention x Only) under a Context Type manipulation

Context sentence 1 (Unbiasing/Biasing):
Abby and Jill are at the mall/shoe store.
Context sentence 2 (NoMention/Mention):
Abby is getting some boots and some sunglasses/some boots and some sandals.
Target sentence (NoOnly/Only):
Jill is (only) getting some boots.

Conclusions

- In Experiment 1, mentioned items restricted the alternatives of a subsequent focused element in the scope of *only*.
- Experiment 2 finds a similar preference for *only* to be interpreted with respect to the preceding discourse--when biasing contextual information is provided in the context of *only*, listeners looks at context-relevant items earlier than in sentences without *only*.
- Experiment 3 should show the same Mention-Only interaction as Experiment 1, with possible earlier target item disambiguation due to contextual bias.

References
[1] Rooth 1992. A Theory of Focus Interpretation. *NLS* 1:1, 75-116.
[2] Kehler 2002. *Coherence, Reference and the Theory of Grammar*. CSLI.