## As strong as an NPI in LIS, LSF & NGT

**Theoretical Puzzle.** Negative Polarity Items (NPIs) are grammatical words like English *any* licensed under particular semantic and syntactic conditions involving negation or other downward entailing environments. While NPIs are typologically very common in spoken languages (Haspelmath 1997), they have so far rarely been described in the sign language literature. In fact, for some sign languages, it has been explicitly stated that NPIs are entirely absent (Abner & Wilbur 2017 for ASL; Antzakas 2006 for Greek SL; but see Schlenker 2017a,b for an NPI analysis of ANY in ASL), up to the point that NPIs have been claimed to be extremely hard to find in SL (Quer 2020).

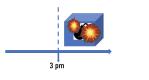
**Claim.** NPIs are not so rare to find in SL once we look for a particular kind, namely *strong* NPIs. Specifically, we provide evidence to show that the sign UNTIL is one such item in LIS, LSF and NGT. We also discuss minor typological differences among the three SLs.

**Methodology.** We used the playback method (Schlenker 2014, Davidson 2020) to elicit acceptability and felicity judgments on sentences containing UNTIL in the three languages. The procedure involved three separate steps. First, videos of sentences including UNTIL as a temporal frame were recorded. Second, in subsequent sessions, general acceptability judgments on a 7-point scale were collected for these sentences. Finally, we collected felicity judgments on a 7-point scale of the same sentences embedded in various contexts. Contexts were introduced either by showing images, creating pre-recorded short dialogues, or having short narratives preceding the target sentence, cf (2). LSF, LIS and NGT were the only languages used during elicitation. Due to confinement, data were collected over Skype meetings with the informants (one per language, but by conference time we are confident to double check the data with more informants per language). Given the generally similar behavior, we only report data from LSF in the next two sections. Differences are discussed after.

**UNTIL as an NPI in LIS, LSF & NGT.** In many languages including English, *until* is ambiguous between a "normal temporal adverb" and an NPI (i.a., Condoravdi 2009). We replicate this in LIS, LSF & NGT, cf. (1) vs. (2). The ambiguity is apparent once sentences with telic and atelic predicates are compared. UNTIL is acceptable with the atelic predicate STAY but not with the telic predicate EXPLODE, cf. (1). The only way of making sense of a sentence like (1b) is if the event repeatedly occurred, namely the very same box would have exploded several times. Crucially, once embedded in a negative sentence, UNTIL is fully acceptable also with telic predicates, cf.(2) confirming the NPI status of UNTIL.

The nature of the ambiguity of UNTIL is not limited to its NPI status. In fact, when used with atelic predicates, its meaning is *durative* in the sense that it denotes an interval of time within which the facts described in the sentence occurred, cf. (1a). When used with telic predicates (2), its meaning becomes *punctual* and gives rise to the following implications (see also Condoravdi 2009:632): i) the relevant event occurred; ii) the event occurred at the time denoted by the temporal expression.

- (1) a. BOX STAY UNTIL 3PM
  - b. \* box explode until 3pm



'The box was there until 3pm.' \* The box exploded until 3pm.

BOX NEG EXPLODE UNTIL 3PM

'The box didn't explode until 3pm.' Meaning: it did after.

**UNTIL as a strong NPI.** The literature on NPIs is vast and the debate on their nature is vivid and ongoing (see Tovena 2020 for an overview). However there is relatively wide consensus on the fact that NPIs are not all alike and that some have more stringent licensing conditions than others. For example, English *any* is licensed in simple downward entailing contexts, like the antecedent of a conditional, or polar questions, while *until* is not, cf. (3). NPIs of the former type are called *weak*, while those of the latter type are called *strong* NPIs. UNTIL behaves as a strong NPI, cf. (4).

- (3) a. If **any** box exploded, I would have noticed.
  - b. \* If a box exploded **until 3pm**, I would have noticed.
  - c. Has **any** box exploded?
  - d. \* Did/\*has the box explode(d) **until 3pm**?

(4) a. \* 
$$\overline{(IF)}$$
 BOX EXPLODE UNTIL 3PM, IX-1 SURE SEE  
b. \*  $\overline{BOX}$  EXPLODE UNTIL 3PM

Embedded complements is another domain where *strong* and *weak* NPIs behave differently. While *weak* NPIs can be licensed under negation with any complement taking predicate, *strong* NPIs are licensed only if embedded within a Neg-Raising predicate (e.g., want, believe, think, etc. Horn 2020), cf. (5). UNTIL again coherently behaves as a *strong* NPI, cf. (6).

- (5) a. John didn't claim that **any** box exploded.
  - b. \* John didn't claim that the box exploded **until 3pm**.
  - c. John didn't want the box to explode **until 3pm**.
- (6) a. \* PIERRE NOT ANNOUNCE BOX EXPLODE UNTIL 3PM
  - b. PIERRE NOT-WANT BOX EXPLODE UNTIL 3PM

**Typological variation in the UNTIL phrase.** From the syntactic standpoint, while LSF and NGT allow the UNTIL phrase in sentence final position (cf. (7a), (7b)), LIS requires it at the beginning of the sentence, cf. (7d) vs. (7e). The last example also shows that it is mandatory in LIS to have the left-boundary of the temporal interval to be explicitly expressed. Finally, the NGT example in (7c) shows that the negative NMM can license strong NPIs, providing further and independent evidence that NGT is "non-manual dominant" w.r.t. negation (Coerts 1992; Oomen & Pfau 2017).

(7) a	. BOX NEG EXPLODE UNTIL 3PM.	(LSF)	'The box didn't explode until 3pm.'
b	b. BOX $\overline{\text{NEG EXPLODE}}$ UNTIL 3PM.	(NGT)	'The box didn't explode until 3pm.'
с	. BOX $\overline{\text{EXPLODE}}$ UNTIL 3PM.	(NGT)	'The box didn't explode until 3pm.'
d	. * box neg explode 2pm until 3pm.	(LIS)	'The box didn't explode until 3pm.'
e	. 2pm until 3pm box neg explode.	(LIS)	'The box didn't explode until 3pm.'

**Conclusions and outlook.** The distributional pattern of the sign UNTIL in LIS, LSF and NGT mirrors that of English *until*, providing evidence that it functions as a *strong* NPI. Its punctual use can be used as an independent diagnostic to identify telic predicates. Sentences with telic predicates and UNTIL are only licensed in a negative environment (anti-veridical, to be precise). As far as we are aware of, this is the first time a *strong* NPI has been identified and described in any sign language. We also documented typological variation pertaining the distribution of the UNTIL phrase in the three languages, which in turn allowed us to offer an independent argument for the status of Neg-NMM in NGT as a genuine negative marker. These discoveries open up many possibilities for further research into the areas we have started exploring here. In particular, while it is true that NPIs like *any* are difficult to find in SL, others like UNTIL are clearly less so.

Selected References. Abner & Wilbur. 2017. Quantification in American Sign Language. In *Handbook of quantifiers in natural language* (pp. 21-59). Condoravdi. 2009. Punctual Until as a Scalar NPI. In Hanson & Inkelas (eds.), The Nature of the Word: Studies in Honor of Paul Kiparsky, 631–654. Davidson. 2020. Is experimental a gradable predicate? *NELS 50*. Haspelmath. 1997. *Indefinite pronouns*. Oomen & Pfau. 2017. Signing NOT (or not): a typological perspective on standard negation in NGT. *Linguistic Typology* 21(1). 1-51. Schlenker. 2014. Iconic features. *Natural Language Semantics* 22(4), 299-356. Quer. 2020. The expression of negation in sign languages. In *The Oxford Handbook of Negation*.