

Negated adjectives: Disentangling inference to the antonym from linguistic acceptability

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Background

When one says that *John is not tall*, we can understand it as a denial that John is tall, but we can also interpret it as a statement that he is short. The latter reading is an “inference towards the antonym” (ITA). Previous experiments by Colston (1999) and Fraenkel and Schul (2008) used explicit ITA tasks. They presented participants with utterances such as *The room is not big*, and asked them to position the subject of the utterance on a scale ranging from *small* to *big*. In line with the expectation that positive adjectives should increase ITA effects (Horn 1989) because speakers use negated positive adjectives to mitigate negativity, these studies found asymmetric ITA effects according to adjective polarity. More recently, Ruytenbeek et al. (2017) used both an explicit and an implicit ITA task. In the latter task, participants indicated the acceptability of an utterance such as *X is not ADJ_A. Y is ADJ_B too* (where ADJ_A and ADJ_B are antonyms). In addition to the role of polarity, Ruytenbeek et al. found a higher ITA strength asymmetry for morphological adjectives, both in the explicit and in the implicit ITA task. This latter finding can be explained by the higher linguistic complexity in the case of morphological pairs (Krifka 2007). That is, the ITA asymmetry between e.g., *not happy* → *unhappy* and *not unhappy* → *happy* is larger than that between *not tall* → *short* and *not short* → *tall*, the reason being that negative morphological adjectives contain two explicit negative morphemes.

Research questions and hypotheses

In Ruytenbeek et al.’s (2017) Exp. 1, adjective polarity was determined on the basis of the results of two polarity tasks, consisting in linguistic acceptability judgments about *X is not very ADJ* and *It’s surprising how X is not ADJ*. Like the *X is not ADJ* construction, these two constructions included a negation, and it is known that negative adjectives are in general less felicitous than their positive counterparts in these environments (Sassoon 2012). However, the fact that these constructions gave rise to lower acceptability scores with negative adjectives might suggest that they probed ITA effects. In this paper, I present new data that enable disentangling ITA strength and linguistic acceptability. I propose that the interaction between polarity and morphology in previous ITA tasks was driven by lower acceptability of morphological antonyms under the scope of negation. In addition, I compare the ITA effects for different negative constructions.

Method

Four types of constructions were used as potential ITA tasks: the three constructions from Ruytenbeek et al. (2017), i.e., *X is not ADJ*, *X is not very ADJ*, and *It’s surprising how X is not ADJ*, and a construction including a negative polarity item (NPI) *X is not at all ADJ*, for which a stronger ITA effect is expected, as the negation is reinforced by the NPI. The study consisted in the randomized presentation of individual sentences followed by an explicit ITA task or a linguistic acceptability task. Each participant saw a total of 144 items: 128 (4 pairs of morphological and 4 pairs of non-morphological contrary (positive/negative) adjectives x 2 tasks x 4 constructions) and 16 fillers (*X is ADJ*; one for each adjective, ITA task only). The study was created on the Psytoolkit platform (Stoet 2017) and administered through Prolific to native speakers of French (N=59; 30 female; mean age=31.9; SD=10.2; range [19, 60]).

Results

The ITA scores were fitted using a cumulative link mixed model. The analyses were carried out in R version 3.6.2 for Windows (R development core team, 2019), employing the `clmm()`

function from the ordinal package (Christensen 2018). ITA scores were regressed on three predictors: Polarity, Morphology, and Construction. The random part of the model included random participant and adjectival pairs intercepts. The fixed part of the model contained the main effects of Polarity, Morphology, Construction, and their interactions. This analysis revealed a main effect of Polarity on ITA scores ($B = 1.18$, $SE = .22$, $z = 5.24$, $p < .0001$), indicating that positive adjectives gave rise to higher ITAs than negative adjectives. The effect of Morphology was not significant ($B = -0.19$, $SE = .24$, $z = -0.79$, $p = .43$), nor was the interaction between Morphology and Polarity ($B = -0.42$, $SE = .31$, $z = -1.37$, $p = .17$). A comparable analysis was carried out for the acceptability judgments. A main effect of Polarity on ITA scores was found ($B = 2.52$, $SE = .18$, $z = 13.62$, $p < .0001$), confirming that positive adjectives are more felicitous than negative adjectives in ITA constructions. A main effect of Morphology was found ($B = 1.09$, $SE = .25$, $z = 4.27$, $p < .0001$), as well as an interaction between Morphology and Polarity ($B = -1.49$, $SE = .25$, $z = -5.90$, $p < .0001$), negative morphological adjectives being less acceptable than negative non-morphological ones. Considering each type of construction separately and applying a correction for multiple testing confirms that the Morphology and interaction effects only occurred in the acceptability ratings (with the exception of *not at all ADJ*, where the interaction was significant, but not the main effect of Morphology). I found significant Pearson correlations between the mean ITA and acceptability scores (treated as numeric): .58 for *not ADJ* ($t(14) = 2.70$; $p = .017$), .80 for *not very ADJ* ($t(14) = 5.01$; $p < .001$), .75 for *how X is not ADJ* ($t(14) = 4.30$; $p < .001$), and .64 for *not at all ADJ* ($t(14) = 3.13$; $p < .01$). The results also indicate that *not at all ADJ* gave rise to the highest ITA scores.

Conclusions

The results of this study demonstrate that negative constructions are valid ITA tasks, as they are understood as statements of the opposite polarity, and that the NPI *at all* increases ITA strength. In addition, they reveal the key role of morphology in the acceptability of positive vs. negative adjectives. An asymmetry between positives and negatives was found both in the ITA and acceptability tasks. However, whether the link between acceptability and ITA can be explained in causal terms, and what the direction of causality is, deserves further investigation. This research constitutes a first attempt at answering this question.

References

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