Children Selectively Drop Expletive Subjects: The Role of Referentiality, Topicality and Argumenthood

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1. Introduction

The acquisition of (overt) subjects in child language production proceeds via an early, non-target-like subject-omission stage. Its root(s), however, remain contested, with several non-mutually-exclusive factors proposed to account for early subject drop. Competence accounts advocate *grammatical* causes, such as parameter missetting or syntactic truncation (i.a., Hyams, 1986; Hyams & Wexler, 1993; Rizzi, 1993; Orfitelli, 2008). Yet, it has also been suggested that subject omission fully (or partially) reduces to performance considerations like utterance/VP-length (Bloom, 1970; Valian, 1991, Valian & Abury, 2005). Pragmatic factors, like topicality, have also been acknowledged (Valian et al., 1996; Hauser-Grüdl, 2010). Importantly, we highlight in this work that existing accounts have typically treated subjects as fully *developmentally homogenous* – in the sense that the proposed causal factors behind pronoun drop should (be able to) affect all subject types.

The generative notion of 'subject' is, conversely, known to be complex and formally *distributed* (McCloskey, 1997; Svenonius, 2001; Poole, 2016): the current consensus is that subjects are associated with different structural positions that reflect their complex nature (e.g., SpecvP/VoiceP, SpecTP, etc.), and that properties ascribed to 'subjecthood' are distributed across functional heads, such that a DP must raise to a given position or at least Agree with a given head to acquire the associated properties. Importantly, 'subjecthood' encodes properties known to be both early-acquired, including argument structural properties (see Lidz, 2023, for a review), and late-acquired, such as finer-grained aspects of the topicality of null/overt DPs (Serratrice et al., 2004). A question that therefore arises at this point is whether all subject *types* are equally affected by pronoun drop in acquisition or not, and whether their multifaceted syntacticosemantic nature may play into acquisition. Conflicting results have been reported to date: comparable rates of drop of referential vs. expletive subjects were observed in

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Hyams (1986), but not in Valian (1991) and Valian et al. (1996). A possibility that has not been explored to date is that these apparently inconsistent results may reflect finer-grained distinctions among expletive types, and their patterning relative to referential subjects may have been overlooked. This is the direction that the present paper explores.

We challenge the traditionally assumed developmental homogeneity of subject types through the lens of *expletive subjects*. Research to date on expletive development is limited to English and Dutch (i.a., Valian, 1991; Schafer & Roeper, 2001; van Dijk & Coopmans, 2013) and work on subject acquisition furthermore does not distinguish between expletive types (though cf. Kirby & Becker, 2007, and Gotowski & Aravind, 2025, for exceptions). We present a previously unnoticed asymmetry through a corpus study on German, English and Dutch monolinguals – children *selectively* drop expletive subjects: *existential* expletives, like *there* in ***There*** *is a dog on my chair,* are almost always overtly expressed, while *weather* expletives, like *it* in ***It*** *is raining,* show high omission rates. This is the focus of section 2. In section 3, we highlight the data's significance for existing theoretical approaches to early subject drop, and call for an elaboration of the formal, featural ontology assumed in the development of subject types in competence-based approaches. We make this proposal explicit in section 4, where we expand on Rizzi (1986) and integrate the notion of categorial differentiation (à la Dresher's, 2009, Successive Division Algorithm) to derive the observed order of acquisition of subject distinctions. Section 5 concludes.

2. A corpus study: subjects in child German, English and Dutch

2.1. Methodology

Our corpus study investigated 12 German, 10 English and 7 Dutch children in CHILDES. The details of the corpora studied are given in **Table 1**.

Table 1. Children studied and summary information.

Language	Corpus	Files	Ages	MLUw	Utterances
German	Miller	111	1;03-4;00	1.09-6.01	45,111
	Koch	143	2;00-2;09	1.0-4.71	45,890
	Leo	375	1;11-2;11	1.0-9.9	109,526
	Caroline	236	0;01-4;03	1.0-6.55	22,825
	Rigol	340	0;00-3;11	1.47-4.82	43,641
Total / range		1094	0;00-4;03	1.0-9.9	266,993
English	Brown	214	1;06-5;02	1.48-4.94	87,497
	Manchester	245	1;00-3;08	1.11-3.63	125,030
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	40,111
	Groningen	275	1;05-3;07	1.02-4.01	58,752
Total / range		399	1;05-5;02	1.02-4.94	98,863

We quantified weather and existential expletives by delimiting a set of obligatory contexts for each expletive type (weather and existential predicates; **Table 2**). This included, for weather contexts, configurations with either EXPL + weather predicate or EXPL + copula + Adj (e.g., *cold*). Referential uses of English *it*, Dutch *het* and German *es* (homophonous with the weather expletive) and locative and other non-expletive uses of Dutch *er* (homophonous with the existential expletive) are excluded from this study. An automated search with CLAN was performed to extract potential utterances with expletive forms, by querying with the *kwal* command the predicates selected (**Table 2**). Genuinely expletive configurations were manually identified following this initial automated step, based on the surrounding discourse context. We coded for production vs. omission of the relevant expletive type in obligatory contexts.

Table 2. Expletive constructions studied in German, English, and Dutch.

	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: *regenen, 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)

Importantly, this study considered superficially *finite contexts* only: expletive configurations in superficially non-finite or not unambiguously finite environments were disregarded, irrespective of whether the expletive subject was omitted or not. Any omission (or lack thereof) of expletives reported therefore does *not* correlate with Root Infinitives, an environment that is well-known to feature null subjects (see Hyams, 2011, for a review)[1].

[1] An exception was made for cases where (finite) English auxiliaries (e.g., progressive *is*) had been transcribed as being partially or fully phonetically reduced. It is important to revisit this decision in future work, insofar as it risks including potentially non-finite forms. Further analysis of these forms may further clarify whether English really patterns as similarly to German and Dutch as suggested in this paper.

Overall, a total of 1293 utterances with expletive pronouns were obtained, in 1524 obligatory contexts. Existential contexts were the most frequent, constituting 1063 of our obligatory contexts, with weather contexts totalling 461.

2.2. Results: children selectively drop expletive subjects

The results reveal an asymmetry: expletive drop is *not* homogenous, but rather 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** plots overt expletive production over time: weather expletives feature production rates between ~0-75% in the majority of the age ranges (months 20-50), with these often being under 25% at months 20-30. Existentials, on the other hand, are almost always produced in 75% or more of obligatory contexts, with no detectable dropping in one language (English).

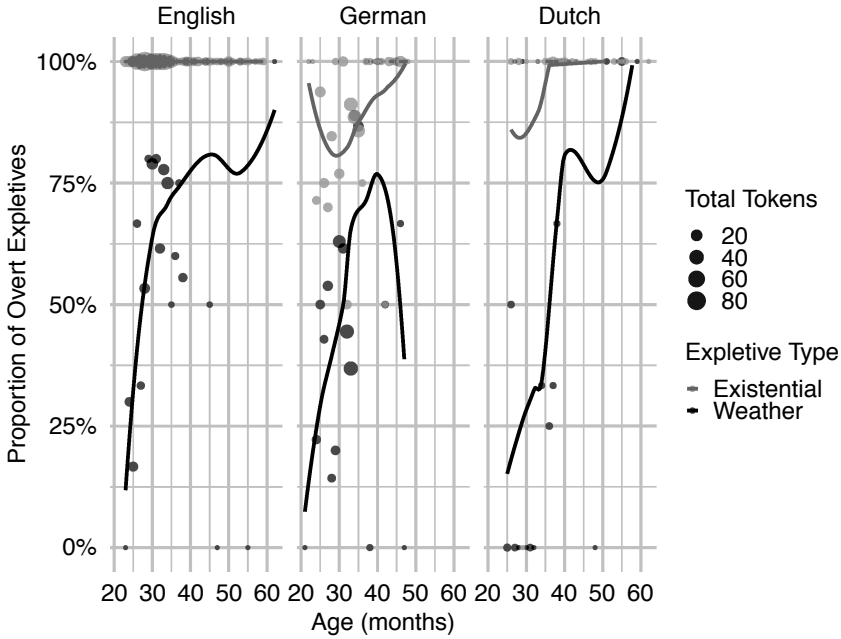


Figure 1. Overt expletive use over age.

Crucially, weather expletives pattern differently from *referential* subjects, which are usually overt in Germanic children in finite contexts. Valian (1991) reports a mean null subject rate of 30% before age 2;6 – a proportion which drops significantly to 5-11% after 2;6. This sets referential subjects apart from weather expletives, which feature high omission rates (<75%) until months 40-50.

The 29 individual trajectories confirm this trend in an exceptionless manner: for every child who shows non-target-like production of some expletive subjects, it is always weather expletives that show low production rates, which gradually increase with age. **Figure 2** plots individiual lines with the mean subject realization rate for each predicate type.

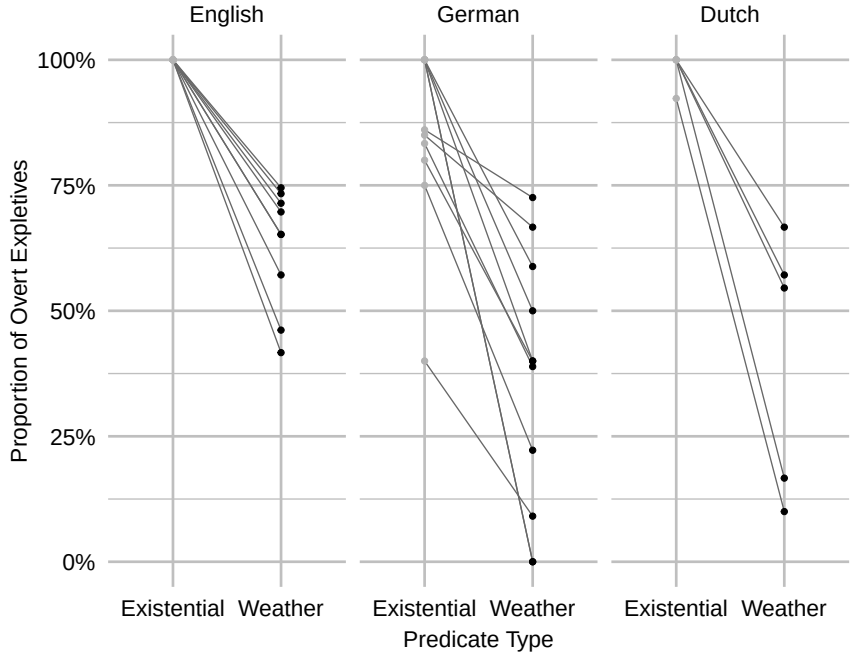


Figure 2. Within-child slope plot of mean overt expletive rates by predicate type.

Further individual-level analysis reveals that drop with weather expletives is not just abundant at early stages, it also appears to be retracted from abruptly in several children, as illustrated in **Figure 3** for Adam (Brown; English) and Laura (van Kampen; Dutch).

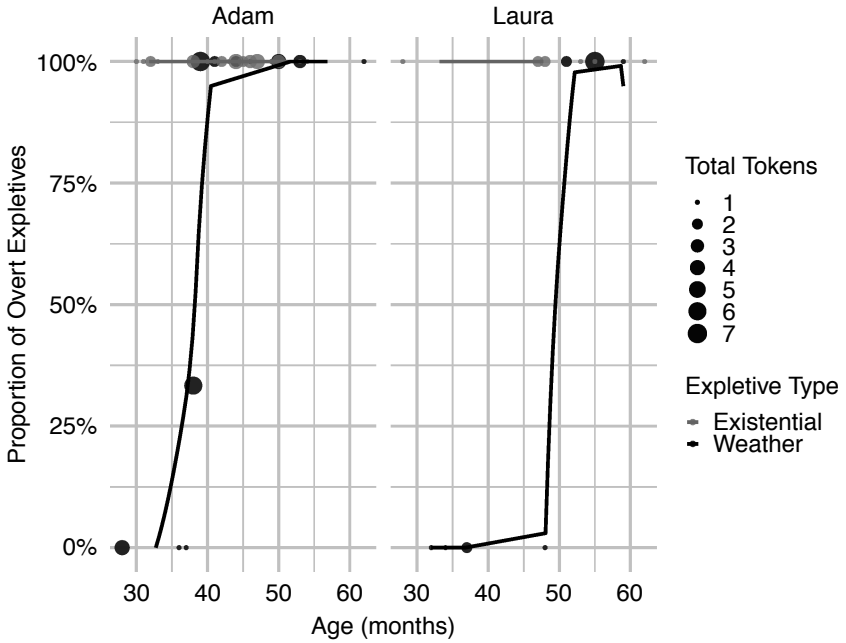


Figure 3. Overt expletive use over age in Adam (English) and Laura (Dutch).

This shift reflects a categorical change in children's behaviour, which may be hypothesized to correlate with a discrete change in their grammatical knowledge (see §4; Snyder, 2007).

We now unpack further the results into finer-grained patterns in the dataset. First, we report that the obligatory contexts (predicates) for weather/existential expletives emerge (more or less) simultaneously (V = 62, p = 0.1891; **Table 3**).

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

Language	**Weather**		**Existential**	
	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

The emergence timings above suggest that the acquisition of the relevant predicate(s) associated with each expletive type is not itself independently responsible for the (lack of) delay in expletive production.

Second, we also establish that the generalization reported – high subject dropping being largely restricted to weather expletives – is *broader* and appears to extend to impersonal expletives in the one child who produces them. This is the case of Merit (Koch corpus), a German early-talker whose recordings (from 2;00)

begin at a high MLUw of 3.6 words. Her advanced syntactic development is illustrated by her production of embedded clauses from the first recording, e.g., *wenn* 'if/when' and *so lang als* 'so long as' clauses, as well as passives (*jetzt **wird** hier mal ein xxx herum **gemacht***, 2;00.24; literally, 'now becomes here MODAL PARTICLE one around made', i.e., 'Now one (unspecified noun) will be made around here' or, more idiomatically, 'Now we'll make one around here.'). All the same, this child observes the same generalization obtained in other children, further corroborated by her production of impersonal expletives: an initial stage with *no* overt expletives (out of 11 obligatory contexts; see 1a) during her first 15 files (2;00.21-2;01.18), which however *co-occurs* with the overt production of 14 overt existentials (out of 16 contexts; 1b) and two overt impersonals (1c):

(1) a. Da regnet Ø auch (2;00.21)
there rains too
'There (it) also rains.'

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.'

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

Merit provides, then, a case-study of an early-talker that nonetheless displays the same developmental patterns attested in all children studied. Furthermore, her production data shows that *overt* impersonal expletives co-exist with *null* weather expletives, suggesting that the difficulties with weather expletives are sufficient to persist to more advanced stages of syntactic development, for at least one child.

Finally, before summarizing the results and their implications, we explicitly rule out the possibility that the patterns obtained are orthogonal to the morphosyntactic nature of the expletive forms studied, and instead reflect extra-syntactic factors. Specifically, we probe one of the strongest performance-based accounts of the subject-drop stage in children, namely the VP-length effect (Bloom, 1970; Valian, 1991; see also Hyams & Wexler, 1993). The proposal underlying the VP-length effect is that the longer the length of the VP is in a given utterance, the more likely it is that the subject will go unexpressed, especially in cases of 'heavy' or lexical subjects. We show, however, that VP-length is not at stake in our patterns: weather constructions with null expletives show *shorter*, not longer, VP-lengths, counter to expectations (mean = 2.31, vs. 3.50 words for (overt) existentials, W = 15220, $p < .0001$; **Figure 4**).

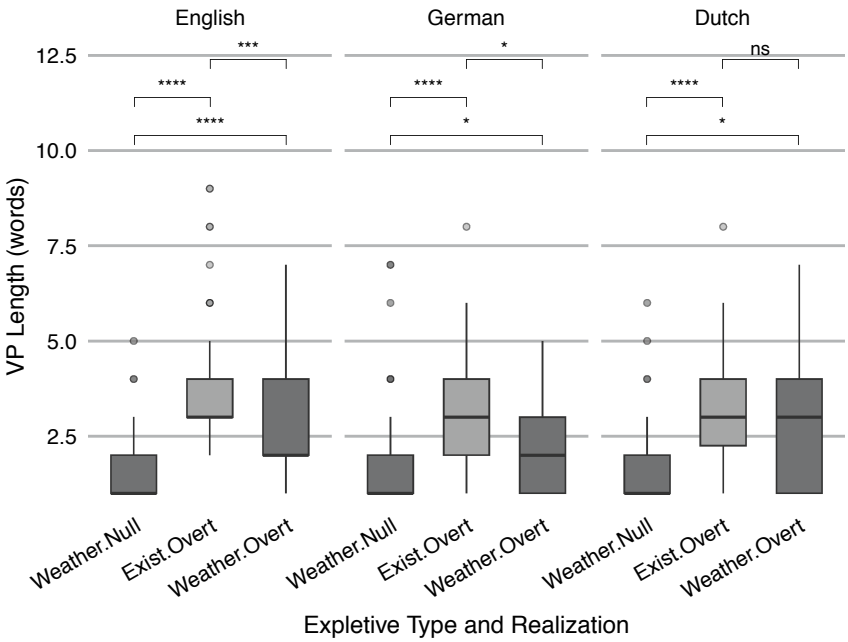


Figure 4. VP-length by expletive type and realization (null/overt).

Overall, we conclude that this dataset unveils a novel three-way *grammatically-conditioned* asymmetry, and turn now to its explananda: the developmental heterogenity in the behaviour of subject types requires a competence-based explanation that accounts for (i) why referential vs. weather vs. existential subjects behave differentially, and (ii) why the observed relative acquisition ordering is found, and not another logically possible one. The next section reviews these two points. It assesses existing competence-based (and other) accounts of the subject-drop stage in acquisition in terms of their ability to account for the developmental tripartition just reported.

3. Too coarse a typology: implications of the data for previous analyses

Arguably the most influential competence-based approaches to subject drop are the so-called *parameter missetting* approaches, developed in Hyams (1986) and subsequent work. The original proposal was that children would (mis)set the null subject parameter to a default [+pronominal] (i.e., null subject) setting, thereby dropping all subject types, including expletives, irrespective of their L1. Parametric approaches to date are based primarily on Rizzi (1982), a typology which distinguishes only natural classes of subjects characterizable in terms of either [±pronominal] and [±referential]. This binary featural account predicts wholesale (lack of) dropping of pronominal subjects, i.e., either null

([+pronominal]) or non-null ([-pronominal]) subject languages, and also distinguishes null subject languages that only allow drop of [-referential] (i.e., expletive) subjects. This predicts at most a *binary* division in developmental behaviour within subject types (referential vs. expletive), *modulo* confounding factors like performance effects. Hyams (1986), however, argues in favour of uniform behaviour, centring only on [±pronominal], insofar as comparable rates of drop are found for both referential and non-referential subjects (see also Orfitelli & Hyams, 2012).

Our results call for a reanalysis of this latter conclusion, on two grounds. Different dropping rates *are* observed across referential and (some) non-referential subjects, as in Valian et al. (1996), suggesting the developmental split must minimally also accommodate [±referential]. However, the subject-acquisition patterns in §2 do not straightforwardly reduce to *just* a bipartition in terms of [±referential] à la Rizzi (1982): differential behaviour is observed *within* the class of [-referential] subjects. A finer-grained basis must thus underpin early subject drop, as we suggest in the next section. A novelty in the present work lies in identifying an asymmetry across expletive *types,* here weather vs. expletive (see also Kirby & Becker, 2007, who also probe distinct types of English expletive/referential *it*, and which we return to in §4). That binary parameters are too restrictive has been independently remarked in the generative typology literature (see Holmberg, 2010, on the null subject parameter); our results corroborate this, demonstrating that the original Rizzian typology of subject types is *also* too coarse-grained for acquisition (see also Hyams, 2011, for a review of some empirical issues faced by traditional binary parameters). The case for further formal differentiation similarly applies to non-parametric accounts, such as the PRO hypothesis (Sano & Hyams, 1994) and Rizzi's (1993) Root Subject Drop.

Finally, our results also nuance the perspective offered by Valian et al. (1996), who advocate a performance deficit. Unlike Hyams (1986), they established higher omission of expletive subjects and subjects preceded by a discourse topic, relative to non-topical referential subjects. They showed, however, that the asymmetry held *irrespective* of MLU group, ultimately arguing that it reflected limited processing resources and input-driven factors (presence of topic/diary drop in adults), not genuine *pro*-drop. We take our results showing *selective* expletive drop to militate against exclusively performance-driven accounts: under Valian et al., it is unclear why the input would 'facilitate' dropping of weather expletives only, and VP-length was shown to be inconsequential. Our data also importantly reveals that weather expletive dropping *does* decrease with age (and so, plausibly, increasing MLU), whilst other subjects (existentials) are rarely omitted at early stages, contrary to what was observed in Valian et al.

These results therefore endorse a competence-based explanation, but, more pointedly, appear to encourage one that goes *beyond* classic binary partitions in subject types (à la Rizzi, 1982).

4. Analysis: differentating categories of nominal elements

Our contribution elaborates the formal basis of children's distinctions among subject types and advances a concrete proposal for the developmental mechanisms and ordering underlying the emergence of natural classes of subjects.

First, we propose to conceptualize the development of subject categories as an (at least partly) emergent process of so-called *categorial differentiation* and granularization – this follows existing work on phonological (e.g., Dresher, 2009; Cowper & Hall, 2014) and syntactic (e.g., Biberauer & Roberts, 2015) categories. Concretely, we assume that more 'generic/coarse' natural classes of subject types, which are featurally simpler and maximally contrastive, are acquired first. These then form the basis for the later acquisition of finer-grained features that distinguish other subject types. We apply the same logic as in existing differentiation proposals to how children 'carve out' the subject and nominal space (see, e.g., Dresher's, 2009, Successive Division Algorithm): namely, that not all formal features encoding the differences between subject types are equally accessible to the child at the start. This differential timing of feature acquisition then makes predictions for which (feature-based) natural classes should be earlier-acquired. In what follows, we broaden our focus of analysis and apply categorial differentiation to the space of *nominal ([N]-specified) elements* broadly (which includes, but is not limited to, subjects). A claim of our analysis is that the acquisition of featural distinctions in the nominal domain usefully predicts which kinds of subjects and expletive types children are able to encode at earlier stages.

As our formal basis, we draw on Rizzi's (1986) updated *tripartite* typology of subjects (*pro*s), which is defined by two features: [±referential] and [±argumental]. This typology therefore distinguishes between referential subjects ($pro_{[\text{referential}]}$), and two types of expletives – so-called 'pure' expletives (e.g., existentials, impersonals; $pro_{[\text{EXPL+ARG}]}$) and 'quasi-argumental' expletives (e.g., weather expletives, $pro_{[\text{EXPL-ARG}]}$; see Chomsky, 1981). Rizzi (1986) assumes three UG-given subject-types, each endowed with a flat feature bundle bearing different values for [±referential] and [±argumental]. However, absent some ad-hoc notion of 'default' for plus or minus feature specifications, the two-way distinction between [±argumental] will still not itself explain why only the production of [+argumental] (i.e., weather) expletives is repeatedly delayed in acquisition.

This is where we suggest that the focus on *subject* typologies is too narrow: we propose that consideration of the features that children have to acquire to carve out the broader space of *nominal* elements helps us to understand the asymmetries observed with expletives. Specifically, we expand the feature set of Rizzi (1986) and propose a role for *topicality* ([±topic]) in how children flesh out the formal specifications of nominal elements, beyond [±referential] and [±argumental]. A distinction that has been argued to be early-acquired is the topic-comment distinction; that is, a distinction between a salient entity identified by a speaker (the topic), about which some information is provided (the comment) (i.a., de Cat, 2007; Bambini & Torregrossa, 2010; van Kampen, 2010; Bosch & Biberauer, 2025; see also Krifka 2007). This then suggests that nominal distinctions involving [±topic] may be early-acquired. Tellingly, existentials/presentationals

are rhematic, i.e., necessarily *non-topical*, structures in which new information is presented. Significantly, existing syntactic literature has argued that existential expletives are featurally linked with their (non-topical) associate DPs (see Uriagereka, 1995, on the Big DP analysis, and Kayne, 2008, for a specific application to expletive *there*). This plausibly renders the existential expletive not only [-referential, -argumental], but also [-topic]. The schematized expletive-associate Big DP below illustrates:

(2) [is [$_{DP}$ there [-topic] [$_{Associate}$ a book]]] > *There is a book.* [-topic]

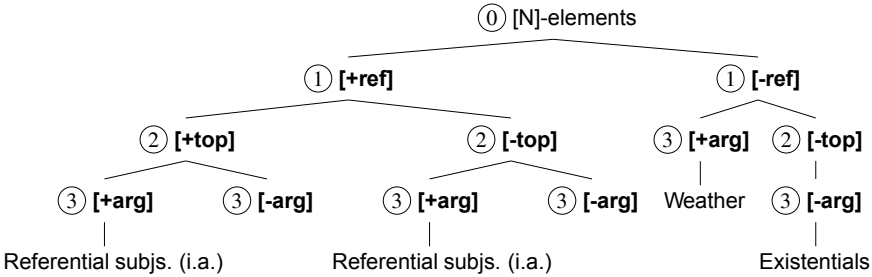
Crucially, the additional [±topic] featural specification does *not* apply to weather expletives, which are acquired as independent DPs, with no associates. [±topic], a feature independently needed to distinguish DPs generally and, by hypothesis, acquired early, therefore helps flesh out the formal specification of existential, but *not* weather, expletives. We argue that this featural difference between existential and weather expletives, coupled with a differentiation-based learning path, may provide a handle on why existential expletives are exponed first by children.

Having laid out the formal toolkit we assume, we set out the acquisition path for nominal elements as follows, with each successive step involving a further degree of 'granularization' of the child's nominal space: (i) children first distinguish the class of [±referential] elements. That children would start by differentiating [±referential] over [±argumental] or [±topic] elements follows if we consider that [±referential] is developmentally grounded on more accessibly reality-anchored notions, namely a visible and perceptually salient entity (see Bambini & Torregrossa, 2010; and also Kirby & Becker, 2007, on the early acquisition of referential uses of pronouns). Then, (ii) we propose [±topic] is plausibly distinguished subsequently. We take step 2 to introduce a 'refinement' over the earlier-acquired [±referential] specification – that is, a finer-grained distinction between topical/non-topical DPs within the domain of visible/referential entities. This is also an early development, as noted above. It is at this step 2 that we can begin to see why existentials would be formally encoded early within the class of [-referential] DPs: the specification of [-topic] in the (referential) associate will impact the features of existentials (see (2)), forming a new contrastive class of nominal elements ([-referential, -topical]). Weather expletives are underspecified for [±topic] (per the Big DP analysis, which only holds of existentials), and at this point, children have yet to acquire [±argumental]. This underspecification may be expected to lead to higher rates of omission. Finally, (iii) step 3 involves the integration of a more grammar-internal contrast, [±argumental], which highlights the *(non)thematic* (argument vs. adjunct) roles of nominal elements. Weather expletives – thus far lacking integration into the set of nominal categories – now receive featural characterization, becoming the [+argumental] group in the [-referential] class. Following the logic of the Maximise Minimal Means (MMM) approach to grammar building (see Biberauer 2019), we take the acquisition of [±argumental] to impinge on all the nominal

categories in the system as features on this approach are assumed to be maximally utilised wherever they are postulated. The [+referential] elements, which are [±topic], are therefore also further specified at this stage as [±argumental]. This finalizes a nominal system that can integrate referential, existential and weather subjects.

We thus assume the differentiation tree of nominal ([N]) elements as below, with [-topic] crucially providing an early featural specification ('latching point') for existentials. The feature ranking in (3) schematizes the sequence in which nominal categories are assumed to emerge: [±referential] heads the ranking, followed by the acquisition of [±topic] and, finally, [±argumental]. This successive division tree therefore combines the three developmental stages outlined above, each of which elaborates prior developmental stages by differentiating already-existing natural classes by means of a new feature. These are numbered next to each feature for ease of readability.

(3) [±referential] >> [±topic] >> [±argumental]



A range of productive questions remain for future work. In particular, the behaviour of expletive types in other languages, including null subject languages (e.g., French *il* and *y*, Catalan *hi*, Italian *ci*, among others), remains largely unexplored. Our account should also integrate the behaviour of impersonals observed in Merit if data from additional children replicate her developmental profile. Confounding effects of predicate type (e.g., copula vs. lexical verb) should also be explored in future work: existential constructions, and some weather predicates often feature copula verbs, which are known to exhibit lower rates of subject drop (e.g., Hyams, 2011).

5. Conclusion

Our findings suggest that subject-drop and subject acquisition should not be viewed monolithically, either as advocated in performance accounts or in earlier instantiations of competence approaches. If children's subject-omissions are purely performance-driven, we expect the proportion of subject-drop to be consistent across subject-types and/or conditioned by processing-related factors (e.g., VP-length). Once expletive and subject-types are controlled for, however, distinct patterns emerge. This challenges performance-only accounts and introduces a further requirement on competence accounts: subject-drop appears

sensitive to finer-grained linguistic distinctions associated with subjecthood. We have proposed to capture this asymmetry with a categorial differentiation analysis, expanding the featural typology of Rizzi (1986). This perspective predicts a correlation between subject production/omission and the nominal categories that children can differentiate at early stages: we proposed that existential subjects may be early-acquired due to their syntactic configuration (featurally associated with [-topic] DPs; viz. Kayne, 2008). These results have wider implications, such as for the basis on which children initially categorize grammatical elements (here, subjects), and they also invite further research on the acquisition of subjects in present-day and historically attested languages instantiating different expletive systems.

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