

Not just *any* sign: Searching for negative polarity items in DGS

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On NPIs. Negative polarity items (NPIs) are expressions that cannot occur in positive assertions with simple past (e.g. *any* in (1b)), but they become acceptable under the scope of negation (1a). NPIs have been claimed to occur in virtually every language (Giannakiadou 2011) and beyond their own central role in semantic theory formation they serve as syntactic diagnostics (NPIs are typically c-commanded by a negator) or semantic diagnostics (e.g. to test whether something acts as a negative predicate). Given that the nature of NPIs and their licensing contexts is still under debate and a broad, cross-modal empirical base would be desirable for deriving further theoretical insights, the present study seeks to identify potential NPI candidates in DGS by performing a collocation analysis of negation signs in the DGS corpus (Prillwitz et al. 2008). To our knowledge, this is the first systematic attempt to discover a range of NPIs in any sign language (but see Schlenker (2017) and Oomen (2021) who identify isolated NPIs in LSF and ASL).

- (1) a. Mary didn't buy **any** books.
- b. *Mary bought **any** books.
- c. I don't like spinach **one bit**. / *Nobody likes spinach **one bit**.
- d. I haven't seen the new movie **yet**. / Nobody has seen the new movie **yet**.

The literature distinguishes superstrong, strong, and weak NPIs based on their formal semantic properties (Zwarts 1993). In this first study on NPIs in DGS, we focus on identifying superstrong and strong NPIs: A superstrong NPI such as *one bit* is only licensed by classical negation (1c), whereas a strong NPI such as *yet* is also licensed by regular negation (e.g. the negative quantifier in (1d)). We leave for further study weak NPIs, which are licensed in any downward-entailing environment, and multi-sign NPIs, as we currently lack sufficient corpus annotations and tools to identify such constructions in the DGS corpus. Further, for our initial search we adopt a simplified notion of the scopal restrictiveness of NPIs and take the scope of negation to be the clause in which the negative element or licenser occurs, plus all clauses depending on it (see Soehn et al. 2010 for a similar procedure). The corpus annotations do not allow ascertaining automatically whether e.g. c-command between licenser and NPI (Ladusaw 1996) obtains.

Method. Following van der Wouden (1992), we assume that the relationship between an NPI and its licenser resembles one of collocation. A first list of NPI candidates in DGS can be identified by looking at collocates of lexical negation signs, morphologically negated signs, and headshake negation. Lichte (2005) and Soehn et al. (2010) show that such a collocational method yields promising candidates for NPIs in German. We extracted the NPI candidates from the DGS corpus, which contains approx. 560 hours of signed conversations (>662,000 tokens as of October 2021) by 330 signers from different regions of Germany. The corpus contains lemmatization as well as German and English translations that roughly correspond to sentential units in DGS. The extraction process included the following 3 steps: We first operationalized clauses as German translation tags containing <18 signs (longer strings were considered outliers, see Jahn et al. (in press) on using translation tags as provisional clausal units). We then identified all clauses that contain a licenser. For classical negation this included lexical signs like NOT, the negative verbal suffix 'alpha', and headshake negation. Regular negation expressions included for example the negative quantifiers NEVER and NOBODY. As a third step, we extracted all lemmas that occur within the scope of a licenser while not being a licenser themselves. The resulting list of 7197 NPI candidates was sorted by the context ratio (CR) of each lemma, that is the number of times it occurs within the scope of a licenser, relative to its overall number of occurrences (cf. Soehn et al. 2010). As this metric favors low-frequency lemmas (a lemma that occurs only once in the corpus will always have a perfect CR of 1.0 if

that occurrence happens to be in-scope) we also filter out lemmas with fewer than 3 in-scope occurrences, resulting in a total of 6484 NPI candidates.

Results. Only two of the 20 lemmas with a CR of 1 (only occur in negated contexts in the corpus) are likely NPIs, i.e. expressions that either strengthen negation, encode understatement, are indefinites, or that encode indifference, intolerance, or minimal degree (see van der Wouden 1994, Hoeksema 1994 for a semantic classification of NPIs). In fact, among the 150 most highly ranked lemmas, only ÜBERHAUPT1 'at all' and AHNUNG1 'idea, knowledge' occur exclusively with negation and have a compatible semantics, i.e. they strengthen negation. Both occur in utterances that draw heavily on signed German (LBG): for instance, (2a) uses the LBG form HABEN1 (HAVE1) and (2b) the phrase <KEIN1 'no' AHNUNG1>, which is more often expressed via the single sign KEIN-AHNUNG1 'no idea' in DGS. While the German word *überhaupt* 'at all' is an NPI and may be in the process of being borrowed into DGS, German *Ahnung* 'idea, knowledge' is not an NPI. Hence, while borrowed from a German lexeme, AHNUNG1 may have developed into an independent NPI in DGS.

- (2) a. ISLAM1 HAVE1 WITH3 ISLAM1 NOT3A ÜBERHAUPT1 NOTHING1B HAVE-TO-DO-WITH
'This has nothing to do with Islam.'
- b. I NO1 AHNUNG1 palm-up THEREFORE1 ASK1 NO1 AHNUNG1 I
'I have no idea (about that), that's why I'm asking.'

Discussion. Compared to Lichte's (2005) and Soehn et al.'s (2010) ranked list of NPI candidates in German, which contains 13 NPIs among the 20 highest-ranked NPI candidates alone, we find very few forms that may have NPI status in DGS. The following limitations on our data set may form part of the reason why our 'haul' was comparatively small: Our search did not capture weak NPIs, which make up the bulk of NPIs in e.g. German (78% of the first 50 NPIs on CoDII-NPI.de are weak); nor does it capture complex NPIs (again, the bulk of NPIs in German are complex phrases). Some NPIs may have received a low CR due to polysemous non-NPI uses of the same lemma (cp. the English NPI *mind* (V) vs. the non-NPI *mind* (N)), which we cannot identify due to a lack of part of speech tagging and sense disambiguation in the annotations. Further, our list of NPI licensers may need expanding to include negative predicates (e.g. VERSAGEN 'to fail', UNBEKANNT 'unknown'). Extracting NPI candidates via a collocation analysis nonetheless proves an important first step in identifying NPIs. The ranked list of candidates then serves as the basis for further manual analysis, as exemplified for ÜBERHAUPT1 and AHNUNG1 here, which can be complemented by further data elicitation.

References

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