

## Verbal aspect in Serbian children's language production

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Previous studies have shown that an early usage of verbal aspect in children's spontaneous production is regularly observed in Slavic languages. However, this leads to the question whether the bare presence of aspect in early utterances is firm evidence that a child has acquired it. In order to show that the acquisition of aspect in Serbian is a process that lasts for several years, elicited production was inspected in children that had already achieved an apparent progress in language (3–5 year-olds). The comparisons with adults were made and several indicators of development were observed: a) the distribution of aspectual forms in children's and adults' language, b) the ability of functional usage of aspect in narrative, and c) the mastery of contrasting aspectual pairs. The findings provided the ground to propose three developmental stages assumed for the acquisition of Serbian aspect, and possible underlying mechanisms of development are discussed.

*Keywords:* verbal aspect, language acquisition, elicited production, Serbian language

### Highlights:

- The first experimental study on verbal aspect acquisition in Serbian
- 3 relevant indicators identified for observing aspect acquisition
- While detected early in child language, aspect acquisition continues in preschoolers
- 3 developmental stages in the acquisition of Serbian aspect are proposed
- Different mechanisms of verbal aspect acquisition are dominant at different ages

The acquisition of verbal aspect in child language development has been an intriguing question in the last four decades, which triggered numerous

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studies in different languages. The core questions in the field are based on the conjunction of verbal tense and aspect, coming from the fact that both refer to temporal properties of an event in reality.

Reporting on temporal properties of an event entails determination of *when* something happened (tense), but also *how* it happened or was happening, how it configures and resides in a time interval. The bearer of this function in language – *verbal aspect*, can be defined as a non-deictic temporal category referring to duration and inner temporal organization of an action, state or event denoted by a verb (Comrie, 1976; Mrazović & Vukadinović, 1990; Peškovskij, 1956; Stanojčić, Popović, & Micić 1989). Li and Shirai (2000) point out the difference between tense and aspect: in contrast to tense, which is concerned with the relationships between situations at different time points, aspect is the mean by which speakers discuss a single situation, for example, as beginning, continuation or completion.

Different languages have different solutions for the grammaticalization of tense/aspect concepts, so this pairing is historically nested and morphologically overlapped in some cases (e.g. English, French, Italian, Japanese, Turkish), but is independent and morphologically differed in others (e.g. Slavic languages) (Bybee, Perkins, & Pagliuca, 1994; Dahl, 1985).

In language production, tense and aspect categories are intertwined and this relation emerges from the nature of the events they denote, i.e. characteristics of the extra linguistic surrounding and its cognitive representations (see Dahl & Velupillai, 2013; Wagner, 2012). The interaction of these categories and the different means of their realization, cross-linguistically make their functional separation in early child language very difficult and instigate complex research problems, which produce a large number of, very often, incompatible and disputable data. The main questions in this area of research can still be argued: do children from early on discriminate different semantics of these categories and do they use them in the way that adults do in their speech. We will focus our research on the last question and the way that children of different ages use verbal aspect in production compared to adults.

### **Perfective/Imperfective Aspectual Forms**

A relevant distinction within the aspect category is between grammatical (viewpoint) and lexical aspect (type of verbal situation, Aktionsart). "The grammatical aspect is a system for classifying utterances according to the perspective or viewpoint that they convey to the listener" (Comrie, 1976; Smith, 1997, as cited in Johnson & Fey, 2006, p. 421) and it is often marked explicitly by linguistic devices, usually auxiliaries and/or inflectional and derivational morphology. It is divided into two perspectives – perfective vs. imperfective. The imperfective emphasizes the process of action unfolding (e.g. *She was making<sup>imperf</sup> a cake for half an hour.*), while the perfective is focused on action or event ending (e.g. *She made<sup>perf</sup> a cake in half an hour.*). The function of the

imperfective in narrative is to set the background, the scene where the actions develop, while the role of perfective is to move the action and narrative along in time (Berman & Slobin, 1996; Wagner, 1997, 1998). The communicative function conveyed by aspectual contrasts is to separate more important from less important information in a story (Slabakova, 2002). The lexical aspect (type of verbal situation, Aktionsart) concerns the temporal constituency of events, and will be described in more detail later in the text.

In Slavic languages, including Serbian, the aspectual value of a verb is an inherent part of a lemma and its semantics. Each Serbian verb in finite forms, as well as in infinitive, has its aspectual value independent of its grammatical context. For example, morphologically simple verbs like *dati* ‘give’, *baciti* ‘throw’ have perfective meaning, while verbs like *pisati* ‘write’, *kucati* ‘knock’, also morphologically simple, have imperfective meaning. Derivational processes of perfectivization and imperfectivization change aspect of perfective and imperfective verbs in both directions. Most of Serbian verbs have aspectual pairs, i.e. the same meaning can have both perfective and imperfective lemma (e.g. *prati*<sup>imperf</sup> ‘wash<sup>imperf</sup>’ vs. *oprati*<sup>perf</sup> ‘wash<sup>perf</sup>’; *dati*<sup>perf</sup> ‘give<sup>perf</sup>’ vs. *davati*<sup>imperf</sup> ‘give<sup>imperf</sup>’) which enables contrasting for the purpose of narrative (Mrazović & Vukadinović, 1990; Stanojčić & Popović, 2000; Stevanović, 1969).

### Lexical Aspect: Type of Verbal Situation

Many linguists emphasize that the aspectual value of verbs is partially contained in its semantics, since the aspect is also partially a lexical property of the verb (Comrie, 1976; Ridjanović, 1976). For this property, different terms are used in the literature – Aktionsart, type of verbal situation, lexical or inherent aspect. Type of verbal situation is a lexical category, which denotes the manner of realization of the verbal situation, nature of that situation and its objective characteristics (Novakov, 2005). It is an inherent feature of verb or verbal phrase semantics and most languages do not have formal markers for it. Lexical aspect is relatively similar while grammatical aspect differs widely across languages (Li & Shirai, 2000).

Telicity is a lexical semantic property of predicates and it indicates whether an event has an inherent endpoint or boundary. The primary semantic division is between telic and atelic predicates. Telic predicates refer to events that possess an endpoint, while atelic predicates refer to all events without an endpoint (Wagner, 2006, 2009).

Taking telicity as the basis of the division, Vendler (1967) has proposed a classification of verbs into four types of verbal situations with respect to the temporal properties that they encode (Aktionsart or Time Schemata):

- *Achievements* – takes place instantaneously and is reducible to a single point in time (e.g. *prepoznati* ‘recognize’, *umreti* ‘die’);
- *Accomplishments* – has some duration, but has a single clear inherent end-point (e.g. *sagraditi* kuću ‘build a house’, *pretrčati* kilometar ‘run a kilometer’);

- *Activities* – has duration, but with an arbitrary endpoint and is homogenous in its structure (e.g. *pevati* 'sing', *hodati* 'walk');
- *States* – has no dynamics, and continues without additional effort or energy being applied (e.g. *voleti* 'love', *znati* 'know');

In Vendler's system, telic predicates include accomplishments and achievements while atelic predicates include states and activities<sup>2</sup>.

### Acquisition of Verbal Aspect

Research findings from different language groups offer an inconsistent picture on aspect acquisition. The empirical results in Germanic and Roman languages have shown that young children use the past tense perfective markers (*passé composé* and *past participle*) as a tool for referring to completeness. This influenced the researchers to claim that the category of verbal aspect is acquired before the category of tense – *Aspect before Tense Hypothesis* (Antinucci & Miller, 1976; Bloom, Lifter, & Hafitz, 1980; Bronckart & Sinclair, 1973; Olsen & Weinberg, 1999; Rispoli & Bloom, 1985). On the other side, the results in Slavic languages supported a view of early and independent acquisition of two categories, tense and aspect. Researchers in Slavic languages were prone to interpret the bare presence of verbal aspect in early child speech as a sign that a child has acquired and mastered it (Bar-Shalom, 2002; Bar-Shalom & Snyder, 2002; Gagarina, 2000; Vinnitskaya & Wexler, 2001; Weist, Wysocka, Witkowska-Stadnik, & Buczkowska, 1984; Weist, Wysocka, & Lyytinen 1991). The inconsistency in the findings was supported by the fact that the differences could be explained by different linguistic realization and marking of tense and aspect in Slavic and non-Slavic languages. Namely, in Slavic languages there is separate morphology for marking tense and aspect, while in Roman and Germanic languages it is confounded. Another important difference is that, in Roman and Germanic languages, verbal aspect is a grammatical category (marked with an inflectional morpheme, or an auxiliary verb and an inflectional morpheme), while in Slavic languages, each verb lemma bears certain aspectual meaning i.e. it is a lexical category. As a consequence, it could be expected that in Roman and Germanic languages aspect appears in child language later because expressing aspectual contrast requires a certain level of grammatical development (at least the level of two or three word sentences), while in the language of Slavic children it is already present with the onset of the first verb lemmas. Lexical realization of aspect and separate markers for it could support the interpretation of early mastery of this category in Slavic languages. In addition, it could be supported by the finding that the acquisition of language

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2 The traditional perspective (Brecht, 1985) claims that Vendler's classification overlaps with the distinction perfective/imperfective. The advocates of another perspective (Braginsky & Rothstein, 2008; Eckert, 1985; Filip, 1999; Paducheva, 1996) claim that there is no overlap between the lexical class of verbs and grammatical aspect. In this paper, we applied the traditional perspective.

categories is faster when clearly differentiated from other categories due to the unique language markers for certain meanings (Clark, 1993; Pinker, 1984; Slobin, 1985).

Such a diverse picture on early acquisition of tense and aspect in these language groups is partially based on, sometimes, wrong interpretations and disallowed comparisons made by researchers on both sides, and confusions on the terminological and conceptual plan (see Wagner, 1998). In our opinion, it is also a consequence of the lack of integration of data on language development with data on cognitive and pragmatic development. When it is said that a child has completely mastered some language category, it is assumed that he/she is able to use it and understand it in a way that adults do, i.e. that adequate mapping of language forms to segments of reality is established (form-meaning mapping), and that it is consistently manifested in production, as well as in comprehension. This phase of complete mastery of a language category could be preceded by phases when a child has acquired a certain concept but still does not succeed to express it in language, or when the child uses certain language forms but actually does not understand its meaning and uses it only in certain contexts („use before meaning“, Nelson, 1991, 1996).

However, such a view of acquisition of certain language categories was not always the common ground for researchers in the field of aspect acquisition. Certain authors made conclusions about the process of aspect acquisition taking into account only aspect production (most often in spontaneous speech, Bar-Shalom, 2002; Bar-Shalom & Snyder, 2001; Gagarina, 2000; Gvozdev, 1961) or only comprehension (Kazanina & Phillips, 2007; Weist et al., 1991). Instead of being interpreted as complementary data that reveal development of different processes of production and comprehension, discordant results from these two types of tasks were often attributed to differences in languages or to the different research methodologies.

In our opinion, an important contribution to a more complete picture on acquisition of aspect comes from research within the functionalist approach (Li, 1990; Li & Bowerman, 1998; Li & Shirai, 2000; Shirai & Miyata, 2006; Stoll, 1998, 2001, 2005). They identified two relevant factors that influence acquisition: the **language input** that a child is exposed to, and **pragmatic factors**, i.e. the context in which aspect is acquired and investigated. The influence of these two factors can explain the early presence of aspect in spontaneous production (language input), and the differences in children's competences by taking into account the context in which aspect is investigated (pragmatic characteristics of tasks).

Research on aspect acquisition in Serbian was conducted only on spontaneous production at early ages. The data gathered in longitudinal studies, as in other Slavic languages, show early presence of aspect in child language (Putnik, 2009; Radulović, 1975). Putnik's study (2009) in Serbian has also confirmed the regularities found in other languages about the relation between tense and aspect in early language: when referring to the past, children use perfective telic verbs, while for the present they use forms of present tense with imperfective atelic verbs.

Having in mind different linguistic tools for the expression of aspectual values in Serbian, which include Aktionsart, perfective/imperfective forms, and aspectual pairings, the aim of our study was to explore its acquisition in the course of child language development. It is conceived as a prolonged process that takes more than an early onset of usage of verbs with accompanied aspectual values, and several developmental stages are proposed. We also assumed that the acquisition of different linguistic tools is based on different psychological underpinnings, so some underlying processes will be discussed.

### Elicited Production Study

The aim of our experimental study was to identify indicators of aspect acquisition in Serbian. We aimed to examine how and to what extent children at different ages mark aspectual contrasts in elicited descriptions of events, and to make comparisons with adults' production. The following comparisons between children (3, 4, 5 years) and adults were conducted with expectations to gain insights into the developmental trends during aspect acquisition:

A. *Comparison of distributions of perfective and imperfective forms;*

The main characteristic of the preschool age children that we tested in this experiment is intensive cognitive and language development, which influence the way that children perceive situations, what they see as relevant in them, and what they succeed to convey by means of their limited language. Similarities or deviations of children's distributions of aspectual forms from stable, developed systems in adult language can give us the ground to discuss potential mechanisms of acquisition.

B. *Comparison of distributions of type of verbal situations;*

This comparison can allow us a finer inspection of what exactly children refer to when using aspect; in other words, how they see the temporal organization of events compared to adults and what characteristics of events' temporal structure are noticed and marked.

C. *Usage of aspectual pairs in event description at different ages for the purpose of aspectual contrasting in event description;*

As mentioned before, in Slavic languages both aspectual forms (perfective/imperfective) are present early in the child's lexicon and used adequately in a given context (Gagarina, 2000, 2004; Vinnitskaya & Wexler, 2001). Because of this, it may seem that a child adequately masters aspect from early on. It is questionable, however, whether a child is able to use both forms of aspectual pairs (e.g. *pravio*<sup>imperf</sup> 'was making<sup>imperf</sup>' vs. *napravio*<sup>perf</sup> 'made<sup>perf</sup>') willingly in a narrative in order to functionally contrast complete and incomplete actions. The usage of aspectual pairs in descriptions of actions and events at different ages could give us a further insight into the developmental dynamics of verbal aspect.

#### D. Ability of functional usage of aspect in narratives at different ages

The ability of marking aspectual contrasts is best expressed in the construction of narratives. The way a child builds a narrative reveals how temporal properties of a situation are perceived, what is considered as important and how it is described by means of aspectual markers. We searched for differences in structural properties of narratives produced by children of different ages while describing certain events.

### Method

**Participants.** The sample consisted of 30 children attending a Belgrade kindergarten, 10 per each age group: 3 years (mean age 3;2, range 2;9 – 3;6), 4 years (mean age 4;1, range 3;8 – 4;4), 5 years (mean age 5;1, range 4;8 – 5;4) and a convenience sample of 10 adults (mean age 42, range 28 – 61). The parents of all children signed a written consent form agreeing that their child may participate in the experiment. Along with the consent form, parents received an information sheet about the aims of research and the procedure. The final recruitment of children was based on voluntary participation.

**Materials.** Short non-verbal cartoons for preschool age children from the serial „*Die Sendung mit der Maus*“<sup>3</sup> (Show about a mouse) were used for elicitation of language. The cartoons were chosen because of their interesting and appealing content for children. Seven cartoons were used in the experiment and two additional ones as practice for introducing the children with the task and the experimenters. In each cartoon, two or three characters (mouse, elephant and sometimes a bird) were involved in a sequence of several actions. The duration of the cartoons was 31–84 seconds each and they were presented in two randomized orders in all age groups.

**Procedure.** The study was approved by the Council for Ethical Issues of Psychologists of Serbia. The experiment was performed in a separate, quiet room of the kindergarten, with an approval from the preschool institution management. It was conducted with each child individually. The instruction given to each child at the beginning of the experiment stated that he/she would watch the cartoon on the computer and afterwards is supposed to tell the experimenters what happened in the movie. After each of the nine movies, the experimenter asked the child: *Šta se desilo u ovom crtanom filmu?* ‘What happened in this cartoon?’. The presented material and the procedure were age appropriate, and could not do any harm to the children.

**Data analysis.** The children’s productions were recorded and transcribed into the electronic form according to CHILDES format (MacWhinney & Snow, 1985). Verbs were automatically lemmatized using the Corpus of Serbian Language (Kostić, 2001) and then extracted from transcripts (CLAN program). Additional manual coding was done for perfective/imperfective forms and type of verbal situations according to Vendler (1967).

Statistical analyses (ANOVA) were performed on extracted data.

### Results

**Production of aspectual forms at different ages.** We aimed to examine whether children and adult competent speakers use the same or different proportion of aspectual forms while describing events.

3 The authors of the cartoons are: Dieter Saldecki, Gert Kaspar Müntefering, Armin Maiwald; production WDR, RBB, SR, SWR, <http://www.wdrmaus.de/>



Figure 1 shows that perfective verbs dominate at all ages (59 – 73%) in comparison to imperfective (27 – 41%).

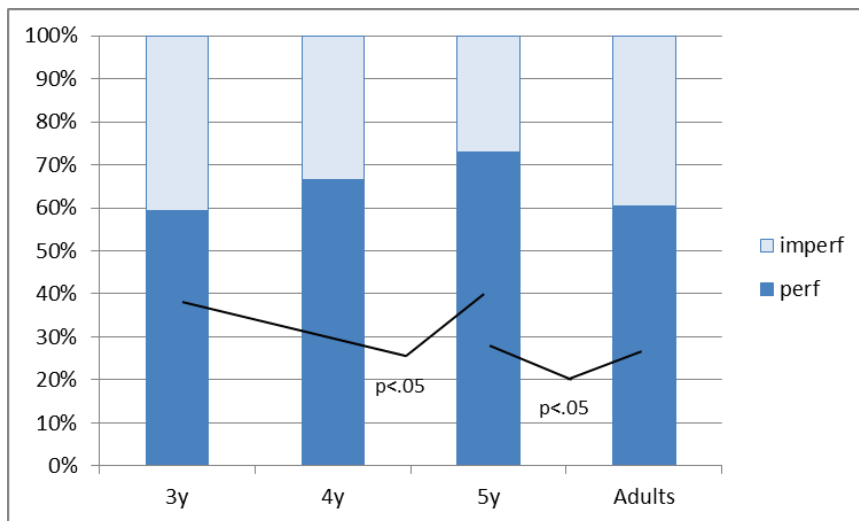


Figure 1. Percentage of perfective and imperfective lemmas per age

Analysis of variance, with the percentage of perfectives per age group as the dependent variable, showed that the effect of age was significant,  $F(3,36) = 2.96$ ,  $p = .045$ ,  $MSE = 136.65$ ,  $\eta_p^2 = .198$ . The Scheffe post-hoc tests showed no significant differences between ages, while the LSD post-hoc test revealed a significant difference between the ages 3 and 5,  $p = .012$ , and 5 and adults,  $p = .023$ . The same analysis without adults revealed a significant age effect,  $F(2,27) = 3.416$ ,  $p = .048$ ,  $MSE = 141.96$ ,  $\eta_p^2 = .202$ , and post hoc tests showed significant differences between ages 3 and 5, Scheffe  $p = .048$ , LSD  $p = .015$ .

The trend observed here is that the proportion of perfective verbs, in the total sample of verbs, increases with age in children. The usage of perfective is more prominent in five-year olds in comparison to younger ages. Having in mind the function of perfective forms in narrative construction, these findings could be considered as an indication of development of the ability for storytelling, which is an actual developmental task for the five-year olds. It is interesting that the perfective/imperfective proportion at the age of three is the most similar to the adults' sample proportion, and that the older children in our sample deviate from it. We will comment this result later in the discussion on mechanisms of acquisition.

**Proportion of type of verbal situations at different ages.** The type of verbal situation can tell us more about the semantic properties that children mark in their production, or more precisely, which temporal features are attributed to the situation in the cartoons.



The verbs extracted from the age samples were classified in one of four categories of Vendler's classification: achievements, accomplishments, states, and activities. Verbs were classified according to the semantic tests that Novakov (2005) offered for the Serbian language. The classification was conducted by three independent estimators and the final decision was based on interpersonal agreement.

The analysis showed that the proportion of the categories is the same for all ages: the most frequent are achievements, than activities, accomplishments and states as the least frequent (Figure 2).

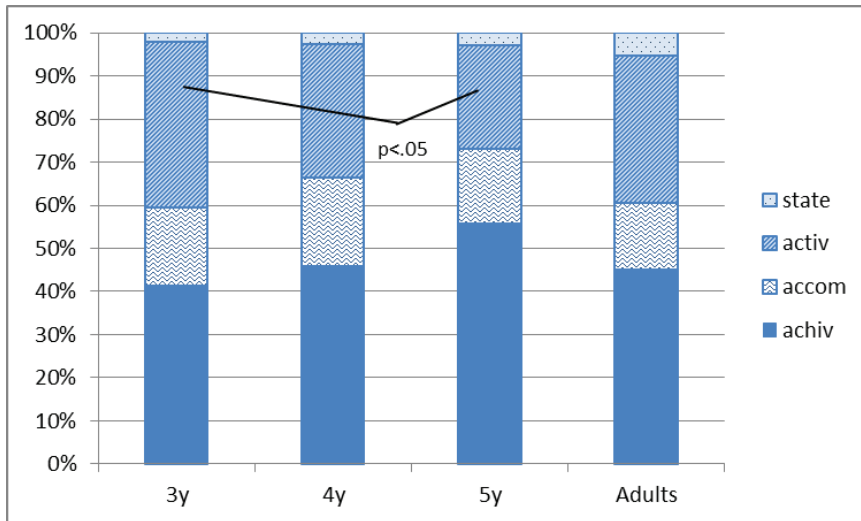


Figure 2. Percentage of type of verbal situation per age (based on Vendler's classification)

Analysis of variance on type of verbal situations showed significant age differences only in the category of activity verbs,  $F(3,36) = 3.167$ ,  $p = .036$ ,  $MSE = 116.24$ ,  $\eta_p^2 = .209$ , while the Sheffe post-hoc test showed significance only between the ages 3 and 5,  $p = .045$ . When analysis of variance was performed only on the children's sample (3, 4 and 5 years), it showed that the effect of age was significant for achievements,  $F(3,36) = 3.763$ ,  $p = .036$ ,  $MSE = 140.54$ ,  $\eta_p^2 = .218$  and activities,  $F(3,36) = 4.181$ ,  $p = .026$ ,  $MSE = 123.48$ ,  $\eta_p^2 = .236$ . The Sheffe post-hoc test showed significance between the ages 3 and 5,  $p = .041$  for achievements and  $p = .026$  for activities.

The finding that the 5-year-olds compared to the 3-year-olds used more achievements than activities reflects the effect previously found in the perfectives (analysis A). Namely, the 5-year-olds produced more verbs of achievements, which appertain to perfectives, while younger children had a higher proportion of activities, which are imperfective.

The interesting finding is that the category of achievements was more prominent in 5-year-olds compared to the younger children. The actual development for younger ages is an increase of the vocabulary and mastering of grammar, but 5-year-olds incorporate these developmental achievements from previous ages into the new developmental task – narrative construction, the ability to tell a more detailed and coherent story. It is clear that in the context of this developmental task, the achievement verbs are the most useful for the expression of flow and dynamics of activity in narrative. This finding will be supported later with the results of the analysis of narrative structure at different ages.

**The incidence and usage of aspectual pairs in event description.** The incidence of aspectual pairs at different ages is presented in Table 1. The total number of different aspectual pairs used in narratives on cartoons increases with age. At the age of three, individual children either did not use aspectual pairs or used them rarely (range is 0–2, Table 1).

Table 1  
*The number of aspectual pairs (AP) per age used in all stories and within the same story*

	<i>N of AP in all stories</i> <sup>5</sup>			<i>N of AP within the same story</i> <sup>6</sup>		
	<i>M</i>	<i>Min/Max</i>	<i>N of participants using AP</i>	<i>M</i>	<i>Min/Max</i>	<i>N of participants using AP</i>
<b>3 years</b>	1.2	0/2	7	0.9	0/2	7
<b>4 years</b>	2.5	1/5	10	1.1	0/2	8
<b>5 years</b>	2.8	0/7	8	1.2	0/4	5
<b>Adults</b>	9.4	3/14	10	4.8	2/9	10

Among children of all ages, there were those that did not produce any aspectual pair within the same story, but this was not the case with adults. Kruskal-Wallis nonparametric test showed significant differences between the ages (all cartoons),  $\chi^2(3) = 19.393$ ,  $p < .001$ ,  $\eta_p^2 = .497$ . In addition, there was a significant difference between the ages in the number of aspectual pairs used within the same story,  $\chi^2(3) = 18.467$ ,  $p < .001$ ,  $\eta_p^2 = .473$ . However, the analysis conducted only on the children's sample did not show any significant effect. That is, an increase in the number of aspectual pairs is not detected in 3 to 5-year-old children, but only in comparison to adults.

Therefore, the analysis on the aspectual pairs reveals that children do not use them functionally for the purpose of contrasting, as enabled by the mother tongue. When they want to express changes in duration or manner of action, even five-year-olds rarely use aspectual pairs with the same lexical basis. The results confirm the findings of Gagarina (2004) in Russian that although children use perfective and imperfective forms productively from an early age, there is no productive usage of aspectual pairs.

4 A participant may have used an aspectual form of one verb in one story and its aspectual pair in another story. The total number of aspectual pairs produced in all stories was counted.

5 Only aspectual pairs that participants produced in the same story were counted.

**Analysis of narrative structure.** Qualitative analysis of the obtained narratives allowed us to recognize three indicators as relevant for the purpose of inspection of content structure and complexity of a story and temporal properties of particular events. The children's narratives were classified into different categories on the basis of complexity, and each narrative was assigned a certain number of points (indicted in brackets):

*Indicator 1 – Narrative construction and reference to the main plot of a story*

- Child builds a well-integrated narrative referring to key components and different phases of an event, differentiating between the starting and ending state, and contrasting them by any language mean (2 points)
- Child refers to certain stages of an event, but an integration into a complete narrative is missing (1 point)
- Child is capable only of naming particular activities or aspects of an event (0 point)

*Indicator 2 – Independence in narrative building*

- Child independently forms narrative by any language mean and does not need any elicitation (2 points)
- Child needs experimenter's prompts and guidance to form a narrative (1 points)
- Even with guidance, child is not capable of forming a narrative (0 points)

*Indicator 3 – Functional usage of verbal aspect*

- Child functionally uses the verbal aspect in referring to certain components of a story, thus, making the perfective/imperfective contrasts (1 point)
- Child uses aspect only as an inherent lexical component of action naming (Aktionsart) (0 point)

Children's narratives for each cartoon were evaluated and assigned 0, 1 or 2 points for the first two indicators, and 0 or 1 point for the third. More points indicate a more developed narrative. The final score on one indicator is calculated by summing the scores for all seven stories.

The examples of transcripts of narratives for one cartoon (*Birthday cake*) for each age are presented in the Appendix, with the evaluation score for each indicator. The example of adult narrative is also presented, in order to illustrate the complete content of the stories.

Analysis of variance was performed on these scores with age as the independent variable. Results revealed a significant age effect for all three indicators: the *narrative construction* indicator,  $F(2,27) = 21.771, p < .001, MSE = 3.93, \eta_p^2 = .617$ ; the *independence in narrative building* indicator,  $F(2,27) = 52.124, p < .001, MSE = 3.6, \eta_p^2 = .794$ ; and the *functional usage of verb aspect* indicator,  $F(2,27) = 31.804, p < .001, MSE = 1.04, \eta_p^2 = .702$ . Scheffe and LSD post-hoc tests showed significant differences between the ages 3 and 4, and

3 and 5, for all three indicators. As Leven's test of homogeneity of variance showed significance for the third indicator, nonparametric Kruskal-Wallis test was applied and confirmed significant differences between ages,  $\chi^2(2) = 21.352$ ,  $p < .001$ ,  $\eta_p^2 = .736$ .

These analyses revealed that narrative complexity increases with age on each of the three indicators. Post-hoc tests showed significant differences between three-year-olds and older children, i.e. four- and five-year-olds have similar abilities regarding narrative construction.

**Characteristics of narratives at different ages.** Analysis revealed that narratives of three-year-olds are very rudimentary – they mostly use isolated sentences, simply naming some of the activities (e.g. Child: *They were making a cake*). If a child produces more than one sentence, there is no coherent link between them. Narrative is induced and built up with the help of the experimenter's questions (e.g. Experimenter: *They were making a cake, ok, and then?*). The three-year-olds do not mark the chronological order of events, but very often only state the most interesting or the most salient element for them in the story, independent of how relevant that element is for the complete story plot. Even if they notice some relevant segment, they do not give it the proper function in the story, i.e. they are not able to convey the true point of the story. Verbal aspect, at this age, is not used in the function of action contrasting, but only for action naming. For example, in the story *Help of a friend*, a child only names the action – “*they were building blocks*” and does not contrast any other action or event to it. This finding is in accordance with Stoll (2005), who also found that younger children use imperfective to describe isolated events without the effort to make a connection between them. Stoll suggests that the function of imperfective to create a background appears only when children's capacity to build narrative rises to a certain level, and she concludes that children register and produce a distribution of grammatical forms that are adequate in certain contexts before they learn its functions.

The inspection of narrative characteristics at different ages revealed that structural complexity increases with age in all three indicators (*narrative construction, independence in narrative building and functional usage of verbal aspect*). Younger children are less competent speakers, their narratives are shorter, simpler, less detailed and differentiated, and less integrated. They do not refer to key components and different phases of events, do not differentiate between beginning and final state, and do not contrast them. Young children are not autonomous in narrative building, and the aspectual value of verbs is not used for contrasting action as in older children, but instead for naming actions and states.

Narratives of four-year-olds, compared to younger children, are more integrated and most of the children of this age succeed to retell the cartoon on their own, without any assistance from the experimenter. Four-year-olds are able to tell the story segments in chronological order, and although some of them mention the relevant elements of the story, they are still not able to lead the point

of the story to the end. Some four-year-olds are able to form narrative with all key elements of the story on their own. Most of them use aspectual contrasts for building narratives, but contrasting is achieved by means of verbal semantics (i.e. usage of verbs that have a different root, e.g. *slagali*<sup>imperf</sup> *kočke* ‘building blocks’ vs. *napravili*<sup>perf</sup> *kuću* ‘made a house’ and not by aspectual pairs (e.g. *slagali*<sup>imperf</sup>/*složili*<sup>perf</sup> or *pravili*<sup>imperf</sup>/*napravili*<sup>perf</sup>).

Five-year-olds are similar to four-year-olds regarding the ability to build narrative, though more of them are able to tell the story autonomously with all the relevant elements. They use aspectual contrasts for the function of narrative building, but aspectual pairs are still rarely used as a way of contrasting, compared to adults.

### Discussion and Conclusions

In the introductory part, we have shown that the accumulation of studies across languages brought a wide variety of findings that revealed an early production of aspectual forms in children. The function of these forms, however, seems to differ cross-linguistically. Children speaking Germanic and Roman languages use the past tense perfective markers as a tool to designate completeness (Antinucci & Miller, 1976; Bloom et al., 1980; Bronckart & Sinclair, 1973; Olsen & Weinberg, 1999; Rispoli & Bloom, 1985), which is due to the overlapping of aspect and tense markers in those languages. Slavic children seem to not only know about completeness, but also exhibit an early use of both perfective and imperfective verbs in their language. However, having in mind the morphological complexity in Slavic, and syntactic complexity in Germanic and Roman languages, as well as the universal pragmatic constraints on the usage of aspect, it was inevitable to question all the facets of aspect, and explore the process of mastering this category. It was not a question of *when* the aspect as a grammatical category is being acquired, before or after the tense, but *how* it unravels during the course of development and what the stages of this development are.

An interesting finding is that the proportion of perfective/imperfective verbs and types of Aktionsart produced at the age of three are very similar to the proportions in adult productions. These findings support the Distributional Hypothesis (Anderson & Shirai 1996; Li & Shirai, 2000; Shirai & Anderson, 1995), which claims that at the beginning of acquisition of this language category the child is influenced by the statistical regularities in input, i.e. adult speech. As semantics of aspect start to develop, children begin to use perfective forms more frequently to mark changes in their surrounding that are salient and relevant to them. In this study, we aimed to uncover the internal process of differentiation of aspectual forms and its usage. We may conclude it is a slow and incremental process that lasts for several years and is largely determined by the cognitive constraints and development of narrative skills. We propose at least three basic stages in the course of acquisition of Serbian aspect. We believe that Slavic data

(Bar-Shalom, 2002; Bar-Shalom & Snyder, 2002; Gagarina, 2000, 2004; Stoll, 2001; Vinnitskaya & Wexler, 2001; Weist et al., 1984; Weist et al., 1991), even though compiled in different theoretical backgrounds, do not contradict to the stages as proposed:

1. Early onset and usage of verbs with accompanied aspectual values guided by the distribution in adults' language. Referring to perfective and imperfective properties is an inherent and unintended component of verbal Aktionsart usage.
2. Mild deviation from the input distribution for the purpose of adjustment to communicational needs – more frequent usage of perfectives in order to designate the completeness/telicity in narrative. This reveals both lexical and pragmatic development due to substantial cognitive growth. Children at this stage are, however, unaware of aspectual pairs, even when both counterparts are mastered, and do not use them as a contrasting device for building a story;
3. Deliberate and functional use of all levels of aspectual marking for the purpose of independent and integrative narrative construction: Aktionsart, morphological markers, contrasting aspectual pairs. A child is capable of referring to key components and different phases of an event, differentiating between the starting and ending state, and contrasting them by any language mean. Children in this phase are able to create a narrative background and refer to the core change in an event. However, the 5-year-olds in this study have not yet achieved full mastery of functional usage of aspectual pairing, which shows that the process takes longer.

The results of the production experiment in Serbian are in accordance with the findings of some other authors (Gagarina, 2004; Stoll, 2001), implying that the acquisition of the aspectual system continues after the age of five.

The comparisons of the distributions of aspectual forms produced in children and adults give us the basis to conclude about possible mechanisms of acquisition, which dominate at certain developmental stages. The data suggest that the influence of the distributional regularities in input is crucial in early ages, which reveals the low level mechanisms of learning. The deviation from the adult distribution at the age of five tells us that statistical regularities in input are no longer the main guide in acquisition. That role is overtaken by cognitive mechanisms, which lead to the partial establishment of perfective form semantics. By using it in different contexts, a child succeeds to establish the relation between perceptively salient change in an event and aspectual forms, which refer to it. This “discovery” is practiced more frequently and applied in different contexts, which leads to the observed deviation in the distribution of aspectual forms compared to adults.

In more complex narratives of older children, aspect is used functionally for contrasting actions and creating a narrative. However, since the aspectual pairs in our study were not used even by older children, at least not in a way

observed in adults, the development of aspect usage awaits for support by further progress in social cognition and language pragmatics. It seems that, more than in the case of other grammatical categories, the acquisition of verbal aspect exhibits a high complexity and integrative role of language function.

The findings will be supported further with the results from the study on verbal aspect comprehension in Serbian (Savić, Anđelković, & Popović, in preparation), which give us a more complete picture on aspect acquisition. Finally, the acquisition of derivational tool of perfectivization and imperfectivization of Serbian verbs still remains to be explored more thoroughly.

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## Appendix

## Examples of narrative transcripts for one cartoon – Birthday cake

Adult	3-year-old
<p>*ADL: The little elephant made a cake and went to bring a candle, and then a mouse passed by and since he was reading newspapers, he couldn't see where he was going, so he bumped into the cake. And then the elephant came and saw what happened. He got angry and was throwing the cake at the mouse, and the mouse was throwing the cake at the elephant, and then they were throwing the cake at each other in a friendly manner and they ate the whole cake.</p> <p>/Slončić napravio tortu i otišao po svećicu, a onda došao miš i pošto je čitao novine nije video kuda ide pa je jedan udario u tortu, a onda je došao slon, pa je video belaja, pa se naljutio, pa je gađao miša tortom, pa je miš gađao slona tortom i onda su oni drugarski tako se gadali i pojeli tortu./</p>	<p>*CHL: It ended. /Završilo se./</p> <p>*EXP: It ended, and before that? /Završilo se, a pre toga?/</p> <p>*CHL: They were making a cake. /Pravili su tortu./</p> <p>*EXP: They were making a cake, ok, and then? /Pravili su tortu, dobro, i?/</p> <p>*CHL: The mouse destroyed it. /Miš je rasturio./</p> <p>*EXP: The mouse destroyed the cake, is that right? /Miš je rasturio tortu, je l' da?/</p> <p>*EXP: And then? /I onda?/</p> <p>*CHL: It ended. /Završilo se./</p> <p>*EXP: And it ended. /I završilo se./</p> <p>—————</p> <p>Indicator 1 – 1 point Indicator 2 – 1 point Indicator 3 – 1 point</p>
4-year-old	5-year-old
<p>*EXP: What happened here? /Šta se desilo ovde?/</p> <p>*CHL: First the elephant made a cake, and then the mouse came and he smashed the cake with a book, then the elephant came and saw it smashed and then first the mouse took it and threw it on him and then the elephant took it and threw it on him. bong+bong+bong+bong@. /Prvo je slon napravio tortu, pa onda došao miš pa on zgnječio tortu sa knjigom pa onda došao slon i video da je rasturena pa onda prvo uzeo miš pa onda bacio na njega pa onda uzeo slon pa bacio na njega. bong+bong+bong+bong@./</p> <p>—————</p> <p><b>Indicator 1 – 1 point</b> <b>Indicator 2 – 2 points</b> <b>Indicator 3 – 1 point</b></p>	<p>*CHL: Here happened, the elephant came and put something white on the cake and then the mouse came and was looking at the newspaper and then he ruined his cake and then, then he got angry and threw the cake on him. /Ovde se desilo, došao je slon i stavio na tortu ## nešto belo i onda je došao miš i gledao novine i onda je upropastio njegovu tortu i onda je, onda se on naljutio i onda je bacio na njega tortu./</p> <p>*EXP: Mhm@fp.</p> <p>*CHL: And then the mouse on the elephant, then again the elephant on the mouse then the mouse on the elephant. /I onda miš na slona, onda opet slon na miša pa miš na slona./</p> <p>* EXP: Bravo, great! /Bravo, super!/</p> <p>—————</p> <p><b>Indicator 1 – 2 points</b> <b>Indicator 2 – 2 points</b> <b>Indicator 3 – 1 point</b></p>