Are activities always (im)perfective? Assessing the Morphology-Sensitive Model in child Romanian

Ioana Stoicescu[1]

Abstract: This paper is concerned with the acquisition of activities in child Romanian. It investigates the hypothesis put forth by Bertinetto *et al.* (2015) that there is no universal route for the development of tense and grammatical aspect, which is not essentially influenced by situational aspect categories (e.g., state, activity, (a)telic, etc.). Bertinetto and collab. proposed a Morphology-Sensitive Model, according to which the specific morphological properties of the target language, not aspectual semantic categories, are used as a source of information by children. Given this model, the prediction is that, in Romanian, where situation type aspect is a covert category, situational aspect features do not guide the production of tense-grammatical aspect morphology in child language; thus, there will be considerable mismatching between situation type aspect classes and the morphology produced in child speech. This prediction was investigated using child Romanian data coming from the longitudinal corpus of one child and was disconfirmed by the data. Activity predicates were more likely to be found in imperfective rather than perfective contexts, proving children's early sensitivity to both situation type aspect and grammatical aspect.

Key words: language acquisition, situation type aspect, activities, morphology-sensitive model, grammatical aspect.

1. Introduction

The acquisition of aspect is one of the areas of language development research that has sparked a great deal of attention. Among the first observations that were made by looking at longitudinal corpora of child language was the fact that children cross-linguistically produce an unusual pattern of aspect-tense inflections, which are used on verbs as a function of the situational aspect of the predicate. Thus, perfective or past inflections are mostly attached to telic predicates, while

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[1] University of Bucharest; ioana.stoicescu@lls.unibuc.ro.

atelic predicates are found with present or imperfective/progressive morphology (1). This distribution exists in a wide range of typologically different child languages (English: Antinucci and Miller 1976, Shirai and Andersen 1995, Boland 2006; Romanian: Stoicescu 2013, Buja 2008; Greek: Stephany 1985; Italian: Antinucci and Miller 1976, Noccetti 2003; French: Bronckart and Sinclair 1973, Labelle, Godard and Longtin 2002; Turkish: Aksu-Koç 1988). However, the distributional pattern is not rigid, as children are able to produce telic imperfective/present predicates, as well as atelic perfective/past predicates.

(1)   a. perfective / past inflectional markers – telic VPs
      b. imperfective / progressive / present inflectional markers – telic VPs

The correlations in (1) were accounted for in several ways. One of the most influential early proposals was the Aspect First Hypothesis, according to which children first distribute tense-aspect inflectional morphology as a function of the (a)telicity of the predicate because their initial grammatical competence does not include tense or grammatical aspect contrasts and, thus, the tense-aspect inflections are actually used as markers of situational aspect (Antinucci and Miller 1976, Bloom *et al.* 1980, Bronckart and Sinclair 1973).

Another variant of the same idea is that children learn situational aspect and tense at the same time but situational aspect serves as a trigger for the acquisition of tense, as initially children, for instance, apply the past morphology predominantly to telic verb phrases (Bloom and Harner 1989). This means that the child has only limited knowledge of the function of the past tense morphology in the adult language and can use it only when describing telic events (Bloom and Harner 1989, Antinucci and Miller 1975). This does not imply that situational aspect features such as (a)telicity are known by the child in an adult-like manner, but they must be to some extent evident to him (Bertinetto *et al.* 2015).

In another version of this hypothesis that focuses on grammatical aspect (The Grammatical Aspect First Hypothesis), it was proposed that children are able to distinguish between present and past sentences only if the present is associated with the progressive and the past to the perfective, indicating that the present and past inflections are regarded as markers of grammatical aspect (Wagner 2001, Buja 2008).

Another influential hypothesis, which was embraced by Slabakova (2002), van Hout (2008), and Stoicescu (2013), is based on the notion of optimal computation or coercion avoidance. It has been argued that coercion, a process of semantic shift, is at work in the aspectual domain. De Swart (1998) claimed that aspectual operators like the progressive and the perfect in English or aspectually sensitive tenses like the *imparfait* or *passé simple* in French have input

conditions – for instance, the *imparfait* needs to combine with atelic situation types (states or activities), while the *passé simple* needs to combine with telic predicates. If the input conditions are not satisfied, coercion operators recategorize the predicate in terms of situational aspect, yielding the required situation type. Consequently, situation type-grammatical aspect combinations such as perfective-atelic, imperfective-telic are mismatching and trigger coercion or aspectual shifts. Children avoid these combinations because the latter are more demanding computationally, and prefer instead the use of matching combinations such as perfective-telic, imperfective-atelic. Van Hout calls this hypothesis the Semantic Complexity Hypothesis: "The semantics of simple semantic operations is acquired early" (2008: 1753).

The Aspect First Hypothesis was criticized in several respects. First, it was noted that both adults and children display the same asymmetrical distributional patterns in their output (Boland 2006 for English, Stoicescu 2013 for Romanian). If the children's production does not necessarily deviate from the adult norm, there are no grounds for assuming that situational aspect is used by children as a springboard for the acquisition of other categories such as tense or grammatical aspect (Bertinetto *et al.* 2015).

Second, several studies pointed out that the children's tense system is not non-adult-like, as they are able to distinguish between the present, past and future from early ages (Weist *et al.* 1984, 1991, 2004, Stoicescu 2012). Evidence for this idea was found for Romanian both in production data, which showed that children produce the same verbs in the present, past and future tenses from an early age (Stoicescu 2012), and in experimental data, which demonstrated early comprehension of tense contrasts (Stoicescu 2013).

The third criticism (formulated by Bertinetto *et al.* 2015), which can be levelled at both the Aspect First and Optimal Computation models, is related to their fundamental presupposition. Both accounts assume that children have an early sensitivity to situational/grammatical aspect distinctions – e.g., the contrasts between telic and atelic predicates and/or the perfective/imperfective aspects. If this were the case, such linguistic categories would be innate, pre-linguistically developed or would be acquired to a sufficient degree quite early – through "recurring patterns of statistically favored combinations…in a usage-base manner" (Li and Shirai 2000 in Bertinetto *et al.* 2015: 1119) –, so as to be available to support the acquisition of other categories.

The notion that children have an innate sensitivity to situational aspect distinctions was indeed adopted by Slobin (1985) in his Basic Child Grammar (cf. Bickerton 1981, Smith 1991); he maintained that children have innate access to semantic notions such as result and process, which are prelinguistic, and help the child extract the relevant linguistic categories from the input. For instance, the notion of result

could help the child map the telic/perfective category. Along the same lines, Gagarina (2000) argued that grammatical aspect distinctions are marked in child speech through onomatopoeia before the emergence of the verb. Russian-speaking children use a single onomatopoeia for a recently completed event, and reduplicate the onomatopoeia for ongoing processes, as can be seen in (2) and (3). The two patterns mirror the perfective – imperfective distinction.

(2) Sjapa njam (Philip, 1;8.28, has bitten a hat)
     hat-NOM njam
     'I have bitten the hat.'

(3) The child is asked 'what are you doing?'
     Njam-njam (Philip, 1;9.3)
     'I am eating.'

However, if it were true that contrasts related to situational aspect (such as state *vs* event or telic *vs* atelic) and/or grammatical aspect (perfective *vs* imperfective) are available to the child at a pre-linguistic stage and serve as a platform for the acquisition of other categories (tense), the developmental path for situation aspect/ grammatical aspect would be universal, an idea yet to be proven.

Bertinetto *et al.* (2015) propose that it is more realistic to assume that children are instead equipped with the cognitive ability to develop mental representations for states and processes, complete *vs* incomplete situations, entity *vs* event, present *vs* non-present, realis *vs* irrealis (2015: 1122). However, these notions are not the same as the corresponding linguistic categories and it takes time and exposure to the target language for the latter to take shape. The related linguistic categories develop based on the evidence children find in the input. Bertinetto and collab. proposed a Morphology-Sensitive Model, according to which the specific morphological properties of the target language, not semantic categories, are used as a source of information by children, and this leads to diverse acquisitional paths.

This paper is concerned with the acquisition of activities, an atelic situation type, in child Romanian. It investigates a hypothesis put forth by Bertinetto *et al.* (2015), within the Morphology Sensitive Model, that, in languages where situational aspect is a covert category, situational aspect categories do not guide the acquisition of the semantics of tense-grammatical aspect morphology. As will be shown in section 2, in Romanian, situational aspect is a covert category that is deeply interconnected with grammatical aspect. If the situational aspect feature of (a)telicity is not used by children to acquire grammatical aspect or tense, we should see considerable mismatching between the situation types and the grammatical aspect/tense markers produced in child speech. Specifically, this means that specific aspectual classes

such as activities would not be overwhelmingly used in contexts in which imperfective interpretations are assigned, contrary to what is stated in (1). Yet, if the Optimal Computation account is on the right track, the pattern in (1) should be preserved for activities.

The paper has the following structure. Section 2 introduces the notions of tense, situation type aspect and grammatical aspect in relation to the tense-aspect morphological markings in Romanian. Section 3 presents the results of previous research on situation type aspect in child Romanian. Section 4 discusses the Morphology-Sensitive Model in more detail. Section 5 provides the research question and predictions made. Sections 6 and 7 provide information about the corpus and research methodology. Section 8 is dedicated to the results of the analysis and their discussion. Section 9 concludes the paper.

2. Situation type, grammatical aspect, and tense in Romanian

Situation type aspect was defined as a cluster of temporal properties (telicity, dynamism, duration) which characterize the situation described by the verbal predicate (Smith 1991, Bertinetto 2001). Several situation types have been described in the literature. Activities are a situation type characterized by atelicity, dynamism and duration (*swim in the lake*, *sleep*). States are atelic, non-dynamic and durative (*love music*). Accomplishments are telic, dynamic and durative (*saunter to the door*). Achievements are telic, dynamic and non-durative (*win the contest*).

Grammatical aspect refers to the viewpoint that the speaker takes when (s)he refers to a situation. If the situation is described as a complete whole, the grammatical aspect is perfective (*He ate the cake*). If the focus is on the ongoingness of the situation, the grammatical aspect is imperfective *(At noon, he was studying*). A situation described with the imperfective aspect is ongoing at a certain time of reference, hence the time of reference is included in the time of the event (Klein 1994), while the time of the event for a situation described in the perfective is included in a time of reference.

Situation type aspect and grammatical aspect should not be confounded. Grammatical aspect is an overt category realized through hybrid tense-aspect forms (Romance) or specialized marking (the English progressive). Situation type aspect is a product of the semantics of the verb interacting with its arguments, as well as other constituents present in the sentence (e.g., temporal adverbials), and is a covert category in Romance languages.

Tense is the verbal category that locates the time of reference for the event relative to speech time (before speech time – past time reference, at/around speech time – present time reference, after speech time – future time reference).

In Romanian, tense and grammatical aspect are marked overtly, but the two categories are expressed by the same tense-aspect forms. The perfective-imperfective distinction is most saliently marked in the past tense: the *perfect compus* and the pluperfect convey perfective past meanings, while the *imperfect* conveys imperfective past meaning. In the *perfect compus* and pluperfect sentences in (4a-b), the events are included in the time intervals provided by the adverbials *ieri* 'yesterday' and *în zece ani* 'in ten years', hence the perfective readings. In the *imperfect* example in (4c), the reference time provided by the adverbial *ieri la trei* 'yesterday at three' is included in the event interval, hence the imperfective interpretation. The *imperfect* also elicits imperfective readings in habitual sentences (4d).

(4)   a. Ieri a plecat din țară.
          yesterday has left from country
          'Yesterday he left the country.'

      b. În zece ani fusese la teatru o singură dată.
          in ten years be-pluperfect.3sg at theatre a single time
          'In ten years, he had been to the theatre only once.'

      c. Ieri la trei, învăța pentru examen.
          yesterday at three study-imp.3sg for exam
          'Yesterday at three, he was studying for the exam.'

      d. În fiecare zi se certau.
          in every day REFL fight-imperf.3pl
          'They used to fight every day.'

The present tense mainly has an imperfective interpretation – if the event is ongoing (5a) or habitual (5b). However, perfective interpretations are possible with respect to future events (5c) (Bertinetto *et al.* 2015). The future tense can have perfective interpretations as well, when the event is viewed holistically, without any regard for its stages (5d).

(5)   a. Acum mă odihnesc.
          now REFL rest-pres.1sg
          'Now I am resting.'

      b. Pisica mea mușcă.
          cat-the my bites
          'My cat bites.'

      c. Plecăm imediat.
          leave-pres.1pl immediately
          'We leave immediately.'

      d. O să plecăm mâine.
          will SUBJ leave tomorrow
          'We will leave tomorrow.'

3. Previous research on situation type aspect in child Romanian

Prior studies on the acquisition of situational aspect in Romanian attested the distributional pattern in (1). Stoicescu (2013) argued that Romanian-speaking children are sensitive to (a)telicity in their production of the *present*, *perfect compus* and *imperfect*. The *perfect compus* was associated with the use of telic predicates, while the *present* and *imperfect* were more frequently used with atelic predicates. In the early stages of acquisition, the correlation between (a)telicity and (im)perfectivity was stronger. The same pattern was attested in adult Romanian, in child directed speech and in adult directed speech. The similarity between child and adult speech was accounted for using the Optimal Computation Model described in section 1. Both children and adults need to use their computational systems economically. The distributional pattern in (1) ensures that, when matching the inflections to the situational aspect of the predicates, aspectual shifts are not induced, which would expend more computational resources. Stoicescu (2012, 2013) also argued for the continuity between adult and child grammars with respect to temporal reference. The studies documented the contrastive use of the present, past and future tenses for a large number of verbs, demonstrating the early development of temporal deixis.

The Optimal Computation Model is predicated on the assumption that children have an early sensitivity to (a)telicity and grammatical aspect distinctions. However, Stoicescu (2013) did not investigate the patterns that can be observed for individual situation types, a line of research that will be pursued in this paper. Another point that was not discussed in Stoicescu (2013) is whether there is any correlation between the interpretations assigned to various tenses and the situation types of the predicates regardless of the inflectional marking, i.e., whether atelic predicates are used in contexts with an imperfective interpretation, while telic predicates are used in contexts with a perfective interpretation. This question will be addressed specifically for activities in this study.

4. The Morphology Sensitive Model

In competition with the Aspect First and Optimal Computation hypotheses, Bertinetto *et al.* (2015) proposed the Morphology Sensitive Model. As mentioned above, in this framework, a semantic category like telicity is not the driving engine for the acquisition of grammatical aspect/tense. What matters is the morphological prominence of categories in the target language.

The child operates with a complex of combined tense – aspect – situation type aspect features and, during the acquisition process, (s)

he extracts each of these features in turn, depending on the evidence he finds in the target language. The first feature that (s)he differentiates is the feature that is more prominently marked in the language, as the richness of the inflectional morphology promotes acquisition. The remaining disentanglement of features is delayed and is driven by the morphological properties of the target language and the input. Overtly marked linguistic categories should take precedence over covert categories.

For situation type aspect, which often lacks morphological marking in the languages studied, acquisition should take longer than it does for overt categories like tense/grammatical aspect. With respect to the latter categories, Bertinetto *et al.* (2015) claim that languages vary with respect to how prominently they are marked, and the most prominent categories are acquired first. For instance, in one language, temporality might be more prominent than grammatical aspect, and, in this case, temporality would be acquired before grammatical aspect.

In Slavic, awareness of aspect should develop early (before tense) because this category is marked saliently (Bar-Shalom 2002). Italian and German are deemed to be temporality prominent languages (Bhat 1999), with tense contrasts marked overtly. However, in Italian, the tenses have multiple interpretations (for instance, the present can be used for past and future events), so the acquisition task for temporality is not easy. Moreover, in Italian, where there are no overt situation type aspect markers, *aktionsart* is heavily dependent on grammatical aspect: for instance, the perfective tense-aspect forms are more likely to induce dynamic readings, whereas stative readings are more readily made possible by the imperfective. It is claimed, given these factors, that situational aspect categories should be more difficult to acquire in Italian. In German, grammatical aspect is not overtly marked (the Präteritum and Perfekt can be used with both perfective and imperfective readings), and the present is polysemous as well. However, German marks telicity overtly through prefixes or verbal particles, but not as regularly as Slavic languages.

Bertinetto *et al.* (2015) analysed the longitudinal data of 3 Italian children (Camillo 2;0-3;6, Raffaello 1;7-2;11, Rosa (1;7-3;3) and 1 Austrian child (Lena 1;7-2;7). The study provided several lines of argument for the Morphology Sensitive Model and against the Aspect First Hypothesis. One of them refers to the fact that the distribution mentioned in (1) appears only if one counts the global percentages of telic *vs* atelic predicates, not if one looks at the distributions of individual situation types (activities, states, etc.). Specifically, Bertinetto *et al.* 2015 claimed that the distribution of some atelic predicates, namely activities, in child Italian and German does not conform to the pattern: activities are not generally found in imperfective contexts, as, for three out of the

four children included in the study, the perfective uses of activities were more frequent than the imperfective uses. (With respect to states and telic predicates, the former were associated to imperfectivity, and the latter to perfectivity, as expected in the framework of the Aspect-First Hypothesis – Bertinetto *et al.* 2015: 1143). However, if the rates for states and activity predicates were added up, the feature atelicity still correlated with imperfectivity. The authors countered this by saying that atelicity cannot be the driving force for the correlations, since activities are atelic and they do not behave as expected.

The way in which the four children used activities was a mirror image of the adult input and did not conform to the AFH. Activities were more frequently used in perfective contexts, and this correlated with the input throughout the time window investigated (contrary to the Prototype account which predicted that the distribution in (1) would be relaxed based on the input – Shirai and Andersen 1995).

5. Research questions and predictions

This paper focuses on the first argument that was put forth by Bertinetto *et al.* (2015) for the Morphology Sensitive Model (MSM), namely the idea that the distributional correlations in (1) disappear if one considers the contextual uses of individual situation types. The question we ask is whether there is a preference for activity predications to occur in perfective contexts as suggested by the MSM or whether they are preferentially distributed in imperfective contexts, as predicted by the Optimal Computation Model.

Since situation type aspect is a covert category in Romanian, according to the MSM, its acquisition should be delayed and proceed more slowly than the acquisition of temporality or grammatical aspect. Since activities are not overtly marked, the prediction that can be made based on the MSM is that there is no correlation with imperfectivity. If children are not aware of the atelicity of these predicates, they should show no preference with respect to the contexts in which they appear.

6. The data

The data on which the analysis was run is part of a larger longitudinal naturalistic corpus. The child is a boy, Iosif, and he was recorded weekly or once to three times a month by Ioana Stoicescu (Stoicescu 2013), starting at the age of 1;10 up until the age of 3;4. The recordings were done for one hour in most cases. The child spoke to his parents, great-grandmother, brother or the experimenter. Iosif's corpus has not been fully transcribed – there are only 18 transcribed files available, of which only 15 could be used for the purposes of this study. The earliest files did not contain activity predicates that could

be unambiguously identified as having a perfective or imperfective contextual interpretation. Table 1 provides information about the age range and the number of child utterances in the files analysed. Table 2 informs about the ages at which the recordings were done and the respective *Mean Length of Utterance* (MLU) for each file. The MLU was calculated as the ratio of the number of words over number of utterances. Since the data were not morphologically coded, the number of morphemes could not be taken into account when calculating MLU. The next section discusses the research methodology.

Child	Source	Age range	Recording sessions used	No. child utterances
I.	Stoicescu corpus (Stoicescu 2013)	2;0.23 -3;1.13	15	8182

Table 1: Child data

7. Methodology

In the literature on the acquisition of aspect, the counts of imperfective *vs* perfective contexts are usually done by taking into account the overt morphological marking (i.e., present tense or progressive marking *vs* past tense marking) without regard for the aspectual interpretation *per se* – whether the context of use of the respective predicate generates a perfective or imperfective interpretation. This was, for instance, the method used by Stoicescu (2013). However, in Romance languages, as Bertinetto *et al.* show, many of the tense-aspectual forms are polysemous, allowing multiple interpretations. For instance, the present tense can have both imperfective interpretations – if the situation described with the present tense is ongoing at speech time – and perfective interpretations (for instance, if the present is used with a future interpretation). A methodological novelty introduced by Bertinetto *et al.* (2015) was that the type of inflectional marking produced by the child was not the crucial factor taken into account in order to determine whether the pattern existed. What mattered was whether the whole sentence had a perfective or imperfective reading. Adopting this methodology, in this paper, we will also take into account the perfective or imperfective interpretation of the activity in the context in which the predicate occurs rather than the inflectional marking of the predicate.

Since the hypothesis that was tested referred to the relationship between the activity situation type and the interpretation it elicits in child speech – whether it is generally perfective or imperfective – it was necessary to identify the activity predicates produced by the child and to assess the readings they were contextually assigned.

The verbal utterances that contained indicative predicates were

analysed in terms of situation type aspect and the activity predicates were selected. In order to do the selection, the compositionality of aspectual interpretation was taken into account. The analysis did not consider the verbs alone, rather the verbs in their interaction with their internal arguments. Although the subject and temporal adjuncts are also relevant for aspectual interpretation, we found no predicates in which these constituents played a role, since the child's productions had minimal syntactic complexity.

The analysis focused on predicates in the indicative mood, as this is the mood for which the imperfective/perfective distinction is most relevant. The indicative tense-aspect forms that the child produced were the *present, perfect compus, imperfect, pluperfect* and the future. After identifying the predicates in these forms, we determined whether they belonged to the activity class by checking whether they had the features dynamism, duration and atelicity. This was done using the tests listed in (6), which were proposed in the literature as tools for the differentiation of situation types (Dowty 1979, Smith 1991).

(6) a. Dynamism – the predicate can be used in the imperative
     b. Atelicity – the predicate is compatible with the *timp de x* 'for x time' adverbial and is not compatible with the *în x* 'in x time' adverbial
     c. Duration – if the predicate is compatible with *timp de x* 'for x time', the time adverbial does not induce an iterative reading.

The first test was used to distinguish activity predicates from stative predicates which are also atelic but not dynamic and not usually grammatical in the imperative (7a). Activities are, however, dynamic and are compatible with this mood (7b).

(7) a. *Ştii răspunsul!
        know-imper. answer-the
        'Know the answer!'

     b. Cântă!
        sing-imper.
        'Sing!'

Romanian does not have progressive morphology, which can be used in English to separate the stative class from activities, but, although the imperative is not a purely aspectual test, as it is usually included in a larger battery of diagnostics that assess agentivity, it is a relatively safe way to identify dynamic predications.

Atelicity is evaluated using the adverbials *for/in x time*. As can be seen below, activities are compatible with *for x time* and do not co-occur with *in x time* (8a); moreover, unlike non-durative semelfactives (8b), they only have single event readings in this context (8a).

(8) a. A cântat timp de zece minute/*în zece minute (single event reading)
          has sung time of ten minutes/in ten minutes
          'He sang for ten minutes/*in ten minutes.'

     b. A tușit timp de zece minute (iterative reading)
          has coughed time of ten minutes
          'He has coughed for ten minutes.'

Taking an example from the child corpus, in (9a), we see an instance of an activity predicate based on the intransitive verb *a dormi* 'sleep', used imperfectively. The predicate is dynamic, as it can occur in the imperative (9b); it is also atelic and durative since it is compatible with *for x time* rather than *in x time* (9c), without the former adverbial inducing an iterative interpretation.

(9) a. Uite, doarme. Iosif 2;7.20
          look sleep.pres.3sg
          'Look, it is sleeping.'

     b. Dormi!
          sleep-imper.2sg
          'Sleep!'

     c. A dormit timp de o oră/*într-o oră. (single event reading)
          has slept time of an hour/ in an hour
          'It slept for an hour/*in an hour.'

The next step was to assess whether the interpretation assigned to the activity predicate was perfective or imperfective. This was done following the methodology described in Bertinetto *et al.* (2015), while also taking into account the potential aspectual interpretations of Romanian indicative tenses that have been described in the literature (Giurgea and Stoicescu *forthcoming*). For instance, for present tense activity predicates, the interpretation was coded as imperfective if the event was ongoing at speech time or habitual. This was determined by considering the larger discourse context and the comments made by the transcriber. If the child talked about future events or events that he intended to engage in using the present simple, the sentence was coded as perfective (Bertinetto *et al.* 2015). If the event referred to was past but rendered through the present, it was also deemed perfective.

The *perfect compus* sentences were coded as perfective, since this temporal-aspectual form has a strong perfective meaning (Stoicescu and Dressler 2022), and, thus, none of the activity sentences attested in this tense could admit an imperfective reading. The *imperfect* predicates were counted as imperfective if they referred to events in progress at a past moment of reference. Habitual activities were not described with the *imperfect* in the data we analysed. The *imperfect* can

have modal interpretations as well – in pretend games (the imperfect of play – Ippolito 2004) and counterfactual contexts. The child produced many such sentences but these examples were excluded from the analysis, because their semantic core is modal rather than aspectual. There were very few future activity sentences, and they were coded as perfective, assuming that the speaker takes a holistic view of the situation when referring to the future. No activities were found in the pluperfect. We excluded sentences with activity predicates for which it was not possible to establish whether the assigned reading was perfective or imperfective. We also excluded predicates based on the verb *sta* 'stay', which were also excluded by Bertinetto *et al.* (2015) because of their intermediate status (stative predicates that allow a degree of agentive control). No semelfactive predicates were included in the analysis.

We also excluded from the analysis repetitions, sentence fragments, and formulaic utterances, as well as song or poem fragments, as the focus was on spontaneous child speech. A child utterance was regarded as a repetition if it was an exact imitation of what the adult said, but not if it was a partial repetition, in which the child preserved only some of the elements in the adult utterance, while recasting it on his own terms. The count was done using tokens rather than types.

8. Results and discussion

The analysis showed that the number of child sentences in which activities had an imperfective interpretation was higher than that of perfective activity utterances. This finding was generally valid for both individual files, as well as overall counts. Figure 1 presents the percentages of activity predicates with an imperfective and perfective interpretation for each recording, from the age of 2;0 to 3;0. More details about the data (full age, MLU, raw numbers and total raw numbers and percentages of perfective and imperfective contexts) can be found in Table 2.

As can be seen in Figure 1, in nine of the fifteen files under analysis, the imperfective uses of activities outnumbered the perfective ones. There were only six files in which the perfective uses were more numerous, namely those recorded at 2;2.13, 2;4.10, 2;5.12, 2;6.15, 2;11.18, and 3;0.15.
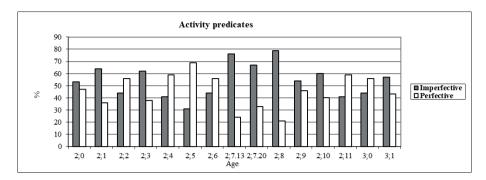
Figure 1: Percentages of imperfective *vs* perfective uses of activities in Iosif's corpus

The same pattern can be observed for the whole corpus. As can be seen in Table 2, the total percentage of imperfective activity sentences is slightly higher than that of perfective activity sentences. The child produced 53% contexts in which activities had an imperfective meaning and 47% contexts in which the interpretation was perfective.

Age	MLU	Imperfective (%)	Perfective (%)	Total no. of predicates
2;0.23	1.418	53 (N=8)	47 (N=7)	15
2;1.13	1.756	64 (N=7)	36 (N=4)	11
2;2.13	2.552	44 (N=8)	56 (N=10)	18
2;3.12	2.124	62 (N=13)	38 (N=8)	21
2;4.10	2.631	41 (N=9)	59 (N=13)	22
2;5.12	3.136	31 (N=5)	69 (N=11)	16
2;6.15	3.631	44 (N=4)	56 (N=5)	9
2;7.13	3.797	76 (N=13)	24 (N=4)	17
2;7.20	3.828	67 (N=6)	33 (N=3)	9
2;8.13	3.613	79 (N=11)	21 (N=3)	14
2;9.10	3.205	54 (N=14)	46 (N=12)	26
2;10.09	3.148	60 (N=9)	40 (N=6)	15
2;11.18	3.627	41 (N=9)	59 (N=13)	22
3;0.15	3.807	44 (N=12)	56 (N=15)	27
3;1.13	2.912	57 (N=8)	43 (N=6)	14
Total		**53 (N= 136)**	**47 (N= 120)**	**N = 256**

Table 2: Percentages of imperfective *vs* perfective uses of activities with raw numbers in Iosif's corpus

The child used the Romanian tenses as they would be employed in the adult language, with the only difference that the range of uses was narrower than in the adult language. The present was mainly found in three contexts: a) situations that were ongoing at speech time (10a); b)

in habitual contexts (10b); c) as a means to refer to the imminent future (10c). One should note that Iosif often used the present to express his intention to do a certain act (either in the near or more remote future). All such volitional contexts were coded as perfective because in such cases the event was viewed externally and globally.

(10) a. Adică cântă. Iosif 2;8.13
meaning sings
'Which means it is making noise.'
[the boy is pushing a button to make a toy make noise]

   b. Da, Luca doarme… pe şobolani. Iosif 2;8.13
yes, Luca sleeps on rats
'Yes, Luca sleeps on rats.'
[Luca is a poor boy from a song that the child knows]

   c. Păi acuma merg cu maşina de pompieri. Iosif 2;8.13
well now go-pres.1sg with car-the of firemen
'Well now, I am going to go on the firetruck.'
[the event is imminent; the child expresses his intention to start moving the firetruck]

One of the difficulties of the analysis of the present tense utterances was determining whether the meaning intended by the child was ongoing – imperfective or future – perfective. The larger discourse context was used as a clue to discriminate between the two uses. The corpus also contained commentary (%com) or explanation lines (%exp) which clarified whether the event was intended or in progress. For instance, in (11a), the present was produced by the child to indicate his intention to play the violin in the imminent future, and the sentence was coded as perfective because the child had a holistic perspective upon the event. In the previous sentence, Mother had indicated that she wanted to help the child hold the violin, a fact reiterated by the explanation line, and the commentary line clarified that the child utterance referred to an intention and had not actually started playing. This confirmed that coding this utterance as perfective was correct. However, (11b) was coded as imperfective because the event was ongoing, as shown by the activity line (act%), which describes the acts undertaken by the participants.

(11) a. Mother: Dă să-ți țină mama.
give SUBJ cl-2sg.DAT hold-subj.3sg mother-the
'Let mummy hold it for you.'
%exp: Mother helps the child to hold the violin
Child: Eu cânt. Iosif 2;0.23
I play-pres.1sg
'I am going to play.'
%com: not while playing, intention

    b. Child: Eu cânt. Iosif 2;0.23
        I play-pres.1sg
        'I am playing.'
        %act: stops playing to say this, continues to play for a little while,
        then stops

The habitual present tense utterances, which were coded as imperfective, mainly referred to the habits of familiar entities from the child's close environment. The child described the typical actions of toys (12a), his family (12b), or fictional characters (10b).

   (12) a. Pis(t)olu(l) face (z)gomot. Iosif 2;1.13
          gun-the makes noise
          'The gun makes noise.'

        b. Noi bem de [*] s(t)ic(l)ă. Iosif 2;1.13
          we drink of bottle
          'We drink from the bottle.'

    Activities in the *perfect compus* were naturally used in perfective contexts (13), and activities in the *imperfect* generally occurred with an imperfective meaning, as a way to refer to events that were ongoing at a past moment of reference (14). In (14), the child referred to an event in which he saw a girl singing into a microphone during a walk in the park. No activities in the *imperfect* with a habitual interpretation were attested. Activities in the future were very infrequent and were used with a perfective interpretation (15).

   (13) Eu am mâncat! Iosif 2;9.10
        I have eaten
        'I have eaten.'

   (14) Aia era o fată pe care cînta la microfon. Iosif 3;1.13
        that be-imp. a girl on who sing-imp. at mike
        'That was a girl who was singing into a mike.'
        [describing an event that had occurred the previous day during a walk
        in the park]

   (15) Eu o să rîd! Iosif, 2;10.09
        I will SĂ laugh
        'I will laugh!'
        [Iosif is talking about what he will do when he listens to the recording
        of himself when he grows up]

    The activity sentences were generally based on intransitive verbs as can be seen above in (10a-b), but also included light verb constructions based on the verb *a face* 'do' – followed by a mass noun object in (12a) or an onomatopoeia (16). Other constructions that were

found in the child's output included reflexive verbs (17) or transitive verbs that selected clitic objects (18):

(16) Și cățelul făcea (h)am+(h)am. Iosif 2;3.12
    and dog-the do-imperf.3sg woof-woof
    'And the dog went woof-woof.'

(17) Ne jucăm cu... Iosif 2;3.12
    refl.2pl play-pres.2pl with
    'We play with...'

(18) Aron mă înregistrează. Iosif 2;3.12
    Aron cl.2sg.ACC record-pres.3sg
    'Aron is recording me.'

Iosif's use of activities generally conformed to the pattern in (1), with imperfectivity being generally associated to atelicity, although the pattern was reversed in some of the files. What can be noted is that, even in the files in which the pattern was reversed, the percentages of both perfective and imperfective sentences stayed close to 50%. The child's use of activities did not change with age, but remained oscillatory, with the tendency to prefer imperfective contexts of use, both at young ages, as well as towards the end of the recording period. There was no evidence of a stronger correlation between activities and imperfectivity at earlier ages than at older ages. The child was equally adept at using activities with both aspectual readings, with a preference for imperfective contexts, at all ages.

The Romanian child data analysed so far do not support the Morphology Sensitive Model, more specifically the idea that the distributional pattern according to which atelicity correlates with imperfectivity in child language is only an artefact of the global count of all three atelic situation types (states, activities, semelfactives). Instead, it provides support for the Optimal Computation Model. Activities emerged preferentially in imperfective contexts in Iosif's data, even though their use in perfective sentences was substantial. The notion that there is a distributional correlation between atelicity and imperfectivity in child Romanian is confirmed once again, as it is clear that it is not only a matter of the child associating certain inflections with atelicity (as previously argued in Stoicescu 2013). The analysis showed that Romanian children also preferentially associate activities to contexts in which imperfective meaning is elicited.

The data confirms that Romanian speaking children have an early sensitivity to both the atelicity of activities and imperfectivity as semantic categories, as they tend to align the two in their production of verbal utterances. At the same time, one cannot argue that situation type aspect features such as (a)telicity are recognized by the child before grammatical aspect features, contra the (Situation)

Aspect First Hypothesis. It is more likely that the two subdomains of aspectual competence develop in parallel because the data we have looked at do not indicate an absolute alignment of activities with imperfective contexts; remember that a significant percentage of activities are also employed in perfective contexts. This means that the child does not have a rigid non-adult-like representation of the relations between situation types and grammatical aspect. Through acquisition, the child simply enlarges the range of imperfective and perfective uses that (s)he assigns to various aspectual classes of predicates.

9. Conclusions

The study showed that, in child Romanian, there is a tendency to associate activity predicates with contexts in which an imperfective meaning is assigned, as predicted by the Optimal Computation Model. This finding goes against the claims of the Morphology Sensitive Model that stated that individual situation types such as activities have a high likelihood to be attested in perfective contexts. The study also showed that Romanian children do not regard certain tense-aspect forms as markers of a specific situation type, contra the Aspect First Hypothesis – the results indicated that children were able to use the same situation type, activities, with almost all indicative tenses used in the adult language.

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