Two stages of NPI licensing: An ERP study
Ming Xiang, Anastasia Giannakidou, & Julian Grove (University of Chicago)
mxiang@uchicago.edu

Semantic/pragmatic processing; Event Related Potentials (ERPs)

Negative polarity items (NPI) such as ever and any are known to be subject to particular semantic and pragmatic licensing conditions, but the exact nature of the licensing condition is still under debate. Using ERP recording, the current study argues that (i) there are two different kinds of licensing mechanisms: one licenses NPIs in the grammar proper, and the other licenses NPIs through inferences; (ii) it is the negativity of the licensing environment, rather than the downward entailment (DE) property per se, that licenses NPIs, contrary to the long-held assumption (since Ladusaw 1980) that DE is a fundamental semantic property underlying NPI licensing.

In a Latin Square design, native English speaking participants (n=33) read a context sentence followed by one of five target sentences (1), while ERPs were recorded. The context sentence was presented as a whole, and the target sentence word by word in the center of the screen (500ms SOA), followed by a comprehension question. Conditions (1a) to (1d) are grammatical sentences, with a different licensor in each condition: no, few, only and emotive factives such as surprised, glad, etc; condition (1e) is the ungrammatical control in which the NPI ever is not licensed by any licensors. The experimental items (n=150) were normed in an offline rating study before the ERP recording session (see (1)). Among the four grammatical conditions, no and few are the stereotypical DE licensors. Only and emotive factives like surprise or glad do not pass the standard DE test (2). It has been argued that licensors like only and factives license NPIs via inferences rather than in the grammar proper (3) (Giannakidou2006; Linebarger1988). All participants also finished an Autistic Spectrum Quotient (AQ, Baron-Cohen et al. 2001), which has been reported to independently assess pragmatic skills in language comprehension (Nieuwland et al. 2010).

ERP recording time-locked at the onset of the critical word(CW) ever showed a significantly larger posterior positivity in the 400-700ms time window on the ungrammatical condition (1e), compared to no, few and only conditions (ps<.05), but only for the licensor only that the positivity is correlated with the participants’ AQ scores (communication subscale (CS) in particular,) (p<.01), such that the worse a participant’s pragmatic skills, the smaller the positivity effect, suggesting licensing through only may be qualitatively different from no and few. The difference between (1e) and the emotive factive condition, is not significant at the CW (ps>.1). However, at the sentence final word (SW), the ungrammatical control showed a prolonged positivity (starting from 400ms from the onset) compared to all four grammatical conditions (ps<.05); but only for emotive factives, this effect is correlated with the CS scores (p<.06) in the same direction as above.

In conclusion, based on both the time course information and the correlation between the processing of a licensor and the participants’ pragmatic skills, the non-DE focus marker only and the emotive factives demonstrated a qualitatively different licensing effect from the DE quantifier no and few, suggesting two different mechanisms for NPI licensing.

(1). War and Peace was such a long novel. 1-5 rating
  a. No Russian literature students could ever finish it. (4.15)
  b. Few Russian literature students could ever finish it. (4.08)
  c. Only Russian literature students could ever finish it. (3.90)
  d. Russian literature students were glad they could ever finish it. (3.75)
  *e. Russian literature students could ever finish it. (2.32)

(2) ?? Only John came to school. → Only John came to school early.
  ?? I am surprised John came to school. → I am surprised John came to school early.

(3) || Only John || = λP.λx[P(John) ∧ ¬∃x[P(x) ∧ x ≠ John ∧ P(x)]

a. Only John came to school. → John came to school and no other people than John came to school.
b. “I am surprised/glad John came” could imply that “I did not expect John to come”.