

# Grammaticalized resumption in sentence processing: Disrupting rather than facilitating

Maayan Keshev, Mor Ovadia, Hila Davidovitch, Aya Meltzer-Asscher, Tel-Aviv University



Sentence Processing Lab

## INTRODUCTION

Resumptive pronouns (RPs) have attracted much attention in the linguistic literature. Many share the intuition that their distribution is associated with processing costs and that they aid in retrieving an inaccessible filler (Ariel, 1999; Erteschik-Shir, 1992; Hawkins, 1999).

However, experimental data collected in recent years, mostly from acceptability ratings, was found to be incompatible with the notion that RPs facilitate processing cross-linguistically (Alexopoulou & Keller, 2007; Meltzer-Asscher et al., 2015; Polinsky et al., 2013).

Previous experimental studies of grammaticized resumption in Hebrew exhibited that such pronouns disrupt processing when they are optional, due to their redundancy (Fadlon et al., 2018). In the current study we explore whether RPs aid in the retrieval of the filler in Hebrew.

## EXPERIMENTS 1 & 2

Are obligatory RPs vulnerable to interference from non-filler NPs?

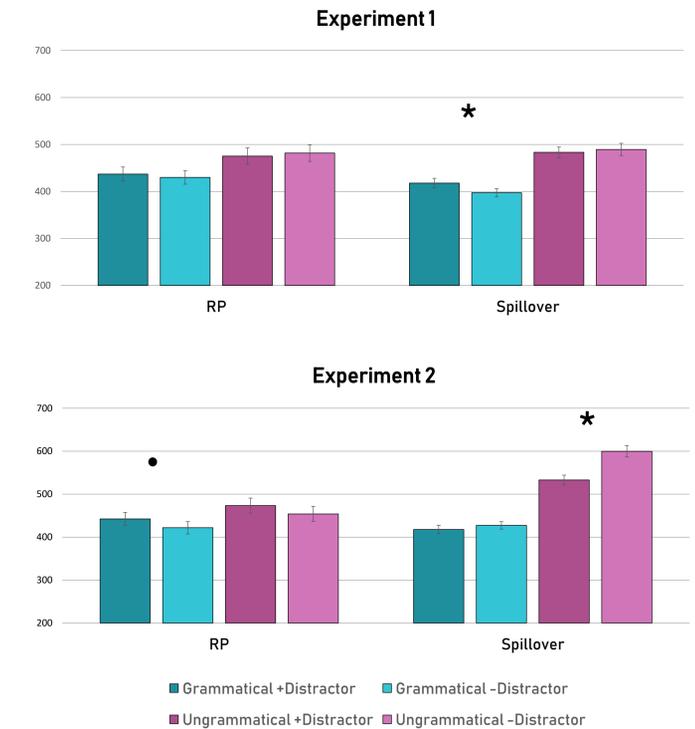
Methods: 32 (Exp. 1) and 48 (Exp. 2) participants performed a SPR task with 32 sets and 48 grammatical filler sentences.

Exp. 1: We hid the suspect{m/f} who the cop{m/f} announced that the criminals threatened her.f before the raid.

Exp. 2: The cop{m/f} hid the suspect{m/f} who the cruel criminals threatened her.f before the raid.

Results: When a matching distractor intervened between the filler and the RP (Exp.1), an inhibitory effect ( $p = .03$ ) was observed in grammatical sentences (slower RTs when both distractor and filler matched the RP).

When filler-distractor order was reversed (Exp. 2), a significant facilitatory effect ( $p = .01$ ) was observed in ungrammatical sentences (faster RTs when only the distractor matched the RP).



## EXPERIMENT 3

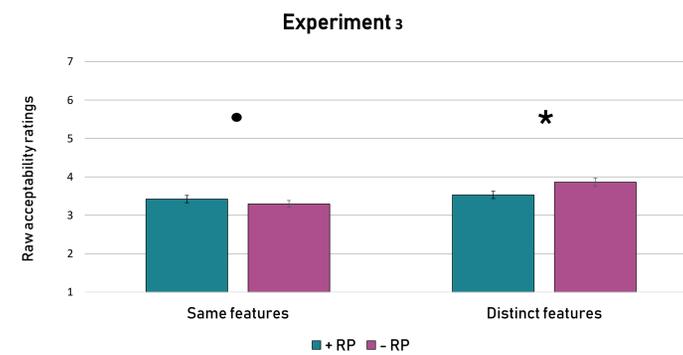
Do RPs aid in the retrieval of fillers in center embedding sentences?

Methods: 160 participants rated the complexity of sentences from 8 sets and 24 grammatical filler sentences.

Conditions: Distinctiveness of  $\phi$ -features (all three subjects identical vs. all different) X with/without RPs.

Results: Resumption did not significantly affect comprehensibility.

Moreover, an advantage of  $\phi$ -feature distinctiveness was observed only in the absence of resumption (interaction  $p = .03$ ).



Same: The book.sg-m that the teacher.sg-m that the student.sg-m liked.sg-m { $\emptyset$ /him} read.sg-m { $\emptyset$ /him} disappeared.sg-m

Distinct: The book.sg-m that the teachers.pl-m that the student.sg-f liked.sg-f { $\emptyset$ /them} read.pl-m { $\emptyset$ /him} disappeared.sg-m

## DISCUSSION

The results of Exp. 1&2 suggest that RPs introduce anaphoric ambiguity and thus may disrupt the retrieval of the filler, rather than aid in it.

The results of Exp. 3 suggest that RPs are unhelpful in recovering a constituent which is unavailable in WM.

The finding that resumption cancels the agreement advantage in Exp. 3 may suggest that resumption blocks the option to neglect one of the dependencies (as in the 'missing V2' illusion, Gibson & Thomas, 1999), leading to increased perception of complexity.

Overall, the results suggest that in both simple and highly complex sentences, RPs are not used to support the comprehension of long-distance dependencies in Hebrew (and possibly in other grammaticized resumption languages).

References: Alexopoulou & Keller (2007). Locality, cyclicity and resumption. *Language*, 83; Ariel (1999). Cognitive universals and linguistic conventions. *Studies in Language*, 23; Erteschik-Shir (1992). Resumptive pronouns in islands. In *Island constraints: Theory, acquisition, and processing* (Eds Goodluck & Rochemont); Fadlon et al. (2018). A shift in gap manifestation incurs processing cost. CUNY poster; Frazier (1985). Syntactic complexity. In *Natural Language Parsing* (Eds Dowty, Karttunen, & Zwicky); Gibson & Thomas (1999). Memory limitations and structural forgetting. *LCP*, 14; Hawkins (1999). Processing complexity and filler-gap dependencies across grammars. *Language*, 75; Meltzer-Asscher et al. (2015). Direct object resumption in Hebrew. *Lingua*, 166; Polinsky et al. (2014). Resumption in English. In *Experimental Syntax and Island Effects*. (Ed. Sprouse).

This research was supported by the Israel Science Foundation grant 216/18 (PI Aya Meltzer-Asscher)