

Expansion of Verbal System in Language Acquisition in Croatian

1. A review of prior research

1.2. Acquisition of verbs

In the literature of language acquisition it is often stated that children's first words are primarily nouns, while verbs appear later in the process of language acquisition. This position reflects the linguistic distinction between nouns and verbs based on the distinction between concrete concepts (like persons or things) and predicative concepts (activity, change of state). Consequently, it is stated that nouns are conceptually simpler than verbs and therefore easier to acquire. These arguments were first outlined in detail by Gentner (1982), and confirmed by Clark (1983), O'Grady (1987) and others (see Caselli et al. 1995), where it was also stated that these arguments lead to the following:

- a) In the empirical data, verbs will be found later in the course of language acquisition.
- b) In the empirical data, verbs will be presented in a smaller percentage in the vocabulary of a child acquiring language, especially compared to nouns that are considered the most numerous – so called noun bias.

Data available for children acquiring English seems to confirm this. Bates et al. (1994) have reported that English-speaking children's vocabulary that consists of less than 50 words has less than 5% of verbs, and vocabulary that consists of more than 500 words consists of approximately 14% of verbs. Fenson et al. (1994) give the following figures for words produced by at least 50% of children at 22 months: 63.2% of nouns, 8.5% of verbs, 5.3% of references to people, 7.4% of game and routines, 4.2% of adjectives, 5.8% of sound effects and 5.3% for others. Using a slightly different set of categories with the 24-month-olds of the Wells corpus in the CHILDES database (MacWhinney 1995, MacWhinney & Snow 1985), the results are: nouns 29%, verbs 20%, deictics and exclamations 16%, interjections 18%, adjectives 5%, negation 10% and questions 1% (Parisse and Le Normand 2006). As it can be seen from the research mentioned, in the English language data, verbs appear in a relatively small percentage (up to 20%). In addition, their percentage (and their number) is always lower than the percentage (and number) of nouns.

Evidence from other languages, however, tends to point to a somehow different direction. Some authors have argued against noun bias and some have shown that this noun bias is cultural and language dependent. In languages such as Korean and Chinese, verbs are learned at least at the same rate as nouns (Gopnik & Choi 1990, Gopnik & Choi 1995, Tardif 1996). Probably the most cited from this group of authors are Gopnik and Choi. Their work on data from children acquiring Korean language led them to logical and empirical arguments that not all children necessarily acquire nouns before verbs.

1.2. Acquisition of verbs in the Croatian language

Research of language acquisition in Croatian (Kovačević et al. 2006) has shown specific developmental trajectories in the acquisition of Croatian noun and verb forms. From the beginning of the process of language acquisition, the percentage of nouns is higher than it would be expected (when taking in consideration mentioned studies in English), but at some point the expansion of the number of verbs is highly noticeable and the number of verbs exceeds the number of nouns. This leads not only to the overall prevalence of verbs is this

period, but also the prevalence of verbs over nouns in entire corpus (from chronological age 1;3 to 2;8). The conclusions drawn in the article by Kovačević et al. are based on the analyses of the data from one child, Antonija, and can be defined as follows:

- a) In the acquisition of Croatian the percentage of verbs is higher than it would be expected when having in mind the data available from English-learning children.
- b) The data indicated two phases in the acquisition of verbs: in the first phase, the number of nouns and verbs produced was similar, but in the second phase the production of verbs increased significantly¹.
- c) The beginning of the second phase was approximately around chronological age of 1;7.

In the article mentioned, the authors have also offered explanations for this by identifying traits that could be found in other languages, as well. Confirmation for that statement was found in data of Yucatec Maya language. Yucatec Maya is a typologically different language, but nevertheless shares certain features with Croatian: morphological richness, verbal independency and relatively free word order. Therefore the authors suggest that these features might explain the higher number of verbs and the two phases in the acquisition of verbs.

2. The objectives of the research

The aims of this research are in great part connected with prior work on the acquisition of verbs in Croatian language, namely, the article by Kovačević et al. Their conclusions ground on the analysis of data from one child and the explanations that they offered are mainly based on the theoretical assumptions and the literature on Croatian language, not empirical data. Therefore an additional analysis should be made in order to get a better insight into the verbal development in Croatian.

The objectives of the present work are:

- a) *To rule out the possibility of the results being fully or partially the effect of individual differences.*

Conclusions about the large number of verbs and two phases in the acquisition of verbs are the product of the analyses of the data of only one child. To be able to rule out the possibility of the results being (fully or partially) the effect of individual differences more data should confirm the results. Therefore the data from other two children available in Croatian Corpus of Child Language (Kovačević 2003) (part of the word bank of child language CHILDES (MacWhinney 1995)) have to be analyzed.

- b) *To determine if there is a correlation between the enlarged number of verbs and morphological richness.*

Morphological richness was offered as one of the explanations of a large number of verbs in Croatian child language. Authors claim that the morphology helps a child with the limited lexicon to convey the message. Therefore it is to be expected that in phase two (when the number of verbs increases) the number of morphological forms used increases significantly.

- c) *To determine if there is a correlation between the enlarged number of verbs and syntactic reductions enabled by features of verbs in Croatian.*

Syntactic and morphological features of verbs in Croatian that allow the speaker certain syntactic reductions are also given as a possible explanation of the phenomena. It is claimed that these features enable easier production, since only one word (verb) can be used as the whole (or large part of the) sentence.

¹ "Phase one" and "phase two" will from now on be used when describing this phenomenon.

- d) To offer possible additional explanations for a large number of verbs and especially for the existence of two phases in the acquisition of verbs.

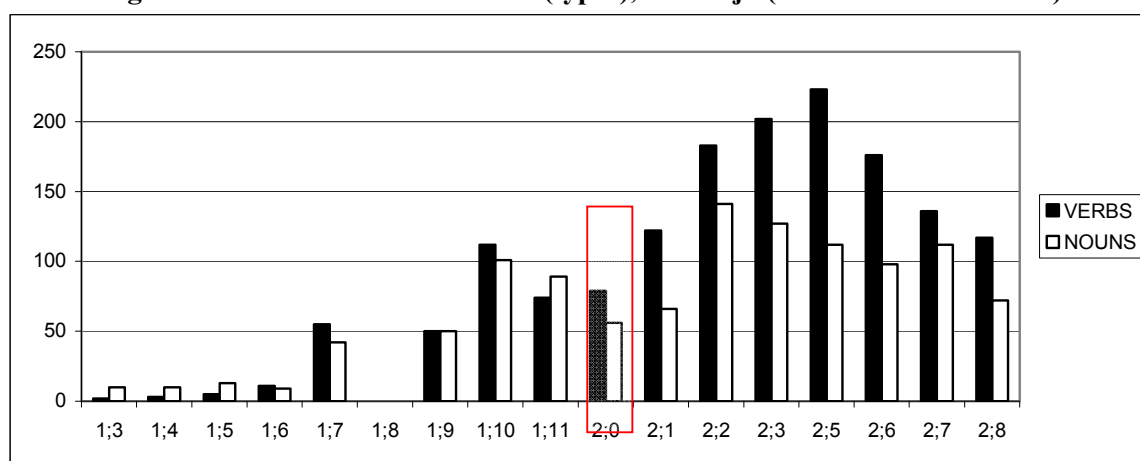
3. Methodology

The data analyzed here are transcripts of three Croatian children, Antonija, Marina and Vjeran (female, female and male). The data are part of the Croatian child language corpus that is part of CHILDES (Kovačević 2003, <http://chilides.psy.cmu.edu/data/slavic/>). Children were, roughly, recorded three times a month. To be able to unify and compare the data as much as possible, analyzed months for all three children were of chronological age 1;5 to 2;8. For the purposes of this article *Frequency dictionary of child language* (Kuvač and Hržica, in preparation) based on the Corpus was also used. Ten most frequent verbs common to all children from the Corpus were extracted.

4. Objective 1. To rule out the possibility of the results being fully or partially the effect of individual differences

To avoid the influence of individual dependency, data from other two children in Corpus were analyzed. Data from the corpora of the other two children partially confirm conclusions based on the analyses of Antonija's corpus. The percentage of verbs in Marina's and Vjeran's corpus is higher than those in data of English-speaking children. Also, their language development shows two phases, one with noun prevalence, and another with verbal prevalence. However, there is a difference in chronological age in which the children enter phase two in verbal development. For Vjeran and Marina this age is around 2;0, while for Antonija it is significantly lower. Kovačević et al. state it to be 1;6. However, although the first month with verbal prevalence for Antonija is 1;6, not until 2;0 is this prevalence constant. Therefore it can be argued that the more adequate onset of phase two in verbal development for Antonija is around chronological age of 2;0, which is in accordance with the other two children.

Figure 1.
Longitudinal data: verbs and nouns (types), Antonija (Kovačević et al. 2006.)



4.1. Conclusion

There is enough evidence to confirm the two previous conclusions on verbal development in Croatian.

- a) In the acquisition of Croatian the percentage of verbs is higher than would be expected when having in mind data available from English-learning children, especially compared to the percentage of nouns.
- b) Data indicated two phases in the acquisition of verbs: in the first phase, the number of nouns and verbs produced was similar, or nouns prevailed, but in the second phase the production of verbs increased significantly.

According to new data, the third conclusion should be revised, so it is proposed that:

- c) The beginning of the second phase is approximately around chronological age of 2;0.

The new time settings will be applied in further analyses.

5. Objective 2. The influence of morphology: is there a correlation between the enlarged number of verbs and morphological richness?

5.1. Croatian verb system

Croatian has a rich morphology, especially of nouns and verbs, with verbs being even more complex. There are seven tenses, two aspects, two numbers, two moods, conditionals, optatives, an imperative, and an infinitive. Morphological endings of verbs also convey grammatical meaning of person, number and (participles) gender. The verbal paradigms are organized into 6 verbal classes (Barić et al. 1997), depending on the thematic vowel and the relation between the present and infinitive stems. However, in spoken Croatian there are only three tenses left (present, future and perfect) and the other tenses can be found mostly in literature (aorist, imperfect, future II, and past perfect). Also, the choice of aspect restricts the choice of tense: in simple sentences, perfective verbs cannot be used in the present, but only in the future and the perfect.

The authors of the article mentioned imply that since there are so many morphological forms with so many meanings, it is expected that a child will use them to express that meaning. Since the lexicon is limited at the early age, different forms enable the child to express different meaning by using morphology. In accordance with that explanation, a higher number of verbs (in types) should also suggest a higher number of different morphological forms. Therefore in this analysis the numbers of morphological forms in phase one and phase two were compared.

5.2. Overall number and order of appearance of morphological forms

In corpora of all three children 15 different morphological forms of verbs were found. There are different forms of present tense (in singular and plural), infinitive (basic form, also used for future tense), participle of all three genders in singular and plural (used for forming past tense), and imperative, mood that signals directive modality, especially in commands.

Not all forms appear early on; new forms appear in the course of development, so their number increases. The analyses showed that by the beginning of the second phase, all verb forms already appeared in corpora of all three children, so there is no expected pronounced growth. However, the numbers relate to all verbs (including auxiliaries and modal verbs), which might have influenced the analyses. Therefore, a second analysis was conducted.

5.3. The analysis of the ten most frequent verbs

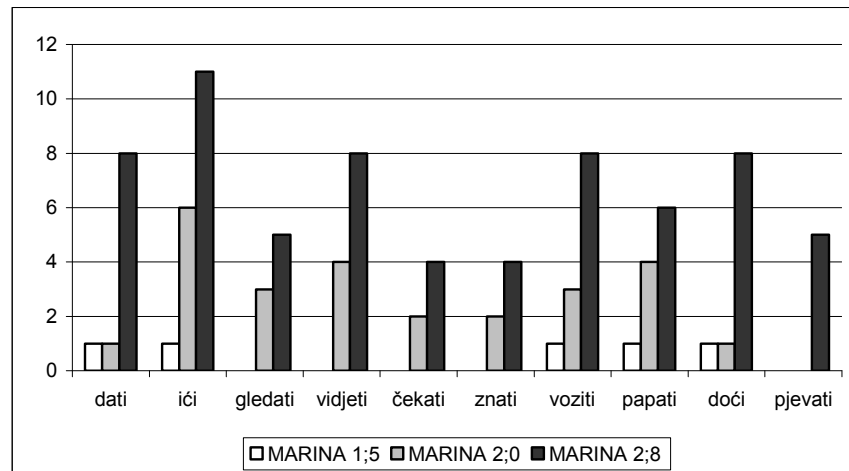
The second analysis tried to uncover what is going on with a specific verb during the course of development. Ten most frequent verbs (auxiliary verbs and modal verbs not included) that appear in corpus were obtained (Table 2) from the *Frequency dictionary of Croatian child language* (Kuvač and Hržica, in preparation), and followed.

Table 1.
Ten most frequent verbs in Croatian Corpus of Child Language (auxiliary and modal verbs are excluded)

number	verb	verb in English	number	verb	verb in English
1.	dati	give	6.	znati	know
2.	ići	go	7.	voziti	drive
3.	gledati	watch	8.	papati	eat (child form)
4.	vidjeti	see	9.	doći	come
5.	čekati	wait	10.	pjevati	sing

The analysis of ten most frequent verbs shows a more distinct difference between the numbers of morphological forms in two phases of language development: number of new forms gained per verb is significantly higher in phase two (for example see Figure 12.). For example, Marina acquired approximately 2.4 new forms per verb in phase one. In phase two this number climbs to 4.1 new forms. Vjeran acquired 1.8 new forms per verb in phase one, and 3.1 in phase two. Antonija acquired 2.9 new forms per verb in phase one, and 3.8 in phase two.

Figure 2.
Number of forms of ten most frequent verbs in three time points - Marina



Although on the basis of the first analysis (all verbs) it could be concluded that the process of the acquisition of verb morphology is already finished in phase two, detailed analysis of the verbs individually shows that phase two is a period of considerable morphological expansion and the number of verbs (types) follows that.

6. Objective 3. The influence of syntax: is there a correlation between the enlarged number of verbs and syntactic reductions enabled by features of verbs in Croatian

6.1. Croatian verb system - syntax

In Croatian verbal morphology enables syntactic reduction of the personal pronoun. The verb carries the information about the subject (1st, 2nd or 3rd person and singular or plural), and sometimes about the object.

Kovačević et al. find this feature of the Croatian language also responsible for the large number of verbs, as it allows the whole sentence to be constructed with just one (or as little as possible) word (verb). Therefore, a child would use a verb to ‘easily’ construct the sentence and the enlarged number of verbs would mean that in the child corpus one could find enlarged number of syntactic forms with the omission of one part of the sentence (semantically redundant).

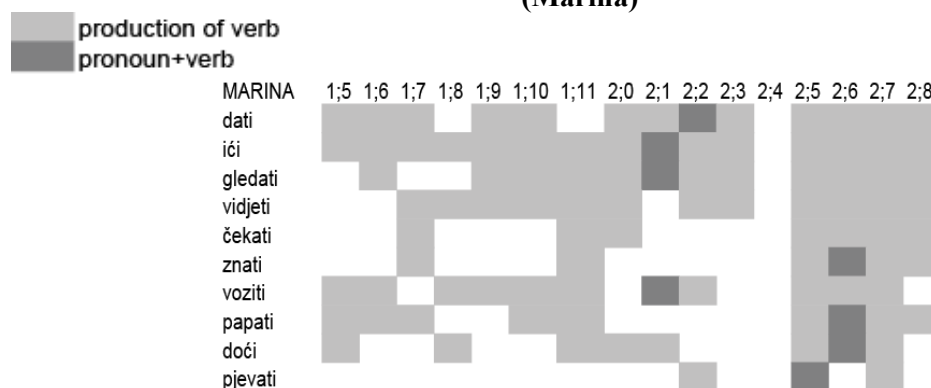
6.2. The analysis of ten most frequent verbs

To check this hypothesis, ten most frequent verbs used by children in were used. All utterances with these verbs were examined to find out if the verb spurt is connected to the increased number of utterances with elision of personal pronoun. There are other elisions in Croatian that might give different results, but the elision of the personal pronoun was chosen because it is the most common and therefore can easily be traced and presumably can be found in enough utterances to enable the analysis.

However, the number of elisions (restricted to certain verbs and certain type of elision) did not show significant growth. More specific, from the beginning, verbs appeared in utterances with elisions. Novelty in the syntactic structures around the time of the beginning of phase two is the appearance of non-elliptical utterances (see for example Figure 18), that is, utterances in which the pronoun could be omitted, but it was included in the utterance, always bringing some additional semantics.

Eg.
 Antonija – 1;11
 ANT: daj ti naz(v)aj [] ivanu .
 /YOU call Ivana/ - meaning, I wont do it, you do it
 Eg.
 Marina – 2;0
 *MAR: mama ja idem +...
 /mummy, I am going.../ - meaning (according to previous utterances) –you did not want to take me out, so now I am going by myself

Figure 3.
Production of utterances with verb and utterances with pronoun+verb construction (Marina)



The morphological feature of a verb that allows it to express the meaning of the subject and/or other parts of syntactic structure is most certainly connected with the large number of verbs vs. nouns and pronouns (since nouns and pronouns can be excluded from the sentence if

semantically redundant). However, in Croatian the elision is expected in syntactic structure, so it is the neutral form. Therefore it can not influence the verbal spurt that emerges in phase two. The noticed appearance of ‘non-elision’ utterances, the ‘reappearance’ of the pronoun, if detected with other verbs, can lead to the broader definition: the increased number of verbs might have something to do with the possibility to use pronoun (or noun)+verb construction to express several kinds of additional meanings such as demanding, pointing, emphasizing, requesting and similar.

7. Objective 4. The influence of other features: possible additional explanations for the large number of verbs and for the existence of two phases in the acquisition of verbs

7.1. Compound tenses

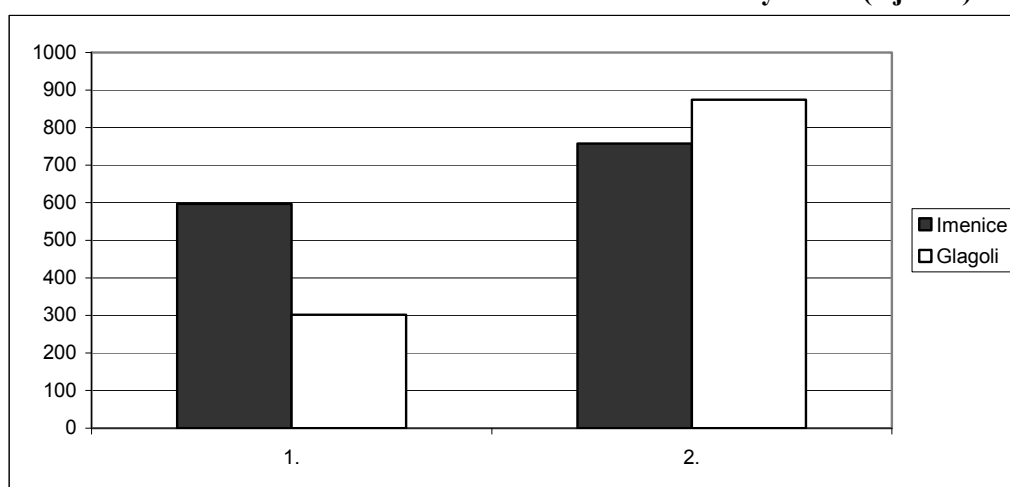
During the above analyses, some other possible explanations for the verb spurt and/or large percentage of verbs was revealed. Both morphological analyses showed preference to the production of participles and infinitives later on in the course of acquisition. As the most frequent appearance of both of these forms is in compound tenses:

infinitive + auxiliary verb ‘to have’ = future tense (Future tense)

participle + auxiliary verb ‘to be’ = past tense (Perfect tense)

It can be assumed that the enlarged number of utterances with compound tenses also attributed to the enlarged number of verbs. As two compounds (verb and the auxiliary) were counted as two separate verbs it could be argued that the large number of verbs, might be a result of methodological procedure, while the other approach (counting two compounds as one verb) could result in different conclusions. However, although it is inevitable that auxiliary verbs significantly increase the overall number of verbs, even if they are all (regardless of their function) excluded, the verbs in the corpuses of all three children still overcome the number of nouns in phase two (for example, see Figure 21.).

Figure 4.
Number of nouns vs. number of verbs without auxiliary verbs (Vjeran)



Therefore, although more frequent (increased) use of compound tense contributes to the large difference in the number of verbs and nouns, it is not exclusively responsible for it.

7.2. Specific syntactic roles of verbs in Croatian child language

A number of authors tried to divide children's utterances into certain categories in the time of early development of syntax (Brown 1973, Slobin 1971, Halliday 1975). Despite their differences, some of the categories are shared by all (or at least a number of) researchers, whether under the same or slightly a different name. Two of them are particularly interesting for this research.

1. Request, demand, desire (Slobin 1971) or instrumental 'I want' and the regulatory 'do as I tell you' (Halliday 1975)

Eg.
*ANT: daj mi čajeka.
/give me some tea/
*ANT: daj tu se čičim.
/let me sit there/

2. Locating or naming (Slobin 1971)

Eg.
*VJE: g(l)e bagera.
/look (there is) a dredger/
*MAR: vidi rukica.
/look (there is) hand/

As can be seen from the examples above, some of the basic syntactic/semantic functions in child's language in Croatian are (while this is not or not entirely so in some other languages) expressed by verbs. Furthermore, some of the verbs from the list of ten most frequent verbs in the early months of language development serve almost exclusively for expressing request, demand or desire ('dati' *to give*, 'čekati' *to wait*, 'ići' *to go (let's)*), or for expressing location or naming ('gledati' *watch* and 'vidjeti' *see*). Request and demand even have their own mood (imperative) with its set of morphological and syntactic rules. In phase two of language acquisition verbs that served only for those basic functions begin to expand semantically and syntactically. By increasing number of roles, number of tokens also has to increase. Together with other features of Croatian outlined here, this one should be considered in the clarification of specific course of verbal development.

8. Conclusion

Objective 1. To avoid the effect of individual differences

It is proved that the prevalence of verbs and two phases of the acquisition of verbs in Croatian are universal for all children in *Croatian Corpus of Child Language*, and therefore, presumably, for the acquisition of Croatian in general. In addition, according to data of all children in Corpus, time setting of the second phase is determinant around the age 2;0.

Objective 2. The influence of morphology

The analyses of verb morphology in general and especially verb morphology of ten most frequent verbs confirmed the hypothesis that morphological richness could be one of the reasons for the increased number of verbs.

Objective 3. The influence of syntax

The analysis of elisions of pronouns showed that the higher number of verbs is not connected to the equal growth of number of elisions. More so, almost all analyzed utterances in phase one in the language acquisition process incorporated elision whenever possible. On the

contrary, for the majority of analyzed verbs, non-eliptical utterances (with extra semantics) appeared later, in phase two.

Objective 4. The influence of other features

Two additional features of Croatian were suggested as possible reasons for both large number of verbs and two phases in acquisition.

- a) Increased number of utterances with compound tenses, and therefore increased number of auxiliary verbs that were counted separately.
- b) Specific features of some of the most frequent verbs in child language that in phase one obtain certain roles that are not or are not primarily associated with verbs (such as demand, request or naming), while later expand by spreading to more specific verb roles.

All mentioned features partially explain verbal development in Croatian language, but should also be investigated further and analyzed thoroughly more. It is also crucial to build prerequisites for further studies, especially the corpus of Croatian spoken language of adult speakers. This corpus would enable better insight into the characteristics of verb system of Croatian spoken language, and the difference between child and adult language in that aspect.

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