



Negative concord in the acquisition of non-negative concord languages

Johannes Hein¹, Cory Bill², Imke Driemel¹, Aurore Gonzalez³, Ivona Ilić¹, Paloma Jeretić² & Maria Teresa Guasti³

CLS 58, 24th of April 2022

1 Humboldt Universität zu Berlin

2 ZAS Berlin

3 Università degli studi di Milano-Bicocca

1. Background on negated indefinites
2. Previous work on the acquisition of negative indefinites
3. Corpus study
 - Corpora
 - Procedure
 - Results
4. Summary and Outlook

Background on negated indefinites

Negated indefinites across languages

In the majority of languages, negated indefinites are expressed with a positive indefinite and sentence negation (Kahrel 1996, Miestamo 2007, van der Auwera and Alsenoy 2016, 2018).

(1) *Evenki* (Miestamo 2007:564)

- a. ekun-da ō-ra-n.
something-CLT become-NFUT-3SG
'Something happened.'
- b. ekun-da [e-]che o-ra.
something-CLT NEG-PST become-PTCP
'Nothing happened.'

Negated indefinites across languages

In negative concord (NC) languages, negated indefinites are expressed via sentence negation and a morphologically marked negative indefinite, a neg-word/NCI.

- (2) Milan **ne** vidi **ništa**.
Milan not sees nothing
'Milan cannot see anything.' *BCS (Progovac 1994: 40)*

Double negation (DN) languages also use negative indefinites, but without the presence of sentence negation. Adding sentence negation would lead to a double negation reading.

- (3) Milan sieht **nichts**.
Milan sees nothing
'Milan cannot see anything.' *German₃*

(roughly) three grammars:

1. NEG ... positive indefinite (type 1, e.g. Evenki)
2. NEG ... negative indefinite (type 2, negative concord langs, e.g. BCS)
3. \emptyset ... negative indefinite (type 3, double negation langs, e.g. German)

Previous acquisition work

Acquisition: A preference for negative concord

Comprehension:

- Children (3;6–6;5) acquiring English or German (DN) strongly favour a single negation interpretation of a sentence with sentential negation and a negative indefinite (Thornton et al. 2016, Nicolae and Yatsushiro 2020).
- Children (4;6–6;3) acquiring Italian (NC) prefer a single negation interpretation of two negative elements in contexts where adults favour a double negation interpretation (i.e. fragment answers) (Moscati 2020)
- We know of no studies on the acquisition of negated indefinites in type 1 languages.

Acquisition: A preference for negative concord

Learning:

- An artificial NC language is more easily acquired than a DN language (Maldonado and Culbertson 2021).
- We know of no studies on the learnability of type 1 languages.

Production:

- One corpus study on one child (Sarah, Brown corpus) exposed to negative concord in parental speech (Miller 2012)

Acquisition: A preference for negative concord

Learning:

- An artificial NC language is more easily acquired than a DN language (Maldonado and Culbertson 2021).
- We know of no studies on the learnability of type 1 languages.

Production:

- One corpus study on one child (Sarah, Brown corpus) exposed to negative concord in parental speech (Miller 2012)

Question:

Do children acquiring English or German make negative concord errors in production?

Acquisition: A preference for negative concord

Learning:

- An artificial NC language is more easily acquired than a DN language (Maldonado and Culbertson 2021).
- We know of no studies on the learnability of type 1 languages.

Production:

- One corpus study on one child (Sarah, Brown corpus) exposed to negative concord in parental speech (Miller 2012)

Question:

Do children acquiring English or German make negative concord errors in production?

Answer:

Yes! But there are considerable quantitative and qualitative differences between the two languages.

Corpus study

German:

- 43 children (from Caroline, Grimm, Leo, Manuela, Miller, Rigol, Stuttgart, Wagner)
- age range = 0–14;10
- number of utterances = 363 028 ($338\,407 \leq 7;10$)

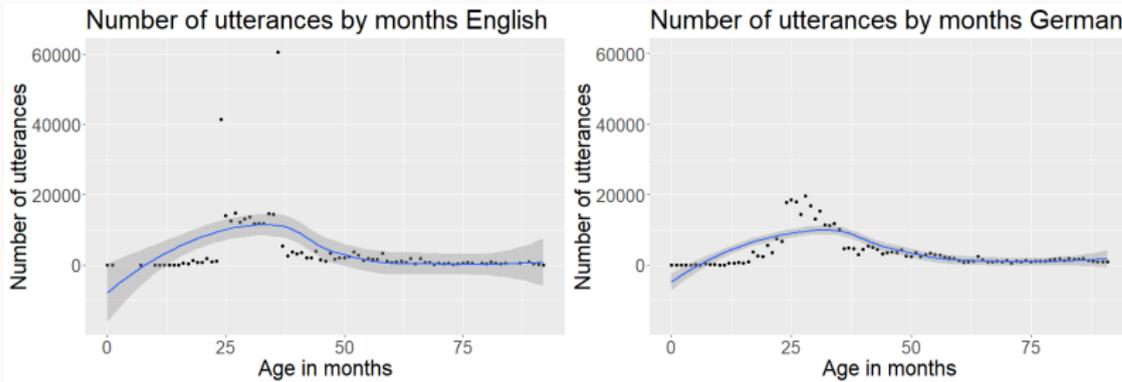
English:

- 6 children (from Brown, MacWhinney, MPI-EVA-Manchester), 4 NA, 2 UK
- age range = 0;7–7;10 (92m)
- number of utterances = 328 972

Sarah (Brown corpus) was excluded as her input matched a NC dialect of English.

Utterance distribution

The distribution of utterances across age is very similar in English and German.

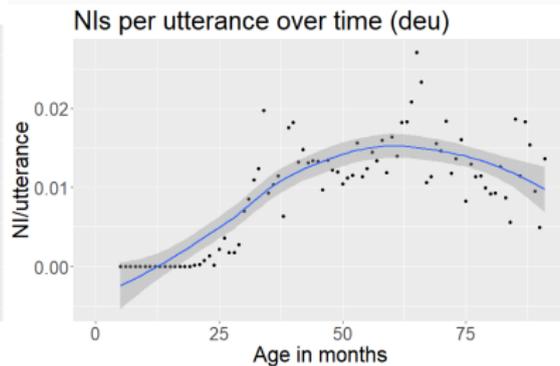
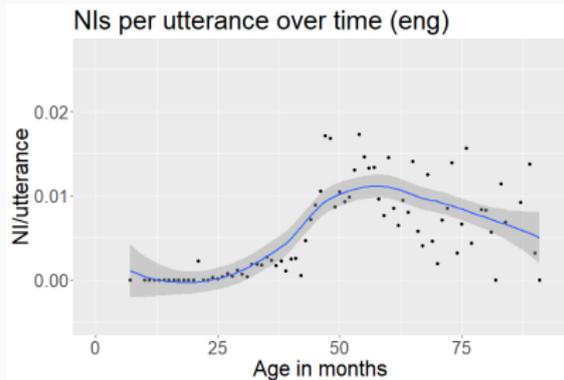
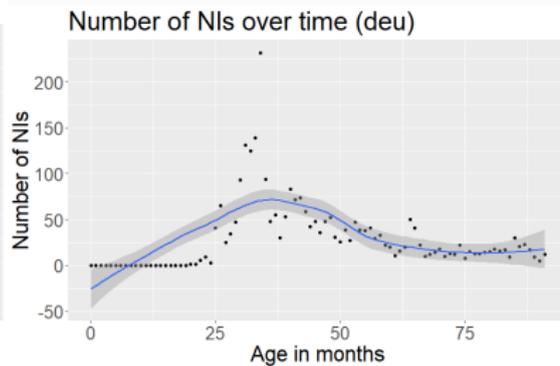
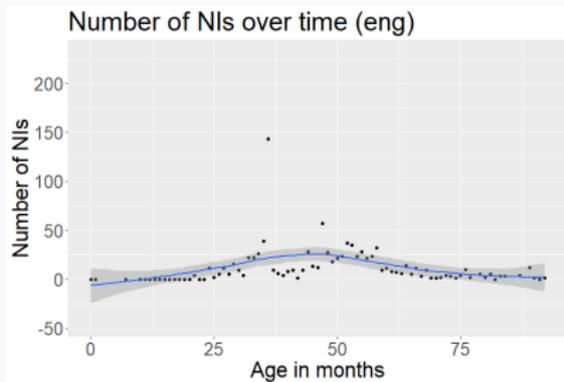


Procedure

- We extracted all child utterances that contained at least one negated indefinite (NI) (*no, nobody/no-one, nothing, never; kein, niemand, nichts, niemals*) → English $N = 2548$, German $N = 3917$.
- We tagged each utterance
 - for the type of NI,
 - for the presence of negative concord (NC)
 - whether the NI was preverbal (excluding independently V-final tokens in German) or postverbal (excluding independent N-V inversions as in e.g. questions)
 - whether negation was *n't* or *not* in English
- We excluded fragment answers (judging them overall uninformative to their NC status) and mistaggings (e.g. English *no* as a response particle).
- Annotations were done by native speakers.

Results: Negated indefinites

Utts. with NI: $N = 909$ (Eng), $N = 3106$ ($2664 \leq 92$ m) (Ger)



Results: Negated indefinites

- fewer NIs overall in English than in German
- usage of NIs takes off at about 40 months in English
- starts to rise earlier (at ca. 25–30 months) in German

Discussion: Negated indefinites

Possible explanations:

- use of NIs as sentence negation more common in German; compare (4-a) vs. (4-b)

- (4) a. I ate no apple.
 b. Ich habe keinen Apfel gegessen.
 I have no apple eaten
 ‘I didn’t eat an apple.’

- richer system of NPIs in English
 - NPIs are used as NIs at early ages (Davidson 2020)

Negative concord errors: Some examples

- (5) a. We don't want no gas. (Adam 3;11, Brown 1973)
b. No tigers don't bit you? (Mark 2;08, MacWhinney 1991)
c. I don't care about nothing. (Ross 5;04, MacWhinney 1991)
d. He won't hurt his head never. (Eleanor 2;11, Lieven et al. 2009)
e. No one's not drying him, mum. (Fraser 3;00, Lieven et al. 2009)
- (6) a. Kein Gewitter kommt nicht heute.
no thunderstorm comes not today
'There's no thunderstorm coming today.' (Leo 2;03, Behrens 2006)
- b. Wir haben noch keine Zudecke nich.
we have yet no duvet not
'We don't have a duvet yet.' (Simone 3;07, Miller 1979)
- c. Kein Teller kann s net sein.
no plate can it not be
'It can't be a plate.' (Sebastian 5;04, Lieven and Stoll 2013)₁₃

Results: Negative concord errors

NC in 184 English (20.2%) and 45 German (1.5%; 1.7% \leq 92 m) utterances

Fig. 2: Proportion of NC in English over time

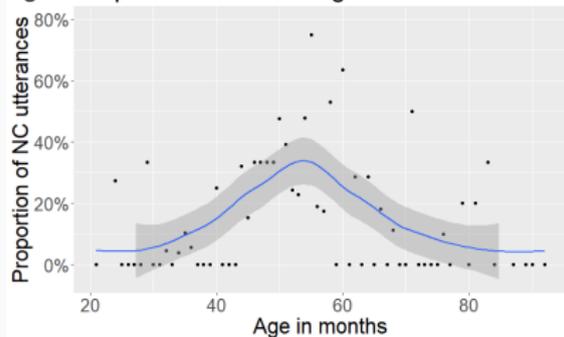
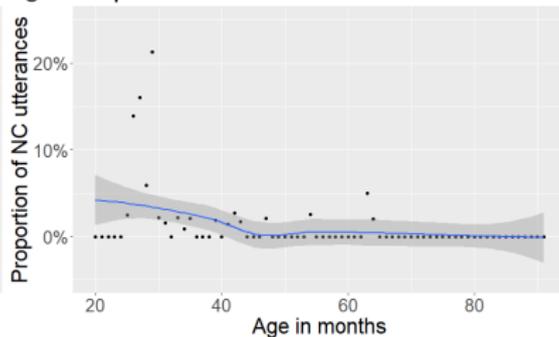


Fig. 1: Proportion of NC in German over time



- contiguous span of about 10 months (English 45–58, German 25–35) where the proportion of errors is not zero
- higher and later peak in English despite lower number of NIs

Discussion: Negative concord errors

Possible explanations:

- two types of negation in English: head *n't*, phrasal (adverbial) *not*
 - negative head is associated with negative concord (Zeijlstra 2004, 2021)
- richer system of NPIs (which require licensing by overt NEG)
 - NIs might be misinterpreted as NPIs

Results: Types of negative indefinites

Errors are found with all types of negative indefinites, albeit in different proportions:

English:

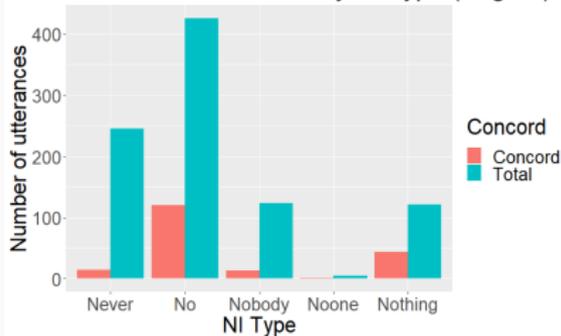
NI	NC	total	prop.
no	120	426	28.2%
no-one	1	5	20%
nobody	13	123	10.6%
nothing	43	121	35.5%
never	12	245	4.9%
total:	189	920	20.5%

German (≤ 92 m):

NI	NC	total	prop.
kein	41	1866	2.2%
niemand	1	49	2%
nichts	1	580	0.2%
nie(mals)	2	172	1.2%
total:	45	2667	1.7%

Results: Types of negative indefinites

Number of utterances by NI Type (English)



Number of utterances by NI Type (German)

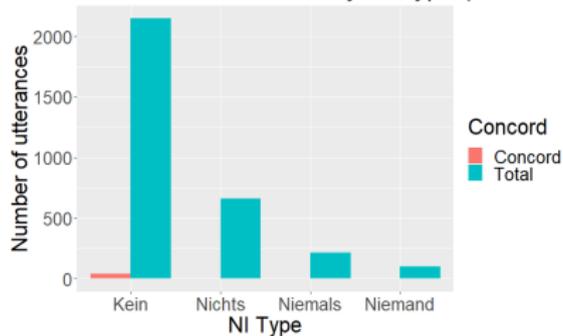
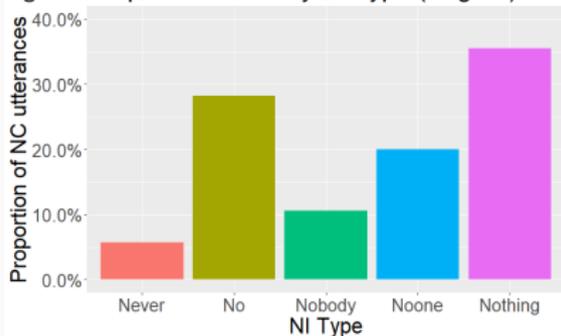
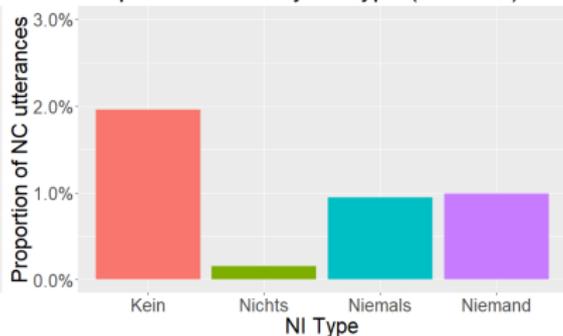


Fig. 3: Proportion of NC by NI Type (English)



Proportion of NC by NI Type (German)



Results: Types of negative indefinites

- German errors almost exclusively with *kein*
- error proportion in English highest with *nothing*, but also non-neglectable error proportion with *nobody/no-one*, *no* and *never*

Results: Position of negative indefinite

excluding independent factors (S-Aux inversion, V-finality, etc.)

English:

	pre-V	post-V
total	392	488
concord	22	157
prop.	5.6%	32.2%

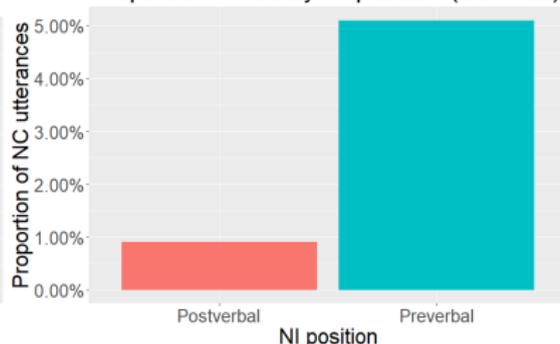
German (≤ 92 m):

	pre-V	post-V
total	90	2245
concord	5	24
prop.	5.5%	1.1%

Fig. 4: Proportion of NC by NI position (English)



Proportion of NC by NI position (German)



Results: Position of negative indefinite

- Higher error proportion with postverbal NIs in English ($p < 10^{-5}$, χ^2)
- Higher error proportion with preverbal NIs in German ($p = 0.0043$, Fisher exact test)

Results: Position of negative indefinite

- Higher error proportion with postverbal NIs in English ($p < 10^{-5}$, χ^2)
- Higher error proportion with preverbal NIs in German ($p = 0.0043$, Fisher exact test)
 - dovetails findings in Bill et al. (2019): Children avoid production of preverbal NIs in contexts where adults prefer them.

- (7) a. Keine Katze trägt einen Hut.
no cat wears a hat
'No cat is wearing a hat.' (adults)
- b. Alle Katzen tragen keinen Hut.
all cats wear no hat
'All cats are not wearing a hat.' (children)

Discussion: Position of negative indefinite

Possible explanation for German imbalance:

- NIs are decomposed into an (negative) indefinite part \exists and a (covert) negative operator part NEG (Penka 2007, 2011).
- With a preverbal NI, only the indefinite part occupies SpecCP while the (covert) negative operator has to remain below C due to V2 (assuming that V2 also holds for covert elements).

- (8) a. \exists C+V ... NEG ... t_{\exists}
b. *NEG \exists C+V ... t_{NEG} ... t_{\exists}

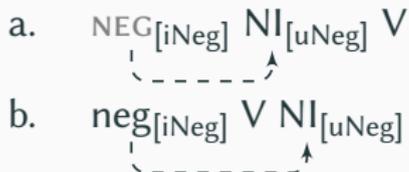
- The indefinite part has to reconstruct for licensing.
- Children have difficulties with reconstruction, in particular to a position below a covert licenser (i.e. covert NEG).
- Erroneously making NEG overt might facilitate this reconstruction.

Discussion: Position of negative indefinite

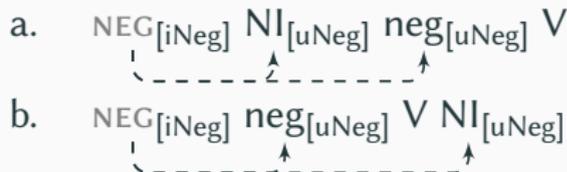
Possible explanation for English imbalance:

- follows a non-strict NC pattern: Only postverbal NIs require concomittant overt negation.
- It could arise due to the avoidance of Multiple Agree which is necessary in strict NC (Zeijlstra 2004, Penka 2011).

(9) *Non-strict NC languages*



(10) *Strict NC languages*



Results: Type of negation (English)

	<i>n't</i>	<i>not</i>	prop. of <i>n't</i>
overall	15669	6200	71.6%
NC	157	24	86.7%
prop. of NC	1%	0.4%	

- Errors occur with both *n't* (head) and *not* (phrasal).
- The proportion of *n't* is significantly higher in the NC-cases ($p < .00001$, χ^2).
- This could be taken to support Zeijlstra's 2004, 2021 link between the head-status of negation and the presence of negative concord (*pace* Maldonado and Culbertson 2021).

Summary and Outlook

Results:

- NC errors in natural speech production of children acquiring English or German in line with comprehension and learning experiments.
- considerable differences in errors between English and German:
 - more and at later ages in English
 - concentrated on one NI-type in German but distributed across different ones in English
 - more likely with preverbal NIs in German but postverbal NIs in English
- NC errors more likely with *n't* in English

Possible explanations:

- two types of negation and richer NPI system in English
- V2-property of German

Outlook:

- conduct the study on Dutch corpora

Acknowledgements

This project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement No 856421).



References i

- Behrens, H. (2006). The input-output relationship in first language acquisition. *Language and Cognitive Processes*, 21:2–24.
- Bill, C., Yatsushiro, K., and Sauerland, U. (2019). Asymmetries in children's negative determiner production. Poster, Boston University Conference on Language Development (BUCLD) 44.
- Brown, R. (1973). *A first language: The early stages*. Harvard University Press, Cambridge, MA.
- Davidson, K. (2020). A negative concord stage in negative polarity acquisition. Poster, Boston University Conference on Language Development (BUCLD) 45.
- Kahrel, P. (1996). *Aspects of negation*. PhD thesis, University of Amsterdam.
- Lieven, E., Salomo, D., and Tomasello, M. (2009). Two-year-old children's production of multiword utterances : A usage-based analysis. *Cognitive Linguistics*, 30(3):481–508.

- Lieven, E. and Stoll, S. (2013). Early communicative development in two cultures. *Human Development*, 56:178–206.
- MacWhinney, B. (1991). *The CHILDES project: Tools for analyzing talk*. Erlbaum, Hillsdale, NJ.
- Maldonado, M. and Culbertson, J. (2021). Nobody Doesn't Like Negative Concord. *Journal of Psycholinguistic Research*, 50.
- Miestamo, M. (2007). Negation: an overview of typological research. *Language and Linguistics Compass*, 1/5:552–570.
- Miller, K. (2012). Sociolinguistic variation in Brown's Sarah Corpus. In Biller, A. K., Chung, E. Y., and Kimball, A. E., editors, *BUCLD 36: Proceedings of the 36th annual Boston University Conference on Language Development*, pages 339–348, Boston, MA. Cascadilla Press.

- Miller, M. (1979). *The Logic of Language Development in Early Childhood*. Springer-Verlag, Berlin.
- Moscatti, V. (2020). Children (and some adults) overgeneralize negative concord: The case of fragment answers to negative questions in Italian. *University of Pennsylvania Working Papers in Linguistics*, 26(1):169–178.
- Nicolae, A. C. and Yatsushiro, K. (2020). Not eating kein veggies: negative concord in child German. *Linguistic Evidence 2020, Proceedings*.
- Penka, D. (2007). A Cross-linguistic Perspective on n-words. *International Journal of Basque Linguistics and Philology*, XLI-2.
- Penka, D. (2011). *Negative Indefinites*. Oxford University Press, Oxford.
- Progovac, L. (1994). *Negative and positive polarity: a binding approach*. Cambridge University Press, Cambridge.

- Thornton, R., Notley, A., Moscati, V., and Crain, S. (2016). Two negations for the price of one. *Glossa*, 1(1):45.1–30.
- van der Auwera, J. and Alsenoy, L. V. (2016). On the typology of negative concord. *Studies in Language*, 40:473–512.
- van der Auwera, J. and Alsenoy, L. V. (2018). More ado about nothing: On the typology of negative indefinites. In Turner, K. P. and Horn, L., editors, *Pragmatics, Truth and Underspecification*, pages 107–146. Brill, Leiden.
- Zeijlstra, H. (2004). *Sentential negation and negative concord*. PhD thesis, University of Amsterdam.
- Zeijlstra, H. (2021). Types of negative concord systems. talk given at DGfS 2021, Freiburg, February 24th-26th.