Negative concord in the acquisition of non-negative concord languages

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Introduction

- In (standard) English and German, sentences with a negative indefinite (NI) and negation (1) yield a double negation reading (1a). In negative concord (NC) languages like Italian and Turkish, a similar construction yields only one semantic negation (1b).

(1) Emma did**n't** eat **no** apples.

   a. Emma ate some apples. ⤳ *double negation reading*

   b. Emma ate no apples. ⤳ *single negation reading*

- Children have the task of learning which type of language they are acquiring. Previous work suggests that children show a bias for NC in comprehension and learning:
  - **Comprehension:** Children (3;6–6;5) acquiring English or German strongly favour a single negation interpretation (1b) (Thornton et al. 2016, Nicolae & Yatsushiro 2020).
  - **Learning:** Learners acquire an artificial language with NC readings more easily than one with double negation readings (Maldonado & Culbertson 2021)
- This bias may result from NC being encoded in the children's grammar, but can also be explained by extra-grammatical factors, e.g. children have processing difficulties with double negation in comprehension, and redundant negation helps learning.
- **Production?** If children produce NC errors in non-NC languages, we can more confidently claim that the observed bias is due to an 'NC phase' in the learner's grammar

> **Hypothesis:** Children learning non-NC languages produce utterances with NC
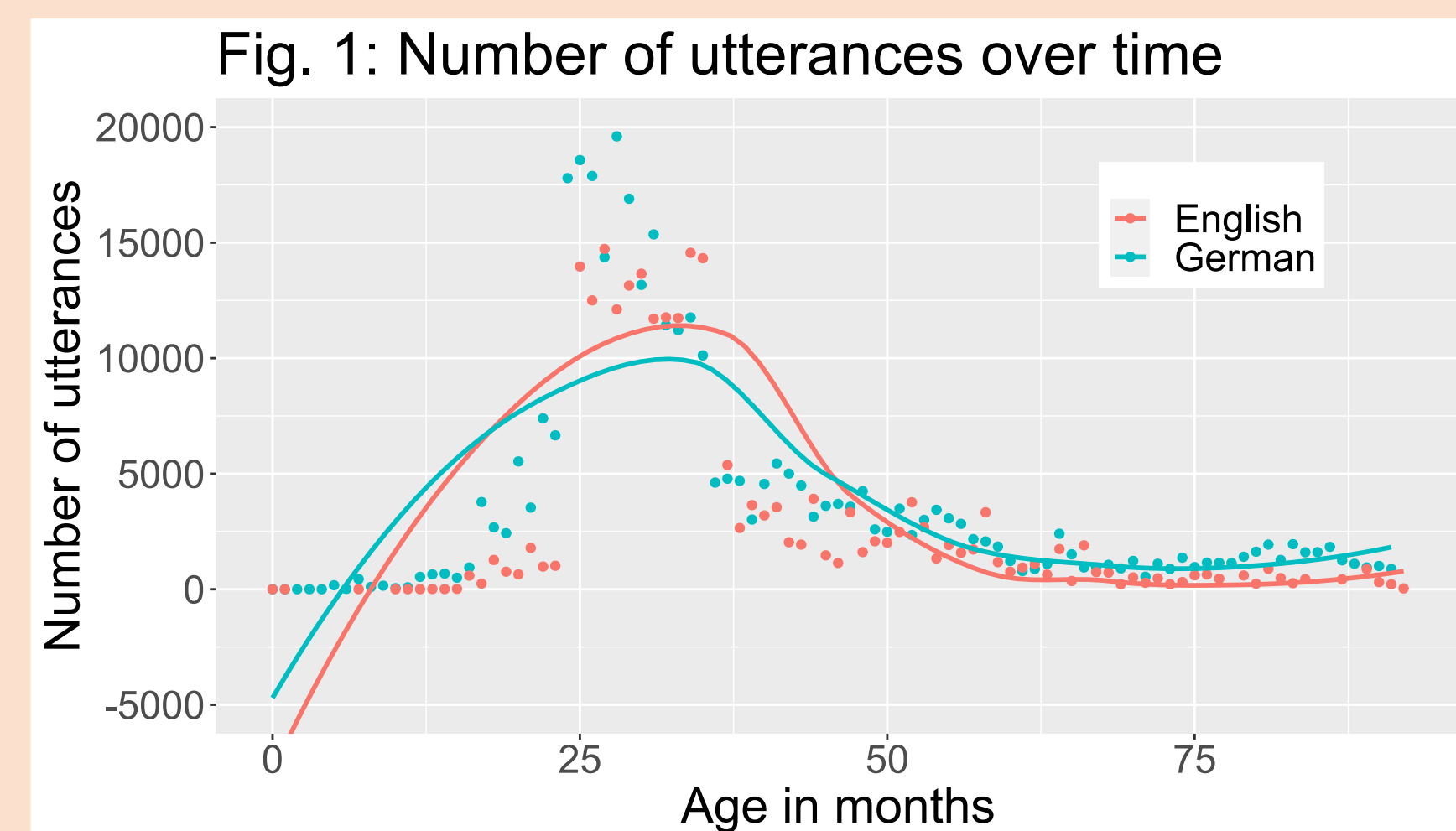
Method

Corpus study based on corpora from CHILDES (MacWhinney 2000):

(6)

	Number of children	Age range	Number of utterances
English	6 (4 NA, 2 UK)	0;7–7;10	328 972
German	43	0–14;10	363 028 (338 407 $\leq$ 7;10)

Procedure:

- We checked whether the input matched a NC dialect of English or German (exclusion of Sarah from the Brown corpus in English).
- We extracted all child utterances that contained at least one NI.

Fig. 1: Number of utterances over time

- We tagged each utterance for: the type of NI; presence of NC; whether the NI was preverbal or postverbal; whether negation was *n't* or *not* in English
- We excluded fragment answers and mistaggings.
- Annotations were done by native speaker authors.
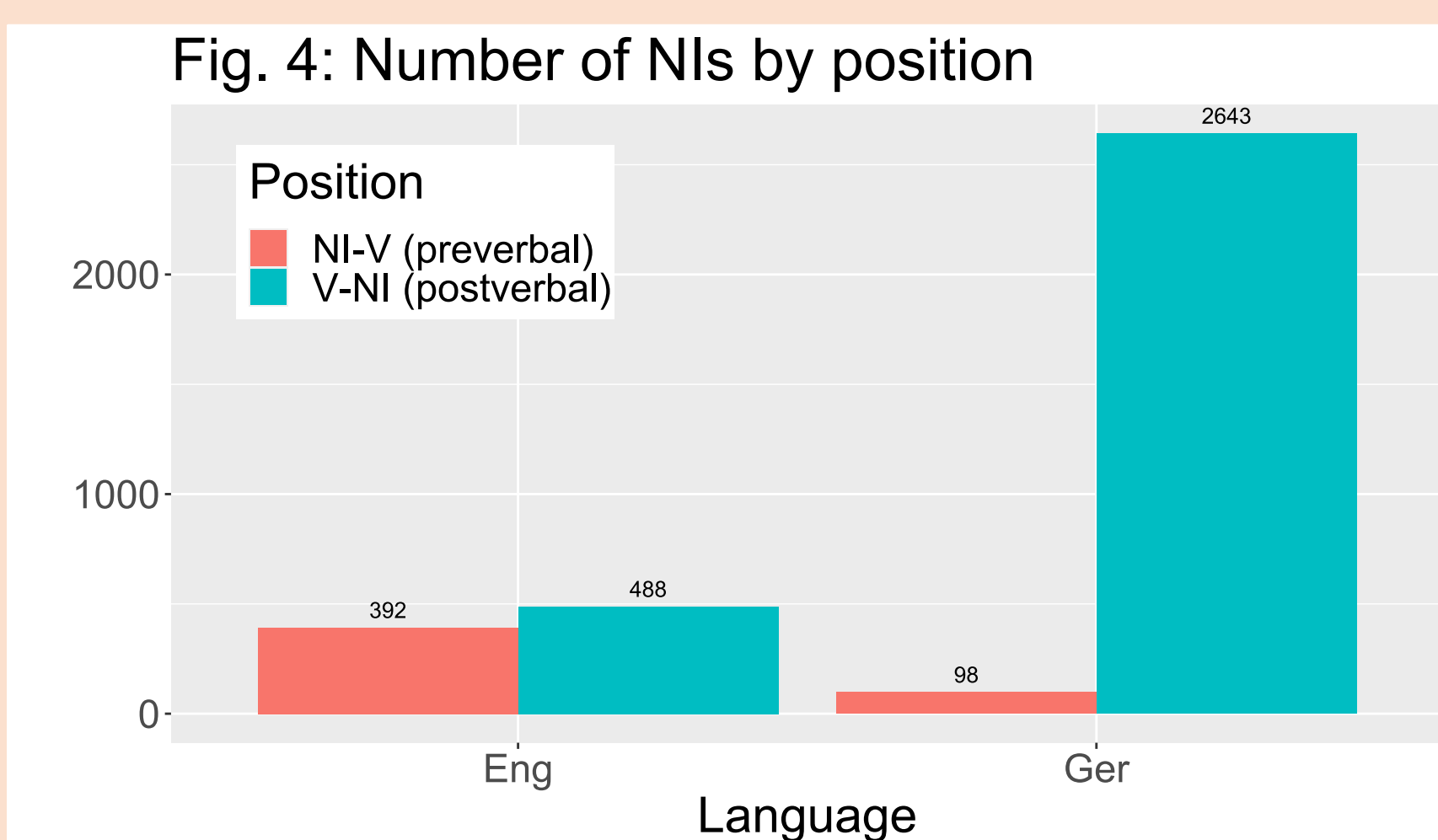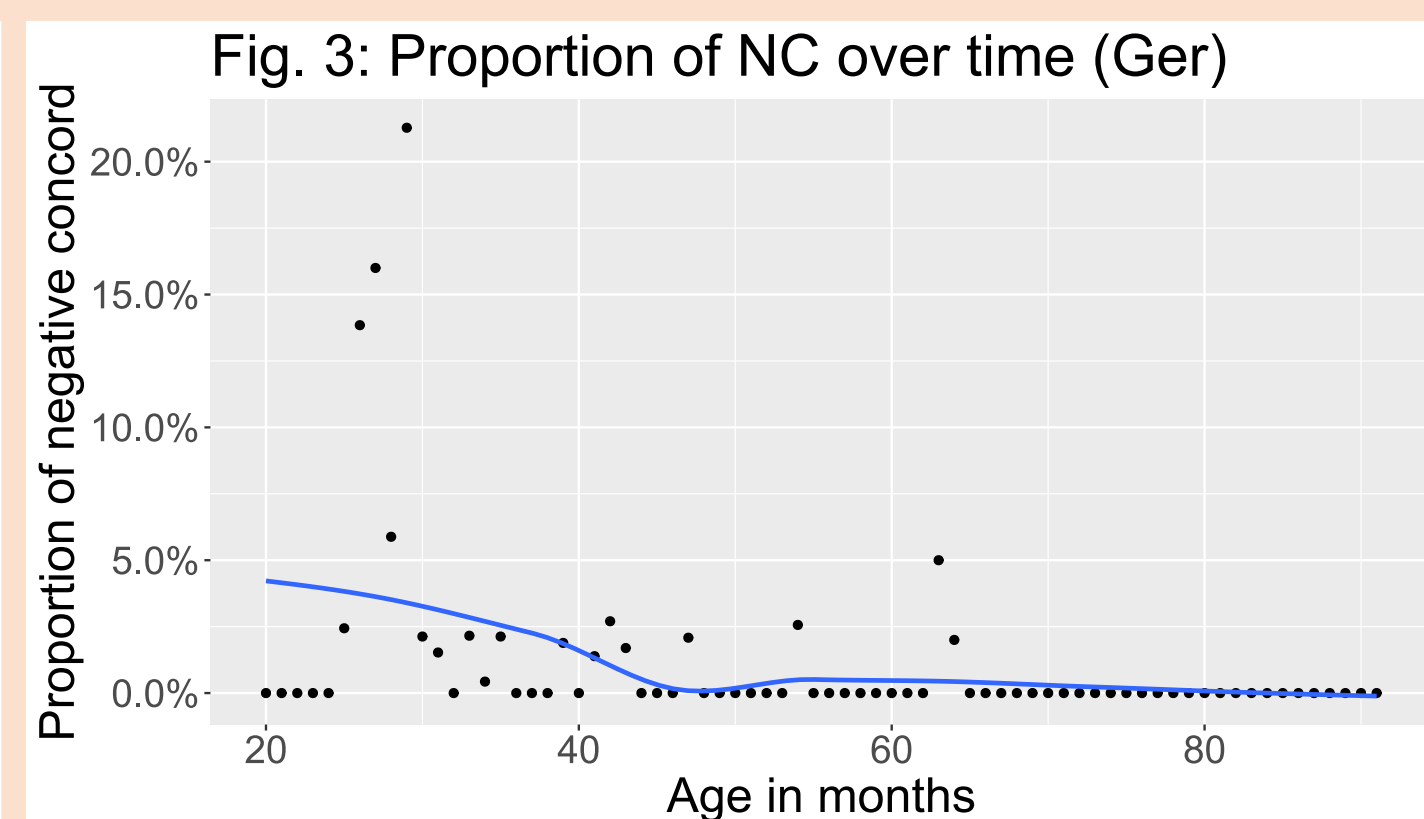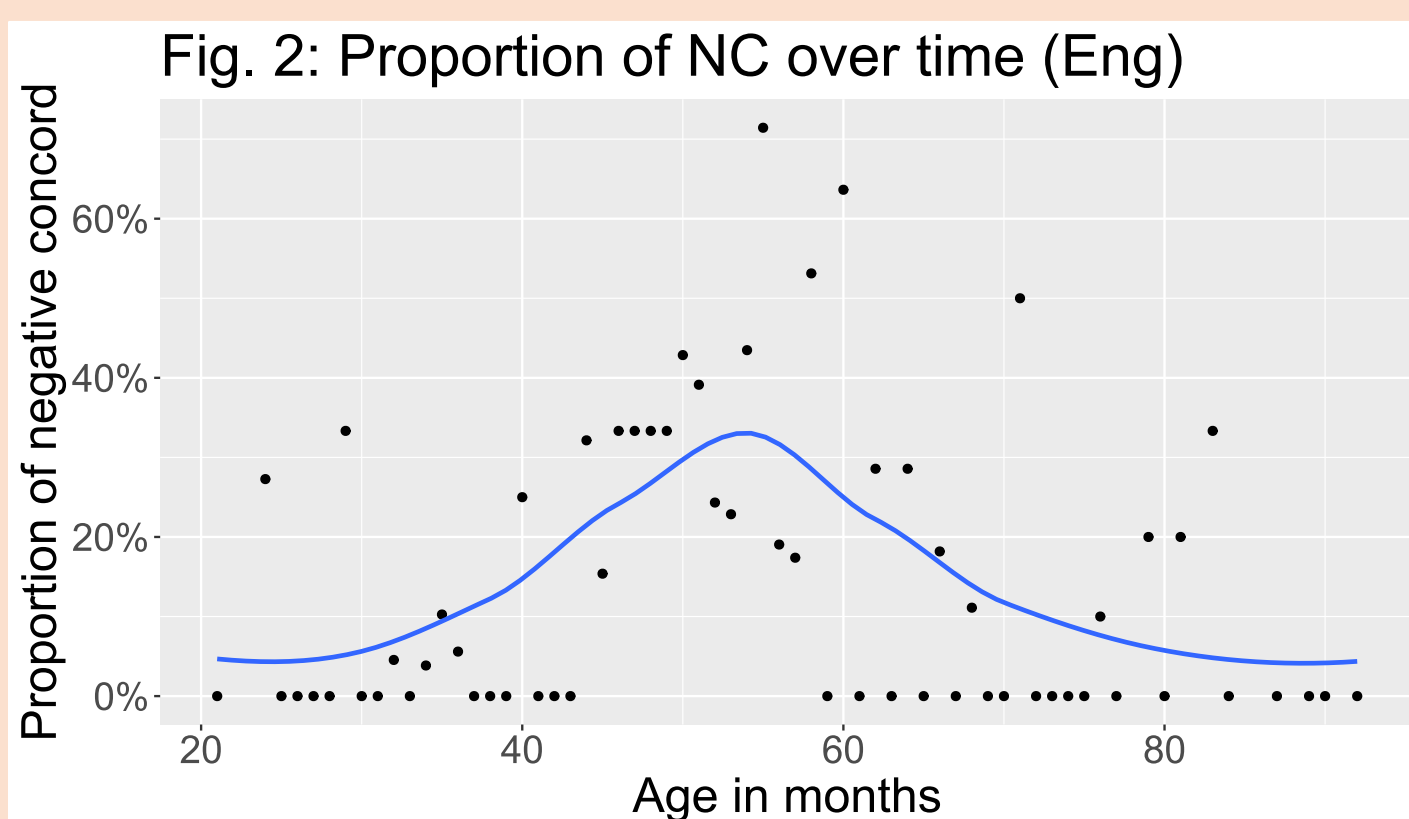
Results

(2) a. I don't care about nothing.   (*English (NA)*, Ross 5;04, MacWhinney 1991)

   b. No one's not drying him, mum.   (*English (UK)*, Fraser 3;00, Lieven et al. 2009)

(3) Kein Gewitter   kommt nicht heute.   (*German*, Leo 2;03)
no   thunderstorm comes   not   today
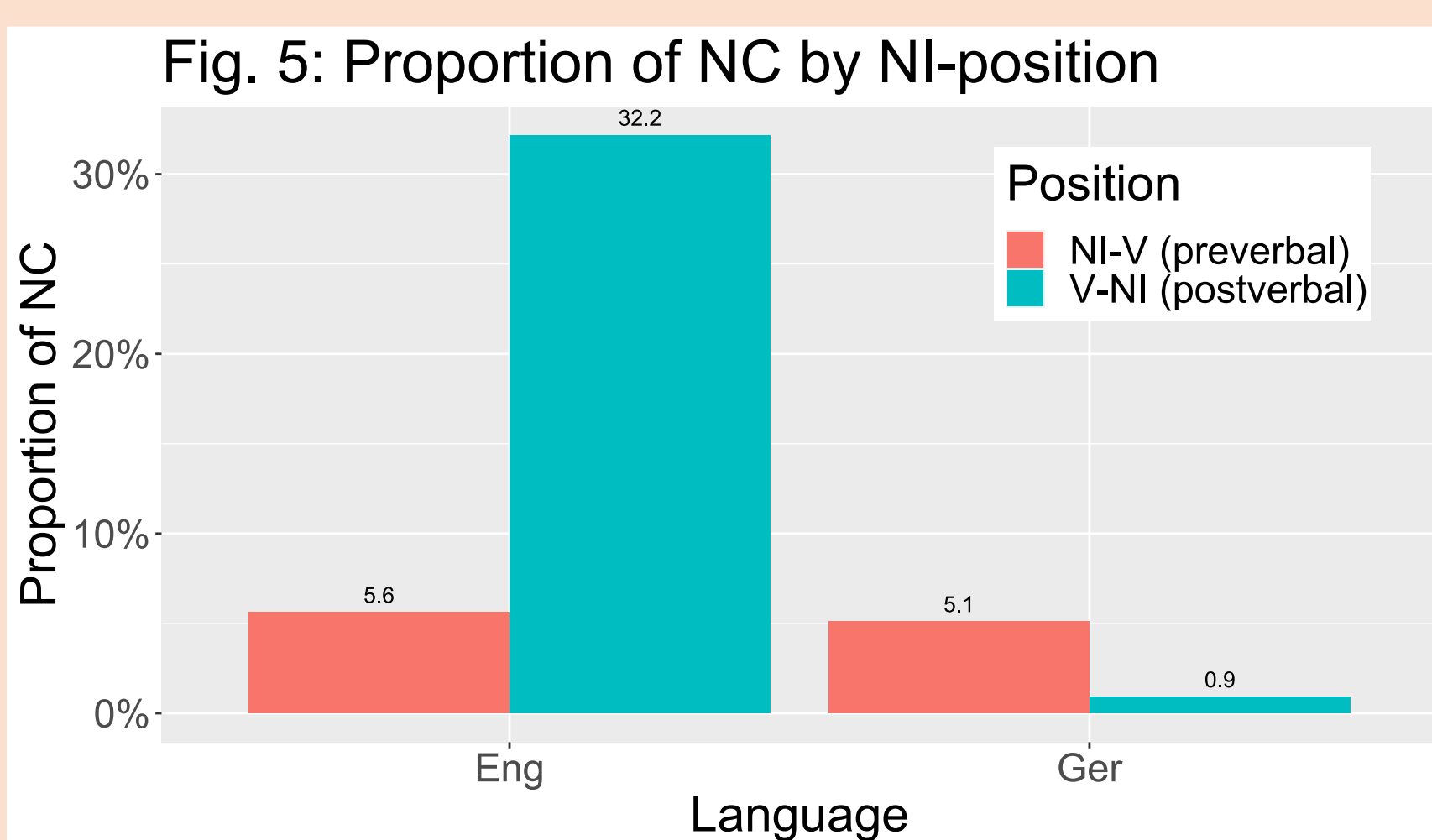'There's no thunderstorm coming today.'   (Behrens 2006)

(4)

	Number of utterances with a NI	Number of utterances with NC
English	909	184 (20.2%)
German	3 107 (2 664, $\leq$ 92m)	45 (1.4%; 1.7%, $\leq$ 92m)

- Higher peak of errors (∼32%) at later age (∼55m) in English vs. German (∼4%, ∼25m).

Fig. 2: Proportion of NC over time (Eng)

Fig. 3: Proportion of NC over time (Ger)

Fig. 4: Number of NIs by position

Position
- NI-V (preverbal)
- V-NI (postverbal)

English:
Roughly equal number of NIs pre- and postverbally

German:
Distribution strongly skewed to the postverbal position

Fig. 5: Proportion of NC by NI-position

Position
- NI-V (preverbal)
- V-NI (postverbal)

English:
Preference for errors with postverbal NIs ($p < 10^{-5}$, χ^2)

German:
Preference for errors with preverbal NIs (p=.0043, Fisher exact)

English & German:
Same error proportion in preverbal position

(5)

	n't	not	prop. *n't*
NC	157	24	86.7%
total	15 669	6 200	71.6%

- We found errors with all types of NIs in both languages though with different proportions.
- In English, the proportion of *n't* in NC-errors is higher than that of *not* ($p < .00001$, χ^2) (5).

Discussion

Main finding: NC errors found in production

- English and German-learning children produce a substantial amount of NC-type errors (4), confirming our hypothesis.
- Nevertheless, such errors occurred in a minority of NI utterances, suggesting that these children never have a phase of their grammar equivalent to that of a NC language

On the difference between English and German

- We found an unexpected difference between English and German speaking children: there are many more NC-type errors in English than German (Fig. 2 vs. Fig. 3).
- A closer look at the data on pre- vs. postverbal NIs reveals 3 key observations:
  1. With preverbal NIs English and German children equally produce about 5–6% of errors (Fig. 5).
  2. The majority of NIs in German are produced postverbally, unlike English (Fig. 4).
  3. With postverbal NIs, English learning children make many more NC errors than in preverbal position (32%), while German learning children make very few (1%) (Fig. 5).

Tentative explanation for the difference between English and German:

- NIs are decomposed into a semantically non-negative existential quantifier licensed by an interpretable negative operator, which is not pronounced in the adult language (Penka 2007, 2011) and hosted between vP and TP.

(7) $[_{CP/TP} ... \underbrace{\text{neg}_\varnothing \ [_{vP} \exists\text{-XP}}_{nobody} ... \text{V} ... \text{XP}]]$

Preverbal NIs undergo reconstruction.

(8) $[_{CP/TP} \exists\text{-XP}_i ... \text{neg}_\varnothing [_{vP} \underbrace{—_i}_{reconstruction} ... \text{V} ... \text{XP}]]$

- Assumptions about acquisition:
  i. Children have difficulties with reconstruction (Bill et al. 2019).
  ii. English children struggle to distinguish NIs and NPIs, e.g. *no-one* vs. *anyone* (Davidson 2020, Illingworth et al. 2022).
- Observation 1: If children have difficulties with reconstruction, in particular to a position below a covert licenser, making negation overt could be a strategy to facilitate reconstruction. This is the case for both English and German.
- Observation 2:
  - The German V2 property allows the subject to appear post-verbally when any other constituent is fronted. We might therefore expect a tendency for children to avoid preverbal NIs altogether in German since it circumvents reconstruction.
  - Word order is stricter in English (EPP-feature), thus children simply cannot avoid producing preverbal NIs when the subject is an NI.
- Observation 3:
  - In postverbal position, English children are faced with distinguishing NPIs from NIs, the former requiring overt sentence negation. If they analyse NIs as NPIs, an NC-type error emerges.
  - NPIs of the *any*-type are not present in German, so this problem does not exist.

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