

I. Background: NPI-licensing and intervention effects

Licensing Negative Polarity Items (NPIs)

- NPIs have to be licensed by c-commanding downward entailing operators (e. g. negation).
- Non-licensed NPIs elicit lower acceptability ratings, prolonged reading/reaction times (Drenhaus et al. 2005; Parker & Phillips 2016), and N400 effects (Saddy et al. 2004).

(1) *Kein_{lic} / *Ein* Musiker hat *jemals_{+NPI}* einen Oscar gewonnen.
*No_{lic} / *A* musician had *ever_{+NPI}* won an Oscar.

Wh-interventions

- Focus operators and quantifiers intervene between C and *wh*-in-situ elements (Beck 2006).

(2) Wen *hat_{+Q}* Max/ **niemand* *wo* getroffen?
 who has Max no one where met
 intended: 'Where did no one see whom?'

- Comparable results for intervention effects in *wh*-questions: lowered acceptability and increased reading times (RTs) Haida & Repp (2013).

NPI-intervention

- Certain quantifiers may block NPI-licensing (intervention effect) (Linebarger 1987; Guerzoni 2006).
 - Intervening quantifiers cause lower acceptability (Richter & Radó 2014).
- (3) John didn't give a red cent_{+NPI} to (*every) charity.
 ¬∀x (John gave-a red cent-to x) for x= a charity

(Non-)Intervention configurations

(4) a. [Licensor [Intervener [Licensor [NPI]]]]
 b. [WH [C_Q [WH [Intervener [WH]]]]]

- Configurations appear to be very similar
- Interveners are not identical
 - WH: *no, few, only, every, ...*
 - NPI: *every, mehr als x* 'more than x', *viele seiner N* 'many of his N', ...
- In fact several *wh*-interveners are NPI-licensors.

II. Material

Context For some time now, you find warning on cigarette packs. These are intended to make the consumers aware of the risks.

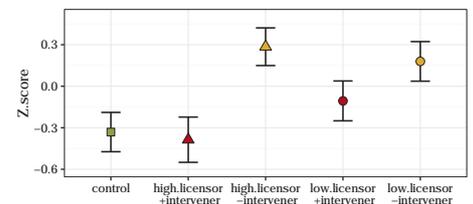
LOW.LICENSOR *Dennoch lassen sich die meisten Raucher von häufigen/ zahlreichen Warnungen nicht beirren.*
 HIGH.LICENSOR *Dennoch lassen sich nur wenige Raucher von häufigen/ zahlreichen Warnungen beirren.*
 CONTROL *Dennoch lassen sich nur wenige Raucher von zahlreichen Warnungen beeinflussen.*
 (only Exp. 1) yet let REFL the/only most/few smokers by frequent numerous warnings not disturb/influence
 'Yet most/only few smokers get (not) disturbed by the frequent/numerous warnings.' – 'Yet only few smokers get influenced by numerous warnings.'
 – 12 lexical variants of verbal NPIs, 8 lexical variants of quantifiers (*einige der/seiner N, mehrere der N, viele seiner N, viele N, sämtliche N*) –

Spillover (only Exp. 2) ... und missachten die gesundheitlichen Risiken '... and ignore the health risks'

III. Results and Discussion

Experiment 1 (acceptability judgment task, 30 participants, 24 items + 38 fillers)

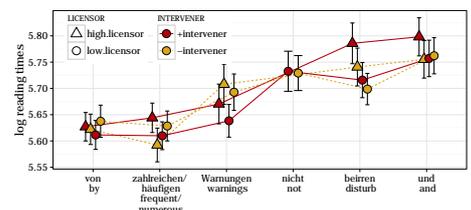
- Intervention effect: interaction of LICENSOR and INTERVENER
 - large decrease for HIGH.LICENSOR + INTERVENER
 - confirming Richter & Radó (2014) and Haida & Repp (2013)
- small decrease for LOW.LICENSOR + INTERVENER
 - presumably interpreting the preverbal negation as sentence negation (wide scope)
- CONTROL-condition as bad as the intervention condition
 - Indicating that NPI-licensing is not a necessary prerequisite for the "intervention effect"
 - Intervention effect is not dependent on the presence of an NPI.



Experiment 2 (self-paced reading, 45 participants, 24 items + 40 fillers)

Intervention effect: interaction of LICENSOR and INTERVENER

- at intervention inducing quantifier (*zahlreichen*)
 - preceding the NPI (parallel to CONTROL of Exp. 1)
 - apparently contra Haida & Repp (2013) (longer RTs after the *wh*-in-situ element)
- at first segment of the spillover region (*und*)
 - indicating backward search for an NPI-licensor which is disturbed by intervening quantifier
- Increased processing load for intervener under NPI-licensor before NPI has been encountered.



IV. Sketching an analysis

Wh-intervention (Mayr 2014)

- Wh*-expressions denote a set of alternatives (individuals) and
- trigger an existential presupposition.

- Existential quantifier receives wide scope in the denotation but surface scope in the presupposition.
- For non-additive operators these two meanings are not identical.
- $\exists x \in \{a, b, c\}. P(x) = P(a) \vee P(b) \vee P(c)$

(5) $\underbrace{Op(P(a) \vee Op(P(b)) \vee Op(P(c)))}_{\text{denotation}} \neq \underbrace{Op(P(a) \vee P(b) \vee P(c))}_{\text{presupposition}}$ for Op = non-additive

(6) WH [non-additive Op [Alternative Set + ∃-Presupposition]]
 NPI ["Intervener" [wh-in-situ]]
 ["Licensor" ["Intervener"]]

NPI-Intervention

- Intervening quantifiers denote a set of alternatives (groups) – at least partitives – and
- trigger an existential presupposition.

- NPI-licensors are non-additive operators.
- Must not scope over these quantifiers.
- Explains increased RTs at second operator: *wh*-in-situ ↔ quantifier

V. Conclusions

- Some apparent NPI-intervention effects are independent of the presence of NPIs.
- NPI-licensors are incompatible with some quantifiers (partitives).
- Those cases may be treated on a par with *wh*-intervention cases.
- Follow-up study needed to confirm these results
- Calls for a principled (experimental) investigation of the scopal interaction of semantic operators.

Intervention effects in NPI-environments: A case of scope incompatibility?

Constantin Freitag
Universität zu Köln

Presented at the Linguistic Evidence 2018
15.–17. 02. 2018
Universität Tübingen

– constantin.freitag@uni-koeln.de –



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no. 613465.

References

- Beck, Sigrid. 2006. Intervention effects follow from focus interpretation. *Natural Language Semantics* 14(1). 1–56.
- Drenhaus, Heiner, Stefan Frisch & Douglas Saddy. 2005. Processing negative polarity items: When negation comes through the backdoor. In Stefan Kepser & Marga Reis (eds.), *Linguistic evidence: Empirical, theoretical and computational perspectives* (Studies in generative grammar 85), 145–164. Berlin: De Gruyter.
- Guerzoni, Elena. 2006. Intervention effects on NPIs and feature movement: Towards a unified account of intervention. *Natural Language Semantics* 14(4). 359–398.
- Haida, Andreas & Sophie Repp. 2013. The intervention effect: Focus alternatives or indefinite alternatives? Experimental evidence. In Maria Aloni, Michael Franke & Floris Roelofsen (eds.), *Proceedings of the 19th Amsterdam Colloquium*, 131–138. Universität Amsterdam.
- Linebarger, Marcia C. 1987. Negative polarity and grammatical representation. *Linguistics and Philosophy* 10(3). 325–387.
- Mayr, Clemens. 2014. Intervention effects and additivity. *Journal of semantics* 31. 513–554.
- Parker, Dan & Colin Phillips. 2016. Negative polarity illusions and the format of hierarchical encodings in memory. *Cognition* 157. 321–339.
- Richter, Frank & Janina Radó. 2014. Negative polarity in German: Some experimental results. *Journal of Semantics* 31(1). 43–65.
- Saddy, Douglas, Heiner Drenhaus & Stefan Frisch. 2004. Processing polarity items: Contrastive licensing costs. *Brain and Language* 90. 495–502.