

Introduction

- **Neg-raising (NR):** neg. in matrix clause interpreted in embedded clause
- NR inference only occurs with NR predicates (NRPs), e.g. *believe*, *think*
- NR allows licensing of strict NPIs (e.g. *until*) in embedded clause

- (1) a. Ana **doesn't** believe_{NRP} [that the train will arrive **until seven**] (✓)
b. \rightsquigarrow Ana believes [that the train **won't** arrive until seven] (✓NR)

! Licensing of strict NPIs is the classic test for NR

- (2) #Ana **doesn't** claim_{NON-NRP} [that the train will arrive **until seven**] (✗)
(3) a. Ana **doesn't** claim_{NON-NRP} [that the train will arrive] (✓)
b. \nrightarrow Ana claims [that the train **won't** arrive] (✗NR)

- **Spanish allows IND/SUBJ alternation** in emb. clause under some NRPs
- But **IND** sentences with strict NPIs are at best marginally grammatical

- (4) Ana **no** cree_{NRP} que el tren **llegue** hasta las siete (✓NR)
Ana not believe that the train arrive.SUBJ until the seven
(5) */#/? Ana **no** cree_{NRP} que el tren **llega** hasta las siete (?NR)
Ana not believe that the train arrive.IND until the seven

- Evidence like (5) has been used to argue that **IND** blocks NR (**HYP A**) (Rivero 1971; Harrington & Pérez-Leroux 2016; a.o.)
- However, others have separately reported a NR inference with **IND**, but make no comment on NPI licensing (Bolinger 1968; de Fignoni 1982; Siegel 2009)

- HYP A:** IND blocks both NR inference and licensing of strict NPIs
HYP B: IND allows both NR inference and licensing of strict NPIs
HYP C: IND allows NR inference but blocks licensing of strict NPIs

Research Questions

- RQ1:** How **acceptable** are NPIs in **IND** vs. **SUBJ** emb. clauses under NRPs?
RQ2: How frequently are constructions with NRPs interpreted with the **NR reading** when the complement clause is in **IND** vs. **SUBJ**?

Experimental Design

- **Factors:** 3x2 design
– **Sent. type:** NNR vs. NR vs. NR+NPI
– **Mood:** **IND** vs. **SUBJ**
- **6 NRPs & 6 corresponding non-NRPs**
- **2 NPIs:** *hasta* 'until' & *en* N 'in Ns'
- **Items:**
– 36 critical items
– 12 fillers (low grammaticality)
– 4 attention checks

NRPs	Non-NRPs
<i>pensar</i> 'think'	<i>saber</i> 'know'
<i>creer</i> 'believe'	<i>estar seguro</i> 'be sure'
<i>considerar</i> 'consider'	<i>ser consciente</i> 'be aware'
<i>parecer</i> 'seem'	<i>resultar obvio</i> 'be obvious'
<i>opinar</i> 'reckon'	<i>asegurar</i> 'assure'
<i>dar la impresión</i> 'give the impression'	<i>recordar</i> 'remember'

- **Example item set (translated):**
(6) a. J. didn't know that V. had **IND/SUBJ** visited the museum that year. (NNR)
b. J. didn't believe that V. had **IND/SUBJ** visited the museum that year. (NR)
c. J. didn't believe that V. had **IND/SUBJ** visited the museum in years. (NR+NPI)

Structure of the Experiment:

S: $x \neg V$ that ... v.IND/SUBJ ... (npi)

(Q1:) How acceptable is this sentence?

1 2 3 4 5 6 7
○ ○ ○ ○ ○ ○ ○

(Q2:) Can **S** have the interpretation:

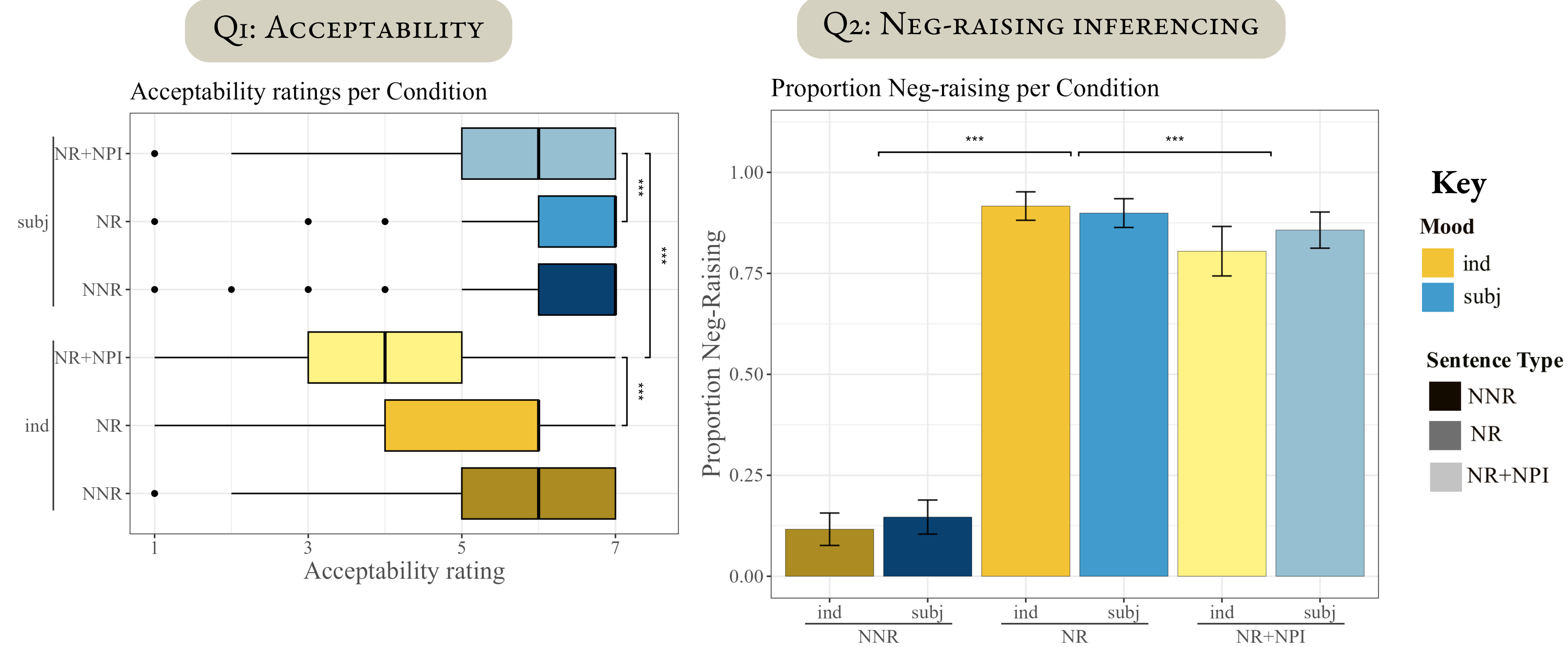
I: $x V$ that $\neg p$

Yes No
○ ○

Next

- **Matrix V:** always in imperfective to avoid ambiguity of the NPI
(7) Ana no *pensó*/***pensaba*** en ello hasta las ocho
Ana not thought.PERF/IMP in that until the eight
'Ana didn't think about it until eight'
(8) Ana no ***pensaba*** que [fuera a llegar hasta las ocho]
Ana not thought.IMP that go to arrive until the eight
'Ana didn't think it would arrive until eight'
- **Embedded V:** (i) counterbalanced for the two subjunctive forms *-ra*, *-se* to avoid dialectal effects & (ii) only telic verbs with NPI *hasta*
- **Platforms:** Prolific (participants) + PCIBex (experiment) (Zehr & Schwarz 2018)
- **Participants:** 48 native speaker of Peninsular Spanish

Experimental Results



Statistical Model: (R4.3.1)

	Main Effect	Main Effect	Interaction
LMER:	Mood	+ Sentence Type	+ M:ST
p-value	$p < 0.001$	$p < 0.001$	$p < 0.001$
χ^2	18.42	197.67	31.48

• Participants and Items as crossed random effects

Statistical Model: (R4.3.1)

	Main Effect	Main Effect	Interaction
GLMER:	Mood	+ Sentence Type	+ M:ST
p-value	$p = 0.52$	$p < 0.001$	$p = 0.29$
χ^2	0.41	249.51	2.46

• Participants as crossed random effects

- Sentences with NPIs overall less grammatical

- **IND** overall less grammatical

- **Interaction: NPI ungrammaticality larger in IND**
[NR.IND – NR+NPI.IND] > [NR.SUBJ – NR+NPI.SUBJ]

- Non-NRPs <<< NR+NPI < NR

- Sentences with NPIs slightly

- **reduced NR inferencing**

- **No effect of mood on NR inferencing**

HYP C



<https://github.com/LeahDoroski/SpanishNegRaising>



<https://farm.pcibex.net/r/syGNNQ/>

Towards an Analysis

PUZZLE: how does IND block licensing of strict NPIs without interrupting NR inferencing?

STEP 1

- NR inference strengthens the environment from DE to AA (e.g. Gajewski 2007)
- Strict NPIs require AA environment to be licensed (Zwarts 1998)

(9) Ana doesn't believe that the train arrived.IND/SUBJ until 7
ASSERTS: $\neg \forall w' \in \text{DOX}_a^w . p(w')$ $\neg \Box p$ (DE)
 $\rightsquigarrow \forall w' \in \text{DOX}_a^w . \neg p(w')$ $\Box \neg p$ (AA) (NR)

- **Both IND and SUBJ** allow NR, so both should strengthen environment from DE to AA

STEP 2

- Non-TC content can intervene in the licensing of NPIs (e.g. Gajewski 2011; Homer 2008; Chierchia 2004)

(Gajewski 2011)	weak NPIs	strict NPIs
SCALAR IMPLICATURES:	indirect implicatures	direct & indirect implicatures
PRESUPPOSITIONS:	of constituent containing NPI	of function and of constituent containing NPI

STEP 3

- **IND** carries additional meaning than **SUBJ** (Schlenker 2005)
- In Italian, **IND** carries a presupposition of speaker commitment (i.e. factivity) (Homer 2008)

(10) x doesn't V_{NRP} [that p]. p .IND $\rightsquigarrow p(w_0)=1$ p .SUBJ $\nrightarrow p(w_0)=1$ (Italian)

STEP 4

- But, results from Montero and Romero (2023) indicate that **IND** in Peninsular Spanish does **not** carry a speaker commitment presupposition with cognitive non-factive predicates (e.g. *pensar* 'think', *creer* 'believe')
- Experiment asked participants to what extent they thought the embedded proposition was true on a scale from 1 (false) to 5 (true)

IDEA: in Spanish, IND may carry a different presupposition which blocks the licensing of NPIs

Conclusion

Takeaway:

- ! Mood affects licensing of strict NPIs but doesn't affect NR
- **Proposal:** IND carries a presupposition that blocks NPI licensing
- ? At best, presence of strict NPIs does **not** increase NR readings
- (Un)grammaticality of strict NPIs is not a reliable test of NR

Next steps:

What presupposition if not factivity?

What could cause strict NPIs to *reduce* NR readings?