

Lexical variation in the illusory licensing of negative polarity items in German

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Negative polarity items (NPIs) like *ever* are prototypically licensed by negative operators that take scope over the NPI (*No farmer was ever...*). Psycho-/Neurolinguistic research, however, indicates that readers sometimes accept sentences containing a licenser at a structurally inaccessible position (*The farmer who had no chickens was ever...*). This is particularly evident in tasks that tap into early processing stages (EEG, eye-tracking, speeded judgments) [e.g., 4; 7; 8]. Current hypotheses attribute this phenomenon to erroneous licenser retrieval due to a partial cue match with the NPI [8], over-application of pragmatic licensing mechanisms [10], or temporal dynamics in the encoding of the semantic/pragmatic representation of the licensing environment [7]. Here, we report a study that extends the empirical landscape by shifting the focus off of the properties of the context and on to the properties of the NPI: We investigated intrusive licensing of two German adverbial NPIs, *jemals* ('ever') and *so recht* ('really'). Both take the same position within a sentence, see (1); the hypotheses above [7; 8; 10] therefore predict comparable intrusion effects. Lexically, however, the two expressions differ in their semantic (w.r.t. scalarity) and pragmatic profile (emphatic for *jemals* or attenuating for *so recht*) [5; 6]. We found illusory licensing for *jemals*, replicating [4; 8], but not for *so recht*. This hints that the lexical properties of the NPI itself contribute to its affinity for illusory licensing.

Experiment (subject N = 90, item N = 42, filler N = 62, data collection via Prolific): Using speeded acceptability judgments [e.g., 1], we tested for illusory licensing of *jemals* and *so recht* based on a 2 x 3 design wherein the two NPIs appear at structurally identical positions (1). Data (Fig. 1) were analysed using Bayesian logistic regression models [2] with Helmert-coded contrasts: For both NPIs, the grammatical condition was accepted at a higher rate than the ungrammatical conditions (*jemals*: $\mathbb{E}(\mu) = 5.85$, CrI = [4.97, 6.83], $P(\delta > 0) = 1$; *so recht*: $\mathbb{E}(\mu) = 2.29$, CrI = [1.73, 2.91], $P(\delta > 0) = 1$), though the difference was smaller for *so recht* than for *jemals* (Interaction NPI x Grammaticality: $\mathbb{E}(\mu) = -1.03$, CrI = [-1.31, -0.76], $P(\delta < 0) = 1$). For *jemals*, there was weak evidence compatible with an intrusion effect ($\mathbb{E}(\mu) = 0.27$, CrI = [-0.08, 0.63], $P(\delta > 0) = 0.93$). For *so recht*, however, the model indicated no evidence for illusory licensing ($\mathbb{E}(\mu) = -0.17$, CrI = [-0.52, 0.16], $P(\delta > 0) = 0.15$).

Exploratory analysis: Visual inspection of individual participants' data (Fig. 2) shows some subjects accepted the sentences with unlicensed NPIs at a high rate (although these are *ungrammatical* under most linguistic theories)—despite these participants' good performance on comprehension questions and filler trials. To explore whether these participants' data could have masked an NPI illusion in our analysis, we conducted an exploratory analysis by removing all participants with an acceptance rate >70% for unlicensed NPI uses of *so recht/jemals* (e.g., 1e/f). The analysis on this subset (N = 61) clearly indicates illusory licensing of *jemals* ($\mathbb{E}(\mu) = 0.41$, CrI = [0.01, 0.79], $P(\delta < 0) = 0.99$), but still does not show any evidence for an illusion with *so recht* ($\mathbb{E}(\mu) = 0.00$, CrI = [-0.42, 0.42], $P(\delta < 0) = 0.51$).

Discussion: We found weak evidence for illusory licensing of *jemals* but not for *so recht*; the latter showed an overall higher acceptance of ungrammatical contexts. This may reflect the differences in the licensing mechanisms of emphatic and attenuating NPIs [5; 6]. In follow-up studies, we plan (a) to test these differences head on, using different emphatic/attenuating NPIs as well as licensers of varying monotonicity properties (e.g., *nicht/kein/wenig* 'not/no/few' in the relative clause) [3; 10], and (b) to systematically address the source of interindividual variation in the susceptibility to NPI illusions, as observed in Fig.2.

- (1) a./d. *Der Bauer, der keine Viehwirtschaft betrieb, war {so recht/ jemals} an den Getreidepreisen interessiert.* (illusory licenser)
 The farmer who **no** livestock-farming pursued was {really/ ever} in the grain-prices interested
- b./e. *Kein Bauer, der die Viehwirtschaft betrieb, war {so recht/ jemals} an den Getreidepreisen interessiert.* (licensed NPI)
No farmer who the livestock-farming pursued was {really/ ever} in the grain-prices interested
- c./f. *Der Bauer, der die Viehwirtschaft betrieb, war {so recht/ jemals} an den Getreidepreisen interessiert.* (unlicensed NPI)
 The farmer who the livestock-farming pursued was {really/ ever} in the grain-prices interested
 ‘{The/No} farmer, who {pursued/did not pursue} livestock farming, was {ever/really} interested in the grain prices.’

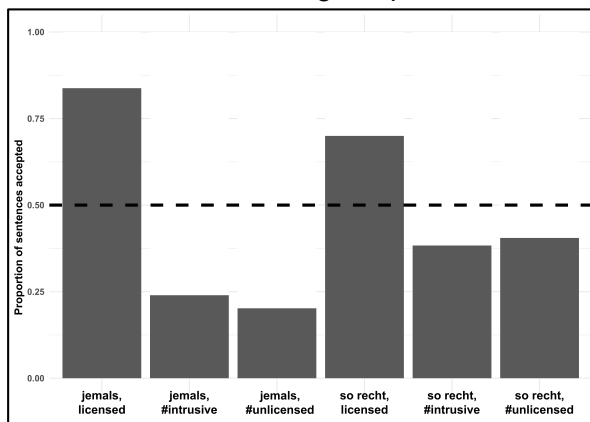


Figure 1: Proportional acceptance of the 6 conditions in Exp.1

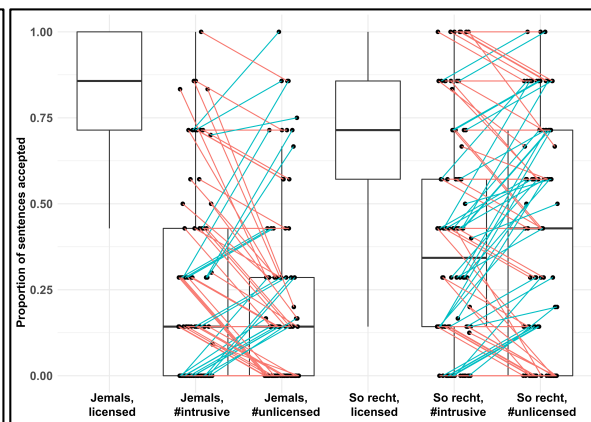


Figure 2: By-participant rate of acceptance for Exp.1. For the ungrammatical conditions, lines connect individual subjects' rate of acceptance across repeated measures. Red = subject accepted sentences with an intrusive licenser more often than sentences without licenser. Blue = subject accepted sentences without licenser more often than sentences with an intrusive licenser.

References: [1] Bader and Häussler (2009). Resolving number ambiguities during language comprehension [2] Bürkner (2017). brms: An R package for Bayesian multilevel models using Stan. [3] de Dios Flores et al. (2017) Negative polarity illusions: licensers that don't cause illusions, and blockers that do. [4] Drenhaus et al. (2005). Processing Negative Polarity Items: When Negation Comes Through the Backdoor. [5] Israel (1996). Polarity sensitivity as lexical semantics. [6] Israel (2011). The Grammar of Polarity. [7] Parker & Phillips (2016). Negative polarity illusions and the format of hierarchical encodings in memory. [8] Vasishth et al. (2008). Processing polarity: How the ungrammatical intrudes on the grammatical. [9] Xiang et al. (2009). Illusory licensing effects across dependency types: ERP evidence. [10] Xiang et al. (2013). Dependency-dependent interference: NPI interference, agreement attraction, and global pragmatic inferences.