Minimizing and maximizing exponence in child language

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WCCFL 40, Stanford, 13-15 May 2022

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Introduction

During language acquisition, children produce errors of omission and **commission**:

(1) English past tense
eat > **eat-ed** > **ate-d** > ate (Kuczaj 1977, 1978)

Commission error: Realization of elements that must not be realized in the adult language including redundant material (see e.g. Alexiadou et al. 2021)

- **Distributive** commission error: *eat-ed* (eat-PAST)
- **Redundant** commission error: *ate-d* (eat.PAST-PAST)

Introduction

Target form	Commission errors: distributive	Commission errors: redundant	
ate	*eat-ed*	*ate-d*	Kuczaj (1977, 1978)
	EAT PAST	EAT.PAST PAST	Menn and MacWhinney (1984)
donner	*faire avoir*	*faire donner*	Lord (1979)
'to give'	'make have'	'make give'	Bezinska et al. (2008)
mieux	*plus bon*	*plus mieux*	Moline (1971)
better	'more good'	'more better'	
kein NP	*nicht...ein NP*	*nicht...kein NP*	Nicolae and Yatsushiro (2020),
'no NP'	'not...a NP'	'not...no NP'	Hein et al. (2022)
ohne	*mit nicht/kein*	*mit ohne*	Cohen (1925), Sauerland (2019)
'without'	'with not'	'with without'	Meyer et al. (2021)

Typology of commission errors from Martin et al. (2021)

Introduction

1. Redundant error case studies
    - Causative
    - Comparative
2. What are children getting wrong?
    - Distributed Morphology: Violation of Specificity
3. Why are they getting it wrong?
    - Redundant errors arise from the interaction of transparency and economy principles

Case studies

Causatives

- Lexical causative verbs encode a causative meaning component CAUSE, e.g. French *fermer* 'close' or *montrer* 'show'
- Periphrastic causatives can be formed in French using the verb *faire* 'make', which encodes an additional CAUSE component

(2) a. *Montre le camion de pompiers.*
'Show the firetruck.'

b. *J'ai fait montrer le camion au client par un de nos meilleurs vendeurs.*
'I made one of our best salesmen show the truck to the client.'

Causatives

- Children in French CHILDES corpora (MacWhinney 2000) frequently produce lexical causatives with a redundant *faire*, thus spelling out CAUSE twice (Martin, Nie et al. 2021)

(3) a. *faire fermer les yeux.* (LSN 4;02, Palasis 2009)
Intended meaning: 'Close the eyes.'

b. *va le faire couper.*
Intended meaning: 'Going to cut it.'
(Marilyn 2;09, Demuth and Tremblay 2008)

c. *du bon feu ici pour les faire réchauffer.*
Intended meaning: 'A nice fire here for reheating them.'
(Camille 3,09, Le Normand 1986)

Causatives

- Matteo (Palasis 2009) and Madeleine (Morgenstern et al. 2009) use the portmanteau lexical causative form before/alongside the redundant form

(4) a. *Elle a fait tomber ma petite cabane.* (Matteo 2;11)
'She made my little shed fall.'
b. *J'ai montré ça.* 'I showed that.' (Matteo 3;02)
c. *Eh fais montrer le camion de pompiers!* (Matteo 3;03)
Intended meaning: 'Hey show the firetruck!'

(5) *(a)près on va le cacher … on va le cacher … va le faire cacher.*
(Madeleine 2;02)
Lit.: 'Then we'll hide it … we'll hide it … we'll make hide it.'

Causatives

- Redundant exponence of CAUSE is attested in several child languages
  - French (Bezinska et al. 2008, Martin et al. 2021)
  - Turkish (Aksu-Koç and Slobin 1985)
  - Persian (Family and Allen 2015)
  - Japanese (Yamakoshi et al. 2018)
  - English (Lord 1979, Nie et al. in progress)

Comparatives

- Regular French comparative: *plus* 'more' + adjective
- Irregular: *bon* 'good', *mieux* 'better' (**plus bon*)
- French children frequently produce *mieux* with a redundant *plus* (cf. Moline 1971), thus spelling out COMP twice

(6) a. *C'est plus mieux comme ça.* 'It's more better like this.'
b. *on va i donner un petit peu d'eau* (...) *pour qu'i soit plus mieux.*
'We'll give him a little bit of water (...) so that he's feels more better.' (VET, Saint-Pierre and Feider 1987)

Comparatives

- Suppletive and regular *-er* suffixed comparative forms can appear with redundant *more* (or *-er*) in child English
- Not limited to irregular comparatives

(7) a. *I like toasts more better.* (Abe 4;03, Kuczaj 1977)
b. *I make it more bigger.*
(Roman 3;09, Weist and Zevenbergen 2008)
c. *that's even lighterer.* (Helen 4;02, Lieven et al. 2009)

(8) *MAR: *a little bit more drier* .
*FAT: *yeah (.) that's true (.) and cleaner (.) right* .
*MAR: *and more drier and more cleaner* .
(Mark 3;09, MacWhinney 2000)

Comparatives

- Children produce the target comparative form before/alongside the redundant form
- Redundant comparatives can be overtly marked twice in English, with *more* and *-er*
- No correlation between irregular formation of the comparative and likelihood of commissive *more* in child English
    - e.g. Commissive *more* is no more likely to occur with *better* than with *bigger*

Generalizations

- Redundant commission errors are frequent in child language
- The element that is redundantly realized tends to be
  - A higher element in the projection
  - A functional element, rather than the root
- Redundant exponence of lower elements is rare

	Redundant commission error	
Target form	**well attested**	**unattested/rare**
donner	*faire donner*	**donner avoir*
CAUSE HAVE	CAUSE CAUSE.HAVE	CAUSE.HAVE HAVE
mieux	*plus mieux*	**mieux bon*
COMP GOOD	COMP COMP.GOOD	COMP.GOOD GOOD

Deriving redundant errors

Question

- What do children do wrong?
- Which part of their grammar is not adult-like (yet)?
- Distributed Morphology (Halle and Marantz 1993, 1994):
  Answer: They don't fully respect Specificity.

Relevant DM tenets

- Vocabulary items are inserted into terminal nodes following the Subset Principle and Specificity (e.g. Halle 1997).
- Exponents may be specified for two types of features (Carstairs 1987, Noyer 1997)
  - **primary features** must be present on the terminal node targeted for insertion
  - **secondary features** must be present on a terminal node in the local environment of the terminal node targeted for insertion.[1]
- Those secondary (or contextual) features count for calculation of specificity since they further narrow an exponents distribution.

[1] See Stump (2001), Müller (2020) for problems of secondary features.

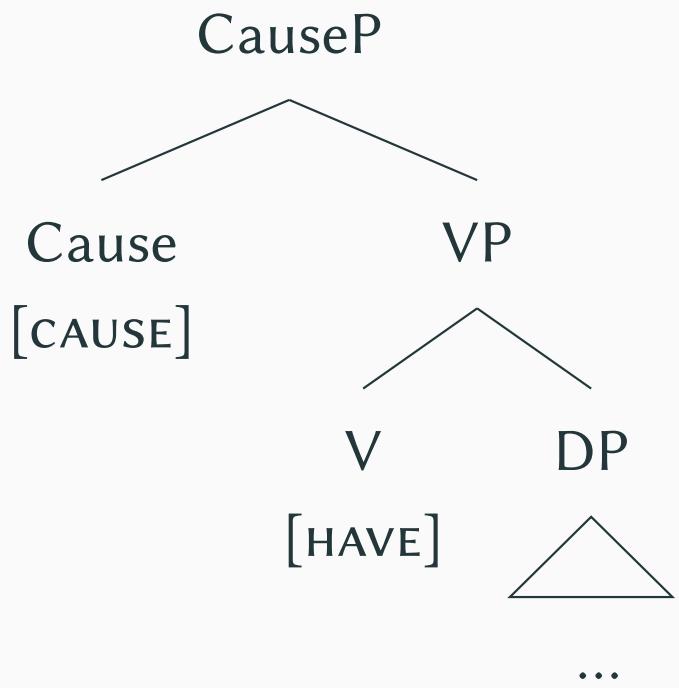
Commission errors in DM

Claim

Children's commission errors result from **disregarding specificity**, in particular when secondary features are involved.

Causatives: Target *donner* 'give'

(9) a. /avoir/ ⇔ [HAVE]
b. /faire/ ⇔ [CAUSE]
c. /donner/ ⇔ [HAVE] / __ CAUSE
d. /∅/ ⇔ [CAUSE] / __ {HAVE, DRY, ...}



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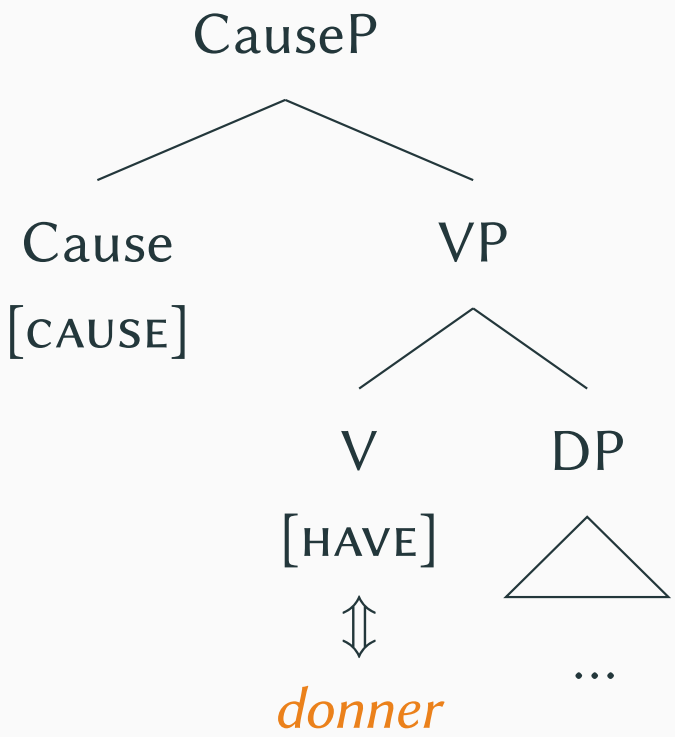

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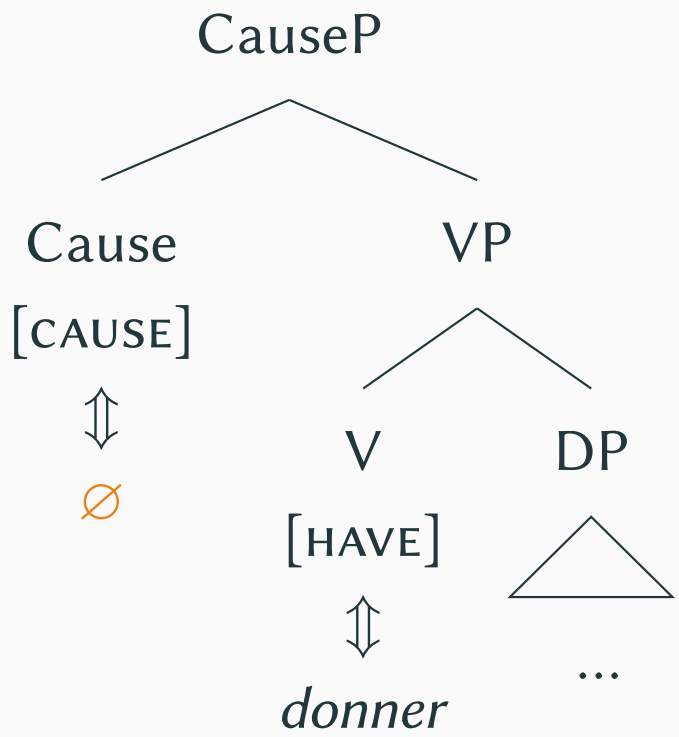

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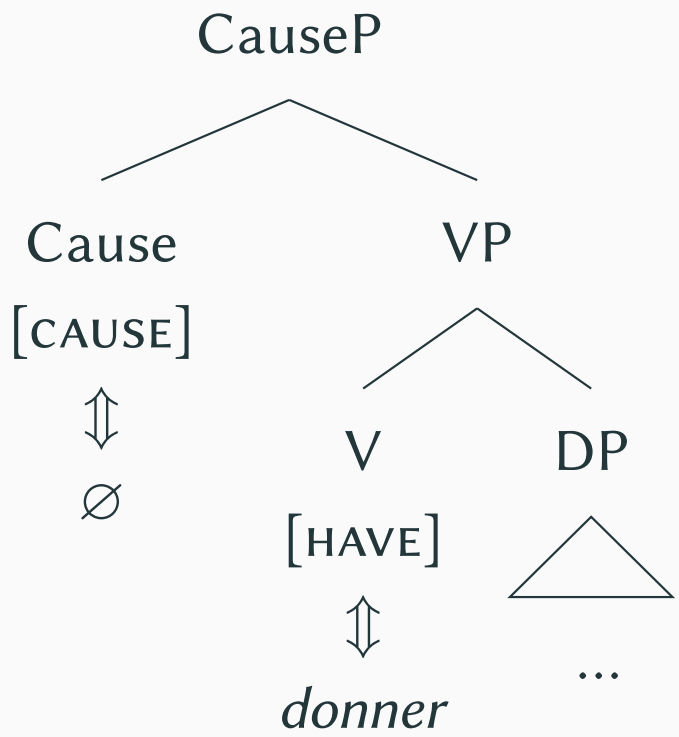
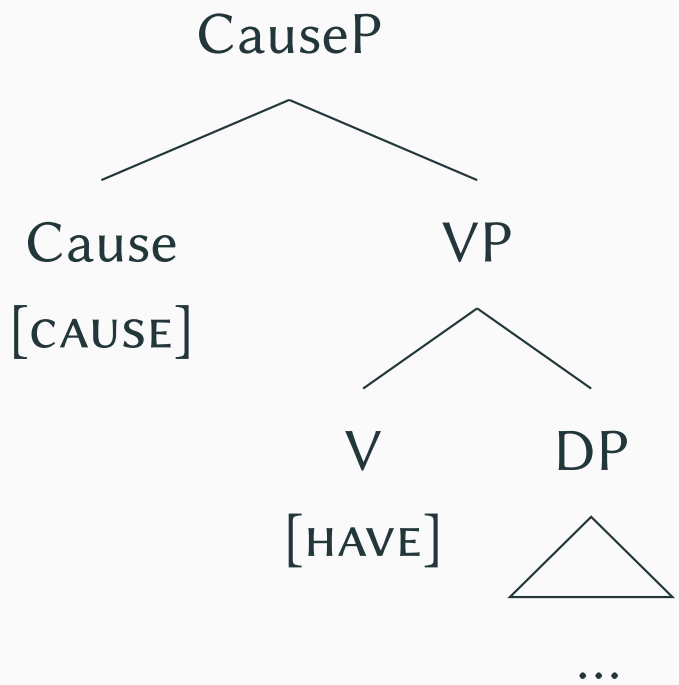


Causatives: Redundant *faire donner* ‘make give’

(10) a. /avoir/ ⇔ [HAVE]
b. /faire/ ⇔ [CAUSE]
c. /donner/ ⇔ [HAVE] / __ CAUSE
d. /∅/ ⇔ [CAUSE] / __ {HAVE, DRY, ...}



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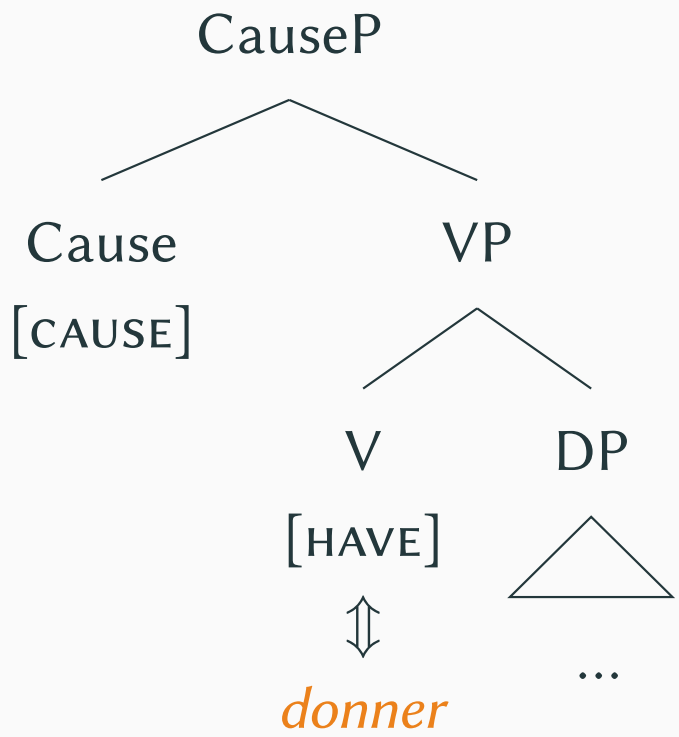

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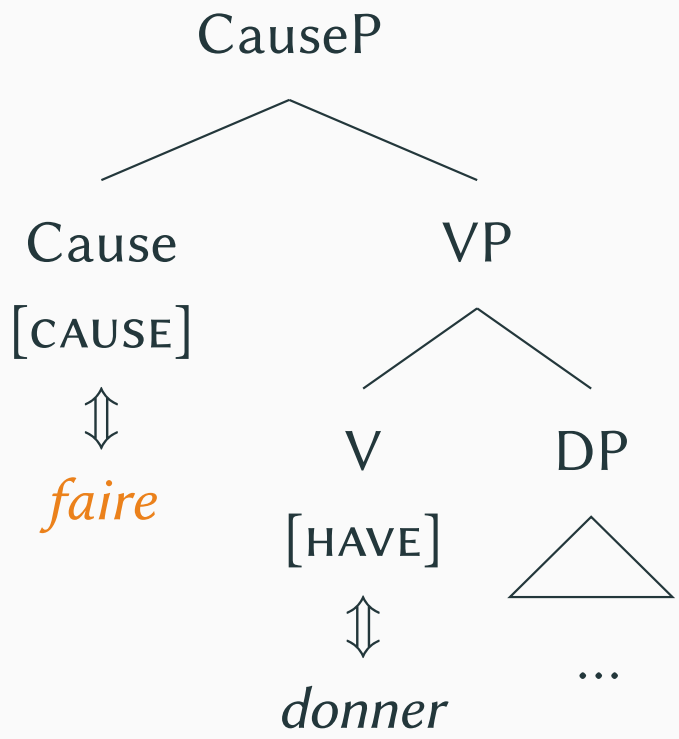

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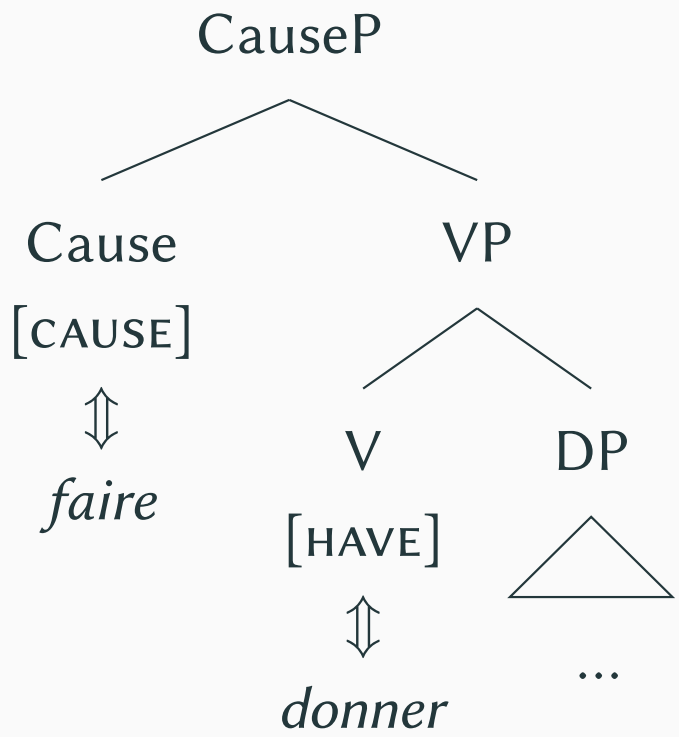
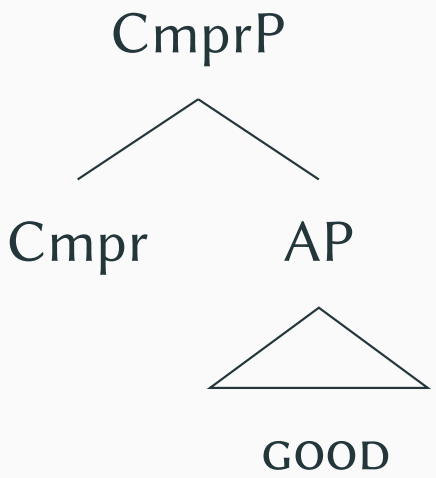


Comparatives: Target *mieux* 'better'

(11) a. /bon/ ⇔ [GOOD]
b. /plus/ ⇔ [Cmpr]
c. /mieux/ ⇔ [GOOD] / __ Cmpr
d. /∅ ⇔ [Cmpr] / __ {GOOD, BAD, ...}

(12)



Comparative structure following Bobaljik (2012)

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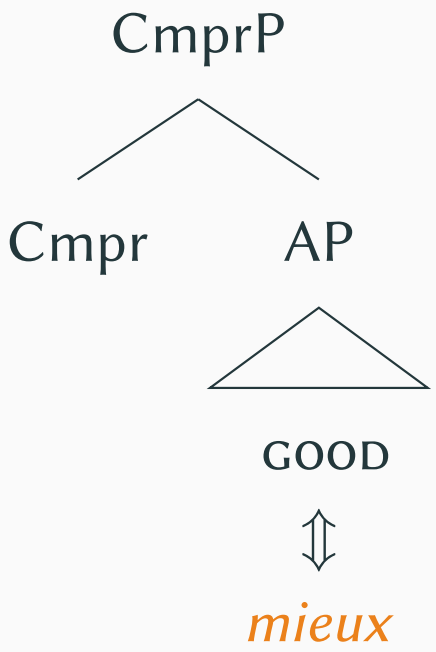

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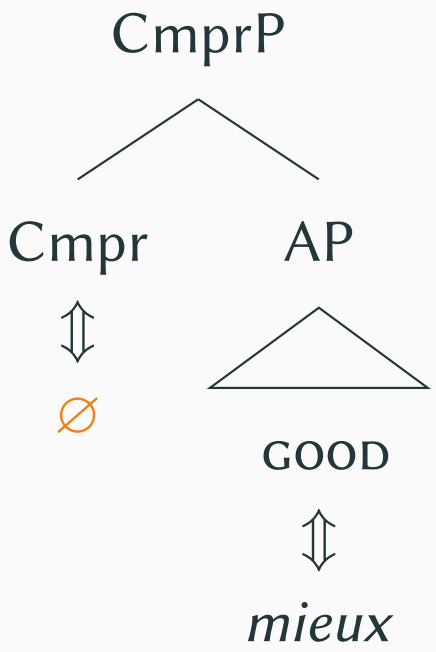

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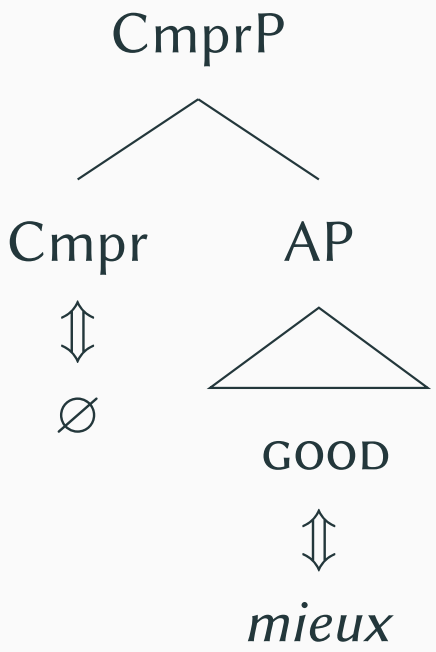

Comparative structure following Bobaljik (2012)

Comparatives: Redundant *plus mieux* ‘more better’

(13) a. /bon/ ⇔ [GOOD]
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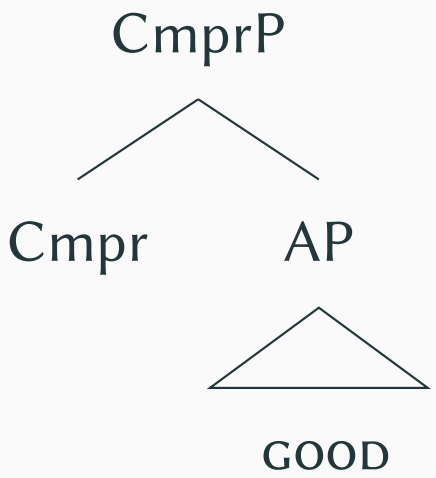
d. /∅ ⇔ [Cmpr] / __ {GOOD, BAD, ...}

(14)



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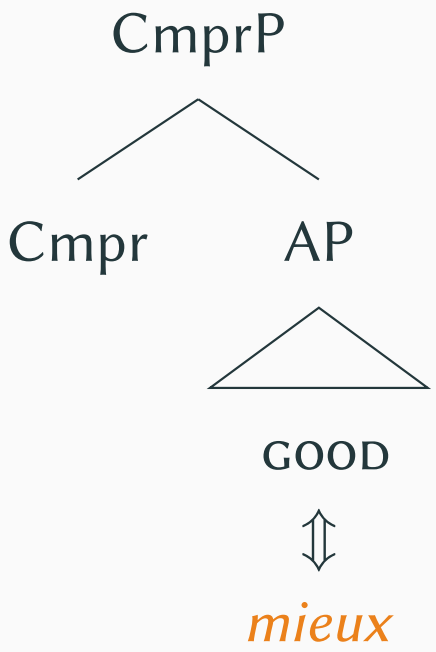

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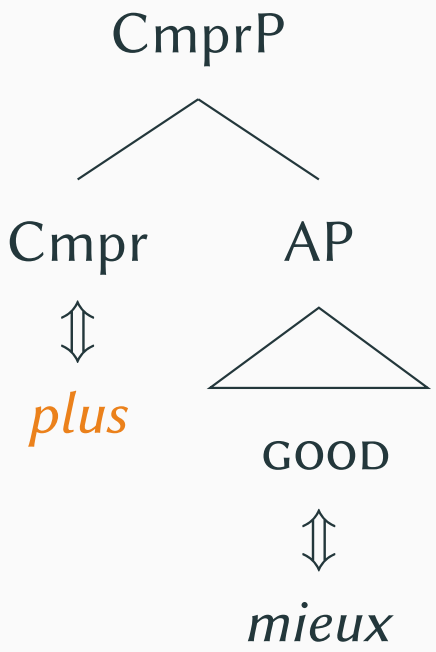

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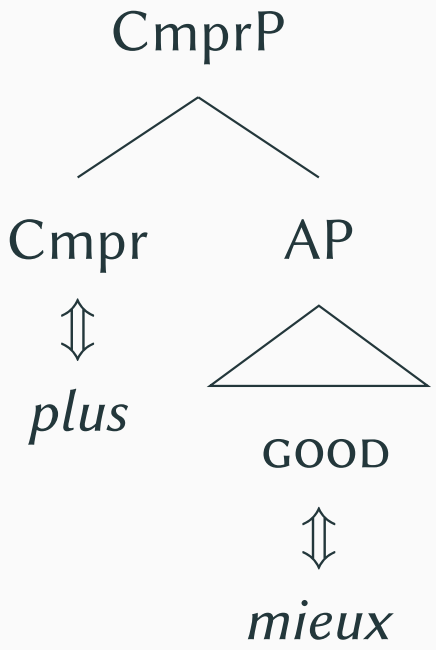
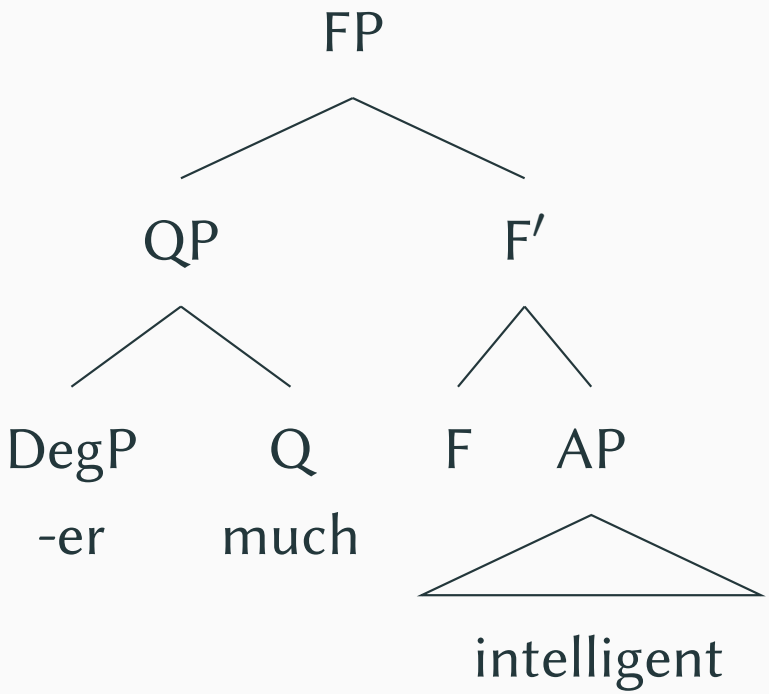


Comparative structure following Bobaljik (2012)

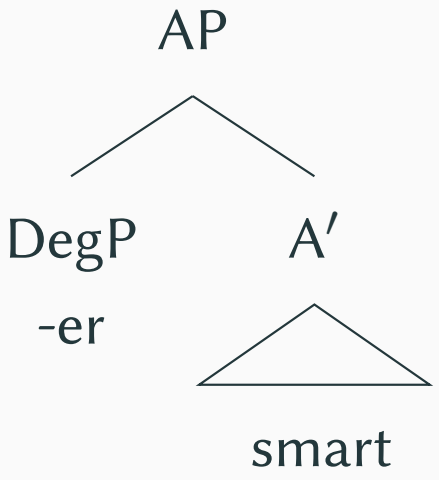
Comparatives: *more bigger* – two structures

Solt (2010) (see also Bresnan (1973), Corver (1997), Wellwood (2019))

(15) more intelligent



(16) smart-er



(17) a. /-er/ ⇔ [DegP]
b. /more/ ⇔ [Q] / __ DegP
c. /∅/ ⇔ [DegP] / __ Q

Comparatives: Redundant *more bigger*

(18) a. /big/ ⇔ [BIG]
b. /-er/ ⇔ [DegP]
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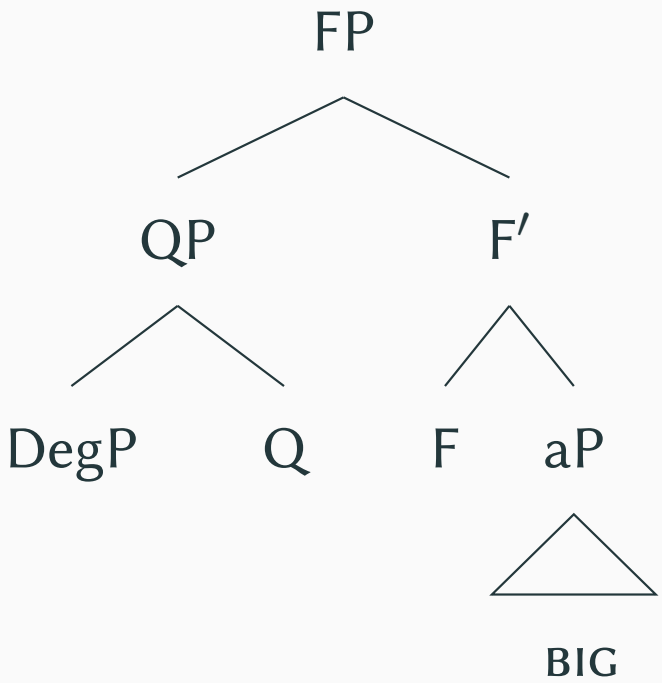
d. ∅ ⇔ [DegP] / __ Q

(19)



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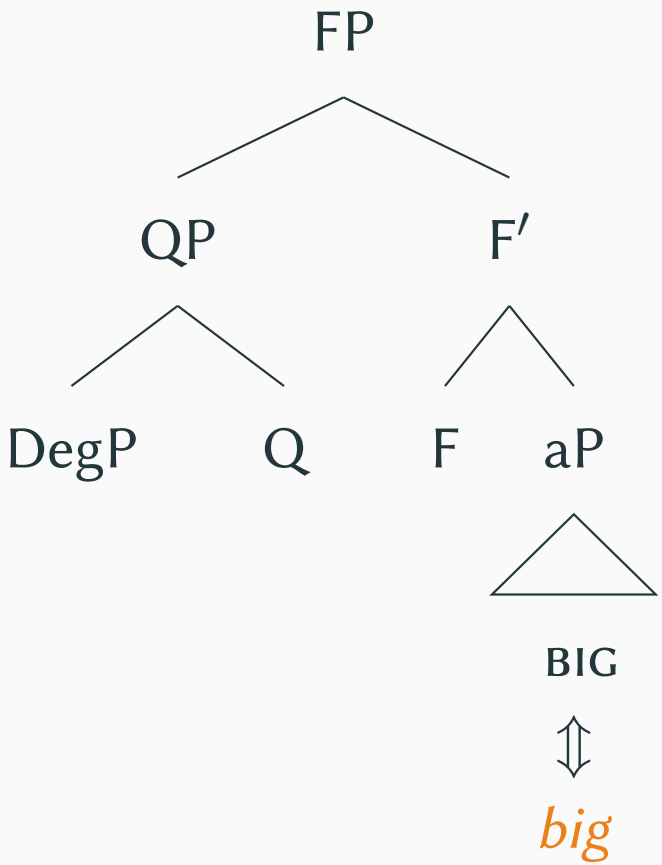

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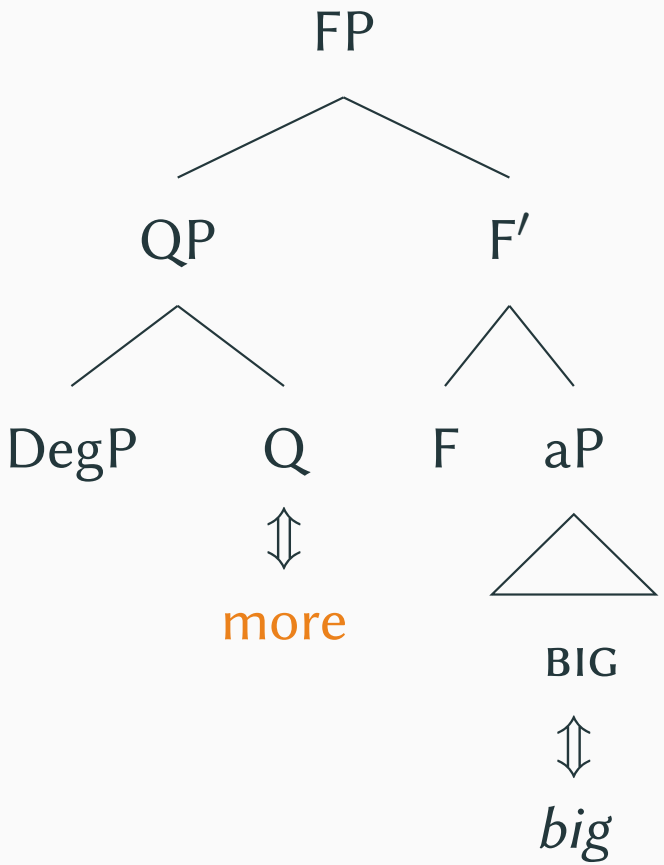

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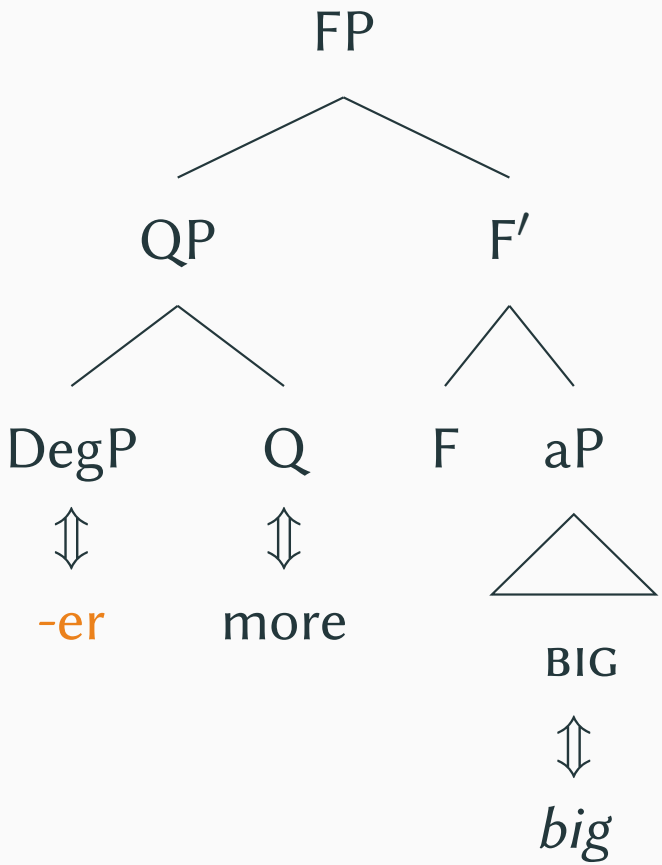

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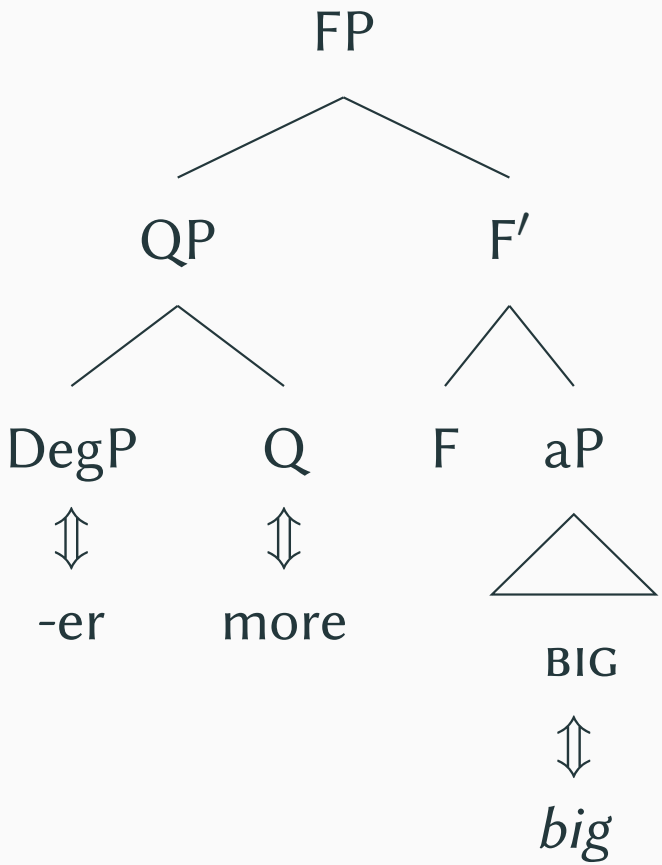

What do children do wrong?

- They insert a less specific vocabulary item if the specificity difference is due to secondary features.
- In the domains at hand, they choose an exponent whose insertion is conditioned by only a single feature over one where it is conditioned by a primary and an additional secondary feature.

Emergence of redundant errors

Principles of exponence

Adult grammar

Minimize Exponence! (Siddiqi 2006)

Realize a set of concepts using the fewest exponents.

- General economy principle, e.g. EAT, PAST → *ate*

Child grammar

- **One-to-one mapping principle** (Slobin 1973, van Hout 2008, Alexiadou, Guasti & Sauerland 2021)
- General transparency principle, e.g. EAT, PAST → *eat-ed*

Maximize Exponence!

Realize each concept using exactly one exponent.

Principles of exponence

Language acquisition

- Two competing principles

Maximize Exponence!

Realize each concept using exactly one exponent.

⇕

Multiple Exponence

⇕

Minimize Exponence!

Realize concepts using the fewest exponents.

- Intermediate stage of **Multiple Exponence** where transparent, decomposed forms exist alongside non-transparent, portmanteau forms
  - e.g. EAT, PAST → *ate-d*

Commission errors

Predictions for development

- **Stage 1: Maximize Exponence!**
  Children first decompose in a one-to-one fashion → Result: Distributive commission errors, e.g. *eat-ed*
- **Stage 2: Multiple Exponence**
  Children have acquired portmanteau forms but continue to prefer transparency → Result: Redundant commission errors, e.g. *ate-d*
- **Stage 3: Minimize Exponence!**
  Children have acquired portmanteau forms without additional morphology → Result: Target forms, e.g. *ate*

Commission errors

Predictions for development

(currently being investigated)

- Multiple exponence in child grammar reflects the attempt to maximize both transparency and economy
- e.g. EAT, PAST $\rightarrow$ *eat-ed* $>$ *ate-d* $>$ *ate*

  COMP, GOOD $\rightarrow$ *plus bon* $>$ *plus mieux* $>$ *mieux*

  CAUSE, HAVE $\rightarrow$ *faire avoir* $>$ *faire donner* $>$ *donner*
- Multiple exponence may persist in non-standard adult language.

Conclusion

- Redundant commission errors are pervasive in child language.
- They can be modelled as a disregard for specificity of secondary features.
- Redundant exponence in child language reflects an intermediate stage of acquisition (Multiple Exponence) in which children attempt to maximize both transparency and economy.

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).

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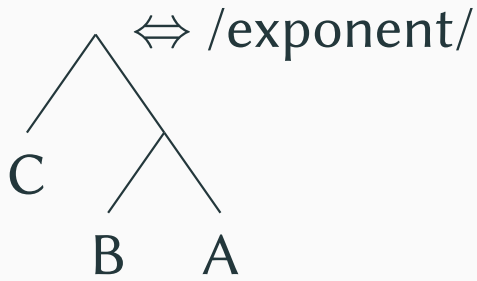
Appendix

Nanosyntax

- Nanosyntax (Starke 2009, Caha 2009, et seq.) allows non-terminal spellout, i.e. spellout out of several terminal nodes that form a constituent at once.

(20)

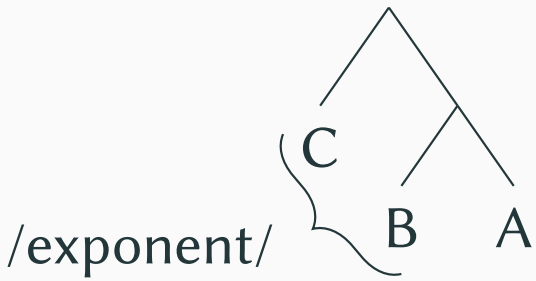


- Lexicalization follows the Superset Principle. Previous lexicalizations may be overridden by subsequent lexicalizations.

Nanosyntax: Spanning

- Spanning (Williams 2003, Abels and Muriungi 2008, Taraldsen 2010, Svenonius 2012, a.o.) allows lexical items to spell out non-constituents (span = "a contiguous sequence of heads in a head-complement relation", Svenonius 2016: 205).

(21)



Nanosyntax: Commission errors

Claim

Children's commission errors result from **erroneous overlapping application** of spanning lexicalization (S-lexicalization) and run-of-the-mill constituent lexicalization (C-lexicalization).

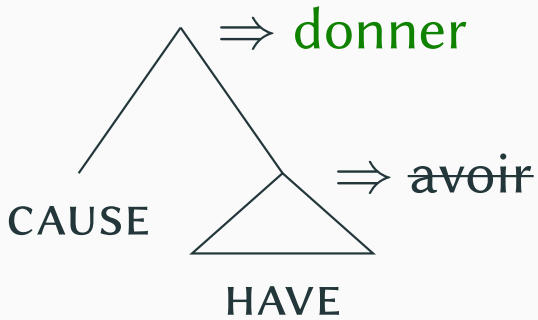
Nanosyntax: Target causative *donner* 'give'

(22) Lexical items

a. avoir ⇔ [HAVE]

b. donner ⇔ [CAUSE [HAVE]]

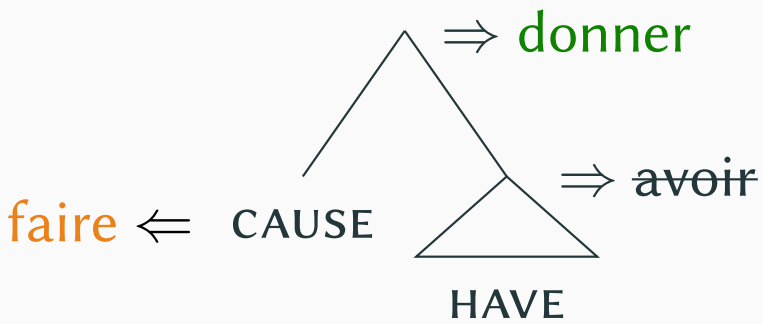
(23) C-lexicalization overrides previous C-lexicalization



Nanosyntax: Redundant causative *faire donner* 'make give'

(24) Lexical items
   a. avoir ⇔ [HAVE]
   b. donner ⇔ [CAUSE [HAVE]]
   c. faire ⇔ [CAUSE

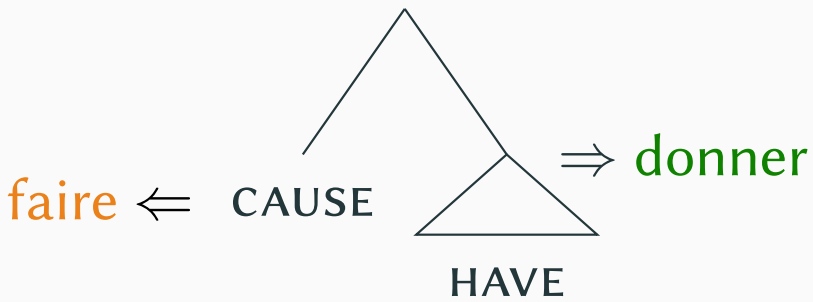
(25) Overriding *avoir* with *donner* and (erroneous) S-lexicalization of CAUSE by *faire*



Nanosyntax: Redundant causative *faire donner* 'make give'

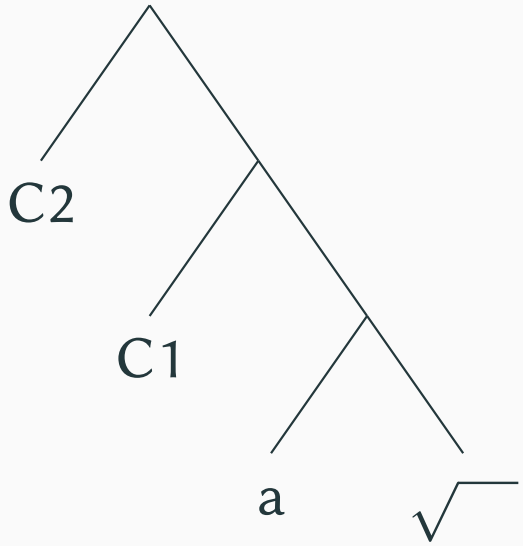
(26) Lexical items
   a. avoir ⇔ [HAVE]
   b. fermer ⇔ [CAUSE [HAVE]]
   c. faire ⇔ [CAUSE

(27) Elsewhere error inserting *donner*, failure to override *donner* and S-lexicalization of CAUSE with *faire*



Nanosyntax: Comparatives

(28) Structure of comparative phrase (Caha et al. 2019)



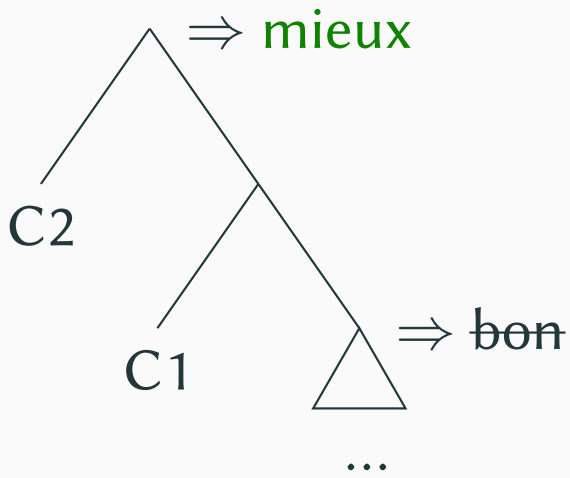
Nanosyntax: Target comparative *mieux* 'better'

(29) Lexical items

a. bon $\Leftrightarrow$ [a $\sqrt{\text{GOOD}}$]

b. mieux $\Leftrightarrow$ [C2 [C1 [a $\sqrt{\text{GOOD}}$]]]

(30) Overriding *bon* with *mieux*



Nanosyntax: Redundant comparative *plus mieux* 'more better'

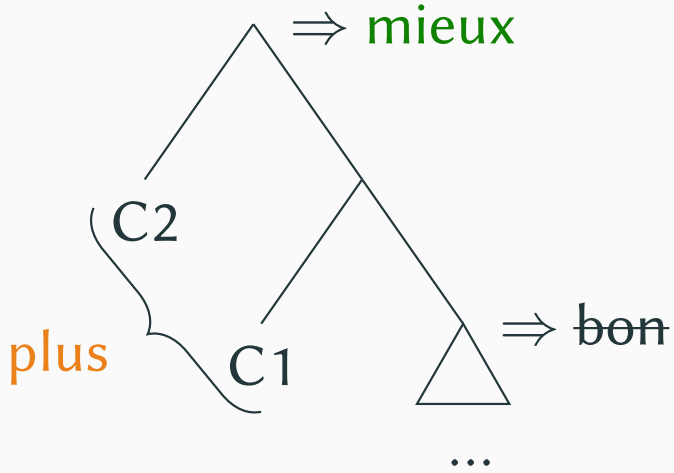
(31) Lexical items

a. bon ⇔ [a $\sqrt{\text{GOOD}}$]

b. mieux ⇔ [C2 [C1 [a $\sqrt{\text{GOOD}}$]]]

c. plus ⇔ [C2 [C1

(32) Overriding *bon* with *mieux* and (erroneous) S-lexicalization of [C1[C2 by *plus*



Nanosyntax: Redundant comparative *more bigger*

(33) Lexical items

a. big $\Leftrightarrow$ [C1 [a $\sqrt{\text{BIG}}$]]

b. more $\Leftrightarrow$ [C2 [C1

c. -er $\Leftrightarrow$ [C2

(34) (Erroneous) S-lexicalization of C1 by *more*