

Attenuating NPIs in indicative vs. counterfactual conditionals

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Conditional antecedents are a typical licensing environment for negative polarity items (NPIs), which is commonly attributed to their nonveridicality (Giannakidou 1998) or scalar properties (von Stechow 1999). Both indicative and counterfactual conditionals (henceforth, ICs and CCs) license the NPIs such as *ever/any*. Here, we make the novel observation that attenuating NPIs (aNPIs) like *sonderlich* ('particularly') (1a) and *all that* (1b) are degraded in ICs compared to CCs. We propose a licensing mechanism based on Condoravdi (2010), Israel (1996), and Krifka (1995), and argue that the degradation in ICs is due to implicatures (i.e. conditional perfection).

(1) a. *Wenn den Lesern das Buch sonderlich gut gefallen* {*hat* /*hätte*,}

If the readers the book particularly good liked {*has.IND/had.SBJV*}

{*?werden/würden*} sie die Fortsetzung kaufen.

{*will.IND/would.SBJV*} they the sequel buy.

b. *If the readers* {*?have/had*} *liked the book all that much, they* {*?will/would*} *buy the sequel.*

1. Experiments (German: subject N=160, item N=12; English: subject N=75, item N=24).

To empirically confirm whether ICs with aNPIs are degraded, we conducted rating studies in German and English. Using a 2x2 design which manipulated the type of conditional (IC/CC) and the presence of the aNPI *sonderlich/all that*, subjects saw sentences like (1a/b) and rated their naturalness on a 1-7 scale. The results (Figs. 1+2) are: First, ICs with aNPIs are less natural than CCs in both languages (Bayes ordinal regression, Interaction effect: **German**: $E(\mu)=0.58$, $CrI=[-0.01, 1.19]$, $P(\delta>0)=0.97$; **English**: $E(\mu)=0.48$, $CrI=[0.16, 0.81]$, $P(\delta>0)=1$). Second, ICs with aNPIs are not rated as completely unnatural. Our proposal takes into account both findings.

2. Previous approaches. aNPIs like English *much/all that*, Japanese *a(n)mari* ('very'), German *sonderlich* ('particularly')/*so recht* ('really'), are called that as their presence renders a sentence attenuated or understating (Israel 1996). Israel assumes that aNPIs lexically specify a high "quantitative" and low "informativity" value, such that they are restricted to contexts in which the proposition with aNPI is entailed (in conditionals: Strawson-entailed (von Stechow 1999)) by a contextually salient alternative. The contrast in (1) is not discussed by Israel. Strawson-entailment, however, holds for both types of conditionals; the degradation of aNPIs in ICs is thus not predicted. Alternatively, the nonveridicality approach (Giannakidou 1998 *et seq.*) assumes that NPIs are licensed under nonveridical operators—such as ICs and CCs. A possible explanation for (1) would be that aNPIs are *strong* NPIs, i.e., only licensed in antiveridical contexts like sentence negation or CCs. However, this predicts a stronger-than-observed degradation in ICs and is incompatible with examples of aNPIs in nonveridical (2a) or downward entailing contexts (2b/c).

(2) a. *Haltet ihr den Satz für sonderlich gelungen?*

Hold you the sentence for particularly well-formed?

'Do you think the sentence is particularly well-formed?' (DeReKo: WDD11/ P01.72378)

b. **About glass surface buildings:** (DeReKo: T09/MAR.03687)

Wenige sind sonderlich einladend für den Betrachter draußen.

Few are particularly inviting for the viewer outside.

c. ..., few [guests] are *all that* happy about having to pay extra for extended Wi-Fi access.

(<https://www.trivago.ae/manchester-38961/hotel/travelodge-manchester-piccadilly-3509960>)

3. Proposal. We closely follow Israel (1996), but present a formalization based on the proposal of Krifka (1995) a.o. that NPIs lexically trigger ordered alternatives, as well as Condoravdi's (2010) version of scalar assertion. The preliminaries from the latter are:

(3) **Strawson contextual update (Condoravdi 2010):** $c +_{\text{str}} p = c \setminus \{w \in c \mid \llbracket p \rrbracket_c^w = 0\}$

Informational strength (Condoravdi 2010): p' is informationally no stronger than p iff
for any context c , $c + p +_{\text{str}} p' = c + p$

We assume that aNPIs lexically introduce alternatives, such that the meaning of *sonderlich*, e.g., is equivalent to *very* (McNally 2016), but introduces lower degree alternatives, see (4). We propose that aNPIs are licensed under the condition in (5): In the first conjunct, this states that p is true in w . In the second conjunct, it states that there must be an alternative p' such that there is a world compatible with context c where p' is true and p' is informationally stronger than p .

(4) $\llbracket \text{sonderlich} \rrbracket = \lambda G. \lambda x. [G(x) \geq_{\text{ds}(\{y: \text{pos}(G)(y)\})} \wedge \forall z \in \text{ALT}(x) [G(x) \sqsubseteq G(z)]]$

(5) **Licensing condition:** $\{w \in c \mid w \in \llbracket p \rrbracket_c \wedge \exists p' \in \text{Alt}(p) (\exists w' \in c \mid w' \in \llbracket p' \rrbracket_c \wedge c + p +_{\text{str}} p' \neq c + p)\}$

A conditional with aNPI is less informative than the evoked alternatives (e.g., p (1b) is Strawson-entailed by p' : *If the readers have liked the book (to some lesser degree), they will buy the sequel*), such that **both ICs and CCs in principle license aNPIs**. Note that this matches the relatively high acceptance of both types of conditionals in the experiments. To account for the IC/CC contrast, we appeal to the presence of two implicatures—conditional perfection (CP) and the implicature to the falsity of the antecedent. CP is a highly common pragmatic inference that is arguably present in both ICs and CCs (Horn 2000:321). **In perfected conditionals, however, aNPIs are no longer licensed:** Under CP, given p , the alternative p' must necessarily be false (and the other way around). In (1b), for instance, if *buying the sequel* is contingent on *liking the book very/all that much*, the alternative p' that *buying the sequel* is contingent on *liking the book (to some lesser degree)* cannot also be true. The contextual update step yields $c + p +_{\text{str}} p' = c + p +_{\text{str}} \emptyset = c + p$, *contra* the licensing condition above. This explains the data for ICs: They are degraded but not completely unnatural due to the pragmatic nature of the CP inference. Further tentative support for this proposal comes from non-perfectible premise conditionals such as (6), where aNPIs are acceptable even in ICs.

(6) A: The readers really liked the book.

B: If the readers liked the book **all that much**, they will buy the sequel.

For CCs, we argue that CP inferences might still occur (while their extent remains to be investigated), but **they can license aNPIs because they trigger a counterfactual implicature about the antecedent** (Anderson 1951; Iatridou 2000). This implicature, which cannot be cancelled easily (Arregui & Biezma 2016), creates a licensing environment (for (1b): *The readers didn't like the book all that much*), such that aNPIs are better in CCs than ICs.

4. Conclusion. To summarize, we introduced the novel observation with cross-linguistic experimental evidence that aNPIs are sensitive to differences between indicative and counterfactual conditionals, a contrast that was unaccounted for by existing proposals. We presented an analysis that captures the data by assuming a scalar licensing mechanism that attributes the differences to pragmatic implicatures in conditionals. The validity of our proposal to other aNPIs and other languages is the subject of future work.

Selected references: Anderson 1951. A note on subjunctive and counterfactual conditionals. Arregui & Biezma 2016. Discourse rationality and the counterfactual implicature in backtracking conditionals. Condoravdi 2010. NPI licensing in temporal clauses. von Stechow 1999. NPI licensing, Strawson entailment, and context dependency. Giannakidou 1998. Polarity sensitivity as (non)veridical dependency. Horn 2000. From if to iff: Conditional perfection as pragmatic strengthening. Iatridou 2000. The grammatical ingredients of counterfactuality. Israel 1996. Polarity sensitivity as lexical semantics. Krifka 1995. The

semantics and pragmatics of polarity items. **Leibniz-Institut für Deutsche Sprache** 2020. German reference corpus (DeReKo). McNally 2016. Modification.

Figure 1: German Experiment

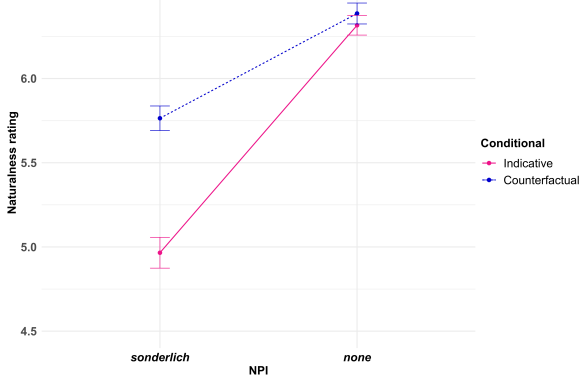


Figure 2: English Experiment

