Negative concord in Dutch, English and German child language

Imke Driemel[1], Johannes Hein[1], Astrid van Alem[4], Cory Bill[2], Aurore Gonzalez[3], Ivona Ilić[1] & Paloma Jeretič[2]

CGSW 36, Chicago, 15th of October 2022

1 Humboldt-Universität zu Berlin
2 ZAS Berlin
3 Università degli studi di Milano-Bicocca
4 Universität Potsdam

Introduction

Negative indefinites across languages

In Negative Concord (NC) languages, negated indefinites are expressed via sentence negation and a morphologically marked indefinite – a so called negative concord item (**NCI**).

(1) **Nikdo** **ne**-volá. *Czech*
nobody NEG-call
'Nobody calls.' (Zeijlstra 2004)

(2) Balász **nem** látott **semmit**. *Hungarian*
Balász not saw nothing
'Balász didn't see anything.' (Giannakidou and Zeijlstra 2017)

Negative indefinites across languages

Non-NC languages also use morphologically marked indefinites, but without the presence of sentence negation – so called negative indefinites (**NIs**).

(3) **Kein** Student hat die Prüfung bestanden. *German*
no student has the exam passed
'No student passed the exam.' (Penka 2020)

This talk: Children learning non-NC languages produce NC sentences!

(4) **Kein** Teller kann s **net** sein. *child German*
no plate can it not be
'It can't be a plate.' (Sebastian 5;04, Lieven and Stoll 2013)

Outline

- We present a corpus study investigating the acquisition of negative indefinites in 3 non-NC languages: English, German, Dutch.
- Main insight: Children learning non-NC languages produce NC utterances.
- We will adopt the Meaning First framework (Sauerland and Alexiadou 2020, Alexiadou et al. 2021) to account for the NC errors children make.
- In doing so, we propose a new morphological account of Negative Concord.
- We discuss additional advantages of the new account wrt. to standard syntactic AGREE approaches to NC.

Corpus study

Corpora

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; number of utterances = 328 972

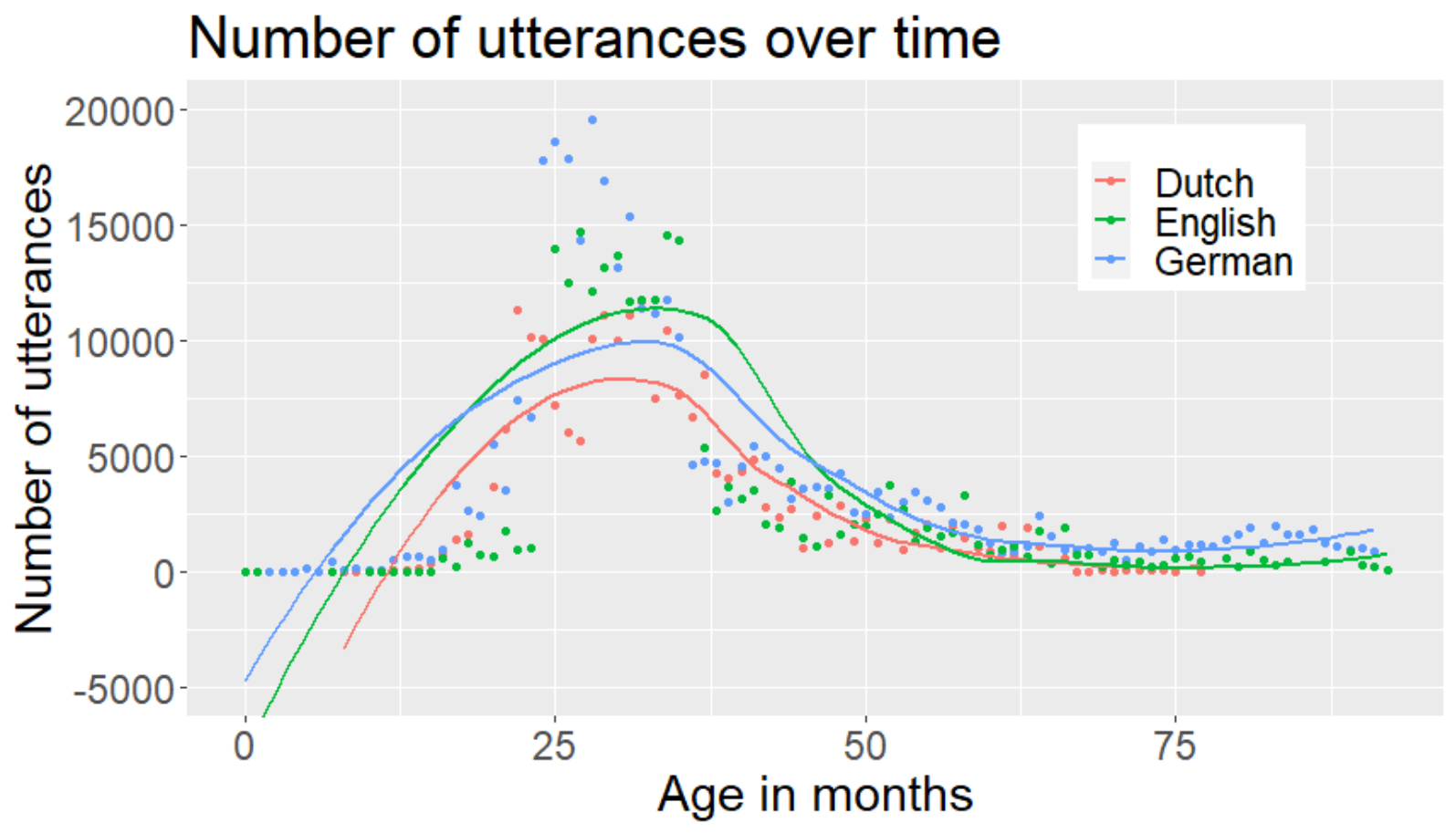
Dutch:

- 40 children (from Asymmetries, BolKuiken-TD, Gillis, Groningen, Schaerlaekens, SchlichtingVanKampen, Utrecht, van Kampen, Zink)
- age range = 1;09–5;06; number of utterances = 220 617

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, Dutch 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*; *geen, niemand, niets, nooit*)
  $\rightarrow$ English $N = 2548$, German $N = 3917$, Dutch $N = 1177$.
- 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/Dutch) 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 and mistaggings
  $\rightarrow$ English $N = 909$, German $N = 3106$, Dutch $N = 857$
- Annotations were done by native speakers.

Negative concord errors

	Utterances with NC	Utterances with NI	proportion of NC
English	184	909	20.2%
German	45	3106 (2664 $\leq$ 92m)	1.5% (1.7%)
Dutch	6	857	0.7%

Negative concord errors: Some examples

(5) a. We don't want no gas. (Adam 3;11, Brown 1973)

b. I don't care about nothing. (Ross 5;04, MacWhinney 1991)

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

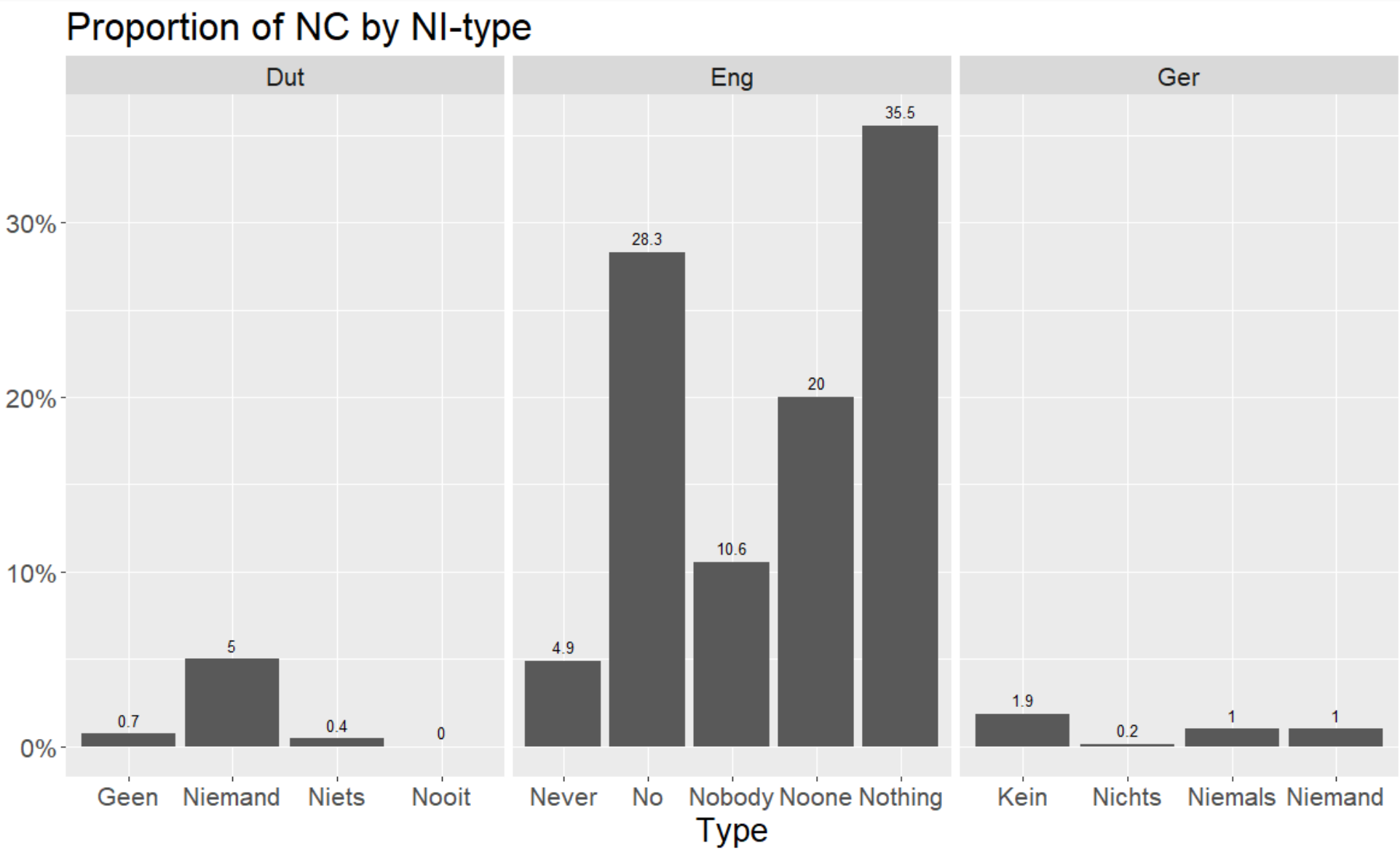
(6) a. Kein Gewitter kommt nicht heute. *child German*
no thunderstorm comes not today
'There's no thunderstorms coming today.' (Leo 2;03, Behrens 2006)

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)

(7) a. En Rosa mag niet geen spelletje. *child Dutch*
and Rosa may not no game.DIM
'And Rosa may not play a game.' (Daan 3;00, Wijnen and Verrips 1998)

b. Heeft Arnold niet geen hamer.
has Arnold not no hammer
'Arnold doesn't have a hammer.' (Diederik 2;10, Schaerlaekens 1973)

Errors with different types of NIs



Proposal

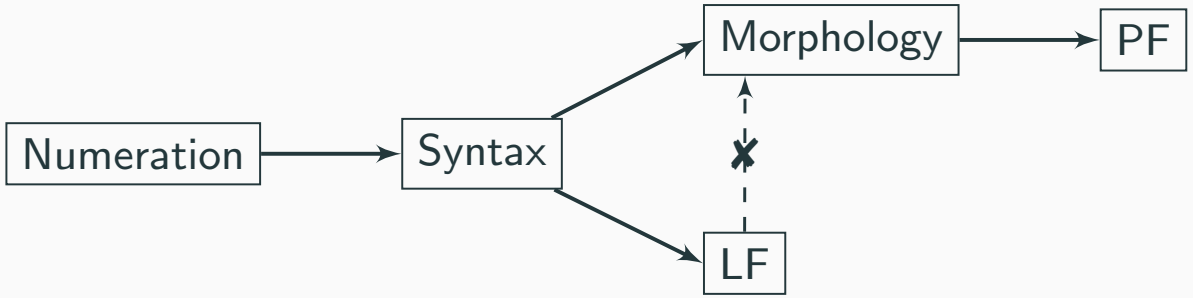
Background

We will adopt the Meaning First framework.

- When children produce more material than predicted by the target language, the additional material reveals pieces of the underlying conceptual representation.
- A semantics-morphology interface: Meaning feeds morphology.

(8) *Meaning First model of grammar* (cf. Sauerland and Alexiadou 2020, 2021)

(9) *Y-model of grammar* (Chomsky 1981, 1995, Halle and Marantz 1993)



Conceptual structure

Decompose if you can!

- Non-NC grammars share the underlying structure with NC grammars: negated indefinites like German *kein* are decomposed into NEG-OP + indefinite determiner (see also Jacobs 1980, von Stechow 1993, Penka 2007, 2011).
- Indefinite determiners are choice functions (functions that take a property as an argument and return an individual of that set) which must be existentially bound at the sentence level (Reinhart 1997, Winter 1997, Kratzer 1998).

(10) *(Negated) indefinites as choice functions:*[1]

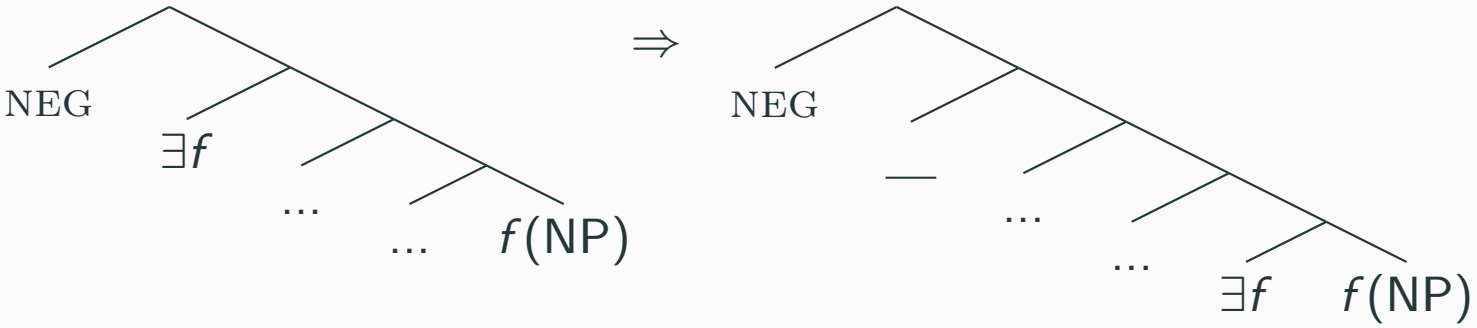
[1] This in-situ analysis aligns in spirit with many other, mostly semantic, NC accounts (Ladusaw 1992, Acquaviva 1993, Giannakidou 1998, Giannakidou and Quer 1997, Déprez 2000, etc.).

Bundling

Semantic dependencies in Meaning First:

- Given the Meaning First architecture, we predict that semantic dependencies such as $\exists f$ ... f(NP) can be made reference to by the morphosyntax.
- We assume that $\exists f$ is realized by the indefinite determiner, and propose a bundling rule which ensures that it is pronounced in the position of the variable.

(11) *Bundling:*



Negative Concord is reduplication

Idea:

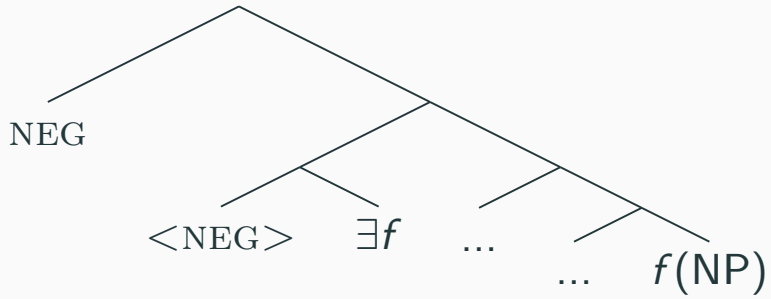
- Negated indefinites (NCI/NI) are the result of a duplication rule of NEG in the local context of an existential.[2]
- Adult non-NC grammars have an additional obliteration rule for NEG (Arregi and Nevins 2007, 2012).

(12) *Compressor rules / morphological rules*

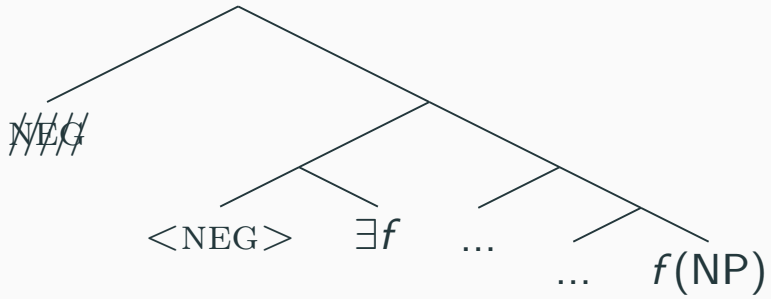
a. NEG-duplication: $\varnothing \longrightarrow \text{NEG} \;/\; \text{NEG}\ [\ \_\_\ \exists$

b. NEG-obliteration: $\text{NEG} \longrightarrow \varnothing \;/\; \_\_\ [\ \text{NEG}\ \exists$

(13) a. NEG-*duplication:*



b. NEG-*obliteration:*

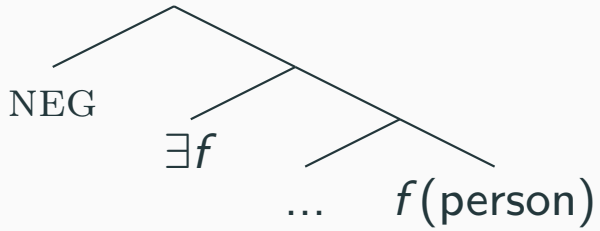


[2] This type of rule is essentially equivalent to the enrichment rules proposed in Müller's (2007) Distributed Morphology account of extended exponence.

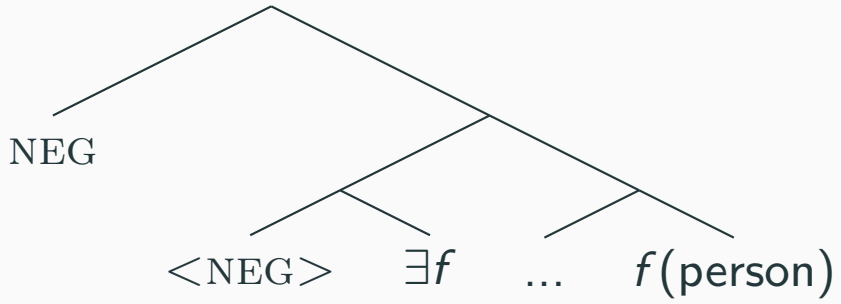
Adult non-NC grammar

(14) Ik heb niemand gezien. *Dutch*
I have n-person seen
'I haven't seen anybody.'
(van der Auwera and Alsenoy 2018: 117)

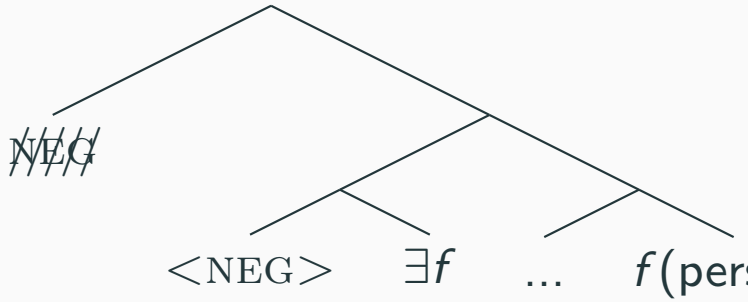
(15) *Step 0: input to morphology*



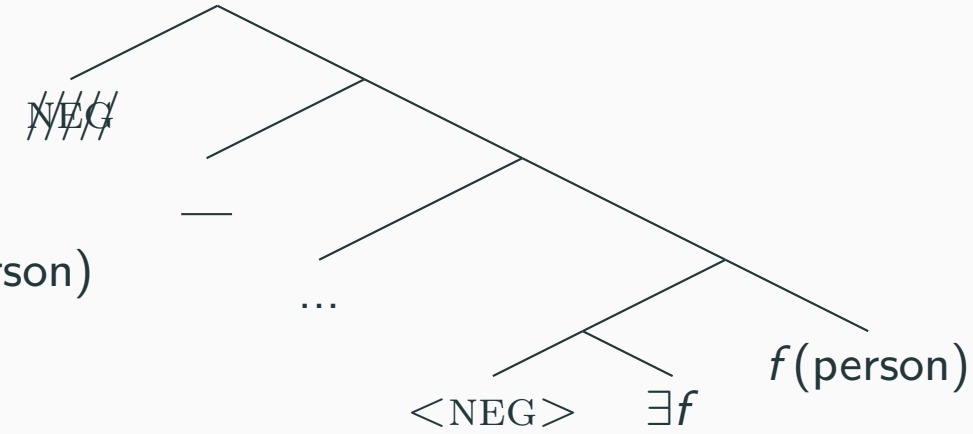
(16) *Step 1: duplication*



(17) *Step 2: obliteration*



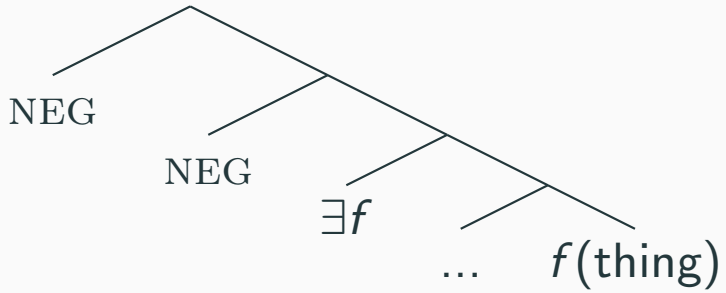
(18) *Step 3: bundling*



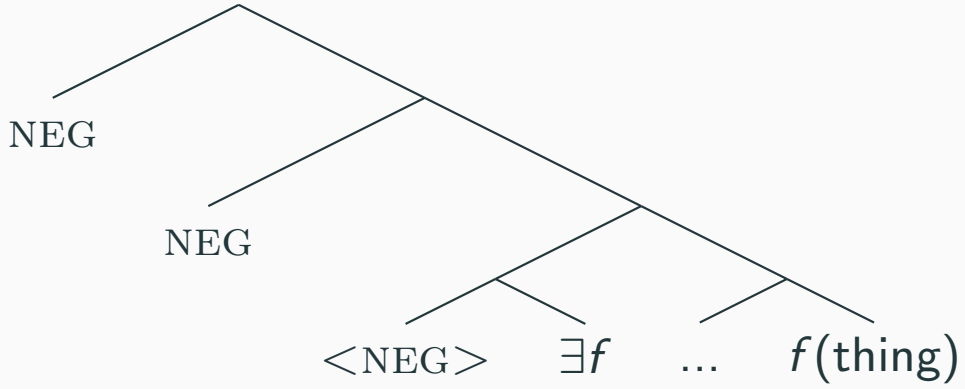
Adult non-NC grammar and double negation reading

(19) Ik heb niet niets gezegd. *Dutch*
I have not n-thing said
'I haven't said nothing.' (I have said something) (Giannakidou and Zeijlstra 2017)

(20) *Step 0: input to morphology*



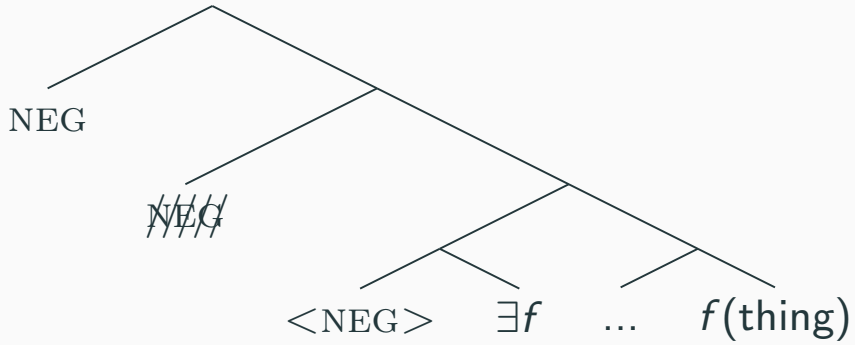
(21) *Step 1: duplication*



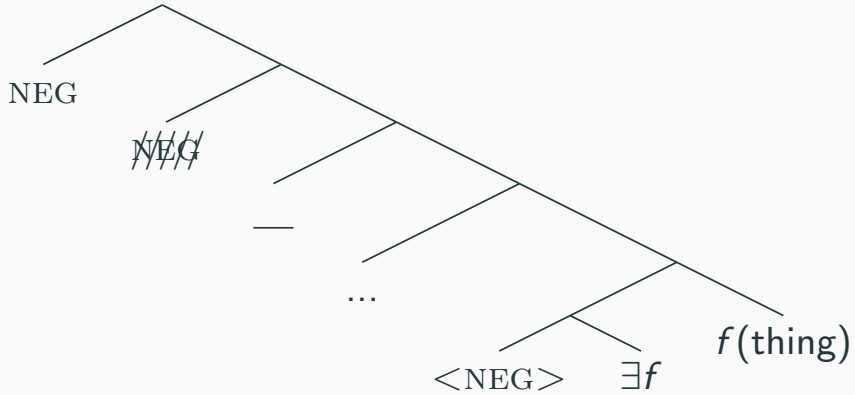
Adult non-NC grammar and double negation reading

(22) Ik heb niet niets gezegd. *Dutch*
I have not n-thing said
'I haven't said nothing.' (I have said something) (Giannakidou and Zeijlstra 2017)

(23) *Step 2: obliteration*



(24) *Step 3: bundling*



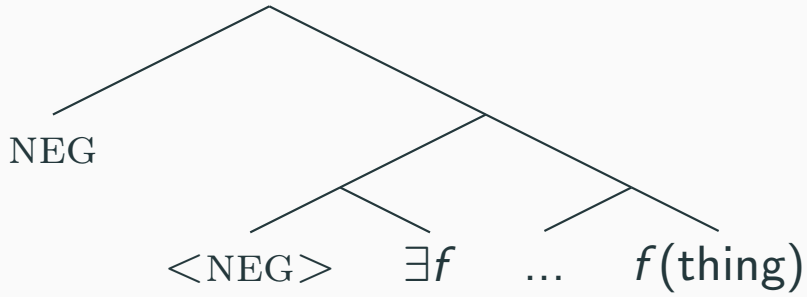
Child non-NC grammar

(25) Der hat nicht kein Fahrstuhl. *child German*
he has not no elevator
'He hasn't got an elevator.'

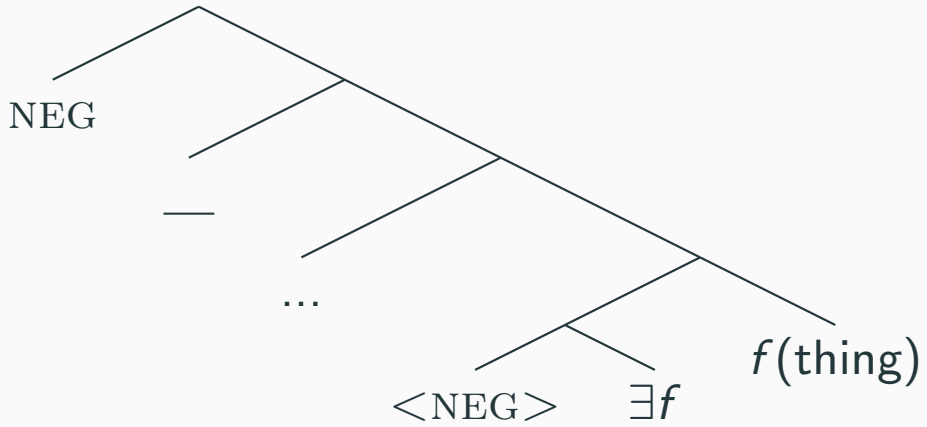
Caroline 2;06, (MacWhinney 1991)

(26) *Step 0: input to morphology*

(27) *Step 1: duplication*



(28) *Step 2: bundling*



Grammars

Adult non-NC grammars are distinguished from child non-NC grammars by the availability of the NEG-obliteration rule:

- Child non-NC grammar: NEG-duplication $\prec$ bundling[3]
- Adult non-NC grammar: NEG-duplication $\prec$ NEG-obliteration $\prec$ bundling

One important benefit of this proposal:

- The way we derive NC utterances by children acquiring non-NC grammars is exactly how we derive adult NC grammars.

[3] Alternative: Children acquire all rules, including NEG-obliteration, but apply them in the wrong order: NEG-obliteration $\prec$ NEG-duplication $\prec$ bundling. This order leads to vacuous application of NEG-obliteration.

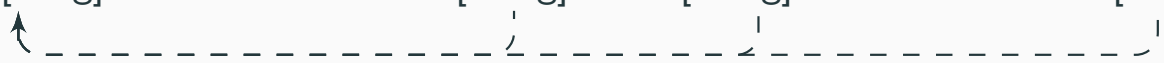
Discussion

Syntactic agree accounts of NC

A standard way to account for NC is by an AGREE-operation which takes place between a (covert) NEG-operator and the NCI (Zeijlstra 2004):

(29) a. Dnes nikdo ne-volá nikoho. *Czech*
today nobody NEG-call nobody
'Today nobody calls anybody.' (Giannakidou and Zeijlstra 2017)

b. $Op_{[i\text{Neg}]}$ Dnes $\text{nikdo}_{[u\text{Neg}]}$ $\text{ne}_{[u\text{Neg}]}$-volá $\text{nikoho}_{[u\text{Neg}]}$



Only [*i*Neg] features are interpreted.

Syntactic agree accounts of NC

A non-NC language has been argued to have the same underlying structure, but with modified AGREE-features and a ban on Multiple AGREE (Penka 2007, 2011).

(30) a. ... dass ich nicht nichts gegessen habe. *German*
that I not nothing eaten have
'that I didn't eat nothing' = 'that I ate something' (Penka 2011)

b. dass ich nicht$_{[i\text{Neg}]}$ nichts$_{[u\text{Neg}\emptyset]}$ gegessen habe
✗

c. dass ich nicht$_{[i\text{Neg}]}$ *Op*$_{[i\text{Neg}\emptyset]}$ nichts$_{[u\text{Neg}\emptyset]}$ gegessen habe

A [*u*Neg∅] feature can only be valued by an [*i*Neg∅] feature.

Advantages over syntactic agree accounts of NC

A syntactic AGREE account requires several non-trivial extensions such as Upward AGREE, Multiple AGREE, and diacritics on AGREE features.

(31) *NC grammar (Czech)*

a. $Op_{[i\text{Neg}]}$ Dnes nikdo$_{[u\text{Neg}]}$ ne$_{[u\text{Neg}]}$-volá nikoho$_{[u\text{Neg}]}$

(32) *Non-NC grammar (German)*

a. dass ich nicht$_{[i\text{Neg}]}$ nichts$_{[u\text{Neg}\emptyset]}$ gegessen habe

b. dass ich nicht$_{[i\text{Neg}]}$ $Op_{[i\text{Neg}\emptyset]}$ nichts$_{[u\text{Neg}\emptyset]}$ gegessen habe

Morphological NC account: Makes no reference to these extensions.

Advantages over syntactic agree accounts of NC

For NC grammars, a syntactic AGREE account requires an additional stipulation for the presence of sentence negation, as it is not necessary to make the derivation converge (see also discussion in Penka 2020).

(33) *NC grammar (Czech)*

a. *Op*$_{[i\text{Neg}]}$ Dnes nikdo$_{[u\text{Neg}]}$ **ne**$_{[u\text{Neg}]}$-volá nikoho$_{[u\text{Neg}]}$

Morphological NC account: The presence of sentence negation falls out naturally since NEG always introduces semantic negation, while the creation of NEG duplicates counterfeeds interpretation.

Advantages over syntactic agree accounts of NC

A syntactic AGREE account has no handle on why negative morphology specifically appears with *indefinites*. In other words, why do we never see negative morphology with *definite* determiners?

Morphological NC account: The occurrence of Negative Concord with indefinites follows naturally given the choice function analysis which creates the necessary local configuration with the NEG-operator.

(34) *(Negated) indefinites as choice functions:*

Summary

- NC errors in natural speech production of children acquiring English, German, and Dutch are in line with comprehension (Thornton et al. 2016, Nicolae and Yatsushiro 2020) and learning experiments (Maldonado and Culbertson 2021).
- Considerable differences in error patterns between English and Dutch/German but errors exist in all 3 languages.
- Meaning First models NC errors as a window into the human mind:
    - Conceptual structure is shared across NC and Non-NC grammars.
    - Children's NC errors reveal pieces of the underlying conceptual structure, i.e. NCI/NI: NEG+indefinite.
- We analyze NC as a morphological phenomenon, which avoids several issues the (standard) syntactic accounts face.

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

Abels, K. and Martí, L. (2010). A unified approach to split scope. *Natural Language Semantics*, 18:435–470.

Acquaviva, P. (1993). *The Logical Form of Negation. A Study of Operator-Variable Structures in Syntax*. PhD thesis, Scuola Normale Superiore, Pisa.

Alexiadou, A., Guasti, M.-T., and Sauerland, U. (2021). A Meaning First approach through a Kids First view. Talk given at the University Milano-Bicocca, 17 March 2021.

Arregi, K. and Nevins, A. (2007). Obliteration vs. impoverishment in the basque g-/z- constraint. In Scheffler, T., Tauberer, J., Eilam, A., and Mayol, L., editors, *University of Pennsylvania Working Papers in Linguistics 13.1: Proceedings of the 30th Annual Penn Linguistics Colloquium*, pages 44–58. University of Pennsylvania, Pennsylvania.

Arregi, K. and Nevins, A. (2012). *Morphotactics: Basque Auxiliaries and the Structure of Spellout*. Springer, Dordrecht.

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.

Chomsky, N. (1981). *Lectures on Government and Binding*. de Gruyter, Berlin.

Chomsky, N. (1995). *The Minimalist Program*. MIT Press, Cambridge, MA.

Davidson, K. (2020). A negative concord stage in negative polarity acquisition. Poster, Boston University Conference on Language Development (BUCLD) 45.

References ii

Déprez, V. (2000). Parallel (a)symmetries and the internal structure of negative expressions. *Natural Language and Linguistic Theory*, 18:253–342.

Geurts, B. (1996). On 'no'. *Journal of Semantics*, 13:67–86.

Giannakidou, A. (1998). *Polarity Sensitivity as (Non) Veridical Dependency*. John Benjamins, Amsterdam.

Giannakidou, A. and Quer, J. (1997). Long-distance Licensing of Negative Indefinites. In Forget, D., Hirschbühler, P., Martineau, F., and Rivero, M. L., editors, *Negation and Polarity: Syntax and Semantics*, page 584–600, Amsterdam. John Benjamins.

Giannakidou, A. and Zeijlstra, H. (2017). The Landscape of Negative Dependencies: Negative Concord and N-Words. In Everaert, M. and van Riemsdijk, H., editors, *The Wiley Blackwell Companion to Syntax*, volume 2, pages 1–38. John Wiley & Sons, Inc.

Halle, M. and Marantz, A. (1993). Distributed Morphology and the Pieces of Inflection. In Hale, K. and Keyser, S. J., editors, *The View from Building 20*, pages 111–176. MIT Press, Cambridge.

Illingworth, C. H., Kang, J. W. D., Gibbs, H., Davidson, K., and Feiman, R. (2022). Negative polarity or negative concord? some children think 'any' means 'no'. Poster, BUCLD 47.

Jacobs, J. (1980). Lexical decomposition in montague grammar. *Theoretical Linguistics*, 7:121–136.

Kratzer, A. (1998). Scope or Pseudoscope? Are there Wide Scope Indefinites? In Rothstein, S., editor, *Events and Grammar*, pages 163–196. Kluwer, Dordrecht.

Ladusaw, W. A. (1992). Expressing negation. In Barker, C. and Dowty, D., editors, *Proceedings of SALT 2*, pages 237–260, Ithaca, NY. Cornell Linguistics Circle.

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.

References iii

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*, 50:1401–1416.

Miller, M. (1979). *The Logic of Language Development in Early Childhood*. Springer-Verlag, Berlin.

Müller, G. (2007). Extended exponence by enrichment: Argument encoding in German, Archi, and Timucua. *University of Pennsylvania Working Papers in Linguistics*, 13(1):253–266.

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-2:267–283.

Penka, D. (2011). *Negative Indefinites*. Oxford University Press, Oxford.

Penka, D. (2020). Negative indefinites and negative concord. In Gutzmann, D., Meier, C., and Matthewson, L., editors, *The Wiley Blackwell companion to semantics*, pages 1–23. Wiley, New York.

Potts, C. (2000). When Even 'No's Neg Is Splitsville. In Chung, S., McCloskey, J., and Sanders, N., editors, *Jorge Hankamer's Webfest*. `https://babel.ucsc.edu/jorgewebfest/index.html`.

Reinhart, T. (1997). Quantifier scope: How labor is divided between QR and choice functions. *Linguistics and Philosophy*, 20:335–397.

Rullmann, H. (1995). Geen eenheid. *Tabu*, 25:194–197.

References iv

Sauerland, U. and Alexiadou, A. (2020). Generative grammar: A meaning first approach. *Frontiers in Psychology*, 11:3104.

Sauerland, U. and Alexiadou, A. (2021). Minimalism and a meaning first view. Ms., ZAS Berlin and Humboldt University of Berlin, `https://ling.auf.net/lingbuzz/005958`.

Schaerlaekens, A.-M. (1973). *The two-word sentence in child language*. Mouton, The Hague.

Thornton, R., Notley, A., Moscati, V., and Crain, S. (2016). Two negations for the price of one. *Glossa: a journal of general linguistics*, 1:1–30.

van der Auwera, J. and Alsenoy, L. V. (2018). More ado about nothing: On the typology of negative indefinites. In und Laurence Horn, K. P. T., editor, *Pragmatics, Truth and Underspecification*, pages 107–146. Brill, Leiden.

von Stechow, A. (1993). Die Aufgaben der Syntax. In *Syntax: An International Handbook of Contemporary Research*, volume 1. Halbband, pages 1–88. De Gruyter Mouton, Berlin/Boston.

Wijnen, F. and Verrips, M. (1998). The acquisition of Dutch syntax. In Gillis, S. and de Houwer, A., editors, *The acquisition of Dutch*, pages 223–300. John Benjamins, Amsterdam.

Winter, Y. (1997). Choice functions and the scopal semantics of indefinites. *Linguistics and Philosophy*, 20:399–467.

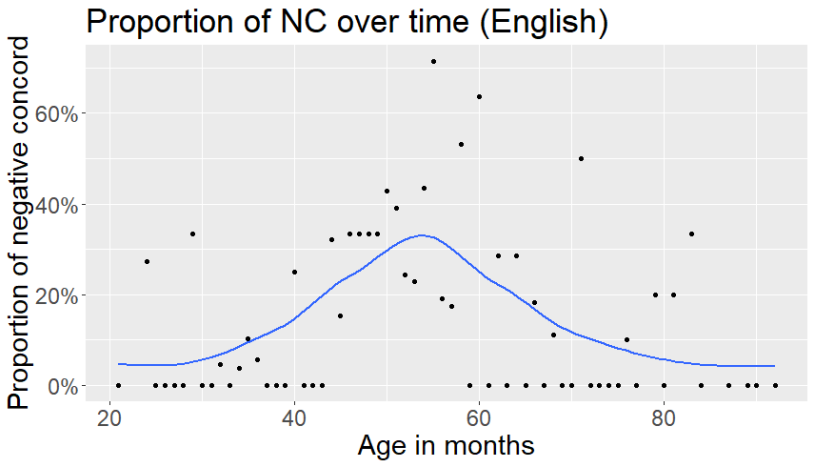
Zeijlstra, H. (2004). *Sentential negation and negative concord*. PhD thesis, University of Amsterdam.

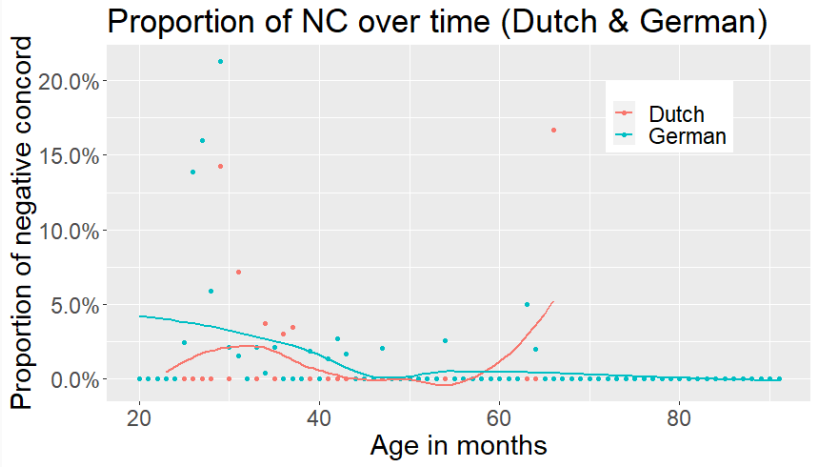
Zeijlstra, H. (2021). Types of Negative Concord. DGfS 2021, slides.

Appendix A: More corpus results

English vs. Dutch/German

	Utterances with NC	Utterances with NI	proportion of NC
English	184	909	20.2%
German	45	3106 (2664 $\leq$ 92m)	1.5% (1.7%)
Dutch	6	857	0.7%





- many more NC-type errors in English than German/Dutch
- later and higher peak in English than in German/Dutch

English vs. Dutch/German

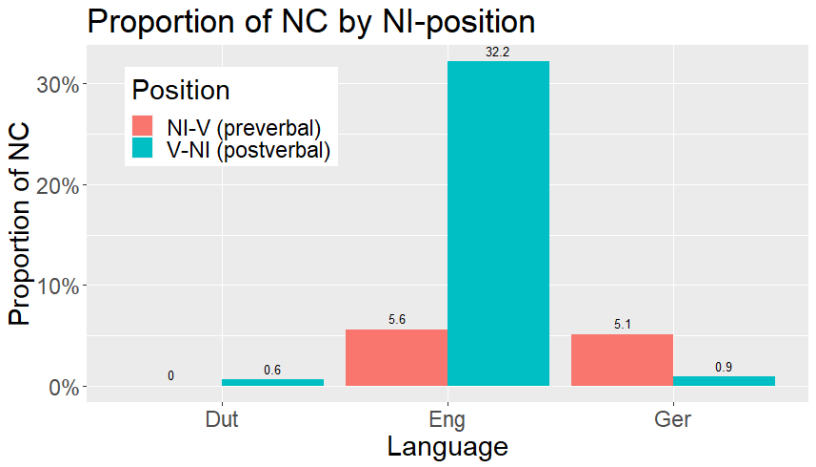
A closer look at the data, focussing on the position of NIs, reveals **three key observations**:

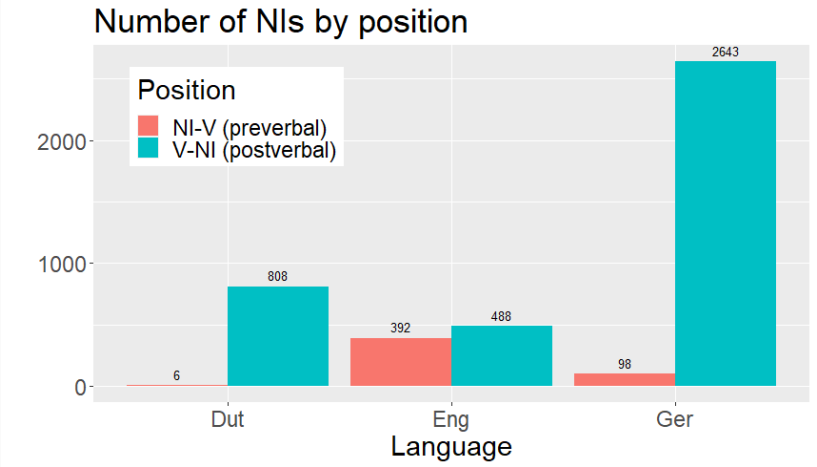
1. With preverbal NIs English and German children equally produce about 5–6% of errors. (No errors for Dutch.)
2. The majority of NIs in German/Dutch are produced postverbally, unlike English.
3. With postverbal NIs, English learning children make many more NC errors than in preverbal position (32%, χ^2 $p < 10^{-5}$), while German learning children make very few (1%) as compared to preverbal position (Fisher exact test $p = 0.0043$).

English vs. Dutch/German

	English		German		Dutch	
	pre-V	post-V	pre-V	post-V	pre-V	post-V
total	392	488	98	2643	6	808
concord	22	157	5	24	0	5
prop.	5.6%	32.2%	5.1%	0.9%	0%	0.6%

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





English vs. Dutch/German: A tentative explanation

Assumption about preverbal NIs:

- Surface position is above negation (in English (SpecTP) and German/Dutch (SpecCP)).
- Need to reconstruct to their base position in the scope of NEG.

Assumptions about acquisition:

- Children have difficulties with reconstruction (Bill et al. 2019).
- English children struggle to distinguish NIs and NPIs, e.g. *no-one* vs. *anyone* (Davidson 2020, Illingworth et al. 2022).

English vs. Dutch/German: A tentative explanation

Observation 1:
With preverbal NIs English and German children equally produce about 5–6% of errors. (No errors for Dutch.)

Explanation:
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.

English vs. Dutch/German: A tentative explanation

Observation 2:
The majority of NIs in German/Dutch are produced postverbally, unlike English.

Explanation:

- The Dutch/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 Dutch/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.

English vs. Dutch/German: A tentative explanation

Observation 3:

With postverbal NIs, English learning children make many more NC errors than in preverbal position (32%, χ^2 $p < 10^{-5}$), while German learning children make very few (1%) as compared to preverbal position (Fisher exact test $p = 0.0043$).

Explanation:

- 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 Dutch/German, so this problem does not exist.

The type of negation in English

	n't	*not*	prop. of *n't*
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).

Appendix B: Split scope

Split scope readings in non-NC grammars

Split scope readings of NIs cooccurring with modal verbs (Jacobs 1980, Geurts 1996, Penka 2007):

- the indefinite takes scope under the modal
- negation takes scope above the modal

(35) a. The company need fire no employees. (Potts 2000)
$\rightsquigarrow$ It is not the case that the company is obligated to fire employees.

b. Ze hoeven geen verpleegkundige te ontslaan. *Dutch*
they need n-INDEF nurse to dismiss
'They don't need to dismiss any nurse.' (Rullmann 1995: 194)

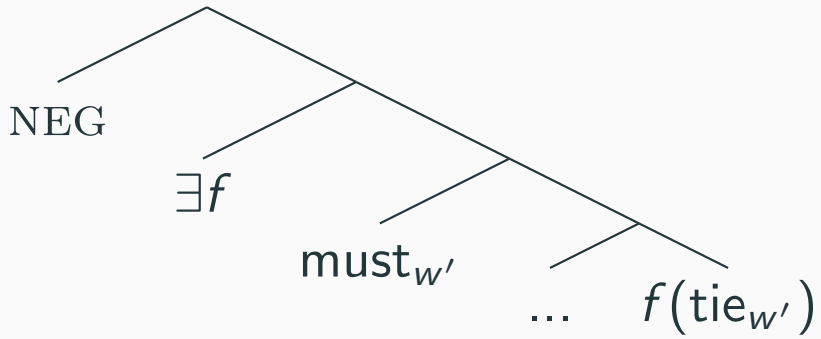
c. Du musst keine Krawatte anziehen. *German*
you must n-INDEF tie wear
'It is not required that you wear a tie.' (Penka 2007: 270)

Split scope readings as pseudo-scope

Abels and Martí (2010): the low scope existential reading of the indefinite is a case of *pseudo-scope* (Kratzer 1998): derived via binding of the world index of the restrictor NP by the modal.

(36) a. Du musst keine Krawatte anziehen. (Penka 2007: 270)
you must n-INDEF tie wear
'It is not required that you wear a tie.'

b. (cf. Abels and Martí 2010: 440)



c. $[\![(36a)]\!]^{@} = 1$ iff $\neg\exists CF(f)\&\forall w' R@$, you wear $f(\text{tie}_{w'})$ in w'

(Abels and Martí 2010: 441)

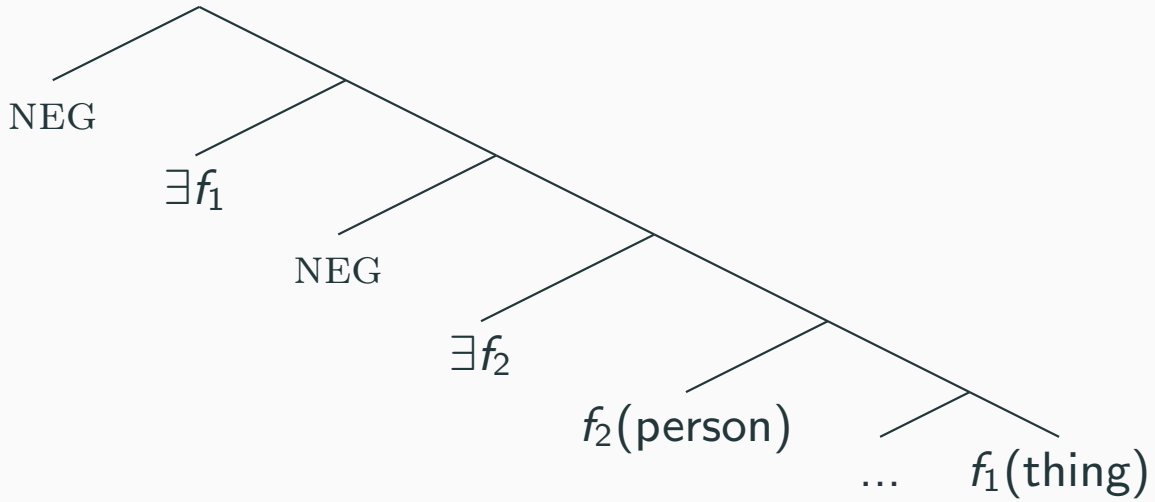
(36a) is true if and only if there is no choice function that in all relevant worlds w' picks a tie from w' that you wear in w'. In other words, you don't have to wear a tie in every world, i.e. the split scope reading of (36a).

Appendix C: More than one NI

Adult non-NC grammar with two indefinites

(37) a. Niemand heeft niets gezegd. *Dutch*
n-person has n-thing said
'Nobody said nothing.' (Everybody said something) G&Z (2017)

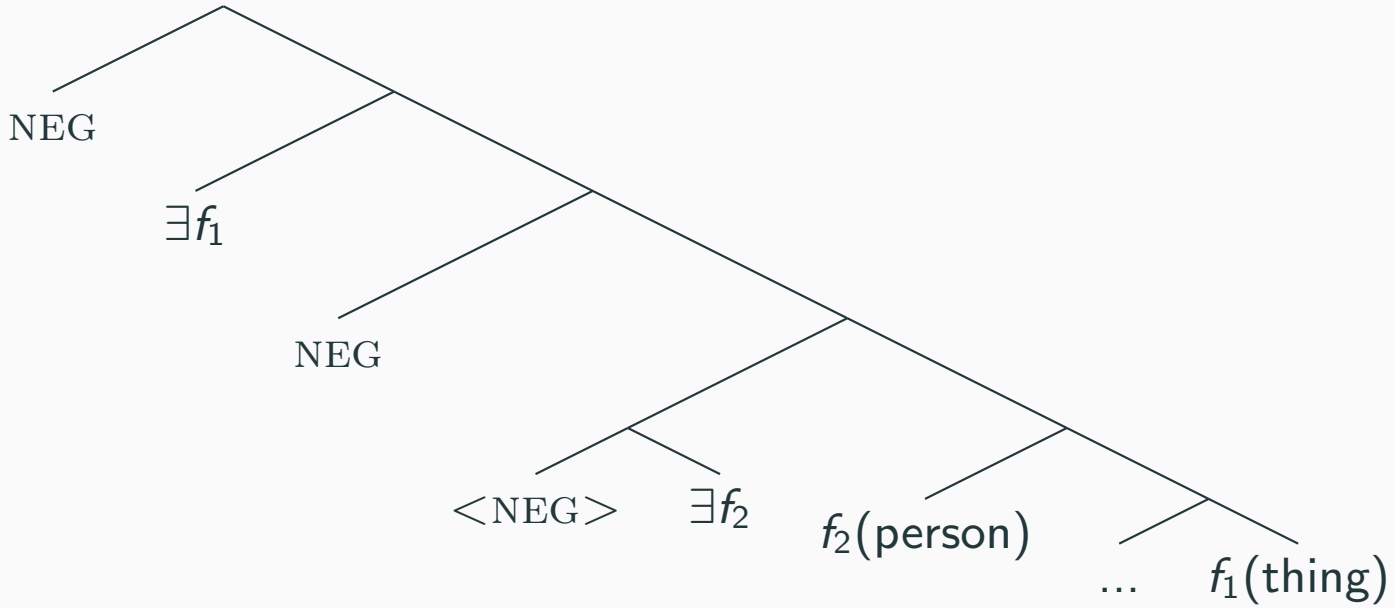
(38) *Step 0: input to morphology*



Adult non-NC grammar with two indefinites

(39) a. Niemand heeft niets gezegd. *Dutch*
n-person has n-thing said
'Nobody said nothing.' (Everybody said something) G&Z (2017)

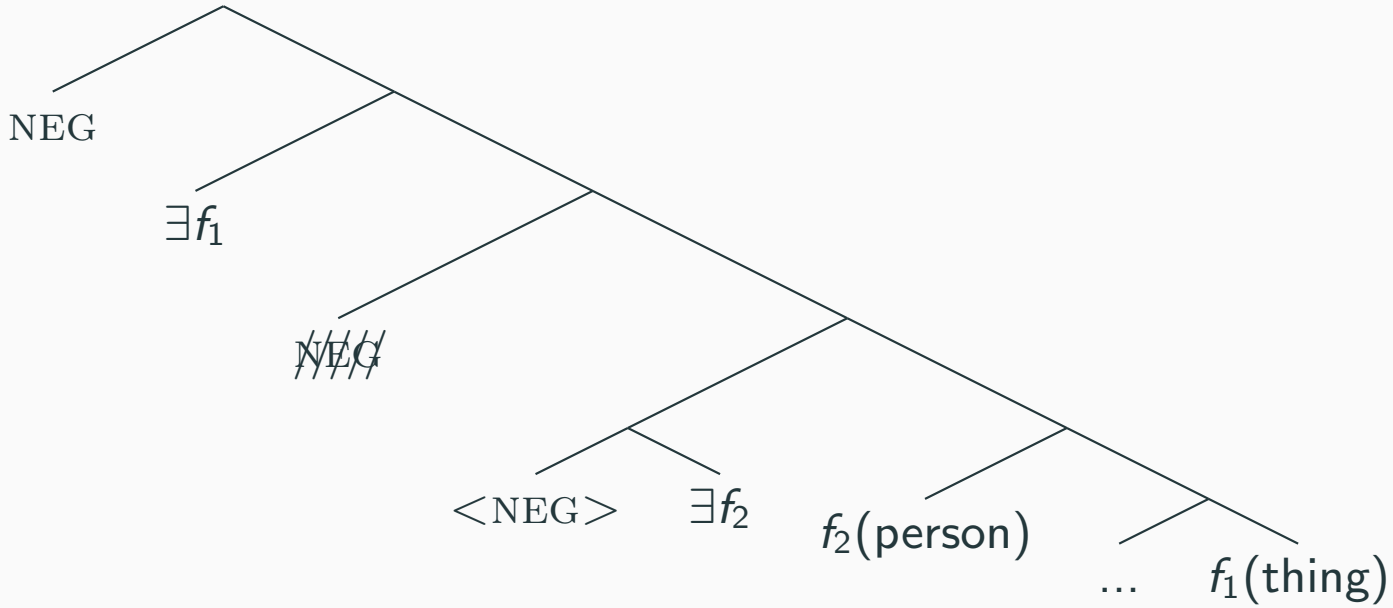
(40) *Step 1: duplication*



Adult non-NC grammar with two indefinites

(41) a. Niemand heeft niets gezegd. *Dutch*
n-person has n-thing said
'Nobody said nothing.' (Everybody said something) G&Z (2017)

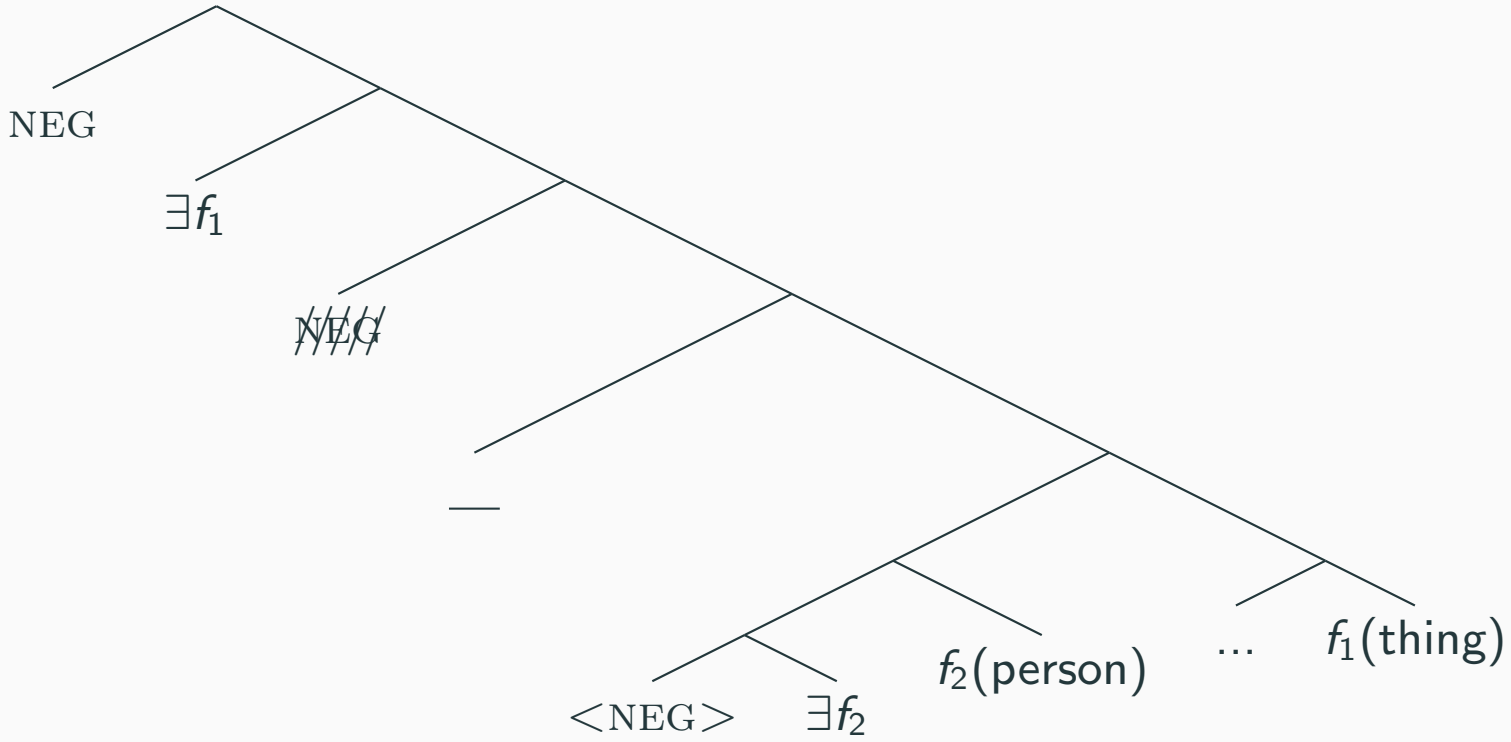
(42) *Step 2: deletion*



Adult non-NC grammar with two indefinites

(43) a. Niemand heeft niets gezegd. *Dutch*
n-person has n-thing said
'Nobody said nothing.' (Everybody said something) G&Z (2017)

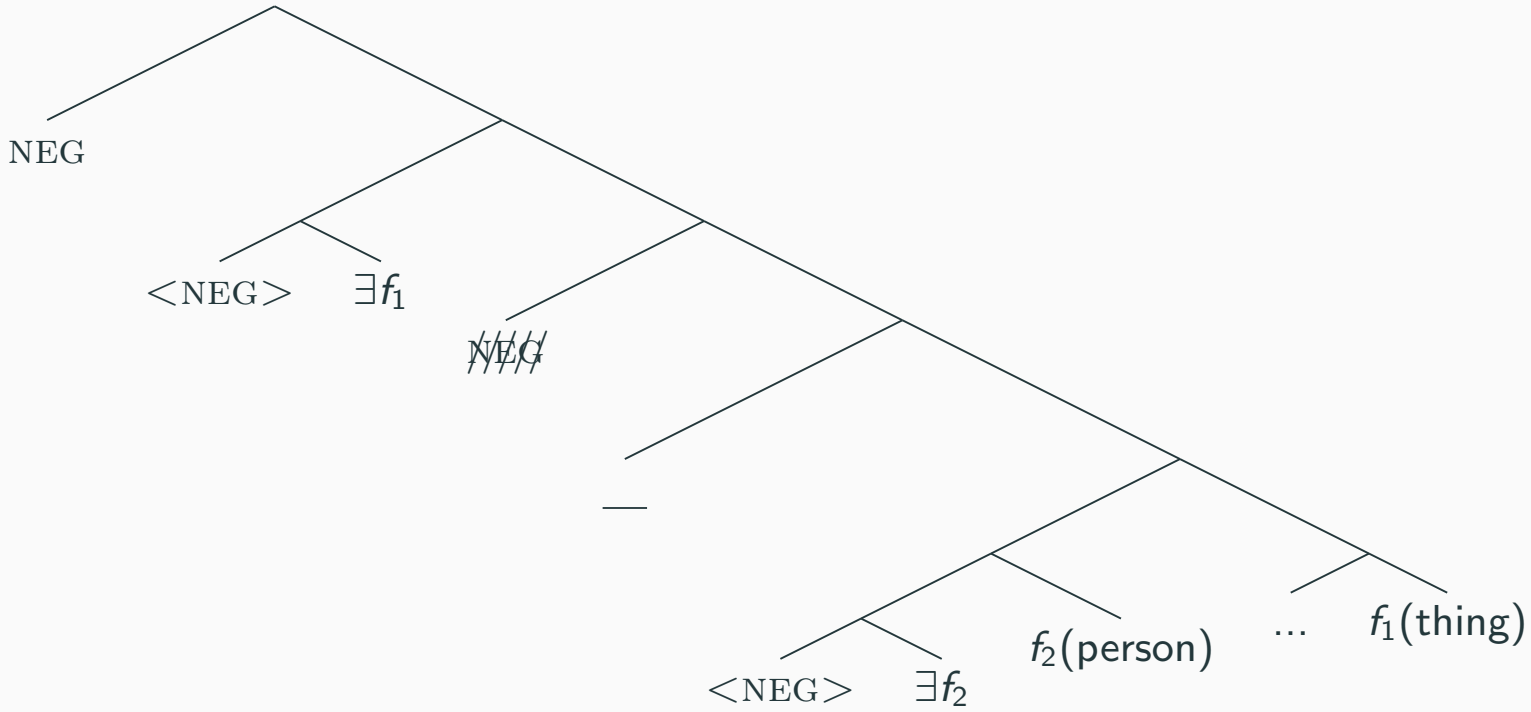
(44) *Step 3: bundling*



Adult non-NC grammar with two indefinites

(45) a. Niemand heeft niets gezegd. *Dutch*
n-person has n-thing said
'Nobody said nothing.' (Everybody said something) G&Z (2017)

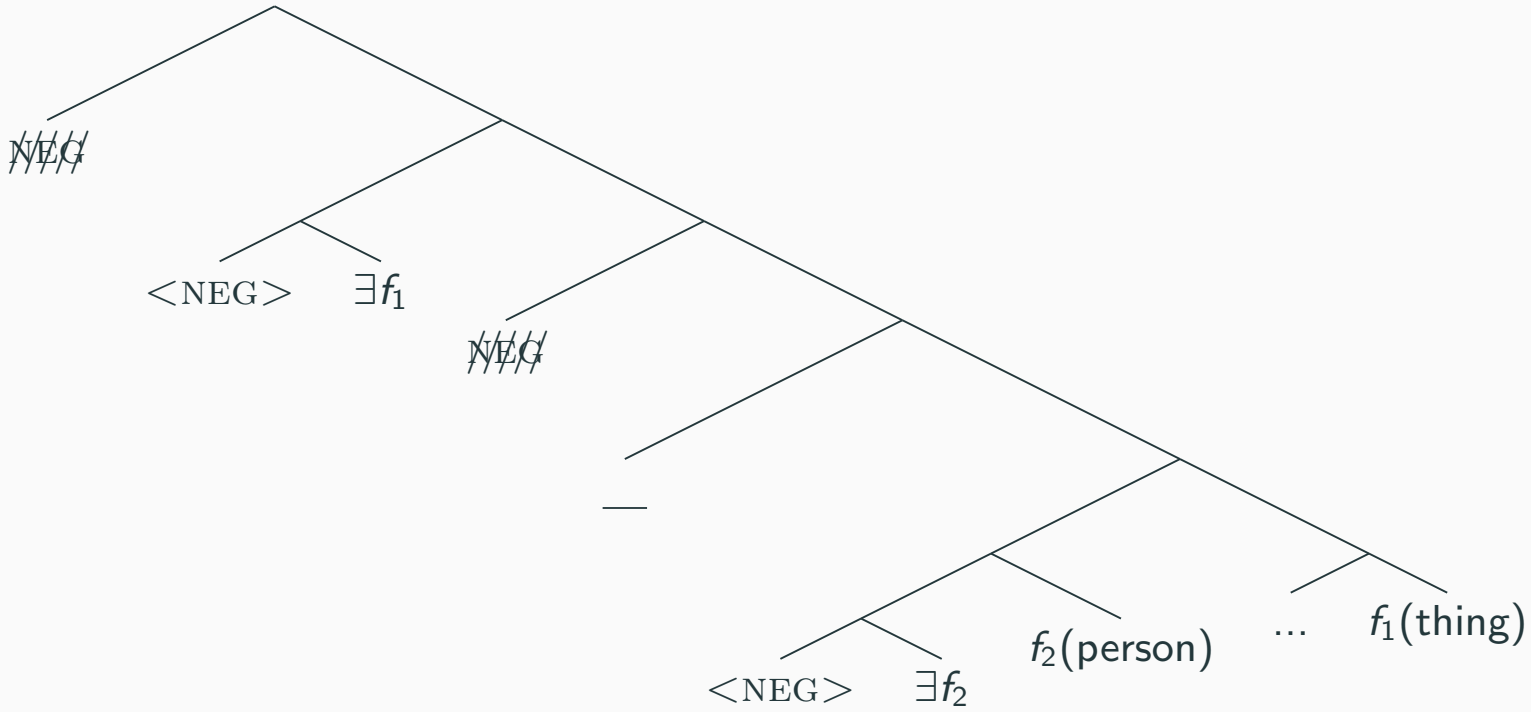
(46) *Step 4: duplication*



Adult non-NC grammar with two indefinites

(47) a. Niemand heeft niets gezegd. *Dutch*
n-person has n-thing said
'Nobody said nothing.' (Everybody said something) G&Z (2017)

(48) *Step 5: deletion*



Adult non-NC grammar with two indefinites

(49) a. Niemand heeft niets gezegd. *Dutch*
n-person has n-thing said
'Nobody said nothing.' (Everybody said something) G&Z (2017)

(50) *Step 6: bundling*