Illicit scope interpretations are not the cause of NPI illusions. They might be a consequence.

The selectivity of negative polarity illusions has proven an extremely useful tool for understanding the cognitive mechanisms underlying the phenomenon. For example, sentences like (1) yield illusions (i.e. they are disproportionately accepted in speeded judgments and online measures), while sentences like (2) are robustly judged unacceptable despite the presence of an intrusive negative element in the relative clause (de-Dios-Flores et al. 2017, Orth et al. 2020). However, this line of work leaves unexplored a key process of sentence comprehension: interpretation. While there is substantial prior research manipulating the factors that cause illusions (de-Dios-Flores et al. 2017, Orth et al. 2020, Parker & Phillips 2016) very little is known about the interpretation a reader comes away with after experiencing an illusion. This is an understandable gap, since probing interpretations is methodologically difficult. However, a recent hypothesis about the cause of illusions makes clear predictions about comprehenders’ sentence-final interpretations, so we attempted to correct this data gap in the present experiment. The hypothesis we evaluate here attributes NPI illusions to errors in scope calculation for negative quantifiers. If the negative quantifier no erroneously takes scope over the main clause, this may yield the perception that the NPI is licensed. Critically, it should also yield the perception that the assertion expressed by the main clause is negative; this is the component of interpretation that we investigate here. For example, after hearing a sentence like (1), do comprehenders come away believing the authors in question have received acknowledgment for their novels or not? We find that comprehenders of NPI illusion sentences ultimately tend to believe that the main clause is negative, but that, contrary to the hypothesis, these interpretations are not a consequence of errors in quantifier processing that occur prior to (and independent from) NPI processing.

We developed a task in which participants are presented with sentences like (1-4) using RSVP, and then provide both a binary acceptability judgment and yes/no answer to a comprehension question. Questions were designed such that a “no” answer indicates a globally-negative interpretation of the sentence (see 5). This allows us to probe whether an illusion occurs and what interpretation results on every trial. Of particular interest here is the interpretation of relative-clause-embedded quantifiers (i.e. 2). Because the hypothesis attributes illusions to failures of quantifier processing (not NPI processing), it predicts a boost in negative interpretations for embedded-quantifier sentences regardless of the presence or absence of an NPI. Thus we also tested versions of (1-4) where the NPI ever was removed.

We find that NPI illusion sentences are frequently interpreted as if the main clause expresses a negative assertion. However, this effect is specific to sentences containing NPIs – the rate of negative interpretations for embedded-quantifier sentences without ever is much lower. Thus, although there is a small “quantifier illusion” (i.e. some negative quantifiers are interpreted inappropriately as if they scope over the whole sentence), it is not a plausible cause of the NPI illusion. This dataset also allows us to investigate interpretation as a function of acceptance – we see that for illusion sentences like (2), trials that are accepted are more likely to be interpreted negatively than trials that are rejected, though both are interpreted negatively more than 50% of the time. One additional contribution of this work is the finding that NPI illusions are robust even when participants must answer comprehension questions (and so cannot engage in purely “shallow” processes), and even in an untimed judgment task. NPI illusions’ insensitivity to timing limits contrasts with the illusion time-course for agreement attraction (Parker 2019), suggesting that there is more to be said about the reanalysis processes that take place after the conclusion of an RSVP-presented sentence.

Based on these findings, we conclude that NPI illusions are not purely the result of quantifier scope processing. We suggest that instead illusions may result from clause-level interpretations of downward-entailing contexts, and pragmatic inferences about the contribution of negation to speaker meaning.
(1) Embedded *no*: The authors that *no* critics have recommended have *(ever)* received acknowledgment for a best-selling novel.
(2) Embedded *haven’t*: The authors that the critics *haven’t* recommended have *(ever)* received acknowledgment for a best-selling novel.
(3) Grammatical baseline (main clause *no*): No authors that the critics have recommended have *(ever)* received acknowledgment for a best-selling novel.
(4) Ungrammatical baseline (without negation): The authors that the critics have recommended have *(ever)* received acknowledgment for a best-selling novel.
(5) Comprehension question: Have the authors received acknowledgement?

References


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