

The production and comprehension of expletive negation across languages
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Romance languages are well-known for their use of expletive negation (henceforth, EN), a construction where a negator (*ne* in (1)) in the complement clause of certain verbs, adpositions or adverbs (henceforth, EN-triggers, e.g., *craindre* in (1)) does not contribute to the polarity of the complement proposition. EN is “illogical” in that the speaker is literally saying the opposite of what she means. Using typological, corpus, and experimental methods this study argues (i) that the occurrence of EN occurs very widely in languages of the world, despite what standard grammars of particular languages say, (ii) that it is rooted in general mechanisms of language production, and (iii) speakers understand EN as EN and, as a result, make more “logical errors” when interpreting a negation in the complement of EN-triggers.

We first surveyed EN in a 722 language sample (250 genera covered) and found classes of EN-triggers recur across languages. Based on a comprehensive list of EN-triggers collected from French and Mandarin where EN is, in most cases, grammaticalized, we proposed a language production model that explains the striking similarity of the EN-triggers across languages. According to our model, EN arises from the concurrent activation of a negative proposition ($\neg p$, e.g., (*I want*) *it not to rain tomorrow* in (1)) entailed by an EN-trigger (e.g., *craindre* in (1)) alongside the intended complement proposition p (e.g., *it will rain tomorrow* in (1)); and it is the erroneous production of this negative proposition $\neg p$ (rather than the intended proposition p) that leads to the occurrence of EN in speech production. Since $\neg p$ is not part of the intended message in speech planning, EN can be considered a speech error. But because this “speech error” is due to the meaning of triggers, EN can become entrenched after some triggers through repetition and speakers may no longer notice the “illogical” nature of the negator. Our production model of EN makes several predictions: (i) The same range of EN-triggers should trigger EN across languages including those where EN is believed not to exist, e.g., English; (ii) Speakers can understand a negator in the scope of an EN-trigger expletively because EN-triggers activate both p and $\neg p$; (iii) The more frequent a negator is used expletively in the scope of an EN-trigger, the more likely a speaker is to interpret expletively a new occurrence of that negator for that trigger.

To test the first hypothesis, we conducted a detailed corpus study of unrehearsed English speech data via Google searches as Horn (2010) pointed out that EN sporadically occurs in English *parole* despite the fact that native speakers typically judge it a speech error. We used consistent but limited search patterns and found that the exact same range of EN-triggers collected from French and Mandarin also trigger EN in English. The percentage of EN interpretation across potential EN-triggers varies greatly, as it ranges from 0% to 100% with a mean of 28.34%.

To test the second hypothesis, we conducted two experiments in both English where EN is viewed as speech error or a matter of *parole* and Mandarin where EN in most cases has already grammaticalized and is a matter of *langue*. Participants read 60 2-3 sentence paragraphs and their 1 sentence continuations (henceforth, target sentences) and judged whether the continuation was logically consistent with the paragraph they just read. Crucially, whether a continuation that contained an EN-trigger was judged consistent or not depended on whether the negator was interpreted logically or expletively. Continuations fell into 4 categories: (i) non-EN-trigger+logically inconsistent negation (2a), (ii) EN-trigger+logically inconsistent negation (2b), (iii) non-EN-trigger+logically consistent negation (2c), and (iv) EN-trigger+logically consistent negation (2d). If participants expletively interpret the negator in the complement clause of EN-triggers (as in (2b) and (2d)), determining whether the continuation is consistent with the context should be more difficult than for non-EN-triggers, as the logical and expletive interpretations support conflicting answers. For example, if *not* is

only interpreted as a logical negation in (2b), the continuation is inconsistent, but if it is also interpreted expletively, the continuation can be judged consistent. As predicted, continuations after EN-triggers elicited less logically accurate answers in both English and Mandarin ($p < .01$ for both languages) and longer response times in English ($p < .01$) and marginally longer response times in Mandarin ($p = .09$). The results of both experiments suggest that both English and Mandarin speakers can interpret the negator expletively in the scope of EN-triggers regardless of the degree to which EN is entrenched. A mixed-effects model on the data from both languages further showed that Mandarin participants, made more logical errors ($p < .01$) and took longer time to judge the coherence of the target sentence ($p < .01$) compared to English participants. We interpret the increase in “illogical” responses and difficulty in making a semantic judgment in Mandarin to result from the higher entrenchment of EN in that language: Mandarin speakers are more likely to interpret a negator as an EN.

To test the third hypothesis, we conducted a correlation test between the frequency of interpretation of a negator as EN after particular triggers in English and Mandarin corpora and the frequency of an “illogical” interpretation of the continuations by English and Mandarin speakers in our two experiments. We predicted and found that the more times a negator was used expletively for a trigger in our corpus, the more likely a participant in our comprehension experiment was to make logical errors when judging target sentences ($r = .66, p < .01$ for English and $r = .85, p < .01$ for Mandarin).

To conclude, this paper shows that EN recurs across languages and that its “illogism” of has its roots in semantic properties of both EN-triggers (systematic entailments associated with the message speakers are trying to encode) and general properties of the language production system. We further show that readers understand negators as EN in the scope of EN-triggers more in languages where it is entrenched (Mandarin) than in languages where it is seen as a speech error (English), but that in both cases it correlates with how frequent EN interpretations are in corpora for particular triggers.

(1) French

| | | | | | |
|-----------|---------------|--------------|-----------|---------------|----------------|
| <i>Je</i> | <i>crains</i> | <i>qu'il</i> | <i>ne</i> | <i>pleuve</i> | <i>demain.</i> |
| I | fear | that.it | NEG | rain.SBJV | tomorrow |

‘I fear that it will rain tomorrow.’

(2) A stimulus set with four different conditions for the English experiment

(a) Non-EN-trigger + logically inconsistent negation

I used to be a strict vegetarian. Last year, I was diagnosed with iron-deficiency anemia, a disease caused by not eating enough meat. My doctor strongly recommended that I eat meat.

So I started not eating meat.

(b) EN-trigger + logically inconsistent negation

After learning that being vegan can prevent the exploitation of animals and promote a greener life on our planet, I decided to become vegan. **So I quit not eating meat.**

(c) Non-EN-trigger + logically consistent negation

After learning that being vegan can prevent the exploitation of animals and promote a greener life on our planet, I decided to become vegan. **So I started not eating meat.**

(d) EN-trigger + logically consistent negation

I used to be a strict vegetarian. Last year, I was diagnosed with iron-deficiency anemia, a disease caused by not eating enough meat. My doctor strongly recommended that I eat meat.

So I quit not eating meat.

Reference

Horn, L. R. (2010). Multiple negation in English and other languages. In L. R. Horn (Ed.), *The expression of negation* (111-148). Berlin & New York: Mouton de Gruyter.