The role of structural cues and recency in processing a pre-verbal anaphor in Turkish

Özge Bakay, Faruk Akkuş & Brian Dillon

University of Massachusetts Amherst

Our Study

Principle A: Anaphors such as *each other* in (1) must be c-commanded by their clause-mate antecedents [1].

(1) Linguists$_i$ heard that the neighbors'$_j$ kids$_k$ teased *each other*$_{*i/*j/k}$.

Question: Is the online retrieval of an antecedent guided by c-command?

Answer: Yes, but with some interference from structurally inaccessible, recent distractors.

Background

There is a lot of evidence that comprehenders rapidly activate the structurally accessible target, with some interference from inaccessible distractors [2-4,6,7, cf.8], especially when targets are less recent in memory [9,cf.10].

As in (2), the experimental designs typically

- investigate post-verbal anaphors [2-4, cf.5] and/or
- distinguish target and distractor using locality (within or outside a clause) rather than c-command [2-10, cf.11].

(2) The bodybuilder$_i$ who worked with the trainer$_j$ injured **himself**$_{i/*j}$.

→ **The present study** specifically tests c-command with a pre-verbal anaphor in Turkish.

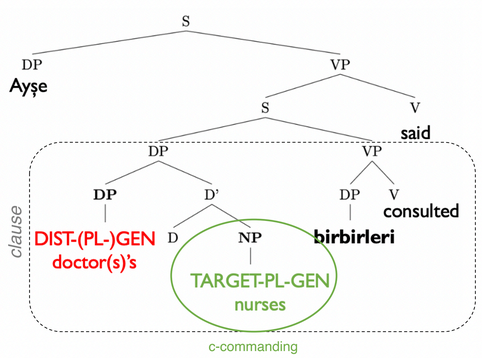
Stimuli

2x2 design with a c-commanding Target & a non-c-commanding Distractor that are

- in the same clause & identical in terms of morphological case marking

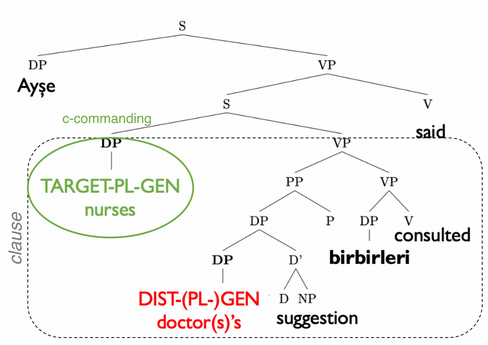
-Int, RecentTarget	Ayşe [Dist-SG-GEN Adj Target-PL-GEN Adv *birbirleri* Verb] Verb
+Int, RecentTarget	Ayşe [Dist-PL-GEN Adj Target-PL-GEN Adv *birbirleri* Verb] Verb
-Int, DistantTarget	Ayşe [Target-PL-GEN Dist-SG-GEN N Adv *birbirleri* Verb] Verb
+Int, DistantTarget	Ayşe [Target-PL-GEN Dist-PL-GEN N Adv *birbirleri* Verb] Verb

RecentTarget



Ayşe said that doctor(s)'s$_i$ (young) nurses$_k$ (often) consulted each other$_{*i/k}$.

DistantTarget



Ayşe said that nurses$_k$ (often) consulted each other$_{*i/k}$ with doctor(s)'s$_i$ suggestion.

Offline Antecedent Selection Task

What is the interpretation of *birbirleri* in offline measures?

Exp.1 (N = 32): choosing the antecedent(s) of *birbirleri*

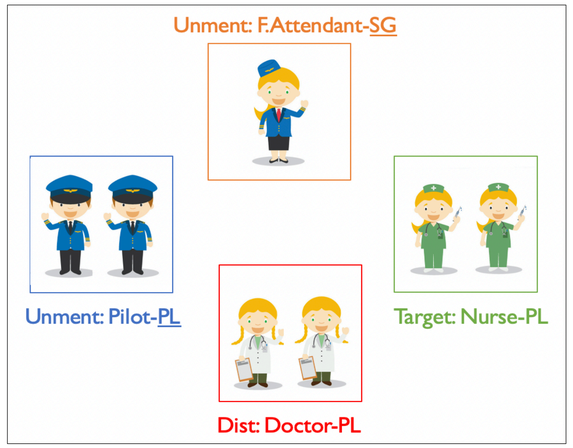
- c-commanding antecedents chosen above 97% of the time,
- more choices of Distractor in +INT than in -INT (p = .01) (see [6] for similar findings)

Visual World Experiment

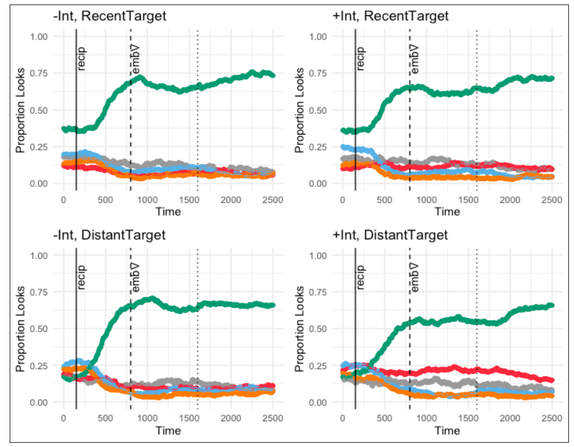
Do listeners use c-command as a cue to the target antecedents in real-time?

Exp.2 (N = 68): listening to statements with the local reciprocal *birbirleri*

Task: clicking on the antecedent that is referred to by *birbirleri*



Example display



Saccade Analysis

How often do listeners launch a saccade towards the distractor [12]?

- *embedded verb window: overall* more saccades towards Distractor in +INT than in -INT (p < .05)

Fixation Analysis

ln(P(Target) / (P(UnmPL)) - ln(P(Distractor) / (P(Unm))

- overall, more looks to Target than Distractor (p's < .001)
- *embedded verb window:* in DISTTARGET, more looks to Distractor in +INT than -INT (p < .01), but no such difference in RECTARGET (p = .30)

Conclusion

- *C-command* as a relational cue guides online antecedent retrieval, but distractors may interfere, especially in later stages [10], suggesting that
  - both structural and non-structural cues may be used, though with a privileged access for structurally-defined targets [3,5-6,8, cf.2]
- Interference may be reduced when the target is more *recent in memory*, which may be attributed to decreased activations of distant distractors [13].

References: [1] Chomsky, 1981 [2] Runner & Head, 2014 [3] Parker & Phillips, 2017 [4] Patil et al., 2016 [5] Kush & Phillips, 2014 [6] Han et al., 2021 [7] Clackson & Heyer, 2014 [8] Dillon et al., 2013 [9] Cunnings & Felser, 2013 [10] Sturt, 2003 [11] Badecker & Straub, 2002 [12] Kingston et al., 2016 [13] Lewis & Vasishth, 2005 **Acknowledgments:** Thanks to the BUMASA reading group and UMass Psycholinguistics workshop for helpful discussion. Research supported by NSF-BCS 1941485 awarded to BD.