Children selectively drop expletive subjects

The role of argumenthood and referentiality

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BUCLD 50 (Boston University), 6-9 November 2025

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Introduction

Subject drop in acquisition

- Children known to drop (compulsory) subjects, especially in Germanic – both **referential** and **expletive**, and in finite but, especially, so-called *Root Infinitive* contexts.

(1) a. Want more apple.
b. Tickles me.
c. French
Dormir petit bébé.
sleep.INF small baby
'Little baby sleep.'
d. German
bin wieder lieb
am again good
'(I) am good again.'

(Bloom et al., 1975; Hamann and Plunkett, 1998; Hamann, 1996)

(2) a. Outside cold.
b. That's cold (referring to weather).
c. Yes, is toys in there.

(Hyams, 1986, p. 63)

Subject drop in acquisition

- **Contentious debate**: Several (not mutually-exclusive) factors proposed to account for subject drop in acquisition.
  - ↪ **Competence** (morphosyntactic) factors (Hyams, 1986; Hyams and Wexler, 1993, *et seq.*; see also Rizzi, 1994, on the Root Infinitive stage).
  - ↪ **Performance** factors, e.g., VP-length (Bloom, 1970; Valian, 1991; Valian and Aubry, 2005).
  - ↪ **Pragmatic** factors, e.g., topicality (Valian et al., 1996; Hauser-Grüdl, 2010).
- These either treat subjects as fully **developmentally homogenous**, or partly so (e.g., Hyams, 1986, who distinguishes [±referential]).

Introduction

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- More than one subject position (e.g., SpecvP/VoiceP, SpecTP, etc.), unlike previously thought.
- Properties of 'subjects' distributed across functional heads.

→ **Subjecthood** nonetheless a morphosyntactically **distributed** notion (McCloskey, 1997; Svenonius, 2001; Poole, 2016).

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- Properties of 'subjects' distributed across functional heads.

- Furthermore encodes both properties known to be:
  - **Early acquired** – argument structural properties (Lidz, 2022).
  - **Late acquired** – (fine-grained aspects of) topicality (Grinstead, 2004; Serratrice et al., 2004; Friedmann et al., 2021).

Introduction

- Are all subject *types* equally affected by pronoun drop?
  - Conflicting results to date: comparable rates for expletives vs. referential subjects in Hyams (1986), but cf. Valian (1991).
    - → But NB: not all possible distinctions made in the studies (e.g., expletive types).

Introduction

- ⑦ Are all subject *types* equally affected by pronoun drop?
  - Conflicting results to date: comparable rates for expletives vs. referential subjects in Hyams (1986), but cf. Valian (1991).
    - → But NB: not all possible distinctions made in the studies (e.g., expletive types).
- **This paper**: challenge the (perceived) **developmental homogeneity** of subject types with evidence from *expletive types*.
  - **We show:** Subject production in German, Dutch and English exhibits an **asymmetry** – *existential* (and other pure) expletives almost always overtly expressed; *weather* expletives heavily omitted.

Roadmap

1. Introduction

2. Selective subject drop in West Germanic children
   - Methodology
   - Results
   - Ruling out alternatives – VP length

3. Analysis and implications
   - Previous analyses
   - Proposed learning path: successive differentiation of subject types

4. Conclusion

Selective subject drop in West Germanic children

The corpus study: methodology

- Corpus study on **12 German**, **10 English** and **7 Dutch** children in CHILDES.

Language	Corpus	Files analysed	Age range	MLUw range	Total utterances
German	Miller	111	1;03-4;00	1.09-6.01	45111
	Koch	143	2;00-2;09	1.0-4.71	45890
	Leo	375	1;11-2;11	1.0-9.9	109526
	Caroline	236	0;01-4;03	1.0-6.55	22825
	Rigol	340	0;00-3;11	1.47-4.82	43641
Total / range		1094	0;00-4;03	1.0-9.9	266,993
English	Brown	214	1;06-5;02	1.48-4.94	87497
	Manchester	245	1;00-3;08	1.11-3.63	125030
Total / range		459	1;00-5;02	1.11-4.94	212,527
Dutch	van Kampen	124	1;06-5;02	1.07-6.07	40111
	Groningen	275	1;05-3;07	1.02-4.01	58752
Total / range		399	1;05-5;02	1.02-4.94	98,863

Table 1: Children studied and summary information

Structures studied

- Quantified all expletive types (weather, existential, impersonal, 'anticipatory', etc.) and their omission.
- Focus on **weather** vs. **existential** here: $N = 1293$ utterances with expletives, in 1524 obligatory contexts (461 weather vs. 1063 existential). This included, very broadly:
  - **Weather**: EXPL + Weather V & EXPL + COPULA + Adj (e.g., cold, hot...).
  - **Existential**: Structures denoting existence and/or location, usually of form EXPLETIVE + COPULA.
- **Finite contexts** considered only: any null expletives reported therefore do *not* correlate with Root Infinitives.

Structures studied

	Weather	**Existential**
German	Expletive *es* Verbs: *regnen, schneien, donnern* Adjectives (+ copula): *kalt, heiss, warm, dunkel* (both SV and VS orders)	Expletive *es* *Es* + copula *Es gibt* construction (both SV and VS orders)
English	Expletive *it* Verbs: *rain, snow, thunder* Adjectives (+ copula): *cold, hot, warm, dark*	Expletive *there* *There* + copula
Dutch	Expletive *het* Verbs: *regen, sneeuwen, donderen* Adjectives (+ copula): *koud, heet, warm, donker* (both SV and VS orders)	Expletive *er* *Er* + copula *Er* + *liggen* ('lay'), *zitten* ('sit'), *staan* ('stand') (both SV and VS orders)

Table 2: Weather vs. existential constructions in German, English, and Dutch.

Results: children selectively drop expletive subjects

- Expletive drop is *not* homogeneous: it affects **weather expletives** in particular (53.3% null across all files), with **existential expletives** being largely overt (6.1% null; $W = 17$, $p < .0001$).

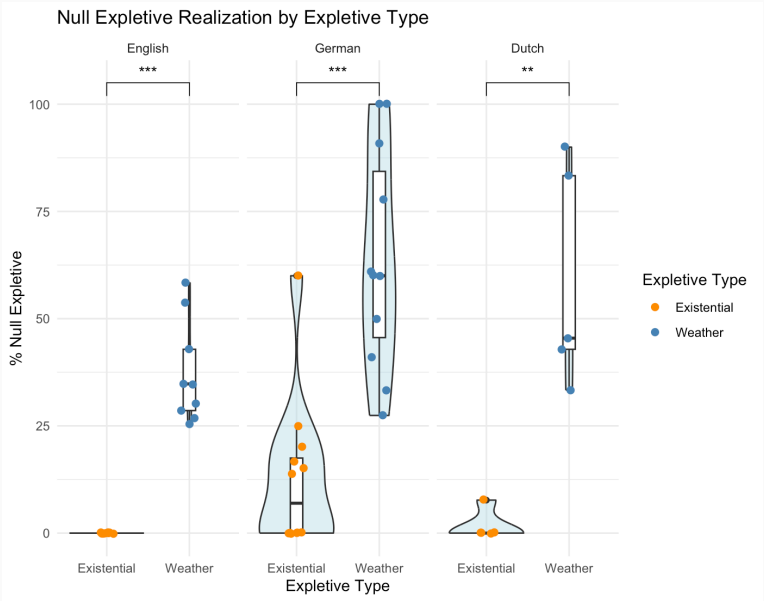

Figure 1

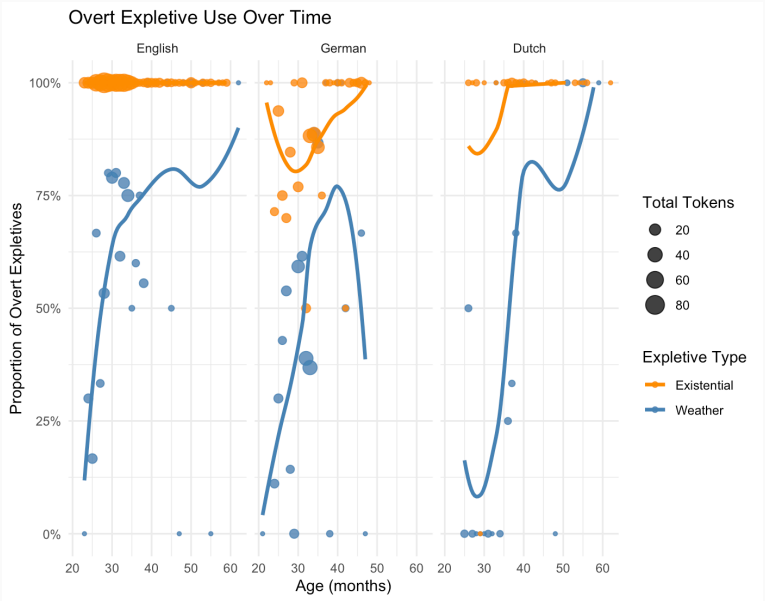

Figure 2

Results: children selectively drop expletive subjects

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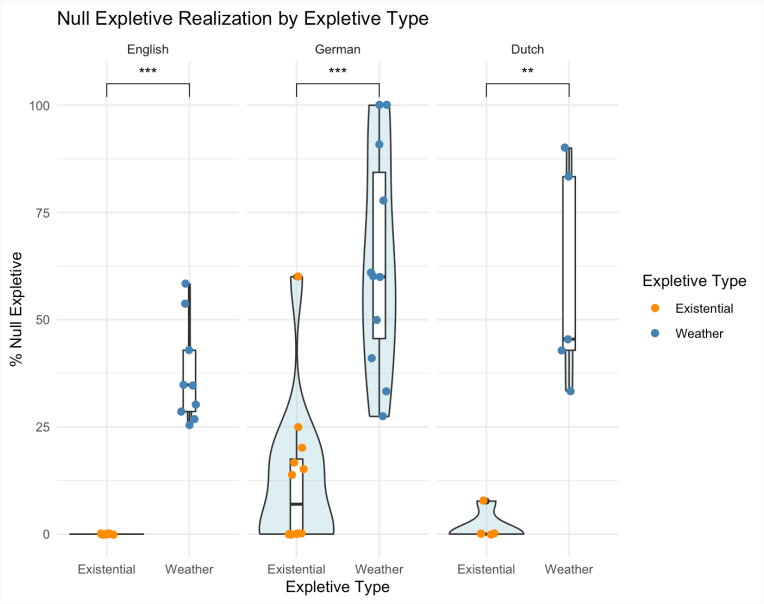

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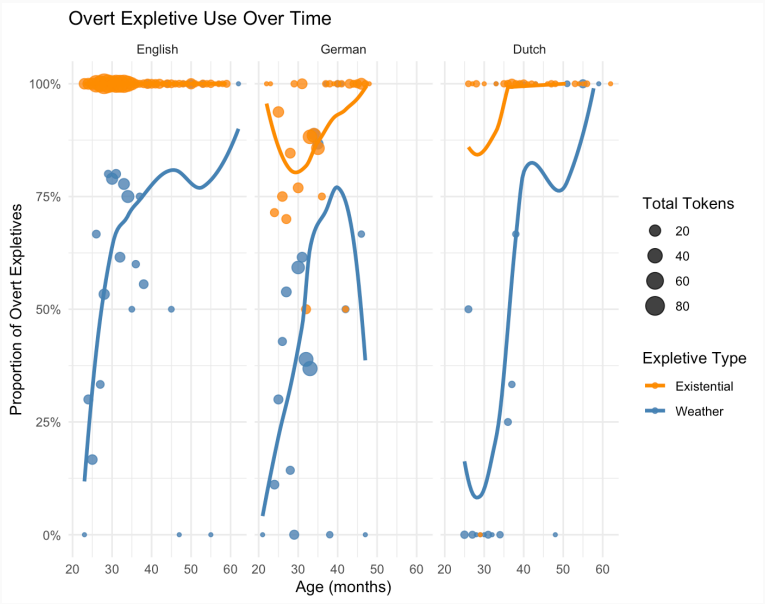


Figure 2

- **Important**: referential subjects pattern differently – usually overt in Germanic children in finite contexts (mean NS rate of 30% for age <2;6 and a rate of 5–11% >2;6; Valian, 1991).

Results: children selectively drop expletive subjects

(3) a. *Nou* ***regent***. *(Dutch, Matthijs, 2;04.24)*
now rains

'Now (it) is raining.'

b. ***Ist*** ***kalt*** *im Winter (German, Leo, 2;04.17)*
is cold in-the winter

'(It) is cold in winter.'

c. ***It***'*s* ***raining*** *out there. (English, Gail, 2;06.09)*

d. *Eine Sonne* ***gibt*** ***es*** *da (German, Caroline, 2;06.24).*
a sun gives it there

'There is a sun there.'

e. ***Is*** *nog meer in (Dutch, Laura, 3;00.18).*
is yet more in

'(There) is more in.' (in response to 'Do you want more yogurt?')

The change is often sudden

- **Zooming in**: First, drop with weather expletives is abundant early on, with later *abrupt* retraction in several children (esp. English and Dutch).

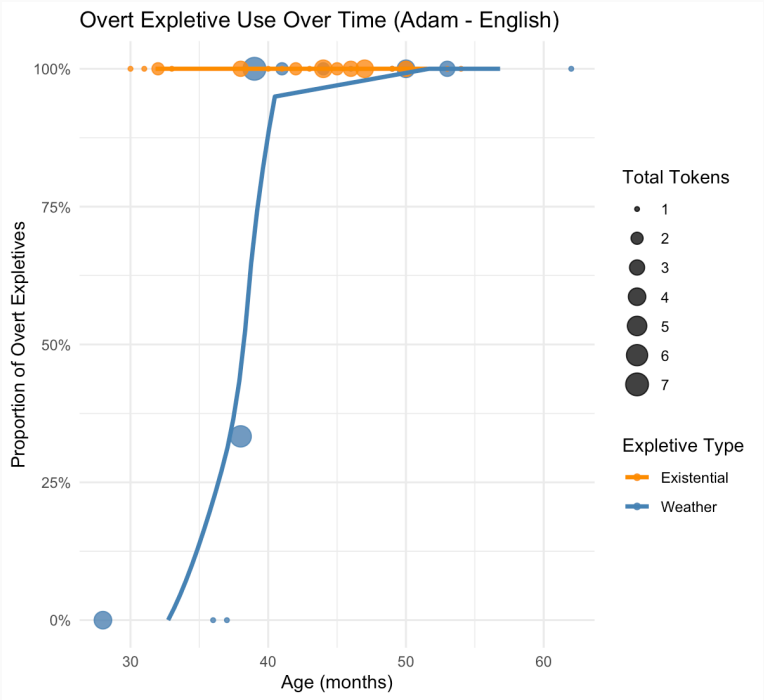
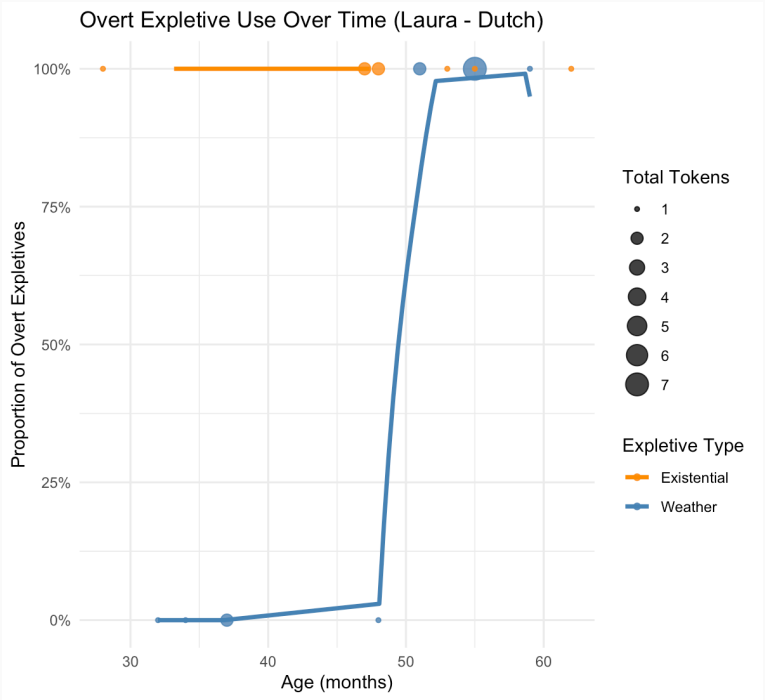


Figure 3



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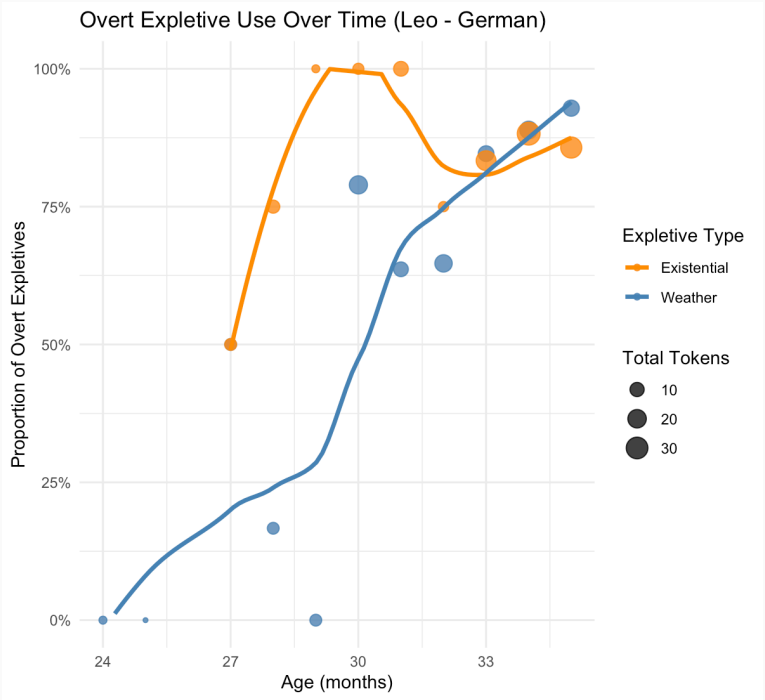

Figure 5

Emergence of obligatory contexts

- Second, **obligatory contexts** (predicates) for weather/existential expletives emerge (more or less) *simultaneously* ($V = 62$, $p = 0.1891$).

	Weather		**Existential**	
Language	Mean	SD	Mean	SD
English	25	1.58	26.4	3.97
German	26.9	3.59	27.8	4.53
Dutch	27.2	2.95	31	5.7

Table 3: Age of emergence (months) of obligatory contexts by expletive type

→ Acquisition of the relevant predicate(s) not independently responsible for the (lack of) delay in expletive production.

Impersonals in early talkers

- Third, the generalisation is *broader* and extends to **impersonals** in the children who produce them.
- **Merit (German)**: syntactically advanced child (recordings at 2;00 begin at 3.6 MLUw).
  - ! Embedding constructions and passives present from the first recording.

(4) a. *Der kommt da hin, so, jetzt* ***wird*** *hier mal ein herum* ***gemacht****. (2;00.24)*
he comes there in so now becomes here once one around made

'He comes there, so, now something/one thing will be made around here.'

b. ***Wenn*** *der Leon sich wehgetan hat, das ist doch nichts. (2;00.21)*
when the Leon himself hurt has that is though nothing

'When Leon hurts himself, it's nothing after all.'

c. *Und die kann ich sitzen lassen* ***s(o) lang als*** *kein(en) Papa hat. (2;00.28)*
and she can I seat let so long as no dad has

'And I can leave her as long as she doesn't have a dad.'

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→ **Merit (German)**: Initial stage with ***no* overt weather expletives** (11 obligatory contexts) – first 15 files (2;00.21-2;01.18)

↪ But two overt **impersonals** (none null).

↪ 14 overt **existentials** (out of 16 contexts).

(5) a. *Da* ***regnet*** *Ø auch.* *(2;00.21)*
there rains too

'There (it) also rains.'

b. *Aber das passt wenn Ø nicht* ***regnet****.* *(2;00.23)*
but this passes when not rains

'Aber this is fine when it rains.'

c. *Aber das passt nicht so länger, als das Ø so* ***regnet****.* *(2;00.23)*
but this passes not so longer when that Ø so rains

'But this doesn't work anymore when it rains like this.'

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(6) a. ***Es*** ***wird*** *nich(t)* ***ges(p)ielt*** *(2;00.22)*
it become not played
'It will not be played (≈ we will not play).'

b. *Da* ***gibt*** ***(e)s*** *kein Wasser, sagt die große Mutter. (2;01.01)*
there gives it no water says the big mother
'There is no water there, says the grandmother.'

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→ Early-talker following the same developmental patterns. Further, *overt* **impersonal** expletives co-existing with null weather expletives.

Selective drop isn't conditioned by VP-length

- Strongest non-syntactic alternative proposed: **VP-length** (Bloom, 1970; Valian, 1991, see also Hyams and Wexler, 1993).

→ Fourth, **VP-length *not* at fault**: weather constructions with null expletives show *shorter*, not longer, VP-lengths (mean = 2.31, vs. 3.50 words for (overt) existentials, $W = 15220$, $p < .0001$).

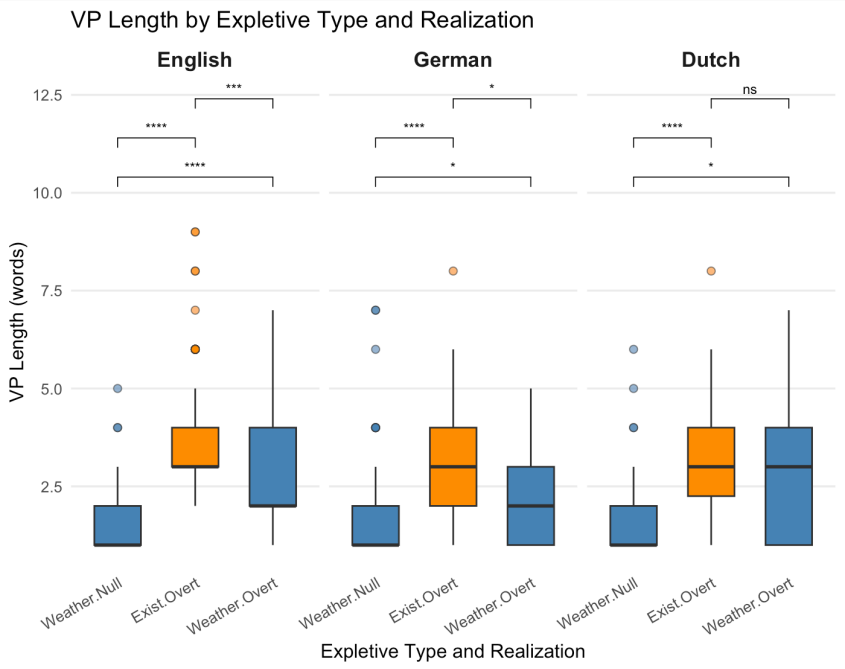

Figure 6

Taking stock

To sum up

1. Referential subject drop correlates primarily with Root Infinitives (e.g., Hyams, 2011).
   - ! Expletive subjects are dropped in *finite contexts*.
2. Expletive drop is furthermore *not* uniform: subject drop targets weather expletives, not existentials.

↪ Therefore, a novel **three-way asymmetry**.

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↪ Therefore, a novel **three-way asymmetry**.

3. Change to overt production is **sudden** – often taken to support categorical, representational changes (Snyder, 2021).
4. The asymmetry is *not* specific to weather vs. existential expletives. It preliminarily **extends to impersonals**, which pattern with existentials.
5. The asymmetry is **not attributable to (some) independent factors** (emergence of obligatory contexts, VP-length).

A grammatically-conditioned asymmetry

- **Our conclusion**: this is a three-way ***grammatically-conditioned asymmetry***.
- **Developmental heterogeneity** requires a competence-based explanation that accounts for:
  - The formal difference between referential vs. weather vs. existential expletives.
  - And *also* their relative acquisition ordering.

The asymmetry

Expletive drop selectively targets weather expletives, not existentials/impersonals. Referential subjects are generally only omitted in Root Infinitive contexts.

Analysis and implications

Previous analyses

- However, existing competence-based analyses too limited:
  - **Hyams (1986), Hyams and Wexler (1993), *et seq.***: default setting to [±pronominal] AGR.
  - **Orfitelli and Hyams (2012)**: NS stage in both production and comprehension.
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1. INFL can be specified for [+pronoun].
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→ Extant competence *and* performance accounts together too 'coarse-grained' → **omissions cannot be reduced to [±referential]**.

Successive differentiation of subject types

Our proposal

- We draw on Rizzi (1986)'s tripartite typology of *pro*s.
  - **Referential** (null) subjects: $pro_{[\text{REFERENTIAL}]}$.
  - **'Pure'** expletives (e.g., existentials, impersonals...): $pro_{[\text{EXPL-ARG}]}$
  - **'Quasi-argumental'** expletives (e.g., weather): $pro_{[\text{EXPL+ARG}]}$.
- Two features define this typology: [±referential] and [±argumental].
- Crucially, *fixed* (UG-based) and *flat* feature bundles.

  → Three subject types (*pro*s) in UG (against current minimalist spirit).

  → No straightforward acquisitional predictions: which *pro*s (all endowed with [±ref], [±arg]) should be acquired earlier (if any)?

Successive differentiation of subject types

Our proposal

- Perspective we adopt: linguistic categories are acquired (at least partly) *emergently* through **differentiation/granularisation** (i.a., Dresher, 2009; Biberauer and Roberts, 2015; Song, 2019; Douglas, 2024).
  - More 'generic/coarse' natural classes acquired before 'finer-grained' ones.

→ **Subject/nominal acquisition learning path**: *'stratifying'* Rizzi's typology. ***Maximally contrastive*** natural classes first, before finer-grained elaboration of features of subject types (i.a., Dresher, 2009; Cowper and Hall, 2014; Biberauer and Roberts, 2015; Biberauer, 2019).

↪ Earlier-acquired features/contrasts form the basis of extension and elaboration for later-acquired (finer-grained) distinctions.

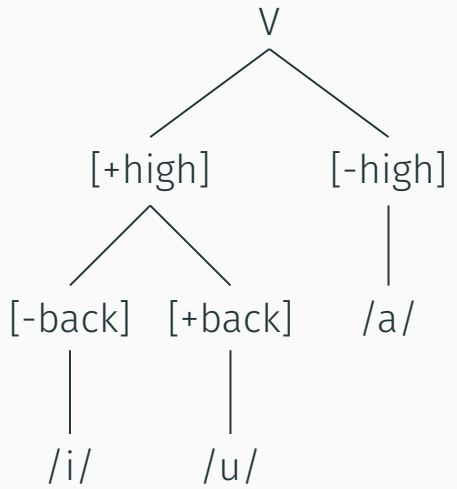
Successive differentiation of subject types

Some existing differentiation-related proposals

→ **Successive Division** (Dresher, 2009) view on learning paths.

1. Divide input into two natural classes by assigning contrastive features.
2. Continue making subdivisions until every phoneme is differentiated.

(8) Dividing a three-vowel inventory as high ≫ back



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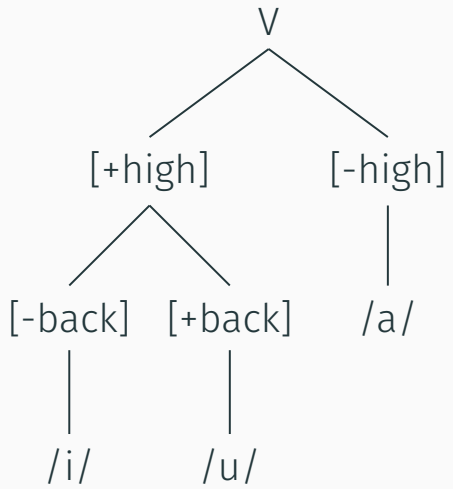

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↪ **Same logic for 'carving out' the subject space**: [F]s encoding the differences between subject types are not all equally accessible for the child at the start.

Successive differentiation of subject types

→ **Attempt 1** **A subject-centred acquisition learning path**: *'stratifying'* Rizzi's original typology.

- Premise: [±referential] 'ranked' before [±argumental] in the differentiation tree. Why?
  - [±referential] concerns more accessibly 'reality'-anchored notions, e.g., a visible and perceptually salient entity (Bambini and Torregrossa, 2010).
  - [±argumental] highlights a *grammar-internal* contrast – arguments vs. adjuncts.

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(10) Step 1 (Germanic)

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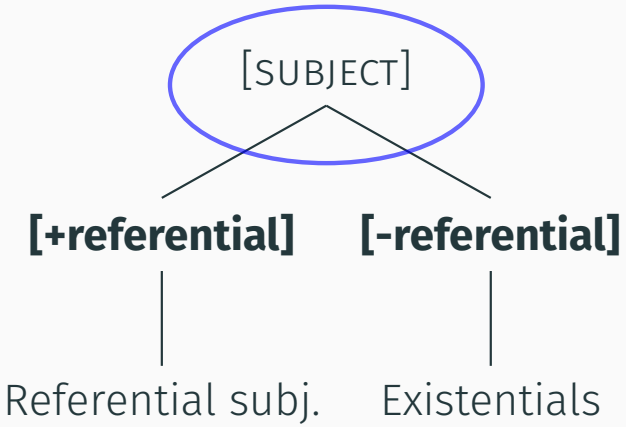

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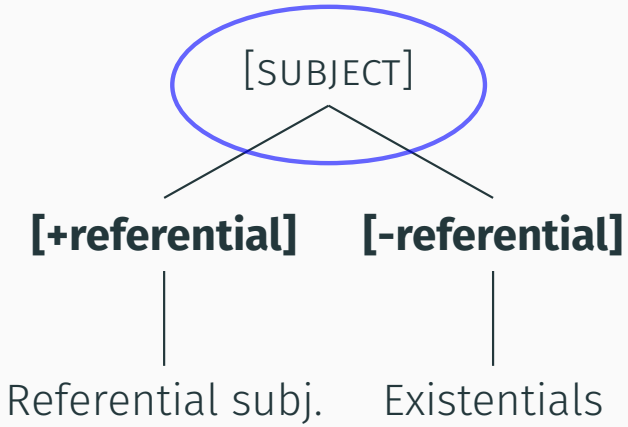

(13) Step 2 (Germanic)

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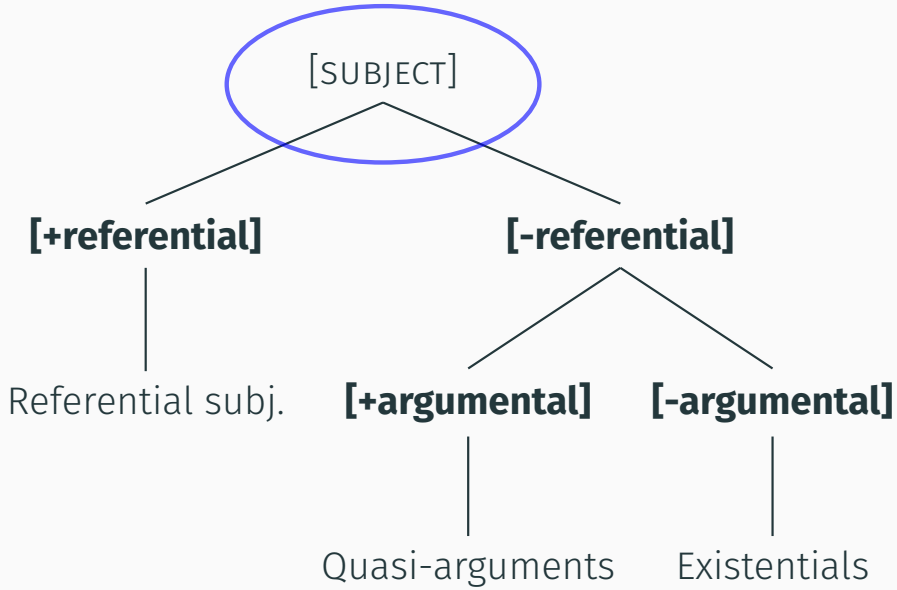
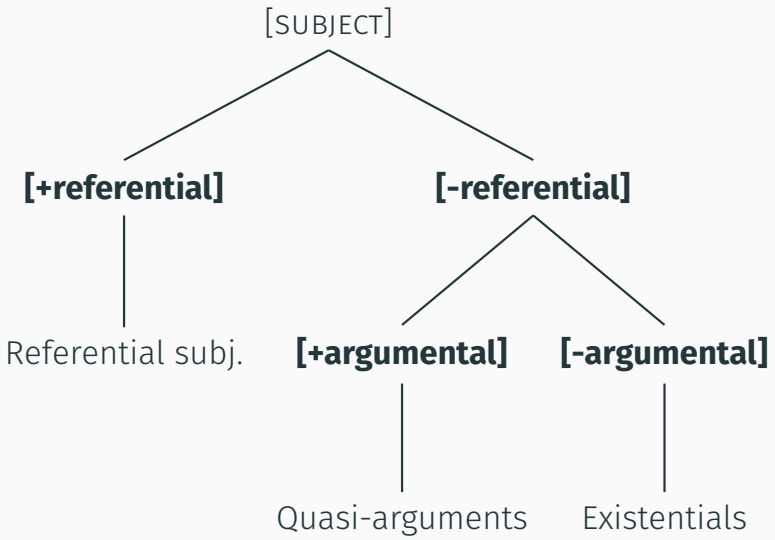


Successive differentiation of subject types

- However, resulting account is *still* too limited:
  1. Why are 'existentials' acquired first within [-referential]? Why are quasi-argumentals hard?
  2. [+referential] inaccurately lacks [±argumental] specification, under this implementation.
  3. How does the development of subjects fit in with other nominal elements also specified for [±referential, argumental]?



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→ **Proposed way forward:** *go beyond* Rizzi's (1986) featural typology to understand acquisition. Change the level of analysis:

- Focus on children's categorisation and development of ***nominal ([N]-specified) elements*** broadly (incl., but not just, subjects).
- And how the acquisition of featural distinctions here impinges on children's encoding of subject and expletive types.

Successive differentiation of subject types

↪ **Attempt 2** Understanding expletive development through the lens of **an acquisition path for nominal elements broadly**.

- **Same differentiation and granularisation logic as above:** [F]s encoding the differences between subject types are not all equally accessible for the child at the start.

Successive differentiation of subject types

↪ **Attempt 2** Understanding expletive development through the lens of **an acquisition path for nominal elements broadly**.

- **Same differentiation and granularisation logic as above:** [F]s encoding the differences between subject types are not all equally accessible for the child at the start.
- **Two additional tools:**
  1. *Additional feature*, **[±topic]** – to understand which nominal distinctions are picked out first.
     - Topic-comment distinction early acquired: salient entity identified by speaker (TOPIC), about which information is provided (COMMENT) (i.a., de Cat, 2007; Krifka, 2008; Bambini and Torregrossa, 2010; van Kampen, 2010; Bosch and Biberauer, 2025).
  2. Existentials/presentationals are rhematic, thus necessarily **non-topical** structures.

Successive differentiation of subject types

- Specifically, follow syntactic literature taking existentials to be featurally linked with their associate (non-topical) DPs (i.a., Kayne, 1994; Uriagereka, 1995):

(14) [is [$_{DP}$ there [-topic] [$_{Associate}$ a book [-topic]]]]

→ Existential expletive is *also* then [-topic].

! This does *not* hold of weather expletives, which are acquired as independent DPs.

Successive differentiation of subject types

- Specifically, follow syntactic literature taking existentials to be featurally linked with their associate (non-topical) DPs (i.a., Kayne, 1994; Uriagereka, 1995):

(15) [is [$_{DP}$ there [-topic] [$_{Associate}$ a book [-topic]]]]

→ Existential expletive is *also* then [-topic].

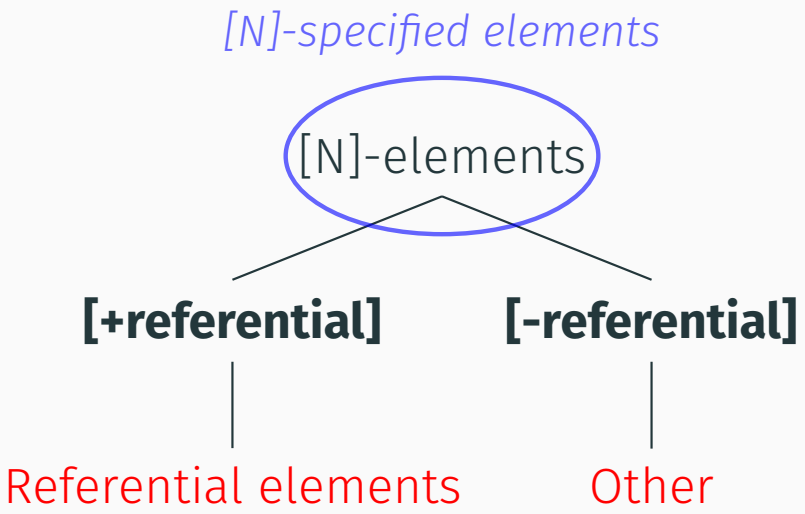
! This does *not* hold of weather expletives, which are acquired as independent DPs.

→ Acquisition of [±topic] in referential subjects will then have knock-on effects for existentials, in a way that does *not* apply to weather expletives → **[±topic] helps flesh out the featural specification of the former only.**

Successive differentiation of subject types

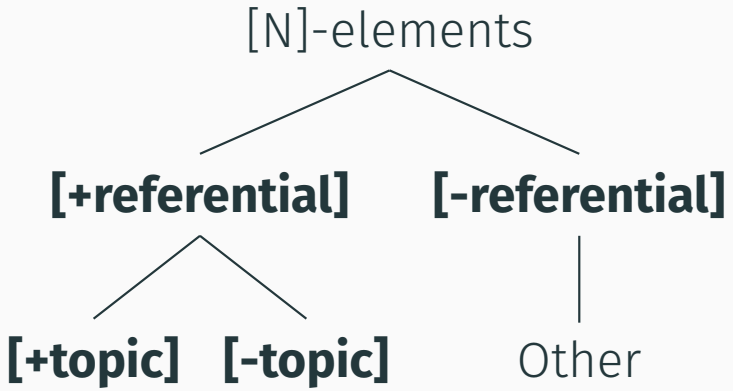
↪ **Attempt 2** understanding expletive development through the lens of **an acquisition path for nominal elements generally**.

1. **Step 1** (early acquired): distinguish [+referential] (e.g., visible/distinguishable entities) from other nominal elements.



Successive differentiation of subject types

2. **Step 2** (also early acquired): distinguish between [+topic] and [-topic] in the domain of visible/distinguishable entities (see Krifka, 2008; Bambini and Torregrossa, 2010; van Kampen, 2010, on early acquisition of topic-comment).



Successive differentiation of subject types

2. **Step 2** (also early acquired): distinguish between [+topic] and [-topic].
   → This crucially gives us a handle on why **existentials** would be formally encoded early within the [-referential] class – specification of [-topic] in the (referential) associate will impact existentials.

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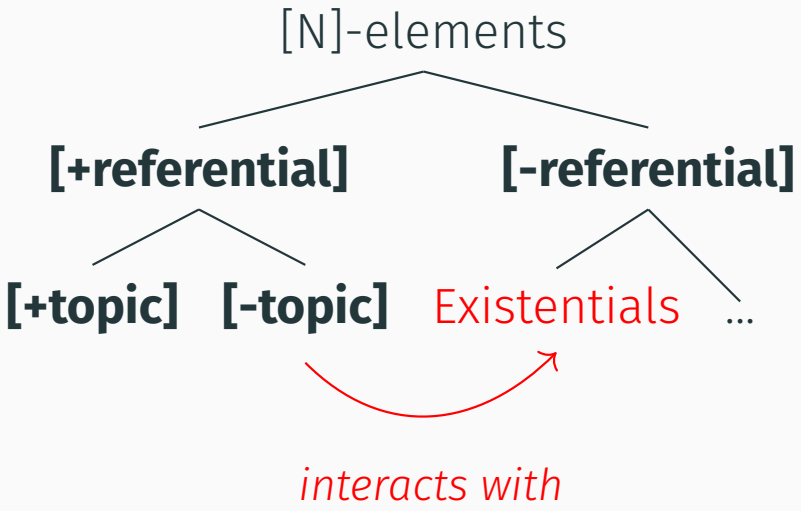

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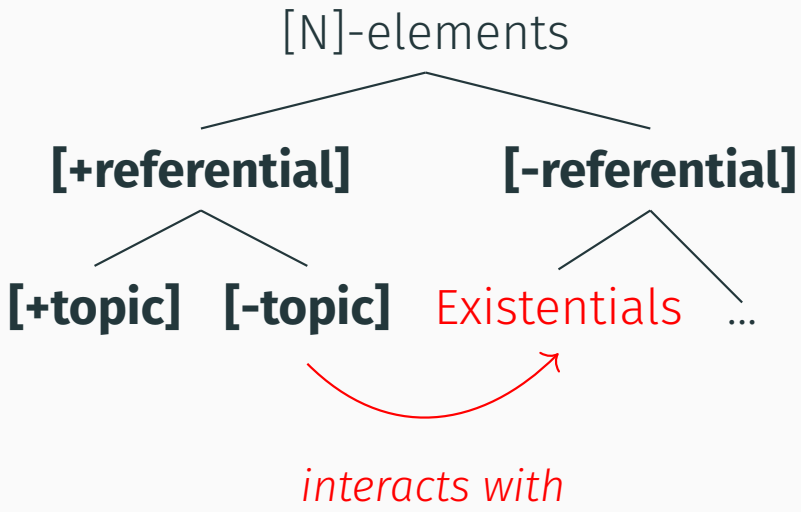

(18) [is [$_{DP}$ there [$_{Associate}$ a book]]]
[-topic] [-topic]

Successive differentiation of subject types

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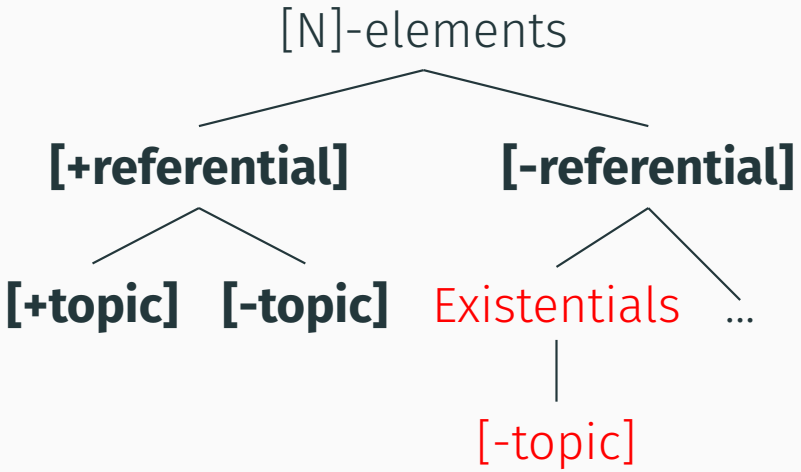

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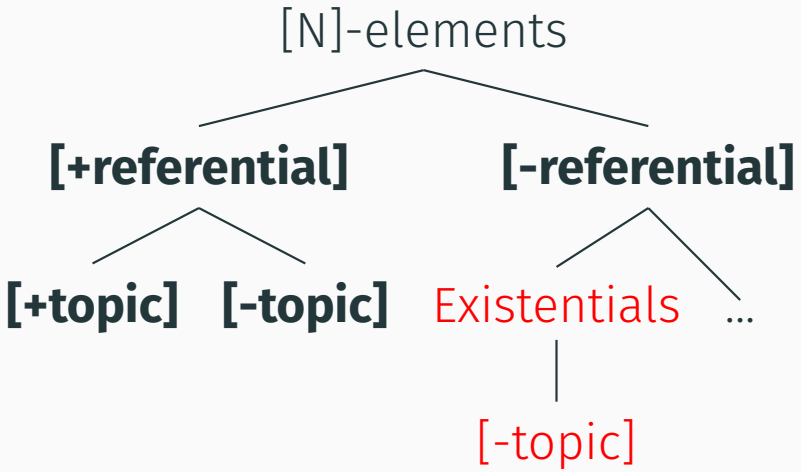
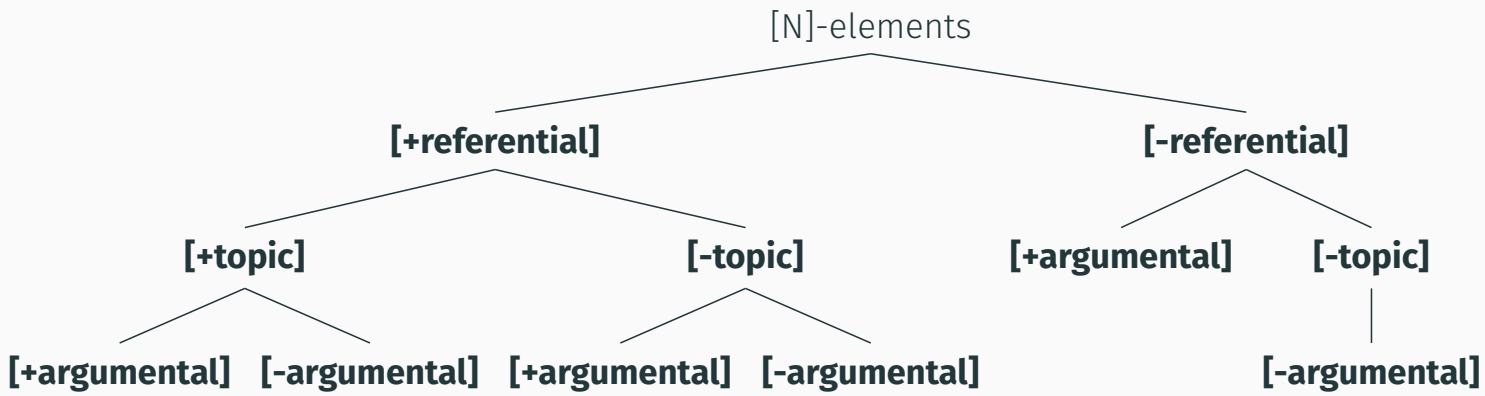


! **Note**: at this point **weather expletives** do *not* fit into any of these acquired distinctions. No connection with [+referential] elements, and so weather expletives remain unspecified for [±topic].

Successive differentiation of subject types

3. **Step 3** (later-acquired): distinguish *syntactic/thematic* roles of the nominal elements – **[±argumental]**.
    - Weather expletives being external arguments vs. existentials, which are adjoined in their complex DP.



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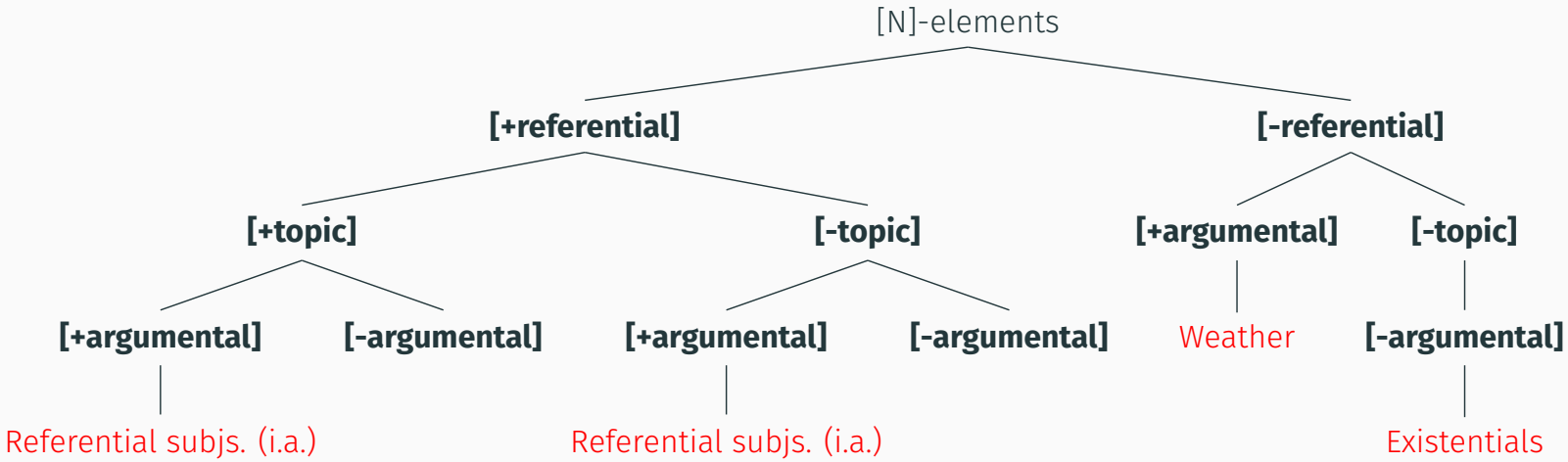

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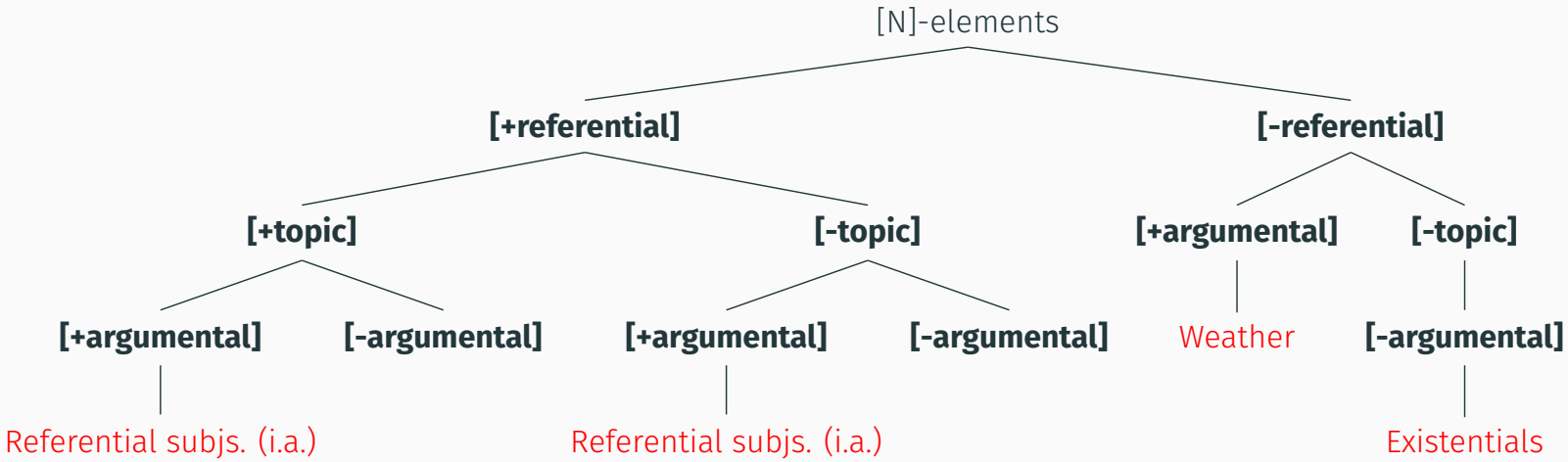

- Nature of [±argumental] – to differentiate arguments vs. adjuncts – means it should apply to all categories differentiated thus far.

Successive differentiation of subject types

To probe further - patterns of crosslinguistic variation

- Several points of **microvariation** in the Germanic developmental patterns – these also appear formally-grounded:
  - ***Es* syncretism in German** → dropping of existentials at higher rates; slower to reduce expletive dropping, in both existentials vs. weather.
  - **English subject (EPP) requirement** → existential *there* in English is never dropped.
  - **Distributional complexity of Dutch *er*** → existentials emerge later in this language and are less frequent; highly multi-functional item (van Dijk and Coopmans, 2013).
  - ? **The case of German *Es gibt*** → syntactically quasi-argumental, but behaves developmentally with other existentials.

Successive differentiation of subject types

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  - ? **The case of German *Es gibt*** → syntactically quasi-argumental, but behaves developmentally with other existentials.
- Range of **productive predictions** from the proposed differentiation learning path.
  - Subjects of **weather** predicates in languages that permit **pronominal/full DP** (non-expletive) subjects should be early-acquired (Eriksen et al., 2015, for a review).

Conclusion

Conclusion and outlook

New perspective on subject drop: children's production of subjects reflects *progressive formal differentation and granularisation*, elaborating on earlier-acquired distinctions.

Conclusion and outlook

New perspective on subject drop: children's production of subjects reflects *progressive formal differentation and granularisation*, elaborating on earlier-acquired distinctions.

- **Previously unnoticed asymmetry** → Subject drop 'tracks' formal properties of expletive types: **referential** vs. **quasi-argumental** vs. **'pure'** expl. subjects.
  - Lends novel developmental reality to independently-proposed formal differences within subject types (e.g., Chomsky, 1981; Rizzi, 1986).
  - Challenges performance-*only* accounts and nuances competence approaches relying on a binary (and even ternary) typology (Rizzi, 1982, 1986).

↪ **Hypothesis** → **categorial differentiation** analysis as a first explanation.

- Stratifies and elaborates Rizzi's originally 'flat' featural typology.
- Why are existentials early-acquired? → early role of [TOPIC] in the differentiation path of nominal elements.

Conclusion and outlook

New perspective on subject drop: children's production of subjects reflects *progressive formal differentation and granularisation*, elaborating on earlier-acquired distinctions.

↪ **Unifies** development of subject distinctions with other categorisation trends in potentially productive ways → granularisation also proposed for:

- Phonological category induction (i.a., Dresher, 2009; Cowper and Hall, 2014).
- Lexicon/concept formation (i.a., Mervis and Crisafi, 1982; Xu and Tenenbaum, 2007; Jaspers, 2012).
- Functional category acquisition (e.g., left periphery) (i.a., Biberauer and Roberts, 2015; Bosch and Biberauer, 2024, 2025).
- Categorisation beyond language (i.a., Zadeh, 1997; Jaspers, 2012; Lorkowski and Kreinovich, 2015; Rutar et al., 2022a,b; Ward et al., 2023).

- Potential for neo-emergentist perspective to help elucidate developmental L1-variation in overt/null realisation of subjects.

Some avenues for future work

- Ontogeny-phylogeny link: development of expletives in Old Germanic (superficially) mirrors the developmental trends observed![1] (Haiman, 1974; Silva-Villar, 1996; Williams, 2000; Richards and Biberauer, 2005; Fuß and Hinterhölzl, 2023).
- A full analysis of other expletive constructions (raising, impersonal, extraposition, etc.).
- Comparative research on acquisition and diachrony of subjects in languages instantiating different expletive systems (e.g., French, Scandinavian languages, etc.).
- Can we corroborate the approach's predictions with experimental/comprehension data?
- Effect of predicate type (copula vs. lexical verb) on expletive omission patterns (see, e.g., Valian, 1991; Sano and Hyams, 1994).

[1] Further explored in our presentation of this data at this year's NELS 56.

Thank you!

Acknowledgements: Many thanks to reviewers of NELS 56 and BUCLD 50 for comments; to Hannah Thaens for help with the Dutch data; to Richard Kayne for discussion; to the Open-Oxford-Cambridge AHRC DTP, St John's College and the Philological Society for supporting this work; and to BUCLD's travel awards for generously funding attendance.

Slides 💻→

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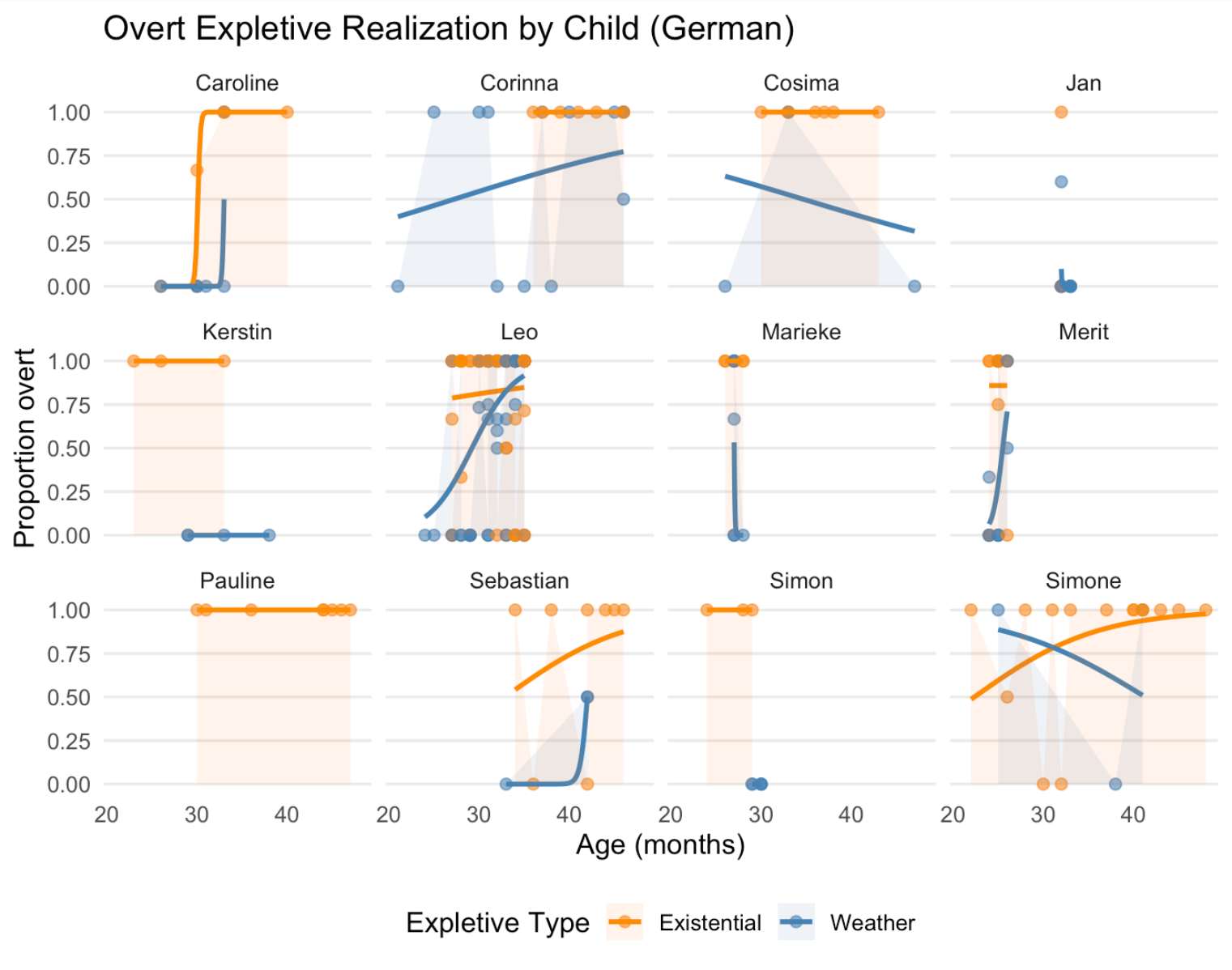
Appendix I: Developmental curves by Child



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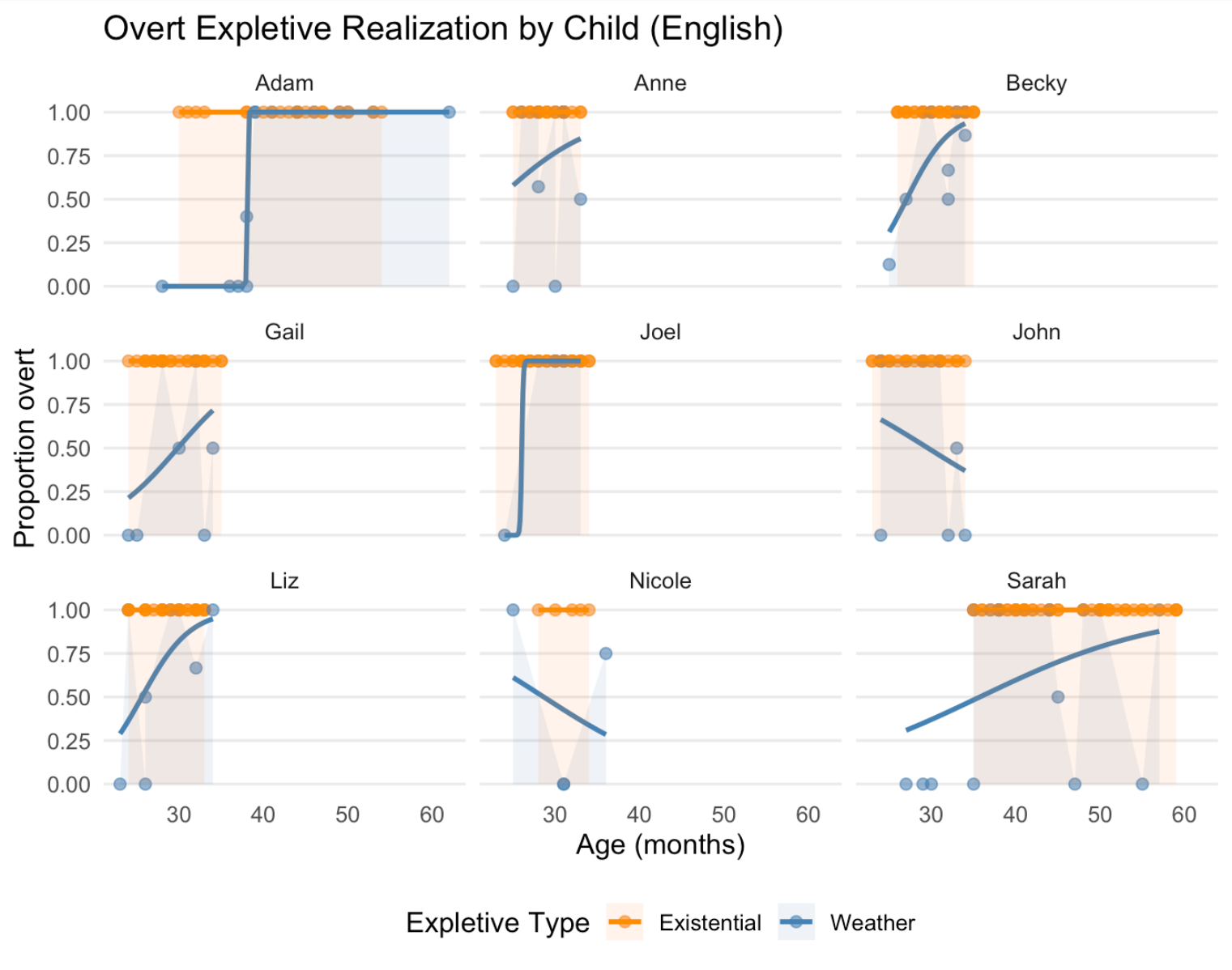

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