

Agreement Morphology in Early Serbian*

Mirjana Mandić

This research deals with the acquisition of agreement inflections on the sample of 4 children from the *Corpus of Early Serbian Child Language*. The results support the continuity approach, according to which children's grammars do not differ from the adult ones. Finite main clauses are attested from the earliest stages of production and almost 90% of the verbs bear correct agreement inflections. It is argued that the initial structure of children's clauses in Serbian includes at least IP level.

Several types of non-adult like forms are also attested. The most frequent error is the inflectional marker omission, which results in the use of a form identical to the 3rd person singular of the present tense. It is argued that this form might be taken as the default form which Serbian learners use whenever they fail to provide an appropriate verbal inflection and could be considered as a root infinitive analogue.

Keywords: *agreement morphology, language acquisition, root infinitive analogue, verbal inflections*

1 Introduction

Previous research on child language acquisition has shown that two-year-olds know much of the syntax of their language, particularly the system of inflection and verb movement. Nevertheless, children produce different types of non-adult forms. It has been argued that these forms are generated by the child's grammar, which differs in some minimal way from the adult grammar (Shütze & Wexler 1996: 670).

This paper deals with the acquisition of finiteness and agreement paradigm in early Serbian. Regarding the Serbian verbal morphosyntax, I address the following questions: how and when is the subject-verb agreement acquired by Serbian-speaking children; are there any early root non-finites (root infinitives, bare verb stems, or bare participles), and if there are, what are their properties; and are functional categories (such as IP or CP) present in early Serbian grammar, and if so, to what extent?¹

* Acknowledgements: This paper incorporates parts of my research for the *Certificat de spécialisation en linguistique*, defended at the University of Geneva in 2010. Thanks are due to the supervisor of this paper Ur Shlonsky (University of Geneva), but also to Boban Arsenijević (University of Niš), Darinka Anđelković (Laboratory for Experimental Psychology, University of Belgrade), and Marko Simonović (University of Utrecht) for their generous input. I would also like to thank the audience of the conference Current Trends in Psychology (Faculty of Philosophy, Novi Sad, Serbia, 2011) and CECIL'S 2 conference (Peter Pazmany University, Hungary, 2012), and to the anonymous reviewers for their helpful comments. All mistakes are, of course, my own.

¹ Abbreviations: SG – singular, PL – plural, 1 – first person, 2 – second person, 3 – third person, M – masculine gender, F – feminine gender, N – neuter gender, PRES – present tense, AORIST – aorist tense, PAST – past tense, FUT – future tense, PLUPF – pluperfect tense, COND – conditional tense, PPART – past participle, INF – infinitive, AUX – auxiliary, MOD / Mod. – modal, SUBJ.COMP – subjunctive complementizer, CL – clitic, NEG – negation, Q – question (particle), T – tense, Agr – agreement, Cop. – copula, Imp. – imperative, Vf – finite verb, Err – error, RI – root infinitive, BP – bare participle, MLU – mean length of utterance, MLUw – mean length of utterance in words, CHI – child, EXP – experimenter, MOT – mother, FAT – father, IP – Inflectional Phrase, CP –

Before looking at empirical evidence in early language, I will briefly summarize the theoretical accounts on early child grammars, as well as the syntax of verbal morphology in adult Serbian.

1.1 Early child grammars

1.1.1 Previous Hypotheses

In the generative framework, there are two main accounts that are currently dealing with the nature of initial grammars developed by young children, namely a maturational account and a continuity account.

According to *the maturational account*, functional projections are not fully available initially and they develop (mature) over time. Some authors (Radford 1990, among others) claim that early clause structures are purely lexical in nature and characterized by the absence of functional category systems (including both IP and CP). According to Radford's study, all major lexical categories projections (NP, VP, AP and PP) are acquired before all major functional categories projections (CP, IP and DP). Nevertheless, there are some other alternative accounts within the maturational approach. According to one, lower functional projections (such as IP) are initially present, but not the higher ones (such as CP) (Meisel & Muller 1992).²

Arguments for the maturational account are based on the early absence of morphophonological material associated with functional projections. The absence of auxiliaries and agreement markers is taken to be the evidence for the early absence of IP (Radford 1990), and the absence of complementizers from early subordinate clauses indicates the early absence of CP (Meisel & Muller 1992). Empirical data that support this view mostly come from languages with a morphologically poor verbal system, such as English, Swedish, or French.

One of the predictions that this approach is giving rise to is the random distribution of the agreement morphology. If the earliest stages of language development are characterized by the absence of functional categories, this implies not only that children would omit verb inflection markers, but also that they would distribute them across verbs without any rules. Thus, one could expect a large proportion of agreement errors in early grammars.

According to *the continuity account*, all elements of the child's grammars are 'in place' from early on and early grammars have all the adult properties (Poeppel and Wexler 1993, Borer & Rohrbacher 2002, Guasti 1993/1994). This view states that most (if not all) functional categories are present very early in the grammatical system, and are innately given by UG. The differences between early and adult grammars are accounted for by the assumption that children must learn language-specific properties. It is also argued that even though children are able to represent the functional projections, they might be underspecified for certain features.³

Complementizer Phrase, NP – Noun Phrase, VP – Verb Phrase, AP – Adjective Phrase, PP – Prepositional Phrase, DP – Determiner Phrase.

² In the literature, the maturational account is also referred to as *Gradual Development Hypothesis* (Borer & Rohrbacher 2002, following Deprez 1994).

³ As Guasti explains, underspecification accounts argue that a feature that is usually present in a finite clause optionally fails to be specified or is optionally missing in a given structure representation. For example, tense and/or agreement feature (Wexler 1994, Wexler 1999) or number feature (Hyams 1996). When this happens, the morpheme expressing that feature cannot surface and the syntactic processes for which this feature is responsible do not occur (Guasti 2002: 133).

Arguments for this hypothesis are based on the early presence of syntactic movement linked to functional structure. The correlation of finiteness and verb placement with respect to negation in early French is taken to be the evidence for the presence of the IP (Pierce 1992). The position of the verb (V2 or verb-final) with respect to the finiteness in early German is taken to be the evidence for the presence of the CP, since it requires V-to-C movement (Poehpel & Wexler 1993). However, this view is mostly supported by Romance null subject languages (Italian, Spanish and Catalan), which all have a morphologically rich verbal system. Studies of the acquisition of verbal inflection suggest that children have full knowledge of the subject-verb agreement in their languages from very early on, which implies that at an early age at least some functional projections are available to them.

In finite clauses, the inflectional node I is specified for tense and agreement features, which express finiteness. Thus, if children demonstrate the knowledge of agreement system, this means that in their grammars agreement is a structure-dependent relation between a head and a specifier (Guasti 2002: 147). This would rule out the possibility for the random use of agreement markers, so one of the predictions that this approach is giving rise to is a small proportion of agreement errors.

1.1.2 *Previous findings*

Even though there are striking cross-linguistic similarities in the course of language development, numerous studies have shown that there are also cross-linguistic differences in the ways in which child grammars differ from the adult ones. In line with the continuity hypothesis, it is argued that in languages with overt agreement morphology, children almost always show the subject-verb agreement from very early on. On the other hand, in languages which do not have overt morphology, children's earliest utterances seem to lack tense and agreement markers, resulting in the production of bare verbs (in English) or root infinitives (in other Germanic languages, and French, for example). These facts have been usually taken as evidence for the maturational hypothesis.

Since this paper deals with the acquisition of agreement paradigms, I will summarize previous findings in this domain on the basis of the data available in the literature.

With regard to *subject-verb agreement*, different studies indicate that in languages with overt agreement morphology, children almost always use the agreement morphemes appropriately, where required. Table 1 provides the frequencies of agreement errors occurring in finite clauses. The percentage of utterances with incorrect subject-verb agreement is low in null-subject Romance languages (Italian, Spanish) and Slavic languages (Russian, Polish, and Slovenian). The percentage of such errors is always under 4%.⁴ In addition, it is argued that the majority of errors are errors of omission rather than errors of substitution (Guasti 1993/1994, Phillips 1995, Rus 2006). This means that children rarely use incorrect agreement suffixes. They almost never substitute one suffix for another one, but rather only omit them.

⁴ The same remark was made in the paper of Hoekstra & Hyams (1998: 84), where the review of error frequencies in early German, Italian, Spanish and Catalan is provided.

Language	Child	Age	N	%Err	Source
Italian	Martina	1;8–2;7	478	1.6%	Guasti 1993/1994
	Diana	1;10–2;6	610	1.5%	Guasti 1993/1994
	Guglielmo	2;2–2;7	201	3.3%	Guasti 1993/1994
Spanish	Inés	1;8–2;6	731	0.67%	Buesa García 2007
Russian	Kristina	1;9–2;0	153	3.08% ^a	Kallestinova 2007
	Tanya	2;5–2;7	161		Kallestinova 2007
	Varya	1;6–2;4	1120	0%	Kallestinova 2007
Polish	Aleksandra	1;9–3;3	2707	0.55%	Klepper-Pang 2003
Slovenian	15 children ^b	2;0	83	2.1%	Rus 2006

Table 1: Percentage of subject-verb agreement errors in early language⁵

With respect to *root infinitives* (henceforth: RIs), it is observed that children acquiring non-null subject languages, such as German, Dutch, Swedish, French and many others, pass through a grammatical stage of language development in which they produce main clauses containing an infinitive verb rather than a finite one. This option is not allowed in their target languages. The root infinitive stage begins with the earliest multiword productions and lasts until about 3 years of age (Guasti 2002: 128). Although RIs are attested in many languages, there are several typological differences observed with respect to the nature of RIs and their presence (or absence) in different languages. In languages such as German or French, the nonfinite forms are actual infinitives, whereas in languages such as English there is no infinitival marker and children produce uninflected (bare) forms. Another important difference is that in null subject languages RIs are very rare. Table 2 provides the frequencies of RIs in different languages (see also Hoekstra and Hyams 1998, for another review).

Language	Child	Age	N	%RIs	Source
Italian	Martina	1;8–2;7	513	4.9%	Guasti 1993/1994
	Diana	1;10–2;6	621	0.3%	Guasti 1993/1994
	Guglielmo	2;2–2;7	212	1.9%	Guasti 1993/1994
Spanish	Inés	1;8–2;6	768	4.2%	Buesa García 2007
Polish	Aleksandra	1;9–3;3	2804	3.46%	Klepper-Pang 2003
Slovenian	15 children	2;0	196	4.6%	Rus 2006

⁵ *Note.* N = number of utterances with the correct agreement. %Err = percentage of utterances with the incorrect agreement, i.e. the frequency of agreement errors.

^a The percentage of incorrect verb forms presented here joins together data from two children (Kristina and Tanya). The author did not provide the distribution of incorrect agreement forms across children. It is only stated that in the corpora of these two girls a total number of 10 bare stems has been found. I have calculated the percentage based on the number of correctly inflected forms and total number of utterances.

^b This is a study based on a collection of spontaneous production data from 15 children.

Language	Child	Age	N	%RIs	Source
Russian ⁶	Kristina	1;10	62	69.4%	Kallestinova 2007 ^a
		1;11	187	34.2%	
		2;0	69	8.7%	
	Tanya	2;5	36	22.2%	Kallestinova 2007
		2;5–2;6	82	9.8%	
		2;6–2;7	100	3.0%	
Varya	1;6–1;8	438	17.4%	Kallestinova 2007	
	1;10–2;4	1039	3.4%		
French	Augustin	2;0–2;9	780	10.5%	Rasetti 2003
	Marie	1;8–2;6	1666	10.7%	Rasetti 2003
	Louis	1;9–2;3	1219	11.6%	Rasetti 2003
Swedish	Sara	1;11–2;11	1274	10.8%	Josefsson 2002
	Markus	1;10–2;0	399	17.8%	Josefsson 2002
	Harry	2;0–2;5	380	26.3%	Josefsson 2002
	Tor	1;11–2;2	126	56.3%	Josefsson 2002
Dutch	Hein	2;4–3;1	4489	16.0%	Haegeman 1995

Table 2: Percentage of root infinitives in early language⁷

As we can see from the table, RIs rarely occur in null-subject languages (excluding Russian, where the percentage of RIs is always lower than 5%), unlike in non-null subject languages where the frequency of RIs is higher (although dependent on the child and the language). This is why the distinction is made in the literature between RI and non-RI languages.

⁶ Even though Russian has rich morphology, it differs from null subject languages since it does not allow null subjects in all types of utterances. There is an ongoing debate on whether Russian is a pro-drop or non-pro-drop language. The higher proportion of RIs in Russian in comparison to pro-drop languages favors the view of Russian as a non-pro-drop language (cf. Bar-Shalom & Snyder 1997).

⁷ *Note.* N = total number of verb forms uttered. %RIs = percentage of root infinitives. ^a In this paper the frequency of RIs (and other verb forms as well) has been divided into stages. I have replicated the data exactly as given in the paper, since it gives us an insight into the drop of RIs with age.

Not all of the studies summarized here mainly deal with the RIs in the languages in question. Thus, not all of them provide the same amount of data with regard to the number of utterances, number of finite or nonfinite forms, and not all of them provide the exact percentage of RIs or other forms. Some studies provide the frequency at particular ages, and some of them gather the frequencies in an age range. If not provided by the author, I have calculated the percentage of RIs by dividing the number of RIs with the total number of verb forms reported in the studies. With regard to the total number of verb forms, not all of the studies count the same verb forms. It is suggested by Guasti (2002) to exclude copulas and imperatives from the final counting, since these verbs never occur as root infinitives. Nevertheless, there are studies that do not count just main verbs, but copulas and imperatives as well. When this was the case, I replicated the number of utterances and the frequency of RIs as given in the paper.

1.2 The syntax of verbal morphology in adult Serbian

The Serbian language has extremely rich verb morphology, with Tense, Agreement, and Aspect expressed by verb affixes, as well as a flexible word order with second-position Wackernagel clitics. The grammatical system of Serbian is a three-gender (masculine, feminine, neuter), two-number (singular, plural), and three-person (1, 2, 3) morphological system, with two types of agreement: subject-finite verb and subject-past participle agreement. The Serbian verbal system distinguishes *finite* and *nonfinite* verbal forms.

Finite forms are inflected for tense and agree with their subjects in person and number. Complex tenses containing the past participle also agree in gender. The inventory of tense forms in Serbian is: present, past, future, aorist, imperfect, pluperfect, future 2 (Progovac 2005). In this section, I will focus on the forms relevant to our paper.

The present and aorist tense are the only simple tenses. They are inflected for person and number. There is no distinct Tense marker for *the present tense*. The productive present tense endings carry both the T and Agr features (the suffixes are agreement markers).⁸ In the case of *aorist*, the Tense feature [+Past] probably comes from the suffixes. We should bear in mind that aorist has its own suffix -h- (also realized as -s- or -š-) which is distinct from person and number suffixes.⁹ Examples of present and aorist tense are provided in (1) and (2). The present and aorist tense paradigm is given in Table 3.

- (1) *Čita-m.*
read-PRES.1SG
'I read.'
- (2) *Pad-ob.*
fall-AORIST.1SG
'I have (just) fallen.'

person	Present tense		Aorist tense	
	singular	plural	singular	plural
1	-m, -u	-mo	-(o)h-	-(o)s-mo
2	-š	-te	-/-e	-(o)s-te
3	-	-e /-u /-ju	-/-e	-(o)š-e

Table 3: The paradigm of the present and aorist tense in Serbian

Given the data in Table 3, one can observe that the third person singular of present, as well as the second and third person of the aorist tense, are the least marked forms of the verbal paradigm, since they have no distinct endings.

The past tense is formed by the (imperfective) present tense form of the auxiliary *biti* 'be', and the past participle of the main verb. The auxiliary can be either in a full form, as

⁸ Progovac (2005) suggested that this could be interpreted as present tense being the default Tense or no Tense, i.e. there are no Tense features on present tense.

⁹ The aorist, formed mostly from perfective verbs, serves to narrate events and expresses events that are perceived as surprising. Although it is not found in all dialects, the standard retains aorist as optional past tense. In colloquial speech, this tense is usually replaced with the past tense.

in the example (3a), or in the enclitic form, as in the example (3b). It is argued that the feature [+Past] is supplied by the auxiliary clitic (Progovac 2005: 63).

- (3) a. *Je-sam stig-la juče.*
 be-1SG.AUX arrive-PPART.FSG yesterday
 ‘I arrived yesterday.’
 b. *Stig-la sam¹⁰ juče.*
 arrive-PPART.FSG be-1SG.AUX.CL yesterday
 ‘I arrived yesterday.’

The *pluperfect tense* is formed by the perfect tense of the auxiliary *biti* ‘be’ and the participle of the main verb (Bošković 1995: 256), as in the example (4).¹¹

- (4) *Davno sam bi-la nastupa-la.*
 Long ago be-1SG.AUX.CL be- PPART.FSG perform- PPART.FSG
 ‘I had been performing long ago.’

Past participles are marked for gender/number agreement. Therefore, information on the subject agreement is found in two places: person/number agreement on the auxiliary and gender/number agreement on the participle. It is proposed that the two sets of agreement features are checked in two split segments of Agr_SP (Progovac 2005: 63). Given that participle is specified for agreement, it will raise to Agr_S to check its agreement features.

The *future tense* is formed by finite modal clitic and infinitive or subjunctive-like constructions¹² with finite lexical verbs (Mišeska Tomić 2004: 519). The modal auxiliary clitic inflects for person and number. In the future tense with infinitives, modal auxiliary clitics precede the infinitive if there is another constituent to their left, to which they can encliticize (5a). Otherwise, the clitics follow and encliticize to the infinitive. In this case, the infinitive marker is dropped and the modal clitic left-adjoins to the root of the verb (5b). The infinitive marker is preserved if the infinitive is marked with the suffix *-ći*, as in (5c).

- (5) a. *Ja ću nastupa-ti sutra.*
 I will-1SG.MOD.CL perform-INF tomorrow
 ‘I will perform tomorrow.’
 b. *Nastupa-ću sutra.*
 perform-INF+1SG.MOD.CL tomorrow.
 ‘I will perform tomorrow.’
 c. *Do-ći ću sutra.*
 come-INF will-1SG.MOD.CL tomorrow
 ‘I will come tomorrow.’

¹⁰ It is worth mentioning that I have not hyphenated inflectional morphemes in auxiliary and modal clitics since their morphology is irregular to some extent and one could not easily separate the inflectional ending from the stem.

¹¹ The pluperfect is a much less frequent past tense. It is used as a reference to a distant past. The other way of forming this tense (with the imperfect of ‘be’ as the auxiliary and past participle) is rarely used.

¹² There is no distinct morphology for subjunctive: it has the same morphology as present tense.

In the future tense in which the modal clitics take as a complement a subjunctive-like construction, the modal clitics agree in person and number with the verb of the subjunctive construction, as in the examples given in (6). The subjunctive-like construction is introduced with the complementizer *da* (Mišeska Tomić 2004: 517–519). It is argued that the feature [+Future] is supplied by the auxiliary verb (Progovac 2005: 62).

- (6) a. Ja *ću* *da* *dode-m* sutra.
 I will-1SG.MOD.CL SUBJ.COMP come-1SG tomorrow
 ‘I will come tomorrow.’
- b. Ti *ćeš* *da* *dode-š* sutra.
 You will-2SG.MOD.CL SUBJ.COMP come-2SG tomorrow
 ‘You will come tomorrow.’

The Serbian modal clitics have full, lexical (non-clitic) counterparts – the present tense forms of the lexical modal verb *hteti* ‘will/want’ (Mišeska Tomić 2004: 520).¹³ These forms also take as a complement infinitive or subjunctive-like constructions, but differ from modal clitics in that they have aorist and past tense and the verb does not necessarily agree with the verb of the subjunctive construction, as given in (7).

- (7) *Ho-ću* *da* *dode-š*.
 will/want-PRES.1SG.MOD. SUBJ.COMP come-2SG
 ‘I want you to come.’

As we saw, there are two auxiliaries in Serbian: *biti* ‘be’ and *hteti* ‘will/want’, both are used in the formation of complex tenses (past and future, respectively). The features [+Past] and [+Future] are supplied by them.

Nonfinite forms relevant for this paper are the infinitive and the past participle. Serbian *infinitives* are formed by the infinitival endings *-ti* or *-ći* which are added to the (infinitival) stem of the verb (some verbs have two distinct stems, commonly referred to as the infinitival and the present stem), as in *pevati* ‘to sing’ and *doći* ‘to come’. Infinitives are used either in the future tense constructions, or as complements to modal verbs.¹⁴ According to Progovac (2005: 63–64), the infinitive form cannot raise to the Agr_S projection, since it has no agreement or tense features to check.

Past participle is used in complex tenses. This form obligatorily bears the information on number and gender. Since it is specified for agreement, it is argued that this form can raise to Agr_S in order to check its features (Progovac 2005: 64).

1.3 The aim and the hypotheses

Starting from the fact that Serbian has a very rich verbal morphology system and based on the findings and theoretical accounts, I expect to find a small number of agreement errors and a small number of root infinitives (if any at all) in early Serbian. In other words, I assume that the agreement paradigm is acquired early in Serbian. This would

¹³ These forms are not the cases of future tense.

¹⁴ For detailed explanations on the use of the infinitive in different frameworks cf. Arsenijević 1997 and Belić 2005.

imply the existence of at least T/Agr_S level in early Serbian, since in adult Serbian, according to the theory I have adopted (Progovac 2005), inflected main verbs enter the derivation at V and in finite clauses move successively to T and Agr_S to check their inflectional features.

2 Data and method

2.1 Sample

The data for this study are taken from the *Corpus of Early Serbian Child Language* (Anđelković, Ševa & Moskovljević 2001). The sample for this corpus consisted of eight monolingual Serbian children (4 from Belgrade and 4 from Banja Luka), whose speech was longitudinally recorded from 1;6 till 4;0 years of age. The recordings were made at 2-month intervals and lasted 90 minutes each. The recording sessions included spontaneous interaction between a child and the adults who were present during the recording (e.g. parents, siblings, relatives, family friends, and the experimenters). The material was collected, recorded and transcribed into electronic form according to the CHILDES system procedures (MacWhinney 2000).

The analysis was conducted on the sample of 4 children from this corpus, two boys and two girls, all from Belgrade: Danica, Jelena, Luka, and Miloš. The analysis is provided for ten different ages (age range 1;6–3;0). The mean length of utterance (MLU) per age for each child is given in Table 4. MLU values are calculated automatically by the use of the CLAN program. They are computed in words, not in morphemes.

Child Age	Danica MLUw	Jelena MLUw	Luka MLUw	Miloš MLUw
1;6	1.22	1.26	1.10	1.17
1;8	1.33	1.12	1.56	1.19
1;10	1.75	1.08	1.77	1.31
2;0	1.80	1.53	1.95	1.05
2;2	2.50	1.68	2.17	1.14
2;4	2.47	1.65	2.52	1.27
2;6	2.14	1.89	2.30	1.34
2;8	2.97	2.63	2.50	1.61
2;10	3.14	2.75	2.82	1.68
3;0	2.02	2.05	2.85	1.90
Average 1;6-3;0	2.13	1.76	2.15	1.37

Table 4: Mean length of utterance in words (MLUw) for all children

2.2 Method: counting procedure and verb types

For this purpose, I have included all verb-containing utterances that occurred spontaneously and can be interpreted by a Serbian native speaker. An utterance was excluded from the final counts if it was not completed or fully intelligible, if it was an

imitation of a previous adults' utterance or a memorized rhyme, or if it was the repetition of the child's own previous utterance (unless the verbal inflection changed from one token to the next). Utterances containing either an overt or a null subject have been considered. The correctness of sentences containing a null subject has been established on a contextual basis.

I did not take into account the utterances with 3SG form if it was impossible to interpret whether the subject was actually 3SG or another person. Also, if it was impossible to interpret whether the verb is in the form of 3SG of present tense or 2SG of imperative (since these forms are homophonous for some verbs), they were excluded.

I have examined sentences with main lexical verbs. The only type of sentences containing a main lexical verb that are excluded from the analysis are existential sentences with the verb *imati/nemati* 'to have / not to have'. In existential sentences the verb and the noun phrase do not agree in phi-features. The verb is inflected only for the 3rd person singular, thus it shows no distinct morphology for other persons.

Constructions with modal verbs, i.e. modal-type verbs selecting an infinitive or a subjunctive-like complement are also included in the study. Imperatives, as well as the verb *biti* 'be' used as a copular verb, were excluded from the analysis.

Since the aim of the study is to explore the acquisition of agreement, the correctness of the subject-verb agreement was checked on the basis of the correctness of the following: person/number agreement of the subject and the main/modal verb in simple tenses; person/number agreement of the subject and the verbs in subjunctive-like constructions; person/number agreement of the subject and the auxiliary *biti* 'be' in past tenses and person/number agreement of the subject and the auxiliary *hteti* 'will/want' in the future tense; gender/number agreement of the subject and past participle.

3 Results

Two relevant types of clauses (verb-containing utterances) are identified in the production of Serbian-speaking children: finite and nonfinite clauses. Identified finite clauses resemble adults' clauses and show correct agreement marking on the verb. Identified nonfinite clauses fall into three subcategories: clauses with incorrect agreement, clauses with bare participles (which consist of bare participle forms which are not preceded by the obligatory auxiliary verb), and root infinitive clauses which contain a matrix infinitive verb. Table 5 shows the breakdown of all the utterance types in the count (note that imperatives and copulas are excluded). The analysis is based on a total of 5480 utterances.

Type	Vf	Mod.		V	Err		BP	RI	Σ
		Mod+Vf	Mod+Inf		Mod+Vf	Mod+Inf			
Danica	989	72	1	87	38	1	42	4	1344
Jelena	871	95	3	64	23	0	34	0	1211
Luka	2043	94	1	201	17	0	65	0	2533
Miloš	337	14	1	12	3	1	5	0	392

Table 5: Breakdown of all clause types in the data¹⁵

Given that a modal verb can have either an infinitive or a subjunctive-like complement, categories Mod. and Err contain two types of constructions. The former is labeled Mod+Vf, representing a modal verb selecting a finite (subjunctive-like) complement. The other one is labeled Mod+Inf, representing a modal verb selecting an infinitive complement. In the table, the total number of modal constructions is presented. However, in the final counts every verb (modal, infinitive and subjunctive-like) is treated separately in the categories of correct agreement and agreement errors. This is why the total number of verb forms included in the analysis is higher than the number of utterances.

The examples of all categories included in the analysis are given in (8).

- (8) a. *juri-m* loptu. Vf
 chase-PRES.1SG ball.
 ‘I am chasing the ball.’
- b. *ne-će* zec da *plač-e.* Mod+Vf
 not-will-PRES.3SG rabbit SUBJ.COMP cry-PRES.3SG
 ‘The rabbit will not cry.’
- c. *(b)o-ću* *na-ći* ovo. Mod+Inf
 want-PRES.1SG find-INF this.
 ‘I want to find this.’
- d. ti *voli-m* ovu žutu. Err, V
 you like-PRES.1SG this yellow
 ‘You like the yellow one.’
- e. *ne-ću* batu *drž-i-* Err, Mod+Vf
 not-want-PRES.1SG brother hold-PRES.3SG
 ‘I don’t want to hold the baby brother.’
- f. *ho-ću* *do-ći* tamo Aća Err, Mod+Inf
 will-PRES.1SG come-INF there Aća
 ‘Will Aca come there?’

¹⁵ Vf = finite lexical verb or modal verb without the complement, Mod. = construction with modal verbs, Inf = infinitive complement, Err = agreement error, V = agreement error on the lexical verb, BP = bare participle, RI = root infinitive, Σ = total number of all verb forms included in the analysis.

- g. *ku^{pi}-o*. BP
 buy-PPART.MSG
 ‘(I) bought.’
- h. *ima-ti* ovu. RI
 have-INF this one
 ‘(I) have this one.’

3.1 Finite and nonfinite verbal forms in early Serbian

In this section I first examine to what extent verbal morphology is mastered by Serbian-speaking children. Chart 1 shows the proportion of finite and nonfinite forms in early Serbian (for all 4 children). Appendix contains tables with exact number and percentage of these forms per child.

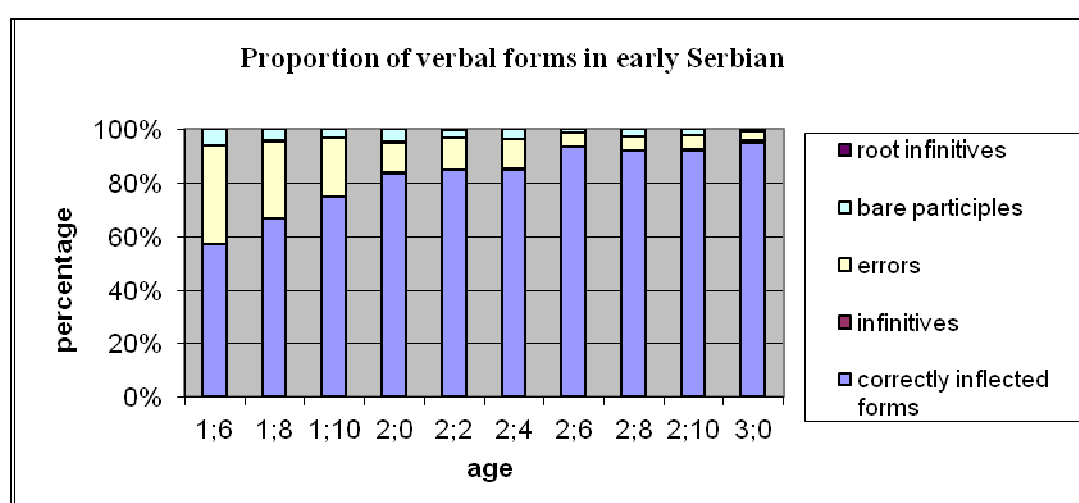


Chart 1: Proportion of verbal forms with respect to age

From very early on, the vast majority of sentences produced by Serbian-speaking children is finite, and there appears to be no stage during which nonfinite clauses prevail. In the age range 1;6–3;0, children correctly inflect the verbs in about 90% of the utterances. The overall rate of agreement errors for each child is 9.7% in Danica’s, 7.6% in Jelena’s, 8.8% in Luka’s and 4.1% in Miloš’ speech, which conforms to the previous findings in the acquisition of different languages.¹⁶ The rate of agreement errors decreases with age and we can observe a developmental change. The percentage of bare participles is lower than 3% for all children, but even at earlier ages never raises above 7%. Root infinitives are reported in the speech of only one child (Danica), and their rate (0.3% in the overall sample) supports previous findings on the root infinitives in non-RI languages (cf. Table 2).

¹⁶ The overall number of utterances and the age at which the verbs first appear is different for Miloš than for the other children. Except for one case of inflected verb at 1;10, there are no intelligible, non-repeating, verb-containing utterances before the age of 2;4. As can be seen in Table 4, Miloš’ MLU is exceptionally low in comparison to the other children. However, except for the amount of talking, there are no other observable differences: Miloš shows low number of agreement errors and bare participles and a high rate of correct forms.

Since this study comprises a rather broad age range, it is more important to take a look into the distribution of correct and incorrect agreement across different ages. At earlier ages, the number of correct forms is lower in comparison to other studies. At the beginning of the earliest verb production, in Jelena's and Luka's speech, around 50% of verbs is correctly inflected for person/number and we find almost the same number of agreement errors: 45.5% and 44.1% for Jelena and Luka, respectively (see also Appendix). In addition, the rate of agreement errors does not drop under 10% before the age of 2;8, 2;6, 2;4 and 2;2 for Danica, Jelena, Luka and Miloš, respectively. Before these ages the percentage of incorrectly agreed verbs is higher than reported in other languages. It reaches 23.5% at 1;6 in Danica's speech, 45.5% at 1;8 in Jelena's speech, 44.1% at 1;6 in Luka's speech and 66.7% at 1;10 in Miloš's speech. These figures are much higher than expected in a language with such a rich agreement system. Note, however, that the ages with the highest error rate are the ones where the overall number of sentences is rather low (cf. Appendix).

3.2 Distribution of finite forms in early Serbian

Even though there is a large proportion of correctly inflected verbs, children do not have an access to all agreement forms immediately. Chart 2 shows the proportion of person and number distinctions with age (for all children).

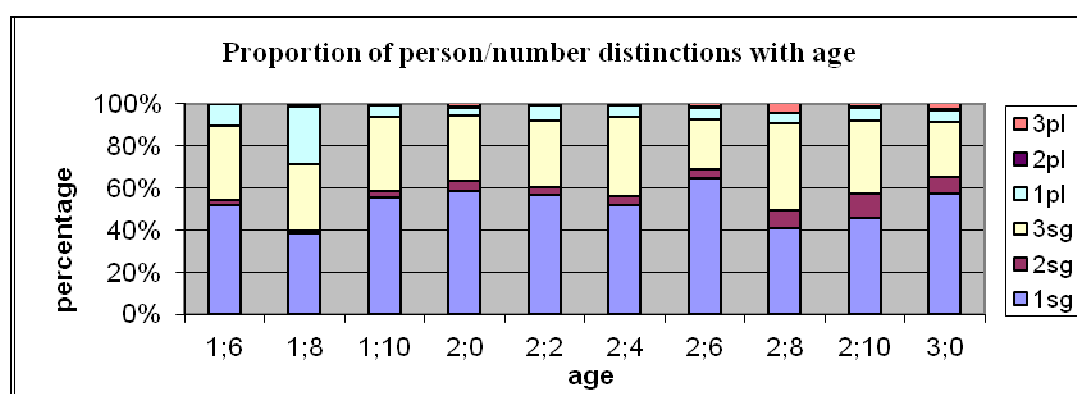


Chart 2: Proportion of person/number distinctions with respect to age

All singular person inflections emerge earlier than the plural ones, with 1SG and 3SG being the most productive ones. In Luka's speech, the first occurrence of first, second and third person singular inflection is at 1;6, whereas for Danica all three person inflections occur at 1;10. For Jelena and Miloš the first appearance is at 2;4 and 2;6, respectively. First person plural is attested early for Danica and Luka (at 1;8 and 1;6) and very common at later ages as well. Third person plural emerges later for all children, whereas second person plural is only sporadically used in the speech of all four children.

Other studies also report on the later emergence of plural inflections in the course of language development (Guasti 1993/1994, Rus 2006). It is argued that this delay of plurality characterizes verbal and other ways of marking the plurality. Nevertheless, in our data, 1PL is early reported and frequent in Danica's and Luka's speech. I assume that the absence of 2PL and 3PL especially at earlier ages is not just due to the delay of plurality, but due to the fact that there are few 2PL and 3PL contexts.

3.2.1 Productivity of verbal inflections

An important distinction between the mere presence of an inflection and its productivity should be made. Not all inflections are productively used, although present in the data, and not all verbs are productively inflected, meaning that there are verbs that are preferably used in one and the same form. Productivity in the domain of verbal morphology means that a child is able to use the same verb with different inflections and in different forms, if that is required by the context. In particular, it means that there is a contrast between at least two different forms of the verb.

In order to clarify the notion of productivity, I will briefly present the examples of non-productive forms first. There are examples in the sample which suggest that certain verbs almost always appear in the same form. This is the case with the verbs *otići* 'to go / to leave' and *pasti* 'to fall', which all children almost always use in the form of 3SG of the aorist tense, especially at earlier ages. Examples are given in (9). One possible explanation for the use of these simplex forms is the fact that they are one of the simplest forms in the overall paradigm of these verbs, in addition to their irregularity in other forms (these verbs belong to the group of verbs whose stems also change).

- (9) a. ovo *pad-e*. (Luka, 2;0)
this fall down-AORIST.3SG
'This (a toy) has just fallen down.'
- b. *od-e* loptica. (Danica, 1;8)
go- AORIST.3SG ball (diminutive)
'The ball has (just) gone.'

Based on this, we can state that verbs *otići* 'to go / to leave' and *pasti* 'to fall' are not productively used at earlier ages. In addition, verbs are used in the aorist tense only with 3SG inflection.¹⁷ Thus, this tense could not be considered as being productive at all.

However, the diversity of forms found in the sample supports the claim that children have mastered the agreement paradigm, despite the percentage of agreement errors found in the production of some children at the earlier ages.

At 1;6, Danica uses 6 different verbs, but only with 3SG inflection. Nevertheless, the number of different verbs increases at 1;8: she uses 12 different verbs inflected for 3SG, 4 for 1SG and 6 for 1PL. More importantly, at this age there are 4 verbs inflected for 2 different persons. These are *kopati* 'to dig' and *otvoriti* 'to open' (with 1SG and 1PL), and *hteti* 'to want' and *ručati* 'to dine' (with 1SG and 3SG inflections). At 1;10, Danica uses 17 different verbs inflected with 3SG, 11 with 1SG, and 7 with 1PL inflections. The verb *kupati* 'to bathe' is inflected with all these inflections, while 4 other verbs (*hteti* 'to want', *sesti* 'to sit', *pasti* 'to fall' and *naći* 'to find') are inflected for two different persons. At 2;0, the verb *voziti* 'to drive' is inflected for 1SG, 3SG, 3PL, the verb *staviti* 'to put' is inflected for 1SG, 3SG, 1PL, verbs *praviti* 'to make' and *skloniti* 'to put away' are inflected with 1SG and 1PL, verbs *spavati* 'to sleep' and *ljudjati se* 'to swing' with 3SG and 3PL, the verb *videti* 'to see' with 2SG and 3SG and *hteti* 'to want' for 1SG and 3SG. Some examples are given in (10).

¹⁷ The number of verbs used in the aorist tense is 21, 19, 30 and 16 for Danica, Jelena, Luka and Miloš, respectively (age range 1;6–3;0). Only 3 examples of verbs inflected for 3PL were found in Danica's sample. All other examples are inflected for 3SG.

- (10) a. da ga *kuḡa-m.* (Danica, 1;10)
 SUBJ.COMP it bath-PRES.1SG
 ‘I am going to bath it.’ (it=teddy bear)
- b. *kuḡa-* ga Nana. (Danica, 1;10)
 bath-PRES.3SG it Nana
 ‘Nana is bathing it.’
- c. sad *kuḡa-mo.* (Danica, 1;10)
 now bath-PRES.1PL
 ‘We are bathing (it) now.’

At 1;6, Luka uses 4 different verbs inflected for 1SG, 1 verb inflected for 2SG, 5 verbs inflected for 3SG and 5 for 1PL. At this age, the verb *bteti* ‘to want’ is inflected for 1SG, 3SG and 1PL and the verb *staviti* ‘to put’ for 1SG and 1PL. At 1;8, 11 verbs are inflected for 1SG, 3 verbs for 2SG, 6 verbs for 3SG and 10 verbs for 1PL. Some of these verbs bear different inflections: *bteti* ‘to want’ 1SG, 2SG, 1PL, *imati* ‘to have’, *skinuti* ‘to take off’ and *igrati* ‘to play’ 1SG and 1PL, *spavati* ‘to sleep’ 1SG and 2SG, *prskati* ‘to sprinkle’ 1SG and 3SG. At 1;10, Luka produces 17 different verbs inflected for 1SG, 3 verbs inflected for 2SG, 19 verbs inflected for 3SG and 3 for 1PL. Some of these verbs bear different inflections: *bteti* ‘to want’ bears all three singular inflections, *ići* ‘to go’ bears all three singular inflections and 1PL, *popraviti* ‘to make something work’, *vozići* ‘to drive’, *jesti* ‘to eat’ 1SG and 3SG, *baciti* ‘to throw’ 1SG and 1PL. At 2;0, there are 20 verbs inflected for 1SG, 7 for 2SG, 16 for 3SG and 1 for 1PL. The verb *bteti* ‘to want’ is used with all these inflections. The verbs *ići* ‘to go’ and *skinuti* ‘to take off’ are inflected for 1SG and 3SG, and the verbs *imati* ‘to have’ and *videti* ‘to see’ are inflected for 2SG and 3SG. Some examples are given in (11).

- (11) a. *ide-m* (sa) mamom. (Luka 1;10)
 go-PRES.1SG (with) mom
 ‘I am going with mom.’ (talking about going to the seaside)
- b. MOT: pitaj ga jel ide on u školicu. (Luka 1;10)
 ‘Ask him if he is going to school.’
 CHI: *ide-ŝ?*
 go-PRES.2SG
 ‘Are you going?’
- c. ovuda vo:zi: *id-e.* (Luka 1;10)
 this way drive-PRES.3SG go- PRES.3SG
 ‘It drives this way, it goes.’ (it = the bus)
- d. a sad *ide-mo.* (Luka 1;10)
 and now go- PRES.1PL
 ‘And now we are going.’

The number of different verbs produced before the age of 2;0 is smaller for Jelena and only one verb (*bteti* ‘to want’) shows the contrast between the inflections. At 1;6, 3 verbs are inflected for 1SG and 2 for 3SG, while only one of them bears both inflections (*bteti* ‘to want’). At 1;8, she uses 2 verbs inflected for 1SG and 2 inflected for 3SG, one of them (*bteti*) bears both inflections. At 1;10, she uses 1 verb inflected for 1SG and 2 for 3SG (*bteti* is one of them). However, at 2;0 the number of verbs increases. She uses 12 verbs inflected for 1SG and 6 inflected for 3SG (only *bteti* has both inflections). Examples are given in (12).

- (12) a. MOT: donesi stolicu! (Jelena 1;6)
 ‘Bring the chair.’
 CHI: *ho-ću!*
 will/want-PRES.1SG
 ‘I will.’
- b. MOT: pa neće tako da se kotrlja. (Jelena 1;6)
 ‘It won’t roll like that.’
 CHI: *ho-će!*
 will/want-PRES.3SG
 ‘It will.’

Miloš does not use inflected verbs before the age 2;4 (except for one example of 3PL, which could not be considered as being productive at all).

The diversity of inflections that have been found on different verbs and on novel verbs in Danica’s and Luka’s speech is important evidence for the claim that children have mastered the agreement system. As we have seen from these observations, even at the earliest ages (from 1;6 until 2;0 years of age) most children show the ability to mark the agreement with different inflections. I hope to have shown that the productivity of novel verbs, as well as the use of different inflections proves that verbs are not learned by rote.

3.2.2 Tense forms

The use of tenses in child language will not be analyzed in depth here, since this would be beyond the scope of the paper. Nevertheless, the overall number of different tense forms children use could further support the idea that children are able to use different inflections. Table 6 shows the overall frequency of different tenses and the age at which each of the tense form first emerged in the age range 1;6–3;0.

Form	PRES		FUT		PAST		AORIST		PLUPF		COND	
	N	Age	N	Age	N	Age	N	Age	N	Age	N	Age
Danica	1004	1;6	86	1;10	54	1;10	21	1;6	1	2;10	/	/
Jelena	975	1;8	32	2;2	56	2;4	19	1;8	/	/	/	/
Luka	1790	1;6	137	1;8	283	1;10	30	1;6	1	3;0	3	2;6
Miloš	315	2;4	30	1;8	8	2;8	16	2;8	/	/	/	/

Table 6: Distribution of different tense forms for all children

As Rasetti points out (Rasetti 2003: 44), the robust production of tensed clauses from the earliest recorded period can be interpreted as a strong indication that IP is largely available as soon as verbs are used. Children in the sample use different tense forms, both simple and complex. This is particularly important because in the past and pluperfect tense, the auxiliary is inflected for person and number and the past participle for number and gender. In the future tense, the modal clitic (auxiliary) which selects the subjunctive-like complement has the person/number inflection in two places. If a child

accurately inflects both, this supports the fact that the child has mastered the agreement system.

However, if we look at the data before the age of 2;0, the use of different tense forms is not productive at all. The number of verbs inflected for present tense is clearly much higher than the proportion of other tenses. The frequency of past and future tense is very low at earlier ages. The first contrast between the tenses is reported at different ages for different children. At 1;6, Danica uses only present and aorist tense, and at 1;10 she adds future and past tense. Jelena uses present and aorist at 1;8, future and past tense are added later (2;2 and 2;4 respectively). At 1;6, Luka uses aorist and present tense, future and past tense are added at 1;8 and 1;10, respectively. Miloš starts using present tense at 2;4, but aorist, past and future tense are added at 2;8. Therefore, the only productive tense form at the earliest ages is the present tense.

3.3 Types of agreement errors

Different types of agreement errors were found in the corpus. Table 7 shows the total number and percentage of different error types for each child.

Type	incorrect suffix		suffix omission		incomplete stem		non-existing suffix		incorrect participle agreement		Σ
	N	%	N	%	N	%	N	%	N	%	N
Danica	29	22.1	82	62.6	15	11.4	4	3.1	1	0.8	131
Jelena	31	33.7	39	42.4	14	15.2	7	7.6	1	1.1	92
Luka	38	17	142	63.7	28	12.6	7	3.1	8	3.6	223
Miloš	5	31.2	6	37.5	5	31.2	0	0	0	0	16

Table 7: Number and percentage of different error types

1) Incorrect suffix – these are the cases where the child uses an agreement suffix in an inappropriate context, i.e the suffix does not match the person and/or the number of the subject, as in the examples given in (13).

- (13) a. EXP: (h)očěš? (Jelena, 2;4)
 ‘Do you want (the scarf)?’
 CHI: (h)o-će.
 want-PRES.3SG
 ‘I want.’
- b. gde *id-e* lavovi? (Luka, 2;4)
 where go-PRES.3SG lions
 ‘Where do lions go?’

- c. *nađ-u* d(r)ugu. (Danica, 1;10)¹⁸
 find-PRES.3PL another
 ‘(I) find another one.’ = ‘I’m going to find another one (the sock).’

As we can see from the table, the overall percentage of this error type is around 20% for Danica and Luka, and around 30% for Jelena and Miloš. It should be pointed out that most of the cases represent the use of the 3SG inflection instead of other verbal suffixes: 23/29 (Danica), 25/31 (Jelena), 35/38 (Luka), 3/5 (Miloš), out of which some examples involve lack of agreement for number (Danica: 7, Jelena: 1, Luka: 7, Miloš: 1) (as in (13b)). This means that 93.2% of this error type are examples where children use the third person singular form instead of some other form (mostly instead of 1SG).¹⁹

Only a small proportion of these errors are errors of substitution of one suffix for another one: 6/20 (Danica), 4/31 (Jelena), 2/38 (Luka), 2/5 (Miloš). It is important to bear in mind that this substitution does not refer to the third person singular suffix.

2) Suffix omission – these are the cases where the child does not use an agreement suffix when it is required in the context.

When present tense agreement suffixes are omitted, most of the forms are identical to the form of third person singular (cf. example (14a)). The number of utterances with suffix omission that results in the same form as 3SG is: 74/82 (Danica), 35/39 (Jelena), 112/142 (Luka), and 4/6 (Miloš). Most of the examples with 3SG form are used in the context with the 1SG subject: 55/74 (Danica), 27/35 (Jelena), 96/112 (Luka), and 2/4 (Miloš). This means that 83.6% of this error type are examples where the lack of agreement suffix results in a form identical to 3SG form.

One might argue that the use of the 3SG form in the child language does not indicate an error, but rather represents the cases where the child is referring to him/herself in the third person. Hence, some authors suggested that these cases should not be counted as errors (cf. Rus 2006 for Slovenian). In the data used here, only Danica and Miloš refer to themselves in the third person and these are mostly the cases with the overt 3SG subject (usually their names or nicknames). However, I have considered an example with a verb in 3SG as an error if an utterance did not contain the subject and the child was clearly referring to his/her own activities. The main reason for this is the fact that the same children use verbs in 3SG form with overt 1SG subjects, where they clearly do not refer to themselves in the third person (cf. (14b)).

Still, there are few forms which clearly lack any suffix, resulting in the use of bare stems (cf. (14c)). The number of these verbs is 4, 2 and 9 (in Danica’s, Jelena’s and Luka’s speech, respectively).

In a few utterances with covert subjects it was difficult to establish whether the subject was singular or plural, but certainly it was not the third person (cf. (14d)).

¹⁸ In this example, the form of 3PL is used instead of the 1SG form. The correct 1SG form of the verb *naći* ‘to find’ is *nađem*. The form reported here *nađu* is the same as 3PL. However, few verbs in Serbian have the suffix *-u* as the 1SG present tense marker. It is possible that this example is not the case of the wrong agreement marker, but rather a case of morphological overgeneralization.

¹⁹ One might argue that the use of 3SG form of the verb *hteti* ‘to want’ is not suffix substitution but rather suffix omission, since all other forms contain 3SG form except for 1SG form which bears different suffix (e.g., *hoću*, *hoćeš*, *hoće*, *hoćemo*, *hoćete*, *hoće*).

We have also attested a small number of examples (4, 2, 21, and 2 in Danica's, Jelena's, Luka's and Miloš' speech, respectively) where the child omits the participle suffix and uses the form which is the same as 3SG or a bare stem (cf. (14e)).

- (14) a. FAT: ti voziš, je-lp (Luka, 1;6)
 you drive-PRES.2SG be-Aux.3SG+Qparticle
 'You are driving, aren't you?'
 CHI: vozj-
 drive-PRES.3SG
 'I drive.'
- b. CHI: da ja pije- (Danica, 2;4)
 SUBJ.COMP I drink- PRES.3SG
 'Let me drink.'
- c. EXP: očeš lopticu? (Danica, 1;8)
 want-PRES.2SG ball (diminutive)
 CHI: oć-
 want-BARE STEM
- d. CHI: da ugasi- (Luka, 2;2)
 SUBJ.COMP turn off-PRES.3SG
 'Let me turn off (the light) / Let's turn off (the light).'
- e. CHI: (u)daji- [: udario] se. (Danica,1;10) hit-
 BARE.STEM reflexive particle
 'He hit himself.'

Suffix omission is the most frequent error type in the overall sample. The overall rate is around 40% for Jelena and Miloš, and around 60% for Danica and Luka.

3) Incomplete stem – these are the cases where the child omits not just the suffix but some part of the verbal stem as well (usually, it is the consonant from the stem that is missing). This omission results in the production of the first syllable of the verb. Some examples are provided in (15). I did not find any report on this type of form in the literature. This might mean that the authors simply did not count these forms as intelligible. Nevertheless, I have decided to include them in the analysis, because they do represent an attempt of the child to use the verb, and a failure to use it right.

- (15) *ba-* (baciti, 'to throw'), *bo-* (bojati *se*, 'to afraid'), *spa-* (spavati, 'to sleep'),
sta- (staviti, 'to put'), *vi-* (videti, 'to see')

4) The use of non-existing suffixes – these are the cases where the child adds a formative to the stem. This element is used as a suffix, even though it does not exist as a verbal suffix in Serbian.²⁰ The most common form of this type is the form: stem + 'suffix' *-i* instead of the correct 1SG, 3SG, or 3PL suffix. Examples are provided in (16).

- (16) *oći* instead of *hoću* ('I want.'), *neći* instead of *neću* ('I don't want.'),
doneći instead of *doneću* ('I will bring')

²⁰ I did not find any report on this type of form in the literature.

The percentage of these examples is small for all children (this error type is not attested in Miloš's speech). It seems that these forms represent an attempt of a child to inflect the verb. The child knows that the verb should be inflected for person/number, but the correct inflection is still not available.²¹

5) Incorrect gender and/or number agreement of participle – these are the cases where the subject and the participle do not agree in gender and/or number. The examples are given in (17).

- (17) a. ja sam ti stavi-la (Luka, 2;6)
 I-MSG be-AUX.1SG you put-PPART.FSG
 'I have put it for you.'
- b. tu bi-la k(r)aka.²² (Danica, 2;0)
 there be-PPART.FSG frog- MSG (name)
 'There was a frog.'

Only few examples of this error type were reported in the sample (Miloš never produces this type of error). The small proportion of this error type might indicate that when past participles are used, there is correct agreement between the subject and the verb. Note, also, the small number of examples where the child fails to use the participle suffix at all (in the type 2 of errors).

With respect to the type of agreement errors it is worth mentioning that the results presented here support previous findings in the acquisition of various languages (Guasti 1993/1994, Kallestinova 2007, Rus 2006, Klepper-Pang 2003, among others). The most frequent cases are the ones where a child fails to use the agreement inflection, producing a form identical to the form of 3SG. Even those verbs whose 3SG form differs from the stem are mostly used in 3SG form. The use of 3SG in inappropriate contexts is the most frequent error which all children make, whereas the substitution of agreement suffixes is quite rare.

These results indicate that the third person singular form might be taken as a default form that Serbian-speaking children use whenever they fail to provide an appropriate inflection. This might be due to the fact that this form is the simplest and contained in all other forms. The default verbal form is usually 3SG of present tense, for most of the verbs. On the other hand, some verbs might have other (also 3SG) default forms. For verbs *pasti* ('to fall') and *otići* ('to leave'), this default form is 3SG of aorist tense.

3.4 Early nonfinite forms: bare participles and root infinitives

Beside agreement errors that have been reported at earlier stages of language acquisition, there are also two types of nonfinite forms found in the child language: bare participles and root infinitives.

²¹ An alternative explanation for this type of error would be mispronunciation. However, this is clearly not the case, since children usually add the same suffix.

²² The example (17b) could even be considered as appropriate agreement, even though it refers to a masculine entity, since the noun *kraka* belongs to the grammatical class of nouns of feminine gender.

Clauses with bare participle consist of a bare participle form which is not preceded by the obligatory auxiliary verb. One account of the auxiliary omission and the resulting bare participles is proposed and empirically supported by different authors: following Phillips (1995), Rasetti (2003: 357) argues that omissions in early grammars represent options which emerge as a response to a need to reduce structure, which is related to performance constraints imposed on the computational capacities of the child. However, there is not enough evidence that this is the case in Serbian. The question of bare participles is controversial in the literature regarding adult Serbian, so we could not say that bare participles are clear cases of non-adult like forms. Their use is highly restricted to particular contexts in adult language (cf. Progovac 2007), but by no means absent. For these reasons we will leave the cases of bare participles to be further investigated. For the time being, their percentage is separately counted and does not belong to either the group of adult-like nor to the group of non-adult like forms. It is noteworthy that, except for the earliest ages, the use of bare participles appears to be optional, given that both bare participles and full forms of past and pluperfect tense are present at the same time.

3.4.1 Root infinitives

In order to obtain data comparable with those in Italian, Spanish, Catalan and other null subject languages, we have applied the methodology summarized in Guasti (2002). Given that RIs are found only in root clauses and that copulas and imperatives cannot show up in RI clauses, we have analyzed only the main clauses.

Four examples of root infinitives are attested, only in Danica's speech. The overall rate of main clause infinitives produced by this child is 0.3%. The percentage of RIs is calculated by dividing the number of RIs by the total number of uttered verb forms.

The earliest use of RIs is reported at the age 2;2 (3 examples, their overall rate at his age is 1.7%). One example of RIs is found at the age 2;8 (0.4%). The examples of RIs are given in (18).

- (18) a. EXP: šta si radila? (Danica, 2;2)
 'What were you doing?'
 CHI: *zalepi-ti žižu onu.*
 paste-INF sticker that
 'Paste that sticker.'
 EXP: mh
 CHI: *zalepi-ti žižu.*
 paste-INF sticker
 'Paste the sticker.'
- b. CHI: ja ima- ovu! (Danica, 2;2)
 I have-PRES.3SG this one!
 EXP: mh@fp, dobro.
 'mh@fp, good.'
 CHI: *ima-ti ovu.*
 have- INF this one
 'Have this one.'
- c. CHI: da pi. (Danica, 2;2)²³
 da-CONJ drink [suffix missing]

²³ Context: Danica is taking two glasses from the experimenter and putting them back on the radiator.

- CHI: da *pi-ti*.
 da-SUBJ.COMP drink- INF
 ‘Let (me) drink.’
- d. CHI: zavari, *uz-e-ti*, zavari.²⁴ (Danica, 2;8)
 braze-PRES.3SG take- INF braze-PRES.3SG
 Braze, take, braze.’

It is obvious that none of the utterances with RIs contains any subject. This finding is in accordance with the assumption that the subjects could not appear in nonfinite clauses (Liceras, Bel & Perales 2006: 210). According to Rizzi’s Truncation Hypothesis (1993/1994), a given structure with a nonfinite verb root is a truncated structure at the level of the TP. This analysis implies that, if AgrP and TP are not projected, we could not expect to find subjects with a nonfinite root form.

In addition, 3 out of 4 examples of RIs (22 a, c, d) clearly show that the child expresses an intention to *paste*, *drink* and *take*, which is also in accordance with previous assumptions that root infinitives express modal meaning (Hoekstra and Hyams 1998, Liceras, Bel & Perales 2006). However, it is impossible to make any further generalizations about root infinitives in Serbian on the basis of such a small sample.

Nevertheless, an important observation should be made with respect to all data we have obtained in the analysis of Danica’s sample. The age of 2;2 seems very significant for the development of her grammar. At this age, Danica uses not only root infinitives, but she starts using infinitives as a complement in the future tense (cf. Table 8 below). At the same age, the highest rate of bare participles is attested. In addition, she starts using constructions with modal verbs followed by a subjunctive-like construction (with the subjunctive complementizer *da*). Even though this age seems rather late for the first occurrence of RIs in child language, it appears that there is a correlation between different phenomena which happen at the same time.

In the data of other children there are no examples of RIs. Moreover, the number of infinitives in early language is small in our data. Table 8 shows the overall number of infinitives in the production of all children, with regard to age. We can observe that children start using infinitives in the future tense construction (Aux + infinitive) or in the modal constructions (Mod. + infinitive) at later ages. In addition, they preferably use subjunctive-like constructions as complements to the auxiliary verb *hteti* ‘will/want’ in the future tense or to the modal-type verbs in modal constructions.

Age	2;0	2;2	2;4	2;6	2;8	2;10	3;0	Σ
Danica	-	3	-	-	-	12	3	18
Jelena	-	-	1	-	-	9	2	12
Luka	4	-	2	6	3	2	4	21
Miloš	-	-	-	-	1	4	5	10

Table 8: Number of infinitives with regard to age

4 General discussion

If we consider the overall sample (age range 1;6–3;0), the results of this research are in line with the continuity approach to language acquisition and falsify the claims that early

²⁴ Context: Danica is taking the cubes from her brother.

grammars are purely lexical in nature. Finite main clauses are attested from the earliest stages of production and constitute the vast majority of sentences produced by the children in the sample.

This study shows that children acquiring a language with overt agreement morphology seem to be sensitive to morphosyntactic properties of the target language from the earliest stages of production. This claim is supported by empirical evidence that almost 90% of the verbs are correctly inflected for person and number. The productivity of novel verbs, as well as the ability to make agreement contrast and use different inflections also proves that verbs are not learned by rote. The delay of plural inflections is reported, especially for the 2nd and 3rd person plural. However, I follow Guasti (1993/1994) in maintaining that this delay of plurality should not be taken as the evidence that children lack knowledge of agreement. The productivity of other person inflections, particularly the contrast between 1SG and 3SG, which children make in the use of novel verbs, shows that the notion of agreement is well embedded in the child grammar. In addition, there is no random distribution of agreement markers, and they are almost always used appropriately.

The fact that children are able to morphologically analyze verbal forms leads to the conclusion that at least the functional category containing the verbal inflection is present in the early grammar. I assume (with Progovac 2005) that this is the functional category T/Agr_s, since all lexical verbs, as well as the auxiliary verbs used in the past and future tense need to raise in order to check agreement features. This also implies the presence of verb movement, which is taken as evidence for the presence of functional categories.

Nevertheless, it is noteworthy that children also make agreement errors. Higher percentage of errors is reported at earlier ages, but they disappear progressively. The proportion of errors in the sample of all children is 7.6%. This proportion is higher than the one reported for other languages, where the percentage of errors is usually lower than 2% and certainly never above 4% (cf. Table 1). The reason for this difference might be in the counting procedure, since I have calculated as errors examples where children failed to provide the correct agreement with respect to the overall sample which excluded copulas and imperatives, whereas some of the previous studies included these types of forms, or excluded others (cf. Guasti 1993/1994 and Rasetti 2003).

Several types of agreement errors were attested, but the most frequent one is the suffix omission. This observation confirms previous findings in the acquisition of different languages – that failure to use the appropriate suffix is a much more common error than the substitution of suffixes (Guasti 1993/1994, Phillips 1995). Suffix omission, which frequently leads to the use of a form which is identical to 3SG, as well as the incorrect distribution of 3SG suffixes instead of other agreement markers, indicates that 3SG form might be taken as the default form which Serbian L1 learners use when they fail to provide an appropriate inflection. As pointed out in Phillips (1995), when verbal agreement morphemes are missing, children commonly use an affix which indicates nonfinite morphology. He argues that this should be taken as regression of some kind to a more general, default form. While in Western European languages, infinitives most commonly serve as the default verbal forms, there is no reason why they should be the privileged default form across languages. I assume that the form of 3SG is the default form in Serbian. Moreover, this form could be considered as an analogue to root infinitives in Germanic languages or French, or an analogue to bare forms in English.

If we focus on the first few ages in the sample (1;6-2;0), we can observe that there is no productive use of other tenses except for the present tense, and that the use of 3SG form prevails – either as a form which correctly agrees with the 3SG subject, or as a result

of suffix substitution/omission. This finding supports the hypothesis that 3SG can be a root infinitive analogue, but contradicts both the results obtained for the overall sample in this study and the results obtained in previous studies. I therefore think that the earliest ages of verbal production deserve more careful study, involving a different methodology.

With regard to root infinitives, it seems that the stage of actual root infinitives does not exist in early Serbian, since only few examples have been attested in the speech of only one child (0.3% of the overall verb use). The small rate of root infinitives in Serbian is consistent with the data from other null subject languages (cf. Table 2). In languages such as Italian, Spanish or Catalan, root infinitives are very rare. On the other hand, as pointed out by Phillips (1995), the rate of RIs is by no means zero, not even in the non-RI languages. How can we then account for the complete absence of RIs from the speech of three other children investigated? There are few possible explanations for its absence in early Serbian. First of all, the overall use of infinitives in early language is rare (cf. Table 8). Unlike in some other languages, where infinitives are morphologically less marked and thus basic elements of the paradigm, they are not that neutral in Serbian. As we saw in the Introduction, infinitives are very marked forms. There are two dedicated infinitive suffixes (*-ti* and *-ći*) which are used only as the infinitival markers and nowhere else in the paradigm. Thus, one might assume that they are lately acquired. It is also noteworthy that the frequency of infinitives is low in the adult language as well (Belić 2005).²⁵ Unlike in some other languages, where infinitives are frequent in the adult speech, the use of infinitives is decreasing in Serbian, and there is an option to choose the subjunctive-like complement instead of using the infinitive form. Hence, I assume that the frequency of infinitives in the input plays an important role in their acquisition.

It should be pointed out that this study shows important similarities in the grammatical development of different Serbian-speaking children. Particularly, we saw that agreement is present in the speech of every child at the beginning of their verbal production. In addition, the progressive disappearance of agreement errors in the samples also conforms to the view that children develop their grammars in the same way.

5 Concluding remarks

In this paper, I have argued that Serbian-speaking children have the knowledge of the agreement paradigm from the earliest utterances on and that Serbian early grammars include at least the functional categories T and Agr_S. However, even though it appears that the Serbian-speaking children have been very efficient in mastering the verbal inflection system, this system still seems to be unstable, especially at the earliest ages (before the age of 2;0). I have also argued that the form of the third person singular of present tense is a default verbal form which children produce whenever they fail to provide an appropriate suffix and could be considered as a root infinitive analogue.

Several limitations of this study should be acknowledged. In order to fully understand children's grammatical development, every observed phenomenon should be examined in more detail. It is important to provide a more detailed study of the

²⁵ Belić's research examined complement variation of verbs, nouns, adjectives and adverbs which select for an infinitival or a subjunctive-like complement. In this study, 204 Serbian-speaking adults participated. Results show that 78.69% of the participants prefer the use of subjunctive-like complement, 15.35% use infinitives, and 5.96% used both complements.

individual differences, since they might give us an insight into more subtle properties of grammatical development. In addition, a more careful study of grammatical properties at particular ages, as well as developmental changes from one age point to another could show us which grammatical phenomena are characteristic of particular ages and which phenomena correlate. The earliest ages around the age of 1;6 should be closely looked at. The phenomena of root infinitives and bare participles still remain unclear; therefore the contexts where they occur deserve careful examination. A broad research on these phenomena in adult language could also help us determine their status and properties.

Given that there are no previous studies on the acquisition of agreement in Serbian, this paper represents a preliminary study. The aim was to provide some answers with respect to agreement morphology in early Serbian, but also to open new questions and point out some characteristics of early grammars that could be interesting for future research.

References

- Andelković Darinka, Nada Ševa & Jasmina Moskovljević. 2001. *Srpski elektronski korpus ranog dečijeg govora* [Corpus of Early Serbian Child Language]. Belgrade: Laboratory for Experimental Psychology, Faculty of Philosophy, and Department of Linguistics, Faculty of Philology.
- Arsenijević B. 1997. Sintaksičko-morfološki status infinitiva [Syntactical and morphological status of infinitives]. *Književnost i jezik* [Literature and language] 45/2-3. 47–55.
- Bar-Shalom, Eva & William Snyder. 1997. The Optional infinitive stage in Russian and its implication for the Pro-Drop debate. In Steven Franks & Martina Lindseth (eds.), *Formal approaches to Slavic linguistics 5: The Indiana meeting*, 8–47. Ann Arbor: Michigan Slavic Publications.
- Belić, Bojan. 2005. Complement verb variation in present-day Serbian. The Ohio State University, PhD dissertation.
- Borer, Hagit & Bernhard Rohrbacher. 2002. Minding the absent: Arguments for the Full Competence Hypothesis. *Language Acquisition* 10 (2). 123–175.
- Bošković, Željko. 1995. Participle movement and second position cliticization in Serbo-Croatian. *Lingua* 96. 245–266.
- Buesa García, Carlos. 2007. Early root infinitives in a null-subject language: A longitudinal case study of a Spanish child. In A. Belikova et al. (eds.) *Proceedings of the 2nd Conference on generative approaches to language acquisition North America (GALANA)*, 39–50. Somerville, MA: Cascadilla Proceedings Project.
- Deprez, Viviane. 1994. Underspecification, functional projection, and parameter setting. In B. Lust, M. Suñer and J. Whitman (eds.) *Syntactic theory and first language acquisition: Crosslinguistic perspectives. Vol. I: Heads, projections, and learnability*. Hillsdale, New Jersey: Lawrence Erlbaum Associates, Inc.
- Guasti, Maria Teresa. 1993/1994. Verb syntax in Italian child grammar: Finite and nonfinite verbs. *Language Acquisition* 3. 1–40.
- Guasti, Maria Teresa. 2002. *Language acquisition: The growth of grammar*. Cambridge: MIT Press.
- Haegeman, Liliane. 1995. Root infinitives, tense, and truncated structures in Dutch. *Language Acquisition* 4 (3). 205–255.
- Hoekstra, Teun & Nina Hyams. 1998. Aspects of root infinitives. *Lingua* 106 [Special issue on Language acquisition: Knowledge representation and processing, Antonella Sorace (ed.)], 81–112.
- Hyams, Nina. 1996. The underspecification of functional categories in early grammar. In Harald Clahsen (ed.), *Generative perspectives on language acquisition*, 91–127. Amsterdam: John Benjamins.
- Josefsson, Gunlog. 2002. The use and function of nonfinite root clauses in Swedish child language. *Language Acquisition* 10 (4). 273–320.
- Kalleshinova, Elena. 2007. Three stages of the root infinitive production in early child Russian. *First Language* 27 (2). 99–131.

- Klepper-Pang A. 2003. Optional structures in the acquisition of Polish: A cross-linguistic perspective. Institut für Linguistik / Anglistik der Universität Stuttgart, PhD dissertation.
- Liceras, Juana, Aurora Bel & Susana Perales. 2006. Living with optionality: root infinitives, bare forms and inflected forms in child null subject languages. In N. Sagarra and A. J. Toribio (eds.) *Selected proceedings of the 9th Hispanic linguistics symposium*. Somerville, MA: Cascadilla Proceedings Project, 203–216.
- MacWhinney, Brian 2000. *The CHILDES project: Tools for analyzing talk*. Third edition. Mahwah, NJ: Lawrence Erlbaum Associates.
- Meisel, Jürgen & Natascha Müller. 1992. Finiteness and verb placement in early child grammar: Evidence from simultaneous acquisition of French and German in bilinguals. In Jürgen Meisel (ed.), *The Acquisition of verb placement*. Dordrecht: Kluwer.
- Mišeska Tomić, Olga. 2004. The syntax of the Balkan Slavic future tenses. *Lingua* 114. 517–542.
- Phillips, Colin. 1995. Syntax at age two: Cross-linguistic differences. In C. T. Schütze, J. B. Ganger and K. Brohier (eds.), *Papers on language processing and acquisition*, 325–382. MIT Working Papers in Linguistics 26.
- Pierce, Amy. 1992. *Language acquisition and syntactic theory. A comparative analysis of French and English child grammars*. Dordrecht: Kluwer.
- Poepfel, David & Kenneth Wexler. 1993. The Full Competence Hypothesis of clause structure in early German. *Language* 69. 1–33.
- Progovac, Ljiljana. 2005. *A syntax of Serbian: clausal architecture*. Bloomington: Slavica Publishers.
- Progovac, Ljiljana. 2007. *Root small clauses with unaccusative verbs*.
http://www.linguistics.stonybrook.edu/fasl/abstracts/R_Progovac.pdf.
- Rasetti, Lucienne. 2003. Optional categories in early French syntax: A developmental study of root infinitives and null arguments. Université de Genève, PhD dissertation.
- Radford, Andrew. 1990. *Syntactic theory and the acquisition of English syntax*. Oxford: Blackwell.
- Rizzi, Luigi. 1993/1994. Some notes on linguistic theory and language development: The case of root infinitives. *Language Acquisition* 3. 371–393.
- Rus, Dominik. 2006. Early root nonfinites and the acquisition of finiteness in child grammar: Evidence from early child Slovenian. In Lavine, J., S. Franks, M. Tasseva-Kurktchieva, and H. Filip (eds.) *Proceedings of formal approaches to Slavic linguistics XIV: the Princeton Meeting*. Ann Arbor: Michigan Slavic Publications, 331–346.
- Shütze, Carson & Kenneth Wexler. 1996. Subject case licensing and English root infinitives. In A. Stringfellow et al. (eds.), *Proceedings of the BUCLD 20*, 670–681. Somerville, MA: Cascadilla Press.
- Wexler, Kenneth. 1994. Optional infinitives, head movement and the economy of derivations. In D. Lightfoot and N. Hornstein (eds.), *Verb movement*. Cambridge: Cambridge University Press.
- Wexler, Kenneth. 1999. Maturation and growth of grammar. In W. C. Ritchie and T. K. Bhatia (eds.) *Handbook of child language acquisition*. San Diego: Academic Press.

Appendix

Tables 1 to 4 show the distribution of finite and nonfinite forms in early Serbian. Following the procedure reported in several papers (Phillips 1995, Kallestinova 2007), I have calculated the percentages of agreement errors, root infinitives and bare participles with respect to all forms analyzed in the study (cf. Guasti 1993/1994 and Rasetti 2003 for different procedures).

Under the column *Finite forms* we find the verbs correctly inflected for person and number, whereas under the column *Infinitives* we find verbs in the infinitive form used as complements to modal verbs (note that infinitives used in the future tense constructions are included in Finite forms). In the column *Nonfinite forms* we find three different types of non-agreeing forms: verbs which are incorrectly inflected for person/number/gender with regard to the context (agreement errors – Err), verbs used in the past participle form

that lack auxiliary (bare participles – BPs), and main clause verbs used in the infinitive form (root infinitives – RIs).

	Finite forms		Nonfinite forms								Σ
			Infinitives		Err		BPs		RIs		
	N	%	N	%	N	%	N	%	N	%	
1;6	12	70.6	-	0	4	23.5	1	5.9	-	0	17
1;8	34	80.9	-	0	7	16.7	1	2.4	-	0	42
1;10	68	79.1	-	0	12	13.9	6	7.0	-	0	86
2;0	85	89.5	-	0	7	7.4	3	3.1	-	0	95
2;2	133	76.0	-	0	27	15.4	12	6.9	3	1.7	175
2;4	94	77.0	-	0	24	19.7	4	3.3	-	0	122
2;6	49	83.1	-	0	10	16.9	-	0	-	0	59
2;8	212	88.7	-	0	16	6.7	10	4.2	1	0.4	239
2;10	317	92.2	1	0.3	22	6.4	4	1.2	-	0	344
3;0	162	98.2	-	0	2	1.2	1	0.6	-	0	165
Total	1166	86.8	1	0.1	131	9.7	42	3.1	4	0.3	1344

Table 9: Distribution of finite and nonfinite forms (**Danica**)

	Finite forms		Nonfinite forms								Σ
			Infinitives		Err		BPs		RIs		
	N	%	N	%	N	%	N	%	N	%	
1;6	7	87.5	-	0	1	12.5	-	0	-	0	8
1;8	6	54.5	-	0	5	45.5	-	0	-	0	11
1;10	31	73.8	-	0	10	23.8	1	2.4	-	0	42
2;0	57	87.7	-	0	4	6.15	4	6.15	-	0	65
2;2	109	91.6	-	0	10	8.4	-	0	-	0	119
2;4	96	75.0	1	0.8	22	17.2	9	7.0	-	0	128
2;6	150	94.9	-	0	6	3.8	2	1.3	-	0	158
2;8	229	92.7	-	0	16	6.5	2	0.8	-	0	247
2;10	220	89.4	2	0.8	11	4.5	13	5.3	-	0	246
3;0	177	94.7	-	0	7	3.7	3	1.6	-	0	187
Total	1082	89.3	3	0.3	92	7.6	34	2.8	0	0	1211

Table 10: Distribution of finite and nonfinite forms (**Jelena**)

	Finite forms		Nonfinite forms								Σ
			Infinitives		Err		BPs		RIs		
	N	%	N	%	N	%	N	%	N	%	
1;6	29	49.1	-	0	26	44.1	4	6.8	-	0	59
1;8	48	60.8	-	0	26	32.9	5	6.3	-	0	79
1;10	167	74.2	-	0	53	23.6	5	2.2	-	0	225
2;0	246	81.2	1	0.3	41	13.5	15	5.0	-	0	303
2;2	218	89.0	-	0	23	9.4	4	1.6	-	0	245
2;4	265	92.7	-	0	12	4.2	9	3.1	-	0	286
2;6	393	94.7	-	0	14	3.4	8	1.9	-	0	415
2;8	234	94.4	-	0	5	2.0	9	3.6	-	0	248
2;10	156	98.7	-	0	0	0	2	1.3	-	0	158
3;0	488	94.7	-	0	23	4.5	4	0.8	-	0	515
Total	2244	88.6	1	0.03	223	8.8	65	2.6	0	0	2533

Table 11: Distribution of finite and nonfinite forms (**Luka**)

	Finite forms		Nonfinite forms								Σ
			Infinitives		Err		BPs		RIs		
	N	%	N	%	N	%	N	%	N	%	
1;6	-	0	-	0	-	0	-	0	-	0	0
1;8	-	0	-	0	-	0	-	0	-	0	0
1;10	1	33.3	-	0	2	66.7	-	0	-	0	3
2;0	-	0	-	0	-	0	-	0	-	0	0
2;2	-	0	-	0	-	0	-	0	-	0	0
2;4	15	100	-	0	-	0	-	0	-	0	15
2;6	14	93.3	-	0	1	6.7	-	0	-	0	15
2;8	88	95.7	-	0	4	4.3	-	0	-	0	92
2;10	75	90.4	1	1.2	6	7.2	1	1.2	-	0	83
3;0	176	95.7	1	0.5	3	1.6	4	2.2	-	0	184
Total	369	94.1	2	0.5	16	4.1	5	1.3	0	0	392

Table 12: Distribution of finite and nonfinite forms (**Miloš**)