

Licensing of NPIs in High Negation Polar Questions: Evidence from *either*

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Background. Polar Questions with High Negation (HiNQs) like (1) convey that the speaker (S) is epistemically biased and originally believed the prejacent proposition *p* to be true (Ladd 1981, Domaneschi et al. 2016, a.o.).

(1) Isn't Jane coming?

Ladd (1981) claimed that HiNQs are ambiguous between: (i) an outer negation reading where S double-checks *p* and (ii) an inner negation reading where S double-checks $\neg p$. The presence of polarity items in HiNQs disambiguates between the two readings: (2a) with the positive polarity item (PPI) *too* is used to confirm S's believe that Jane is also coming (outer negation reading), whereas (2b) with the negative polarity item (NPI) *either* is used by S to check the new and unexpected inference that Jane isn't coming (inner negation reading).

(2) a. Isn't Jane coming **too**? \Rightarrow Outer negation reading, double-checking *p*
b. Isn't Jane coming **either**? \Rightarrow Inner negation reading, double-checking $\neg p$

There are two competing approaches to explain Ladd's ambiguity: (A) Romero & Han (2004) analyze Ladd's inner and outer readings as a scope ambiguity between negation and a VERUM operator. NPIs are assumed to be licensed, and PPIs anti-licensed, if they are in the immediate scope of negation. (B) AnderBois (2011), in contrast, argues that there is only one structure for HiNQs, which invariably produces a question double-checking *p*. S is moreover taken, by default, to have a tendency to retain her prior belief *p*, which gives us the outer negation reading. Deviating from this default tendency requires an NPI (or a similar scalar item like *even*) whose pragmatic properties overwrite the default, with the resulting interpretation being perceived as Ladd's inner negation reading. Importantly, under approach A, NPIs in HiNQs are assumed to be licensed by negation, whereas the second approach takes NPIs in HiNQs to be licensed by whatever mechanism is responsible for the licensing of NPIs in questions.

Our goal is to provide experimental evidence on the licensing of NPIs in HiNQs to distinguish between these two approaches. We focus on additive *either*, which is an NPI but has a more limited distribution than regular NPIs (Rullmann 2003). Previous experimental studies (Hartung 2006, Sailor 2013) suggest that *either* is degraded in HiNQs (contra Ladd's (2b)), but these studies have only little experimental power. We conducted a full-fledged experiment to test whether *either* is acceptable in HiNQs. To this end, we contrasted on the one hand *either* with the NPI *yet*, whose acceptability in HiNQs is undisputed, and on the other hand HiNQs and questions with Low Negation (LoNQs, e.g. *Is Jane not coming?*), in which NPIs can be assumed to be licensed regularly by negation. Approach A predicts that there should be no contrast in acceptability between *either* and *yet* in HiNQs, and neither between *either* in HiNQs and LoNQs. Under approach B, we don't expect *either* in HiNQs to pattern with *yet* in HiNQs and *either* in LoNQs. Rather, it is expected that *either* in HiNQs patterns with *either* in positive polar questions (PosQs).

Experimental study Native speakers of Canadian English (n=56) read short scenarios followed by a short dialog between two speakers and rated the acceptability of the final utterance on a 1-7 scale (7 = "fully acceptable".) In the target items, the final utterance was either a HiNQ or a LoNQ containing one of the NPIs *either* or *yet* (2x2 design). All scenarios introduced facts corresponding to the additive presupposition of *either* and were appropriate for the respective question type (HiNQ vs. LoNQ), as illustrated in the example target item (3) with a HiNQ:

- (3) Susan and her husband have a gardener to look after their garden. They asked the gardener to come today and mow the lawn and clip the hedges. Susan is sure that the gardener mowed the lawn, because she heard a lawn mower in the morning. When Susan comes home from work, her husband says:

"I don't think the gardener has been here. The hedges haven't been clipped."

When Susan hears this she says:

"Hasn't he mown the lawn **either**?" / "Hasn't he mown the lawn **yet**?"

32 target items were distributed in 4 lists with a Latin Square Design. In addition, we included items where the NPI occurred in a negative declarative (2 each for *either* and *yet*), a positive declarative (2 each for *either* and *yet*), or a positive polar question (6 for *either*, 2 for *yet*).

Results The ratings were analysed using lmers with utterance type and NPI as fixed factors and participants and items as crossed random factors (random intercepts), using the package lme4 (Bates et al. 2015). As shown in Fig. 1, there is an interaction between NPI and utterance type ($p < 0.001$): *either* is significantly less acceptable in HiNQs than in LoNQs ($p < 0.001$). Moreover, in HiNQs *either* is significantly less acceptable than *yet* ($p < 0.001$). In contrast, there is no difference between HiNQs and PosQs regarding the acceptability of *either* ($p = 0.74$). We furthermore tested for a correlation between the mean acceptability of *either* in positive and negative polar questions across subjects. We found a significant positive correlation between *either* in PosQs and HiNQs ($r = 0.43$, $p < 0.001$), but not between *either* in PosQs and LoNQs ($r = 0.15$, $p = 0.26$).

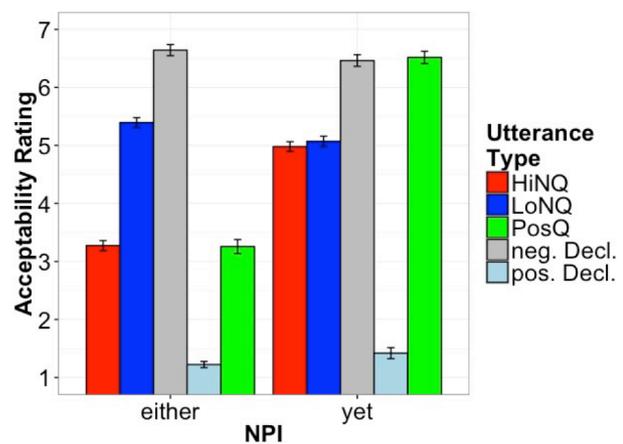


Fig. 1: Acceptability ratings across conditions (whiskers represent the 95% confidence interval)

Discussion and Outlook Our results indicate that additive *either* is degraded in HiNQs in Canadian English, which is unexpected under the assumption underlying approach A that NPis in HiNQs are licensed by negation. They moreover suggest a correlation between the acceptability of *either* in PosQs and HiNQs such that speakers who find *either* in PosQs acceptable also tend to accept *either* in HiNQs, which is in line with approach B. In sum, our results from Canadian English lend tentative support for approach B according to which NPis in HiNQs are licensed by whatever mechanism is responsible for the licensing of NPis in questions. In future work we are going to investigate: (a) how recent analyses of NPI licensing in questions (e.g. van Rooy 2003) could be applied to HiNQs to derive Ladd's inner-like reading under AnderBois' 'single structure' analysis and (b) how the results of the present study can be understood in the light of other studies with the same population (e.g., Romero et al. 2017, Arnhold et al. 2018).

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