Negation, *czy*, and evidential bias in Polish polar questions: An acceptability rating study

In Polish, canonical polar questions are built with two main strategies (cf. Mikoś, 1976; Golka, 2010; Šimík, to appear). The first one is adding the sentence initial particle *czy* and a rising intonation in the end, as in (1). The second is intonational only, with a final rise on a declarative sentence, as in (2).

(1) Czy Piotrek ma złatą rybkę?   CZYPQ
     CZY Piotrek has gold fish

     Does Piotrek have a goldfish?

(2) Piotrek ma złatą rybkę?   NON-CZYPQ
     Piotrek has gold fish

     Does Piotrek have a goldfish?

I investigated experimentally how negation and contextual evidence influence the acceptability of these two forms of PQs. An acceptability rating study based on Staňková (2023) was conducted, with adjustments to account for the specifics of Polish. The experiment was run online on L-Rex (Starschenko & Wierzba, 2024) and 67 participants took part. They were asked to rate how natural a question appears in a specific context on a Likert scale between 1 (completely unnatural) and 7 (completely natural). The statistical analysis was run using R in RStudio (R Core Team, 2024). I fitted Cumulative Link Mixed Models (CLMM) from the package `ordinal` (Christensen, 2023).

In the main experiment, negative CZYPQs (CZYNPQs) are compared to negated NON-CZYPQs. Specifically, the question is posed whether an outer or inner negation reading is preferred (see Ladd, 1981; Büring and Gunlogson, 2000; Romero and Han, 2004; Repp, 2013; a.m.o.). Following an observation by Ladd (1981), polarity items were used as proxy for type of negation – negative polarity items (NPIs) for inner negation and positive polarity items for outer, since it does not license NPIs. Furthermore, the effect of different levels of evidential bias (Sudo, 2013) is tested (neutral and for $\neg p$). Thus, the experiment had a 2x2x2 design with the variables CZY (presence vs. absence of *czy*), PI (PPI, proxy for outer negation, vs. NPI, marking inner negation), and CONTEXT (neutral vs. negative). Results are presented in Figure 1.

Generally, no systematic difference was found between CZYPQs and NON-CZYPQs. For CZYNPQs, no significant effect of polarity item was found ($z = 1.073, p = 0.283$). I expected that CZYNPQs will primarily trigger outer negation reading, and so the rating with PPIs will be significantly higher than with NCIs. No support for this hypothesis was found in the current experiment. Outer negation CZYPQs were rated significantly higher after neutral than after negative context ($z = 4.136, p < 0.001$), while no effect of context was found for inner negation CZYPQs ($z = -0.792, p = 0.428$).

For NON-CZYNPQs, again, no significant preference for outer or inner negation was found ($z = -0.629, p = 0.529$). NON-CZYPQs with outer negation significantly preferred neutral to negative context ($z = 2.806, p = 0.005$), while the rating of inner negation NON-CZYPQs was not significantly influenced by any level of contextual evidence ($z = -1.803, p = 0.071$).
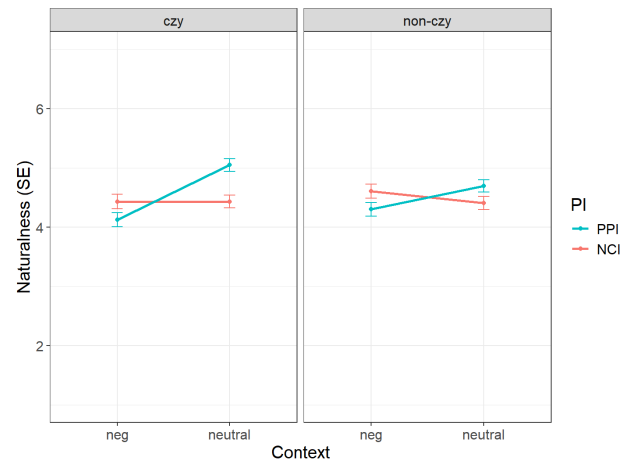

Figure 1: Mean ratings for E1

A second experiment investigated positive and outer negation CZYPQs. Appart from polarity, the context was varied between neutral or positive (for p). Both positive ($z = -2.796, p = 0.005$) and outer negation CZYPQs ($z = -3.456, p < 0.001$) were rated significantly higher after neutral context than after evidence for p. Furthermore, positive PQs were significantly preferred to their outer negation counterparts ($z = -6.234, p < 0.001$).

Additionally, NON-CZYPQs are compared with inquisitive rising declaratives in English (Gunlogson, 2002; Jeong, 2018; Rudin, 2022) in an attempt to determine whether this utterance type is available in Polish.

References

Büring, D., & Gunlogson, C. (2000). *Aren't positive and negative polar questions the same?* [Ms., UCSC/UCLA].

Christensen, R. H. B. (2023). *Ordinal—regression models for ordinal data* [R package version 2023.12-4]. https://CRAN.R-project.org/package=ordinal

Golka, M. (2010). Semantics and pragmatics of negative polar questions. In P. Łupkowski & M. Purver (Eds.), *Aspects of semantics and pragmatics of dialogue* (pp. 149–150). Polish Society for Cognitive Science.

Gunlogson, C. (2002). Declarative questions. *Semantics and Linguistic Theory*, *12*, 124. https://doi.org/10.3765/salt.v12i0.2860

Jeong, S. (2018). Intonation and sentence type conventions: Two types of rising declaratives. *Journal of Semantics*, *35*(2), 305–356. https://doi.org/10.1093/semant/ffy001

Ladd, D. R. (1981). A first look at the semantics and pragmatics of negative questions and tag questions. https://api.semanticscholar.org/CorpusID:62052300

Mikoś, M. J. (1976). Intonation of questions in Polish. *Journal of Phonetics*, *4*(3), 247–253. https://doi.org/10.1016/S0095-4470(19)31247-1

R Core Team. (2024). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. Vienna, Austria. https://www.R-project.org/

Repp, S. (2013, January 1). Common ground management: Modal particles, illocutionary negation and verum. In D. Gutzmann & H.-M. Gärtner (Eds.), *Beyond expressives: Explorations in use-conditional meaning* (pp. 231–274). BRILL. https://doi.org/10.1163/9789004183988_008

Romero, M., & Han, C.-H. (2004). On negative yes/no questions. *Linguistics and Philosophy*, *27*(5), 609–658. https://doi.org/10.1023/B:LING.0000033850.15705.94

Rudin, D. (2022). Intonational commitments. *Journal of Semantics*, *39*(2), 339–383. https://doi.org/10.1093/jos/ffac002

Šimík, R. (to appear). Polar question semantics and bias: Lessons from Czech/Slavic. In B. Gehrke & R. Šimík (Eds.), *Topics in the semantics of Slavic languages*. Language Science Press.

Staňková, A. (2023). *The expression of speaker's bias in Czech polar questions* [Master's thesis, Univerzita Karlova, Filozofická fakulta, Ústav českého jazyka a teorie komunikace].

Starschenko, A., & Wierzba, M. (2024). L-rex linguistic rating experiments [software], version 1.0.3 [GNU General Public License v3.0]. https://github.com/2e2a/l-rex/

Sudo, Y. (2013). Biased polar questions in English and Japanese. In D. Gutzmann & H.-M. Gärtner (Eds.), *Beyond expressives: Explorations in use-conditional meaning* (pp. 275–295). BRILL. https://doi.org/10.1163/9789004183988_009