SENSITIVITY TO SITUATION ASPECT IN THE USE OF TENSE MORPHOLOGY IN CHILD ROMANIAN

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This paper investigates the acquisition of tense-aspect morphology by young children speaking Romanian, focusing on the interaction between the emergent *prezent*, *perfect compus*, and *imperfect* morphology and "situation aspect" (Smith 1991). It shows that children are sensitive to the situation aspect of the predicate when they use tense/grammatical aspect morphology.

The linguistic categories whose acquisition is investigated in this paper are tense, "viewpoint aspect" (or grammatical aspect), and "situation aspect" (Smith 1991). Tense is the grammatical category that specifies the relation between the speech event and the event described by the verb phrase. It is expressed by inflectional morphology, which encodes the relations of anteriority, simultaneity, and posteriority to the moment of utterance, corresponding to *past* tense, *present* tense and the *future*.

Viewpoint aspect or grammatical aspect is a category that encapsulates the perspective selected by the speaker for the description of an event. This perspective or viewpoint is also encoded by the inflectional morphology. The features associated to viewpoint aspect are [+/- perfective]. When a perfective perspective is assumed by the speaker, the event is described as terminated or completed. From an imperfective viewpoint, the event is considered in its progress, and its endpoint is ignored. In Romanian, viewpoint aspect and tense are realized syncretically. For instance, the *prezent* may encode both present tense and imperfective viewpoint aspect. The *perfect compus* encodes both past tense and perfective viewpoint aspect. The *imperfect* encodes both past tense and imperfective viewpoint aspect.

Situation aspect defines the way in which the event is temporally organised. *Telic* predicates presuppose the existence of an endpoint (*build a house*), while *atelic* predicates are homogenous and do not have an inherent endpoint (*run*).

1. Aspect-tense distributional tendency in child language

The literature on the acquisition of tense and aspect emphasises that there is a widespread pattern in the distribution of inflectional morphology. When children start acquiring language they use the inflectional morphology in a way that is asymmetric and peculiar. Certain types of inflections are reserved for certain classes of predicates. It has been shown that present, progressive or imperfective morphology is generally used on atelic predicates, less frequently on telic predicates. In addition, past or perfective morphology is reserved for telic predicates, appearing more seldom with atelic predicates. This distributional tendency is summarised in (1).

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(1) a. *Present/progressive/imperfective morphology – atelic predicates, rarely with telic predicates*
b. *Past/perfective morphology – telic predicates, rarely with atelic predicates*

This means that imperfective present and atelic predicates like (*is*) *playing* are more frequent in child speech than perfective past, yet atelic predicates like *played*. Similarly, past perfective telic predicates like *made (a) castle* are more frequent than present imperfective telic predicates like *is making a castle.* It seems that there is an evident correlation between situation aspect and grammatical aspect or tense. The distributional pattern in (1) was found for languages with different properties of their tense-aspect systems: child English (Smith (1980), Shirai & Andersen (1995), Boland (2006)), child French (Bronckart & Sinclair (1973)), child Italian (Antinucci & Miller (1976)), child Polish (Weist et. al. (1984)). Buja (2008) argued that the same pattern is also present in child Romanian, but her study does not provide the exact percentages of telic versus atelic predicates used by the children (aged 3;2 – 9;11), so a definite conclusion on child Romanian is yet to be reached. The research methodology used in Buja (2008) was picture elicitation, and the data were collected cross-sectionally. Additionally, the participants were older than 3;0. In this study, data from younger children are collected longitudinally, providing an insight into a period critical for the development of the temporal system (2;0-3;0).

The research question addressed by this study is whether data from early child Romanian (age<3;0) display the tendency in (1). We investigate whether there is a correlation between situation aspect and grammatical aspect and tense in early child Romanian.

2. The data

The analysis will be based on two corpora of longitudinal naturalistic data. The first corpus consists of weekly and monthly one-hour recordings of child B (a girl) in spontaneous conversation with her mother, the investigator and other carers. The corpus was collected and transcribed in the CHILDES format by L. Avram (MacWhinney & Snow (1985)). The second corpus belongs to child I. (a boy) and was also transcribed in the CHILDES format (MacWhinney & Snow (1985, 1990)). For the purposes of this paper only the files in which non-copulative verbal predicates were produced by the children were selected. The details of the files used are given in Table 1.

Table 1 Child data

Child	Source	Age Range	Sessions	Predicates
B.	Avram corpus	1;6-2;11	19	1511
I.	Stoicescu corpus	1;10 -3;1	18	2125

3. Research method

The analysis started with an identification of the predicates marked with the *prezent*, *perfect compus*, and *imperfect* tenses in the two corpora. The verb phrases thus selected were placed into two categories: telic versus atelic. The criteria used for the classification was felicitousness with the *in-phrase* (*în două ore* "in two hours") for telic predicates and with the *for-phrase* (*timp de două ore* "for two hours") for atelic predicates (see Dowty (1979)). Our classification took into account the entire verb phrase, not only the verb, in line with the scholarly consensus regarding the compositionality of situation aspect. The analysis also

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consisted in a count of telic versus atelic predicates for the three tenses. We then calculated the percentages of telic and atelic predicates for each tense. The results will be presented in the following section.

4. Overall results

The results of the analysis for each child corpus are presented in Table 2. A similar pattern emerges in both children's corpora. Most *prezent* predicates are atelic (78% for I., 58% for B.). Most *perfect compus* predicates are telic (85% for I., 70% for B.). Most frequently, the few *imperfect* predicates in the corpus are atelic. As *prezent* and *imperfect* tenses are both [+imperfective] and mostly atelic, and the *perfect compus* predicates are mostly telic, the results support the claim that there is a correlation between grammatical aspect and situation aspect in child speech. Similarly to their peers, Romanian-speaking children associate (a)telicity to particular inflections.

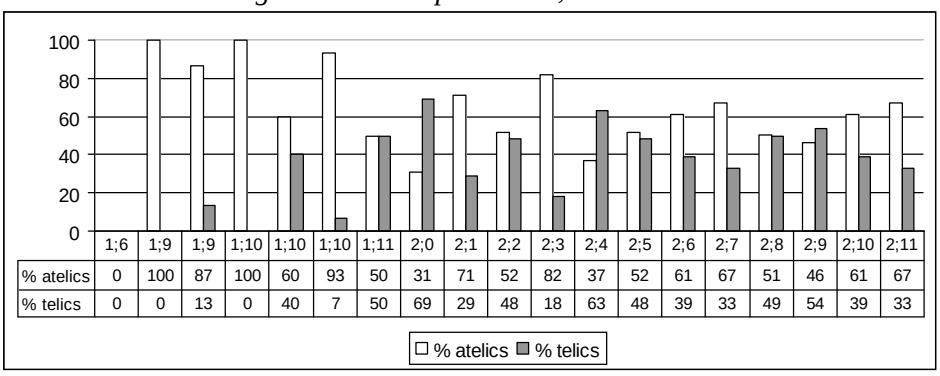
Table 2 Total percentages of telic vs. atelic predicates

	Prezent		*Perfect compus*		*Imperfect*	
Total %	Atelic predicates	Telic predicates	Atelic predicates	Telic predicates	Atelic predicates	Telic predicates
B.	58	42	30	70	86	14
I.	78	22	15	85	75	25

The next question addressed is whether these correlations are also found for each recording, not only generally in the corpora. The tables underneath Figures 1-4 present the way in which the percentages of telic versus atelic predicates vary function of age. For the present tense, there are very few files in which the distributional pattern in (1a) is not present. Child B. produces more present telics than present atelics only at ages 2;0, 2;4, and 2;9. Child I. produces more present telics than atelics only in one file at 1;11. For the past tense, telic predicates are almost always more frequent than atelics, with only two exceptions, at 2;1 for child B. and 2;7 for child I – here the proportions of telics and atelics are equal.

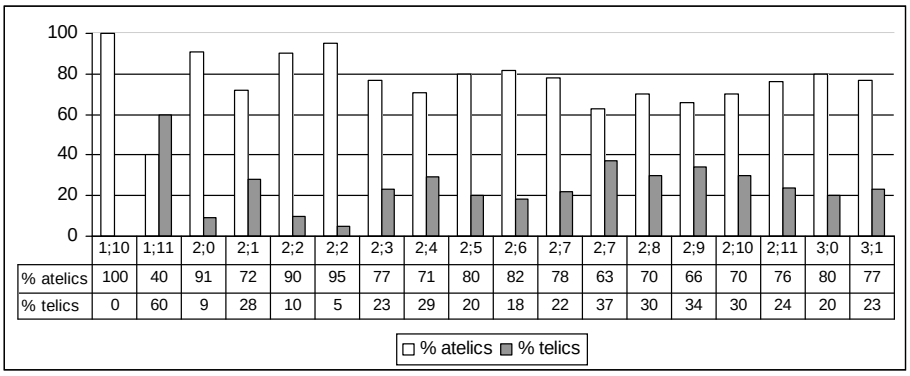
Another fact that can be uncovered by the analysis of individual files is whether there is any connection between the age of the children and the strength of the correlation between situation aspect and viewpoint aspect. Figures 1-4 show that this correlation is present. The percentages of *perfect compus* telic predicates and *prezent* atelic predicates are higher at earlier ages than at older ages

Figure 1 Present predicates, child B.



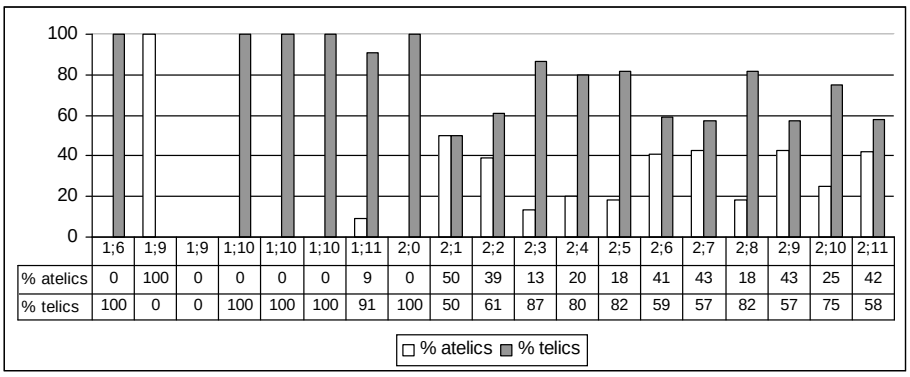
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Figure 2 Present predicates, child I.



	1;10	1;11	2;0	2;1	2;2	2;2	2;3	2;4	2;5	2;6	2;7	2;7	2;8	2;9	2;10	2;11	3;0	3;1
% atelics	100	40	91	72	90	95	77	71	80	82	78	63	70	66	70	76	80	77
% telics	0	60	9	28	10	5	23	29	20	18	22	37	30	34	30	24	20	23

Figure 3 Perfect compus *predicates, child B.*

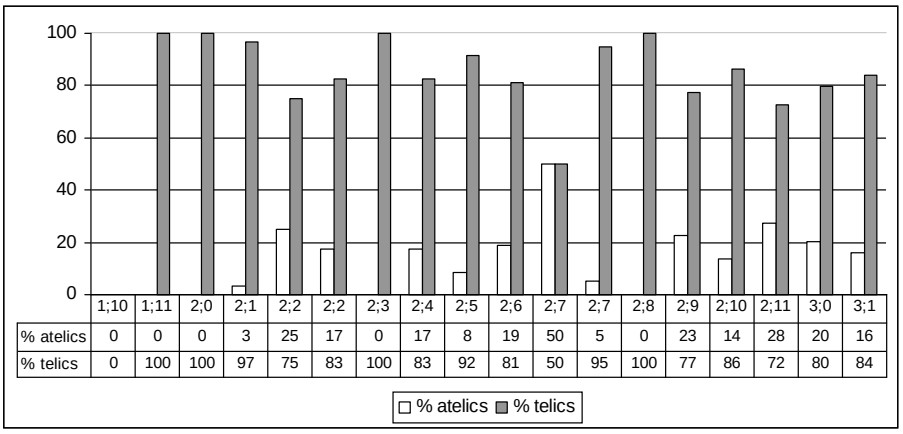


	1;6	1;9	1;9	1;10	1;10	1;10	1;11	2;0	2;1	2;2	2;3	2;4	2;5	2;6	2;7	2;8	2;9	2;10	2;11
% atelics	0	100	0	0	0	0	9	0	50	39	13	20	18	41	43	18	43	25	42
% telics	100	0	0	100	100	100	91	100	50	61	87	80	82	59	57	82	57	75	58

The *present* tense appears in the corpus of B. for the first time at 1;9.03 but it only becomes more productive at 1;9.21. In the fives files spanning the interval 1;9-1;10 the proportion of present atelics is rather high (average 88%), but then it decreases significantly (the mean percentage of present atelics in the other files is 56%). The bottom-line is that, by 1;11, child B. is already capable of producing present telics, in other words, of reversing the distributional pattern. In the following months, child B.'s present telics become increasingly numerous. In child I.'s case the asymmetric distribution of the present inflection is more marked throughout the corpus. The percentages of present atelic predicates remain higher than in child B.'s case, being almost always above 60%. Child I.'s first present predicate in the corpus is at 1;10, but the present becomes more productive starting with 2;0. The correlation with age for the present is not so evident in this corpus. The average proportion of present atelics in the first six files (1;10-2;2) is not a lot higher (81%) than the mean for the next six files (75%). This means that child I. is not as quick to relax the connection between atelicity and present morphology as child B. is.

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Figure 4 Perfect compus *predicates, child I.*



	1;10	1;11	2;0	2;1	2;2	2;2	2;3	2;4	2;5	2;6	2;7	2;7	2;8	2;9	2;10	2;11	3;0	3;1
% atelics	0	0	0	3	25	17	0	17	8	19	50	5	0	23	14	28	20	16
% telics	0	100	100	97	75	83	100	83	92	81	50	95	100	77	86	72	80	84

The correlation with age is more evident for the *perfect compus* predicates. The *perfect compus* emerges at 1;6 in B.'s corpus but becomes more productive at 1;11. In the interval 1;6-2;0 *perfect compus* telics are almost the only aspectual class produced (average percent around 90%), but this proportion decreases significantly starting with 2;1 (the average for the rest of the files is around 60%). In the corpus of I., the *perfect compus* first emerges at 1;11, but at 2;1 it becomes more productive. During the interval 1;11-2;3 the correlation between this morphology and telicity is very strong (average percent of past telics is around 90%), after which it weakens but only slightly (the average percentage for the rest of the files is around 80%).

We should stress that during the early stages, when the percentages of present atelics and past telics are highest, the number of predicates produced is very small. Many of these first forms are probably not analysed. As the child grows, and his repertoire of verbs is enriched, the flexibility with which he applies inflectional morphology is greater.

In conclusion, the results point to the following tendencies in the use of inflectional morphology in child Romanian: (a) the *prezent* morphology is mostly applied to atelic predicates; (b) *perfect compus/past participle* morphology is mostly associated to telic predicates; (c) *imperfect* morphology is mostly found with atelic predicates. Secondly, it is important to remember that there is no one-to-one mapping between inflections and aspectual classes; the child does not apply a strict rule of marking telics with the *perfect compus* and atelics with the *prezent*, as there are numerous exceptions (high percentages of present telics and *perfect compus* atelics). Thirdly, we found some evidence for an age correlation – the proportions of *perfect compus* telic predicates and *prezent* atelic predicates are greater at earlier ages than at older ages in child B.'s case. However, child I.'s data is not as clear with respect to the strength of the correlation between atelicity and the present tense and telicity and the past tense at early ages.

5. Accounts of the distributional pattern found

5.1. *Children's inability to dissociate themselves from the present*

Early studies on the acquisition of tense-aspect forms (Bronckart & Sinclair 1973, Antinucci & Miller 1976) were very much under the influence of the piagetian theory of cognitive development. According to Piaget, the child has an egocentric perspective and lives very much in the present at the debut of the pre-operational stage (2;0). As such, he cannot represent past or future times. Consequently, the Aspect First Hypothesis was proposed. It

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claims that children become aware of aspectual contrasts before tense contrasts and that at the beginning of language development, tense morphology has an aspectual interpretation, not a temporal one. Thus, present morphology is assumed to express atelicity for the child, while past tense inflections encodes telicity or resultativity.

However, recent research has shown that children are in fact conceptually able to represent past events. As shown by Bauer & Mandler (1989: 197), children at the preschool age (3-8) have adult-like representations of events and the organisation of their memories of events is also adult-like. By the age of 2;0 children already order two events in a sequence while playing (Bauer & Mandler 1989: 197). The proportion of such sequences doubles between 1;8 and 2;4. Other studies argued that 4 and 6-month-old babies are able to recognise objects and types of movement seen 1 or 3 months before (Bahrick & Pickens (1995), *apud* Weist (2009)). Bauer & Mandler (1989) demonstrate that at 1;4 children are able to remember sequences of events seen 2 weeks before if these are events involving familiar actions. At 1;8 children are able to remember and re-enact even unfamiliar event sequences. To sum up, children have a pre-linguistic awareness of temporal succession and temporal concepts. When they start producing language, children are conceptually ready to create temporal orderings of events. Since their challenge is not a conceptual one, it follows that their task is to find a way to express temporal notions through language. The difficulty of their task lies in the complexity of the featural make-up of various tense forms. It follows that children's alleged cognitive inability to dissociate themselves from the present is not a good explanation for the distributional pattern found.

Since the account described above was proven to be on the wrong track, we propose an alternative explanation starting from the necessity to use one's computational resources in an optimal fashion.

5.2. *The need for economy*

The empirical observation that we made was that there is a correlation between grammatical aspect and situation aspect in child Romanian. Thus (a) imperfective inflectional morphology was associated to atelicity, while (b) perfective inflectional morphology was associated with telicity. It should be noted that imperfectivity and atelicity share the feature of unboundedness, while perfectivity and telicity involve boundedness. It follows that the Romanian children investigated preferred to produce predicates in which situation aspect and grammatical aspect matched in terms of the [+/-bound] feature.

We assume that the organisation of the clause contains the levels presented in (2). In (2a) tense and grammatical aspect are represented at different levels because sometimes they can be realised by distinct inflections (as, for instance, in the case of the progressive *(be)-(ing)* tenses in English, or the Romanian *perfect compus*). In (2b) tense and grammatical aspect are represented at the same level because they can be expressed by syncretic inflectional morphology (as, for instance, in the case of the *imperfect*). According to De Swart (1998), grammatical aspect operators may function as modifiers of the aspectual interpretation of the lexical verb phrase. Aspectual shifts may or may not take place at each level of the structure, function of the semantics of each operator.

(2) a. *[Tense [Grammatical Aspect [$_{VP}$ Situation aspect]]*
b. *[Tense/Grammatical Aspect [$_{VP}$ Situation aspect]]*

Inflectional morphemes carry a [+/-bound] feature. The lexical predicate is also evaluated as either [+/-bound] [i.e., telic or atelic] at the level of the verb phrase. At each step

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of the derivation the [+/-bound] feature is re-evaluated. If the situation aspect calculated inside the verb phrase is [+bound], i.e., the predicate is telic, and the inflectional affix is also [+bound], i.e., perfective/past, the whole sentence will have a [+bound] interpretation (3a).

If the situation aspect calculated inside the VP is [-bound], i.e., the predicate is atelic, and the inflectional affix is also [-bound], i.e., imperfective, the whole sentence will have a [-bound] interpretation (3b). In (3) there is *aspectual continuity* from one syntactic level of the derivation to next one and no aspectual shifts take place.

(3) a. *A construit o casă.*
has built a house.
'He has built a house'
b. *Alerga.*
run.imperfect.3sg
'He was running'

If the situation aspect of the predicate does not match its inflection in terms of the [bound] feature, *aspectual shifts* take place during the derivation. For instance, in (4a) the verb phrase *build a house* is telic (i.e., [+bound]), because it presupposes an end result, but the inflectional morphology (the *imperfect*) is [-bound] and its application generates a homogenous [-bound] predication, in which the end result is ignored, while the process part of the event is focused. In (4b) the verb *run* is atelic and [-bound] but the inflectional morphology (the *perfect* compus) is [+bound] and the resulting predicate is also [+bound], entailing that the process of running was terminated. In (4), the inflectional morphology changes the aspectual interpretation of the verb phrase, so there is no aspectual continuity from one step of the derivation to the other.

(4) a. *Construia o casă.*
build.imperfect.3sg.
'He was building a house'
b. *A alergat.*
has run
'He has run'

The proposal we make is that aspectual shifts are computationally more costly and as such they are more likely to be avoided. At the same time, aspectual continuity requires less effort and is likely to be preferred. A clause that requires an aspectual shift is more demanding than a clause where the situation aspect properties of the verb phrase are preserved throughout the derivation.

This proposal explains the distributional pattern in (1). Children produce predicates with aspectual continuity more often because these are the predicates that are the easiest to compute. The fact that predicates where lexical aspect and grammatical aspect do not match begin to be produced with ever-increasing frequency as the child grows older is proof that the computational resources available have a significant impact. At the earliest ages children avoid aspectual shifts because their computational resources are limited and they need to build representations that are as economical as possible. This is why the percentages of "matching" predicates is so high at the onset of acquisition.

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This account also explains why the distributional pattern appears cross-linguistically. It is only natural for child speakers of all languages to strive for computational economy and to prefer cost-free operations.

This proposal is also supported by the fact that studies on the processing of language have argued that coercion (an operation of semantic transformation) is a factor that slows down reading. Pickering et al. (2005) argue that the processing of sentences that involve coercion is more difficult than that of non-coerced sentences.

Child Romanian displays the tense-aspect correlations expected by the proponents of the Aspect First Hypothesis. However, these empirical tendencies can be accounted for in terms of the computational limitations faced by children. Further research is needed in order to confirm or refute the Aspect First Hypothesis. Namely, one needs to find out through other means than the ones employed in this paper whether children encode situation aspect rather than deictic tense and grammatical aspect through inflectional morphology. The sensitivity to situation aspect may be present even if the child is already in possession of a deictic system, no matter how fragile. The two aspects do not exclude each other. These issues will be the focus of further research.

6. Conclusions

This paper has shown that young children speaking Romanian are sensitive to the situation aspect of the predicate when they use tense/grammatical aspect morphology. Perfective and/or past morphology is applied predominantly to telic predicates, while imperfective and/or present morphology is reserved mostly to atelic predicates. We have argued that this is only a tendency, not a stringent rule, in the sense that non-matching predicates are also produced. However, there is also evidence of a very early stage during which children are quite conservative with respect to the application of inflectional morphology. These findings were explained via the need for computational economy. Aspectual coercion is avoided, especially at younger ages, due to the constraints on computational resources.

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SENSITIVITY TO SITUATION ASPECT IN THE USE OF TENSE MORPHOLOGY IN CHILD ROMANIAN

(*Abstract*)

The acquisition of tense and aspect in English, Polish, Dutch, Italian, and French has been the focus of considerable work by both linguists and psychologists. The following distributional pattern was noted in a variety of child languages: at early stages of development, children generally attach past/perfective inflections to telic predicates, and present/imperfective morphology to atelic predications. This observation led to the hypothesis that children do not use inflectional morphology to mark tense and grammatical aspect, but use it to mark situation aspect distinctions. This idea is known as the *Aspect First Hypothesis*. It is assumed that the young child (aged 2;0-6;0) is not able to make tense or grammatical aspect distinctions, but is capable of situation aspect distinctions. Two longitudinal corpora of child Romanian (2 children, aged 1;10-3;1 and 1;6-2;11) were investigated with a focus on the interaction between the *prezent*, *perfect compus* and *imperfect* morphologies and the lexical aspect of the predicates. The analysis confirmed the cross-linguistic observation that children use imperfective morphology predominantly on atelic predicates and perfective morphology mainly on telic predicates. The alternative account put forth in this paper is that the distributional pattern of tense inflections is a result of the speakers' efforts to build economical representations. It is more difficult to create representations for predicates whose lexical aspect, grammatical aspect and tense do not match than for predicates for which these categories are in alignment. This is why children tend to produce predicates which involve the same features (i.e. boundedness or unboundedness) at several syntactic levels. This tendency is cross-linguistic and is more marked at younger ages, when derivational capacities are less developed.

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