Spanish Neg-raising: Mood effects on NPI licensing

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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. ⇝ 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$_{non\text{-}NRP}$ [that the train will arrive until seven] ✗

(3) a. Ana doesn't claim$_{non\text{-}NRP}$ [that the train will arrive]
b. ↛ Ana claims [that the train won't arrive] (✗NR)

- **Spanish allows IND/SUBJ alternation** in emb. clause under some NRPs
- But the status of IND sentences with strict NPIs remains unclear, e.g. (5)

(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

- The (potential) ungrammaticality of (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
pensar 'think'	*saber* 'know'
creer 'believe'	*estar seguro* 'be sure'
considerar 'consider'	*ser consciente* 'be aware'
parecer 'seem'	*resultar evidente* 'be obvious'
opinar 'reckon'	*asegurar* 'assure'
dar la impresión 'give the impression'	*recordar* '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* ¬*V that* ... v.IND/SUBJ ... (*npi*)

(Q1:) How acceptable is this sentence?
1 2 3 4 5 6 7
○ ○ ○ ○ ○ ○ ○

Next

(Q2:) Can **S** have the interpretation:
I: *x V that* ¬*p*
Yes No
○ ○

Next

- **Matrix V**: always in imperfective to avoid ambiguity of the NPI

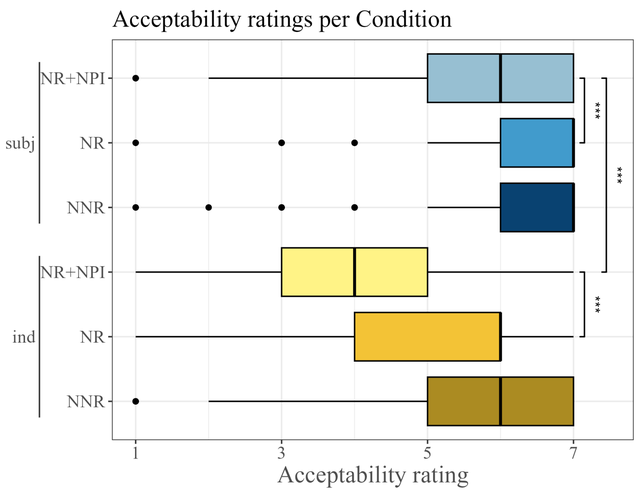
(7) *Ana no pensó/*****pensaba*** *en ello hasta las ocho*
Ana not thought.PERF/IMP in that until the eight
'Ana didn't think about it until eight'

(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 speakers of Peninsular Spanish

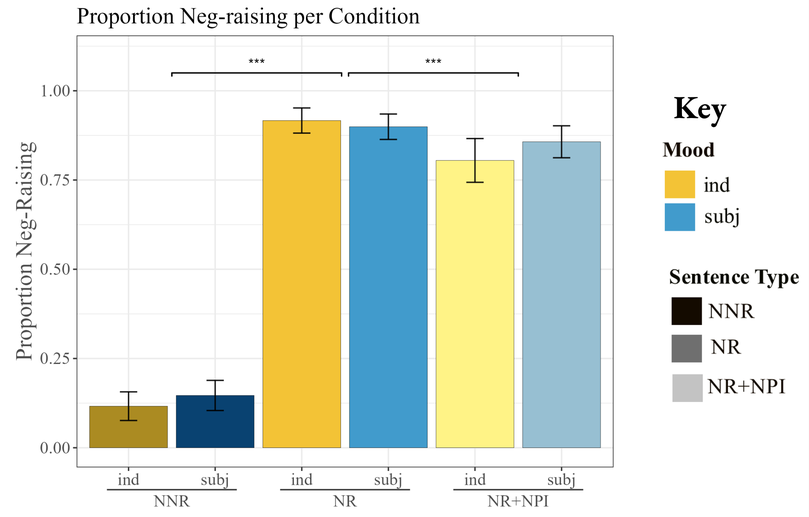
Experimental Results

Q1: Acceptability



- Sentences with NPIs overall less grammatical (p<0.001)
- **IND** overall less grammatical (p<0.01)
- **Interaction: NPI ungrammaticality larger in IND than in SUBJ** (p<0.001)

Q2: Neg-raising inferencing



- Non-NRPs <<< NR+NPI < NR (p<0.001)
- Sentences with NPIs slightly **reduced** NR inferencing (by ~7.2%)
- **No effect of mood on NR inferencing** (p=0.52) and no interaction (p=0.29)

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?

Piece 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: $\neg\forall w' \in \text{DOX}_a^w.p(w')$ ¬□p (DE)
⇝ $\forall w' \in \text{DOX}_a^w.\neg p(w')$ □¬p (AA) (NR)

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

Piece 2

- Non-truth-conditional 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**

Piece 3

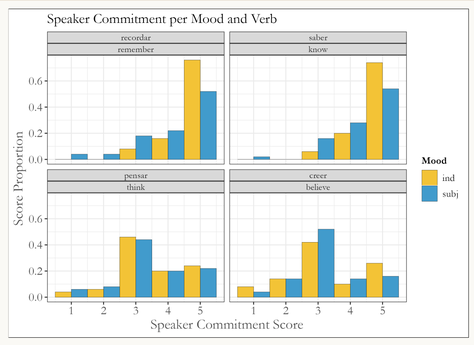
Step 1

- 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 ⇝ $p(w_0)$=1 *p*.SUBJ ↛ $p(w_0)$=1 (Italian)

Step 2

- But, results from Montero and Romero (2023) indicate that IND in Peninsular Spanish **need 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)



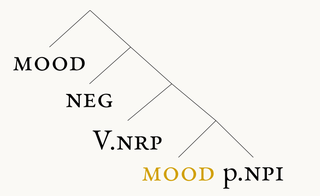
Step 3

- Alternatively, IND in Spanish can carry a presupp. that *p* has been discussed in previous discourse (e.g. Ridruejo 1999: fn. 17), which we implement via the Common Propositional Space (CPS) (Portner 2009)

(11) a. #([CONTEXT: A attributed to B *p*, *p* =the thought that Juan is intelligent])
b. B: I don't believe that Juan is.IND intelligent (... I believe he is sharp)

(12) *x* doesn't V_{NRP} [that *p*]. (Spanish)
a. *p*.IND ⇝◇ $p(w_0)$=1 *p*.SUBJ ↛ $p(w_0)$=1
b. *p*.IND ⇝◇ $p \in$ CPS *p*.SUBJ ↛ $p \in$ CPS

Piece 4



- $[\![\text{Emb mood}]\!]^w([\![\text{p.NPI}]\!]^w)$

Piece 5

- Both presuppositions make the context non-anti-additive

(13) a. $\mu([\![$John doesn't think Mary left.IND and John doesn't think Bill left.IND$]\!])$
b. $\mu([\![$John doesn't think Mary or Bill left.IND$]\!])$

	Neg-raising		Speaker Commitment		Mentioned previously
a.	$\lambda w_0.\forall w \in \text{Dox}_j(w_0) : \neg L_w(m)$	∧	$L_{w_0}(m)$	/	$\lambda w''.L_{w''}(m) \in$ CPS
	$\wedge\ \forall w \in \text{Dox}_j(w_0) : \neg L_w(b)$	∧	$L_{w_0}(b)$	/	$\lambda w''.L_{w''}(b) \in$ CPS
	⇓⇑		⇓⇵		⇓⇑?
b.	$\lambda w_0.\forall w \in \text{Dox}_j(w_0) : \neg(L_w(m) \vee L_w(b))$	∧	$(L_{w_0}(m) \vee L_{w_0}(b))$	/	$\lambda w''.L_{w''}(m) \vee L_{w''}(b) \in$ CPS

Conclusion

! Mood affects licensing of strict NPIs but doesn't affect NR inference
- **Proposal**: IND carries a presupp. that blocks NPI licensing: factivity of p / $p \in CPS$ (/ or possibly something else)
- (Un)grammaticality of strict NPIs is not a reliable test of NR

References: Bolinger, D. 1968. Postposed main phrases: an English rule for the Romance subjunctive. *CJL*14. • Chierchia, G. 2004. Scalar implicatures, polarity phenomena, and the syntax/pragmatics interface. *Structures and Beyond 3* • de Fignoni, N. M. (1982). Acera del alcance de la negación en la subordinación sustantiva. *Anuario de Letras*20. • Gajewski, J. R. 2007. Neg-raising and polarity. *L&P*30. • Gajewski, J. R. 2011. Licensing strong NPIs. *NLS*19. • Harrington, S. & Pérez-Leroux, A. T. (2016). Subjunctive and subject pronoun realization: a study of *(Yo) no creo que*. *BAIJHL*5. • Homer, V. 2008. Disruption of NPI licensing: The case of presupposition. *SALT*18. • Montero, R. and Romero, M. 2023. Examining the meaning of polarity subjunctive.*NELS 53* • Portner, P. 2009. *Modality*. Oxford. • Ridruejo, E. 1999. Modo y modalidad. El modo en las subordinadas sustantivas. In *GDLE*. • Rivero, M.-L. 1971. Mood and presupposition in spanish. *FoL*. • Siegel, L. 2009. Mood selection in Romance and Balkan. *Lingua*119. • Schlenker, P. 2005. The Lazy Frenchman's Approach to the Subjunctive. *RLLT 2005*• Zehr, J. and Schwarz, F. 2018. Penncontroller for Internet Based Experiments (IBEX).• Zwarts, F. Three types of polarity. *Plurality and Quantification*