

Uniformity and variability in the understanding of expletive negation across languages

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Expletive negation (EN) is a construction where a negator in the complement clause of certain lexical items (EN-triggers; 'fear' in (1)) does not change the polarity of the complement proposition. Jin & Koenig (2019, 2020) found it to occur widely in languages of the world and that the same set of predicates or operators trigger EN. They propose a language production model where EN arises from the production of a lexically entailed negative proposition $\neg p$ rather than the intended proposition p . They suggest that what starts out as an interference between the argument proposition that is part of the message (p) and its entailed dual ($\neg p$) can become entrenched or even grammaticized depending on the trigger or language.

In this paper, we report the results of a French and a Mandarin experiment that test the hypotheses that (i) the same semantic interference effects occur in comprehension across languages but that (ii) the propensity of speakers to interpret a negator expletively can vary from language to language. We model our experiments after Jin & Koenig (2020) who designed a semantic interference effect experiment that tested whether English speakers include in their representations the expletive use of negators. Participants in their experiment read short paragraphs and judged the logical consistency of continuations given the paragraphs. Continuations fell into 4 conditions: (3a) non-EN-trigger + logically inconsistent negation, (3b) EN-trigger + logically inconsistent negation, (3c) non-EN-trigger + logically consistent negation, and (3d) EN-trigger + logically consistent negation. If participants interpret the negator in the complement clause of EN-triggers ('prevent' in (3b, 3d)) *expletively*, determining whether the continuation is consistent should be more difficult than for non-EN-trigger continuations, as the logical and expletive interpretations support conflicting answers. They found EN-trigger continuations elicited less logically accurate answers and longer response times. Importantly, they found that there was a high correlation ($r=.66$, $p<.01$) between EN interpretation across triggers in a corpus and logical inaccuracy for EN-trigger continuations, which suggests that English speakers keep track of the likelihood that a negator is interpreted expletively after each trigger.

Our French and Mandarin experiments mirror Jin & Koenig's English experiment's logic and stimuli. We chose French and Mandarin because EN is, according to grammars, more entrenched in both languages and, additionally, French has one negator *ne* which is a grammaticalized marker of EN and one which is not (*ne*) ... *pas*. First, we predicted and found that our French and Mandarin participants, like Jin & Koenig's English participants, made more logical errors ($p<.01$ for both French and Mandarin participants) and took longer to respond ($p<.01$ for French and $p=.07$ for Mandarin participants) for continuations that contained EN-triggers than for continuations that did not. We also found a high correlation ($r=.75$, $p<.01$) between logical inaccuracy for EN continuations in the Mandarin experiment and frequency of EN interpretations in a Mandarin corpus study (French corpus study pending), confirming that the more EN interpretation for a particular EN-trigger a speaker has encountered, the more likely she is to interpret expletively a new occurrence of a negator in the scope of that EN-trigger. Second, we predicted and found an interaction between language and trigger condition. A logistic regression showed that French and Mandarin speakers made more logical errors ($p<.01$) than English speakers after EN-triggers (22.5% EN interpretation for English, 54.2% for French, and 58.5% for Mandarin speakers), but not after non-EN-triggers, suggesting that speakers of both languages were more likely to interpret negators expletively after EN-triggers than English speakers. Third, we predicted and found an effect of negator form for French. French speakers made more logical errors ($p<.01$) when the negator in the argument proposition of an EN-trigger was *ne* (82.04%) than either English speakers (29.83%) or Mandarin speakers (71%) for corresponding triggers and conditions, but less logical errors ($p<.01$) than Mandarin speakers (64.75%) and roughly the same number of logical errors ($p=.11$) as English speakers (24.12%) when the negator was the standard negation (*ne*)...*pas* (29.05%). Overall, the results of our experiments suggest that

although there is uniformity across languages in the availability and triggers of EN interpretation of negators, entrenchment can vary across, languages, triggers, and negator form.

(1) A French example of EN marked with grammaticalized negator *ne*

J'ai peur qu'il ne pleuve demain.
 I.have fear that.it NEG rain.SBJV tomorrow

'I fear that it will rain tomorrow.'

(2) A French example of EN marked with low-entrenchment negator (*ne*)...*pas*

Vous avez oublié de ne pas nommer Jacques Stephen Alexis,
 You have forgotten INF NEG nominate PN

un grand des grands savants.

one great of.the great savants

'You have forgotten to nominate Jacques Stephen Alexis, one of the greatest savants.' (Jin & Koenig 2019: 173; such examples sound like errors to native speakers)

(3) A stimulus set with four different conditions in Jin & Koenig's (2020) English experiment

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

My husband and I were high school classmates and we graduated ten years ago. Several days ago, we both got an invitation for our 10-year high-school reunion. I think it'll be fun to get together for the first time after so many years. But my husband said he won't go because he didn't like most people in his class. I want him to go with me. **I'll persuade him to not go there.**

(b) EN-trigger + logically inconsistent negation

Every time when my husband comes back from his annual high-school reunion, he is unhappy. I know this is because he thinks he has accomplished the least among his classmates. Now this year's reunion is approaching and he said he would go. **I'll prevent him from not going there.**

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

Every time when my husband comes back from his annual high-school reunion, he is unhappy. I know this is because he thinks he has accomplished the least among his classmates. Now this year's reunion is approaching and he said he would go. **I'll persuade him to not go there.**

(d) EN-trigger + logically consistent negation

My husband and I were high school classmates and we graduated ten years ago. Several days ago, we both got an invitation for our 10-year high-school reunion. I think it'll be fun to get together for the first time after so many years. But my husband said he won't go because he didn't like most people in his class. I want him to go with me. **I'll prevent him from not going there.**

(4) **Table 1.** Mean accuracy and response time in the Mandarin experiment

| Trigger Condition | Logical consistency | Mean accuracy of judgments | Mean RT |
|-------------------|------------------------|----------------------------|---------|
| non-EN-triggers | Logically inconsistent | 89.80% | 4907.79 |
| EN-triggers | Logically inconsistent | 35.88% | 5773.35 |
| non-EN-triggers | Logically consistent | 90.80% | 5418.28 |
| EN-triggers | Logically consistent | 47.18% | 6170.93 |

Table 2. Mean accuracy and response time in the French experiment

| Trigger Condition | Mean accuracy of judgments | Mean RT |
|---|----------------------------|---------|
| EN-triggers that take <i>ne</i> as EN | 17.96% | 5162.84 |
| Non-EN-triggers used as controls | 90.51% | 4127.28 |
| EN-triggers that take (<i>ne</i>)... <i>pas</i> as EN | 70.95% | 7123.64 |
| Non-EN-triggers used as controls | 90.80% | 3760.88 |