

# Spurious NPI licensing is covert licensing

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## Overview

- **New fact**  
NPI licensing can seemingly occur in the absence of a licenser.
- **Account**  
In these cases, NPIs are licensed by EXH, a covert exhaustivity operator with a similar syntax/semantics as *only*; EXH c-commands the NPI at LF.

## Spurious NPI licensing

- Under certain circumstances, speakers appear to be subject to so-called **spurious NPI licensing effects**, whereby they perceive NPIs without a c-commanding licenser to be licensed and grammatical.
  - (1) a. **Grammatical**  
No mountains that the Swedish hikers have climbed have **ever** been taller than 5000 feet.
  - b. **Spurious**  
The mountains that **no** Swedish hikers have climbed have **ever** been taller than 5000 feet.
  - c. **Ungrammatical**  
The mountains that the Swedish hikers have climbed have **ever** been taller than 5000 feet.
- Empirically robust across a variety of experimental paradigms: acceptability-judgment tasks (Drenhaus et al. 2005), eye-tracking (Vasishth et al. 2008), self-paced reading (Xiang et al. 2006), and ERP (Xiang et al. 2009).
- **Previous leading account**  
Vasishth et al. (2008) argue that spurious NPI licensing arises from similarity-based interference from a partial match during memory cue retrieval, working within the cue-based retrieval system known as ACT-R:
  - (2) a. **Grammatical**  
No mountains ... the Swedish hikers ... ever ...  
[+negative +c-commander] ← [+negative +c-commander]
  - b. **Spurious**  
The mountains ... no Swedish hikers ... ever ...  
[+c-commander] ← [+negative] ← [+negative +c-commander]
  - c. **Ungrammatical**  
The mountains ... the Swedish hikers ... ever ...  
[+c-commander] ← [+negative +c-commander]
- **Problems with the previous account**
  - It is presented as relying on linearity alone, but it is forced to postulate a feature [+c-commander], whose nature is unclear.
  - NPIs seem more prone to illusions than other formally similar dependencies (e.g. reflexives) in similar contexts. Such between-construction differences are not expected on an account that attributes the effect to the memory architecture of the parser (Xiang et al. 2009).
  - This processing model does not realize the right grammatical constraints that are widely believed to be involved in NPI licensing (e.g. no reliance on downward-entailing environments, no differences between licensing in the restrictor and scope, etc.).

## Proposal: Covert licensing

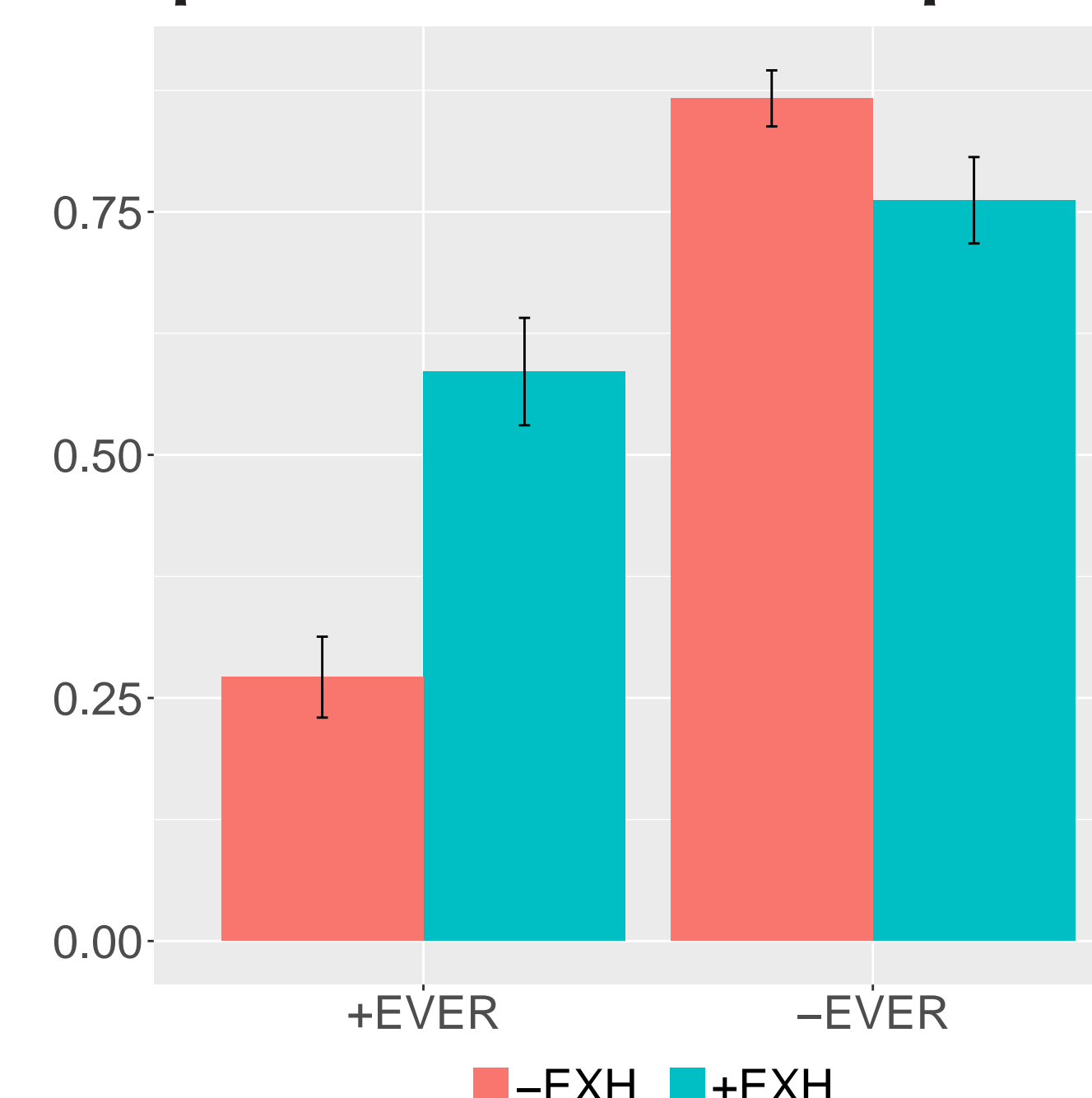
### Spurious NPI licensing is genuine licensing via EXH.

- **Fact**  
*Only* licenses NPIs in its immediate scope (Klima 1964; von Stechow 1999).  
(3) Only Sam<sub>f</sub> has ever come.
- **General assumption**  
Exhaustification is carried out in the grammar by means of an **optional** covert focus sensitive operator EXH, semantically akin to *only*:  
(4) a.  $[[\text{only}]]^w = \lambda C_{(st,t)}. \lambda p_{(st)} : p(w). \forall q \in C(p)[q(w) \rightarrow p \subseteq q]$   
b.  $[[\text{EXH}]]^w = \lambda C_{(st,t)}. \lambda p_{(st)} : p(w) \wedge \forall q \in C(p)[q(w) \rightarrow p \subseteq q]$
- **Prediction**  
EXH should be able to license NPIs like *only* does.
- To test this prediction, we exploit environments where EXH is **obligatory**, by utilizing situations involving **shortfall** (Moxey 2006): a deficit between what is expected of the reference set of an NP versus what is fact.  
(5) Whenever the summer is really dry, Susy expects all of her plants to die. This year, a small number of the plants have died.
- Scalar Implicatures generated by shortfall cannot be canceled:  
(6) #... In fact, all of them have.

## Experiment

- We manipulated two factors: (i) the presence of an NPI ([±EVER]) and (ii) the obligatoriness of an exhaustive parse via shortfall ([±EXH]):  
(7) a. [+EXH], [±EVER]  
Whenever the summer is really dry, Susy expects **all** of her plants to die. However, a small number of the plants have {**ever** / ∅} died.
- b. [-EXH], [±EVER]  
Whenever the summer is really rainy, Susy expects **none** of her plants to die. However, a small number of the plants have {**ever** / ∅} died.
- **Task (speeded-acceptability)**
  1. Read a context sentence that manipulated shortfall (no time limit).
  2. Then read a target sentence with or without *ever*, presented in a rapid word-by-word display.
  3. Judge the target sentence as ‘Very natural’ or ‘Not so natural’.
- 35 participants, recruited on Amazon Mechanical Turk, saw 24 items distributed across four lists in a Latin square design.
- Proportion of ‘natural’ responses was lower in the [+EVER] condition ( $p < 0.05$ ), (no main effect of [EXH]).
- There was a significant interaction of [EVER] and [EXH] ( $p < 0.05$ ): in [-EVER], the presence of shortfall ([+EXH]) degraded a sentence; in [+EVER], shortfall improved it.

Proportion of ‘natural’ responses:



## Upshot

- NPIs are licensed in the absence of an overt licenser when EXH is obligatory.

## Discussion

- Spurious NPI licensing need not always be a *grammatical illusion*: sometimes it is **genuine licensing**.
- In shortfall cases, EXH solves the licensing problem: EXH and *only* are focus sensitive operators, with very similar syntactic and semantic properties, i.e. the difference is their (c)overtness.  
(8) Whenever the summer is really dry, Susy expects all of the plants in her garden to die. However, ...
  - \* a small number of the plants have **ever** died.
  - only** a small number of the plants have **ever** died.
  - EXH** a small number of the plants have **ever** died.
- By providing *similar enough* semantics to *only* and EXH, we expect *similar enough* NPI licensing capability.
- **Open questions**
  - Why are [+EVER, +EXH] sentences judged less natural than [-EVER]? Even with EXH, [+EVER] sentences are rated worse than [-EVER] sentences, suggesting that EXH-licensed NPIs are still degraded: licensing an NPI covertly is dispreferred over licensing it overtly (cf. Maxim of Manner).
  - Why are there ever unlicensed NPIs? Although EXH can license NPIs, its presence—by virtue of it being covert—cannot be counted upon in matrix sentences: it is an *unreliable* licenser.
  - Besides requiring EXH, what makes shortfall special? Shortfall contexts are such that even [-EVER] sentences are dispreferred.

## Conclusion

- It is generally possible to attribute part of the “spurious” licensing effect to aspects of grammar and language use that are well studied. The hope is that **all** so-called spurious cases are such—and we are working at exploring that possibility.
- **Predictions**
  - All environments where EXH is obligatory should be good NPI licensers, a priori to the same extent that [+EVER, +EXH] sentences are.
  - Since *only* does not license Strong NPIs, EXH should not either:  
(9) \*Only Sam came in years.
- **Future extensions**
  - Strength of exhaustivity in questions correlates with NPI licensing and perhaps EXH (Guerzoni & Sharvit 2007; Nicolae 2013).
  - Nonmonotonic NPI licensing is only possible in contexts which strongly resemble shortfall (Linebarger 1980):  
(10) a. #Of the 25 students in my class, exactly 20 have ever read a book.  
b. Of the 25 students in my class, exactly 2 have ever read a book.
  - Although EXH can license NPIs, it is not a good NPI licenser across-the-board:  
(11) \*(EXH) Sam<sub>f</sub> has ever come. [cf. (3)]
  - “Classical” spurious NPI licensing (in (1)).