A PROCESSABILITY ACCOUNT OF THE L2 ARTICLE ACQUISITION BY BULGARIAN YOUNG LEARNERS OF ENGLISH

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ТЕОРИЯ ПРИОБРЕТЕНИЯ РЕЧИ И ЕЁ ПРИЛОЖЕНИЕ ПРИ ИССЛЕДОВАНИЕ ОВЛАДЕНИЕ АНГЛИЙСКИХ АРТИКЛЕЙ БОЛГАРСКИМИ ДЕТЬМИ, ИЗУЧАЮЩИМИ АНГЛИЙСКИЙ ЯЗЫК

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Summary. The present paper sheds a new light on the acquisition of English articles by L2 young learners of English. It focuses on the interplay between L1 interference and the applicability of a recent cognitive theoretical framework – the Processability theory which serve as a basis for outlining the possible difficulties in the English article acquisition by Bulgarian 9-10-year old learners of English as L2.
Key words: processability theory; English articles; L2 acquisition of English; L1 interference.

The English article system poses considerable difficulties to learners who speak English as a second or foreign language (L2). This is supported by the rich spectrum of research results focused on the exploration of L2 article errors in the spoken and written production of learners of English from various linguistic backgrounds – e.g. Japanese [5,19], Korean [7], Spanish [18; 10], Syrian Arabic [24], Russian [7], Swedish and Finnish language [11].

Some of the recent accounts of the acquisition of English articles by child L2 learners who come from article-less languages (e.g. Russian, Korean, Japanese etc.) [8, 9] or from languages with article systems [11, 26, etc.] reveal that both groups of young learners make similar mistakes at the initial stages of target language acquisition. The most frequent types of ungrammatical placements of the English articles reported in the studies include the omission of articles in obligatory contexts, their suppliance in an incorrect semantic context and the use of bare nouns in cases when an indefinite article is needed. However, it has to be noted that despite the resemblance in the types of errors produced, the child L2 learners of English whose L1s lack articles demonstrate a considerable variation in the choice of articles on the basis of the semantic features that they define – definiteness and specificity. The low levels of accuracy in supplying the definite and indefinite English articles are claimed to be a result of L1 transfer as at the start of L2 acquisition learners rely on the knowledge that they possess of the grammatical features and semantic contexts characteristics for their L1. Another plausible interpretation of the misuse of English articles in the definite and specific contexts is the access that child L2 learners have of the Universal Grammar (UG) parameters and settings that will allow them to acquire the L2 grammatical and semantic features which have no parallels in their L1.

One of the latest theoretical proposals that attempts to give an account of the way in which child L2 learners of English process the grammatical structures of the foreign language is the *Processability theory* [20, 21]. Being a cognitive theory with elements of Lexical functional grammar, the Processability theory claims that in the process of L2 acquisition learners develop their procedural skills for restructuring their interlanguage knowledge systems so that they conform to the target language structures.

The empirical evidence gained from studies that test the applicability and reliability of the Processability theory in describing the developmental sequences of English language acquisition by speakers of other languages [1, 4, 5, 15, 22, 25 etc.] support the plausibility of this theory which has been used as a framework in a variety of studies in English L2 contexts.

Despite the utilization of this theoretical approach in studies exploring the L2 acquisition of English and the fact that English is the most popular foreign language studied by 73,1% of all Bulgarian primary school pupils [12, p. 60], researchers have paid little attention to exploring the ways in which Bulgarian children acquire the English articles. The **main goal** of this paper, therefore, is to establish whether the Bulgarian primary school learners of English as L2 follow a similar developmental pattern in the acquisition of English compared to learners of other languages. Through the presented English article errors made by the 9-

10-year old L1 Bulgarian speaking child acquirers of English as L2, the current work tests the Processability theory predictions and establishes a cross-linguistic basis between the English and the Bulgarian article systems that would allow for detecting possible areas of difficulties for Bulgarian young learners of English as L2.

According to the current developments in the field of cognitive linguistics – a field to which the Processability theory belongs, L2 acquisition is considered to be a cognitive process in which form-meaning links are established, as well as links between the lexical or grammatical forms of words and their meanings and use. A deeper and better understanding of how these form-meaning relations are established when acquiring a L2 is necessary in order to understand how L2 learners manage to cope with the grammatical aspects of the target language. A suitable model that illustrates the intrinsic link between thinking and language production (and that constitutes the basis of the Processability theory) is proposed by Levelt [16].

Levelt's *Speech Production Model* claims that speech production includes three main components: conceptualization, formulation and production (Fig.1; adapted from Levelt [16, p. 9].

The boxes in Fig. 1 show the processing components and the ellipsis and circle represent the knowledge stores that contain respectively two types of knowledge: a) declarative knowledge stored in the long-term memory of L2 learners; and b) factual knowledge: knowledge about the words in the L2, about their "semantic, syntactic, morphological, phonological, stylistic, pragmatic and idiomatic characteristics" [13, p. 177].
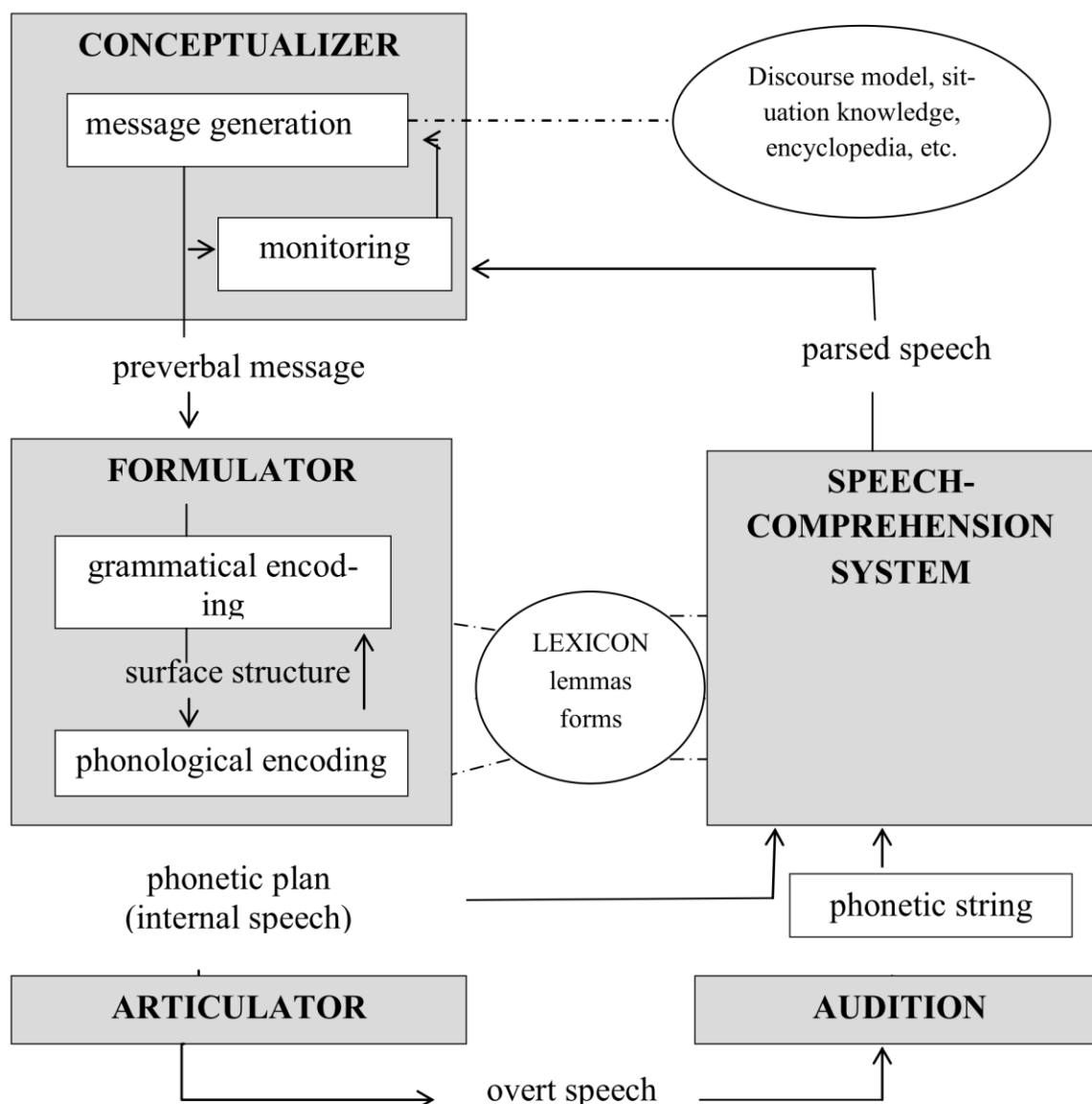
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CONCEPTUALIZER
  message generation ------→ (Discourse model, sit-
                              uation knowledge,
                              encyclopedia, etc.)
  monitoring ←─────────── parsed speech

preverbal message                  parsed speech
        ↓

FORMULATOR                    SPEECH-
  grammatical encod-          COMPREHENSION
  ing                         SYSTEM
  surface structure
  phonological encoding       LEXICON
                              lemmas
                              forms

phonetic plan
(internal speech)                  phonetic string

ARTICULATOR                   AUDITION

        ──────→ overt speech ──────
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Fig. 1. **Levelt's Speech Production Model**

Levelt's *Speech Production Model* is built up on the idea that each stage receives certain input and produces certain output which functions as input for the next component. A central assumption in this model is the idea that the L2 speaker acts as information processor who initially generates a preverbal message (in the *Conceptualizer*), then it is "translated" into a linguistic structure by supplying the relevant grammatical and phonological encoding (in the *Formulator*) and finally converted into speech proper in the *Articulator*.
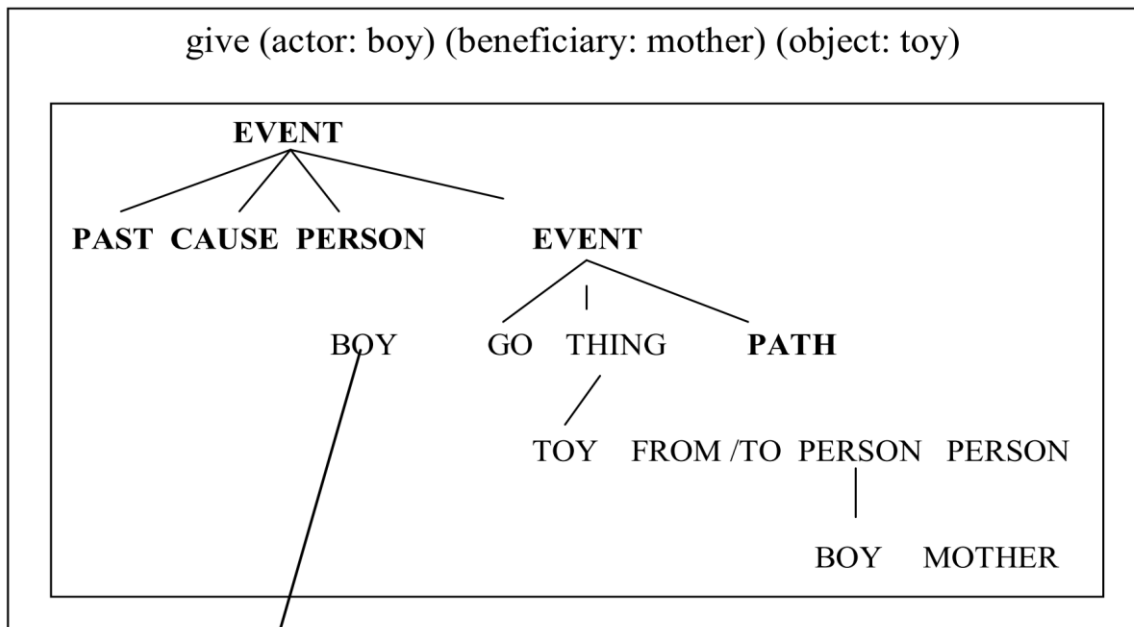
The process of generation of the utterance *A boy gives a toy to the mother* in the light of Levelt's model is illustrated in Fig.2[1] which shows the different processes involved in the generation of the sentence. The first step involves the generation of concepts in the *Conceptualizer* and the activation of the lemma *boy* in the mental lexicon of the L2 speaker. As the lemma *boy* is a N (noun) this calls forth the categorial procedure NP (noun phrase) which can build the phrasal category where N functions as a head of the NP. The categorial procedure makes it possible for diachritic features to be marked to the complements and specifiers. Thus, the Det (Determiner) is attached to the NP, the lemma *a* is activated and the lexeme *a* is inserted at the beginning of the utterance. Despite the fact that articles in English do not exhibit obligatory agreement with the noun, the selection of the lemma *a* "depends partly on

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[1] Adapted from Pienemann and Häkansson, [23, p. 388 – Figure 1]
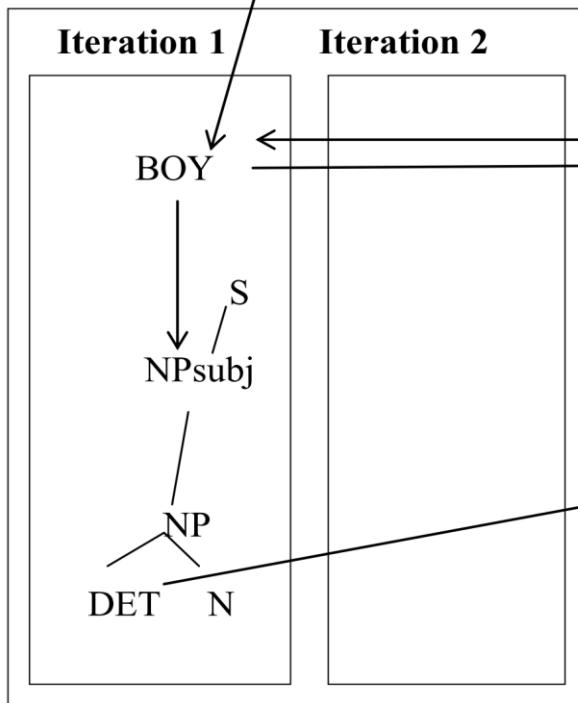
the value of a diachritic feature (singular) of the head being checked against that of the targeted lemma" [23, p. 388].

What Fig. 2 illustrates is the initial generation of a sentence up to the point before information exchange between the constituents of a phrase becomes possible. The missing steps include the assigning of grammatical functions to the phrase and the delivery of the generated fragment to the *Formulator* and then to the *Articulator*. As Pienemann and Häkansson [23, p. 389] point out while the production of this structure and the associated lemmata are activated, the next conceptual fragment is processed in parallel. So when the structure and the associated lemmata are delivered from the *Formulator* to the *Articulator*, the newly produced conceptual fragment will move from the *Conceptualizer* to the *Formulator*. Thus the whole process of production of utterances in the L2 moves from one iteration to another.
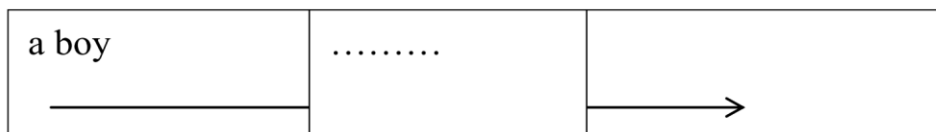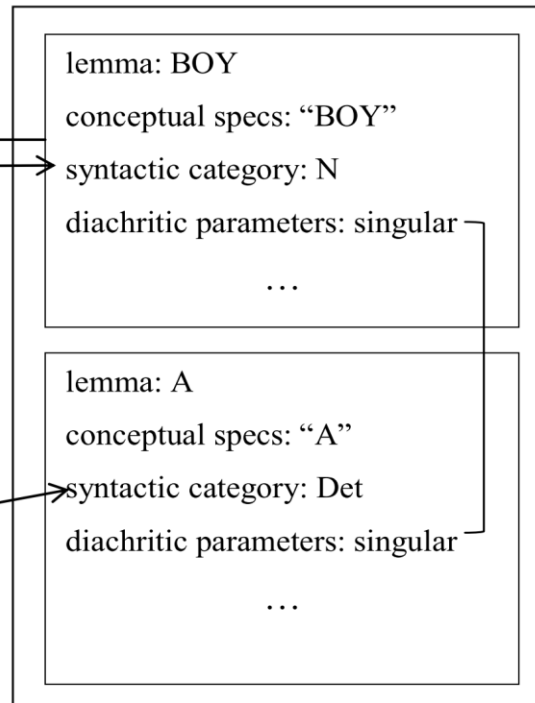
CONCEPTUALIZER

give (actor: boy) (beneficiary: mother) (object: toy)

EVENT

PAST CAUSE PERSON   EVENT

BOY   GO   THING   **PATH**

TOY   FROM /TO PERSON PERSON

BOY   MOTHER

GRAMMATICAL ENCODER   LEXICON

Iteration 1   **Iteration 2**

BOY

lemma: BOY

conceptual specs: "BOY"

syntactic category: N

diachritic parameters: singular

…

S

NPsubj

NP

DET   N

lemma: A

conceptual specs: "A"

syntactic category: Det

diachritic parameters: singular

…

a boy   ………

Fig. 2. **Language generation**

Due to the fact that languages differ in their grammatical characteristics, the information used in the conception of the preverbal message will differ depending on the language. For instance, the English article system contains two types of articles that differ in the semantic properties that they express – *definiteness* and *specificity* (Table 1).

Table 1

Semantic settings of the English articles

	+ definite	-definite
+ specific	***the***	***a***
- specific	***the***	***a***

Although, the Bulgarian articles also express the same semantic settings, there are considerable differences in the article systems of Bulgarian and English. This in Levelt's terms means that the L2 Bulgarian young learners of English have to develop a new *Conceptualizer* so that they are able to plan and produce sentences in the target language. While developing this new *Conceptualizer*, the L2 primary school pupils will rely on their L1 *Formulator*. This suggests that at the initial stages of L2 acquisition the Bulgarian young speakers of English will be influenced by the grammatical parameters of their L1 which will affect their performance in English. For instance, as in Bulgarian the notion of *indefiniteness* is not expressed by means of articles, the Bulgarian children will tend to omit the English indefinite article *a* in front of singular countable nouns or noun phrases containing such nouns.

It is worth noting that Levelt's *Speech Production Model* contains another component – the *Speech-Comprehension System* which allows the L2 speakers to monitor their own production in the form of overt speech as it is connected to the conceptual system. Since all the components of the model are autonomous and there is no feedback among them, speech errors might appear in the oral production of the L2 learners as the components of the model do not contain mechanisms for recognizing and coping with incorrect input.

Regardless of this drawback of Levelt's model mentioned above, the potential of the Processability theory for studying and analyzing the acquisition of L2 articles by Bulgarian 9-10-year-old children cannot be underestimated. Taking into consideration the fact that this theoretical platform perceives L2 acquisition as a cognitive process in which the L2 learners develop language processing procedures and follow universal paths of development, it can predict the developmental trajectories followed by L2 learners on the basis of the order in which these processing routines develop.

The idea behind this assumption is that the processing procedures develop in a hierarchical sequence – the lower level procedures act as a prerequisite for the functioning of the higher level ones.

According to Pienemann [20] L2 learners need to acquire first *words* which will be added to the target language lexicon before their grammatical category is assigned. Thus in *Stage 1: Word access / Lemma* the L2 speakers, who are at the beginning level of language acquisition, are able to produce only individual words and formulaic expressions that do not require exchange of any grammatical information with other constituents in a specific structure.

Then at *Stage 2: The Category procedure* L2 learners are able to assign the grammatical category (e.g. noun, adjective, verb, adverb etc.) of the target language words. Once this is achieved, lexical morphemes can be produced. For instance, the processing of the English *-ing* form of verbs (in contexts without auxiliaries), past *-ed* forms and plural *-s* forms of nouns is achieved by this procedure.

Stage 3: The Phrasal procedure: At this stage are formed phrases through the exchange of grammatical information between the constituents of a phrase so that its type and function within the sentence are determined. For instance: in the NP (noun phrase) *Mark's dog* the application of possessive *'s* on the head noun is possible due to the fact that the lemma *Mark* contains the grammatical function *possession.*

Stage 4: S-procedure: This is the stage at which information is exchanged across phrasal boundaries and S – V (Subject – Verb) agreement is reached. Here the phrases are also assigned grammatical function such as subject or object. For example in the NP *John walks* is subject so the verb that follows it has to be in the 3rd person and singular. The insertion of the *-s* suffix on the verb is achieved by the application of interphrasal morphology

processing. In fact, according to the Processability theory inter-phrasal morphology can appear only after phrasal morphology has taken place. For instance: if the NP *a boy* has the function of a subject in a sentence, then the verb which follows it must be in the *3ʳᵈ person* and *singular* in number as in the sentence *A boy plays tennis*.

The last procedure at *Stage 5: Sub-clause procedure* is related to the *joining of sentences* in which complex sentence structures are formed.

This hierarchy gives ground for predicting which grammatical forms and structures the learner will be able to process at a certain level of his / her language development.

What has been presented in the previous sections is an outline of the Processability theory and its application in the acquisition of L2. The next section will deal with the "translation" of this framework to the study of English articles by Bulgarian primary school children aged 9 to 10 and formulating a number of research hypotheses. In order to do this an outline of the similarities and differences between the lexical, phrasal, and interphrasal morphology of the noun phrases in English and Bulgarian with respect to the processing of articles will be provided.

Before we deal with the English and Bulgarian noun phrases (NPs) we have to point out that these structures are similar in the two languages as the constituents of a NP usually include a DET (determiner), ADJ (Adjective) or a QUANT (Quantifier) and a head noun. The major contract between the English and Bulgarian NPs is that the determiner (DET) in English comes before the head noun (e.g. **the** *boy,* **the** *windows,* **a** *cat*), while the determiner in Bulgarian takes a post-posed position (e.g. *мъжъ̀т / mažat – man* ₘₐₛ𝒸,ₛ𝒢, *the* ₛ𝒢,ᴅᴇᴛ; *сина /* *sina – son,* ₘₐₛ𝒸. ₛ𝒢; а, ₘₐₛ𝒸.ₛ𝒢). Apart from that in Bulgarian NPs the articles and adjectives agree with the head noun. This agreement involves the diachritic features of gender, number and definiteness or indefiniteness.

The article system in Bulgarian is much more complicated than that of English which has only two articles – *the* and *a* which do not agree with the noun or adjective in the NP in terms of gender or number. The person and number paradigm of the Bulgarian articles is summarized in Table 2.

<div align="right">*Table 2*</div>

Person and number paradigm of the Bulgarian articles

GENDER	INDEFINITE		DEFINITE	
	singular	plural	singular	plural
Masculine	*-a / -ja*	*-to*	*-ât / -jat*	*-(i)te*
Feminine	*-(a / ja)ta*	*-to*	*-(a / ja)ta*	*-(i)te*
Neuter	*-to*	*-to*	*-to*	*-te*

Basic examples that illustrate the use of Bulgarian definite article with nouns and adjectives within the NP are given below:

(1)   *Golemi   -jât   mi   kufar*
Big, ₐᴅᴊ, ₘₐₛ𝒸. ₛ𝒢.   *the,* ᴅᴇᴛ. ₘₐₛ𝒸. ₛ𝒢.   *I,* ₁ₚ. ᴅₐᴛ.   *suitcase,* ₘₐₛ𝒸.ₛ𝒢
"My big suitcase"

(2)   *Žena-   -ta   na   ulitsa   -ta*
Woman, ꜰᴇₘ. ₛ𝒢.   *the,* ᴅᴇᴛ. ꜰᴇₘ. ₛ𝒢. *in*   *street,* ꜰᴇₘ.ₛ𝒢   *the,* ᴅᴇᴛ. ꜰᴇₘ. ₛ𝒢.
"The woman in the street"

(3)   *Dete-   -to   pee*
Child, ɴᴇᵁᴛ. ₛ𝒢.   *the,* ᴅᴇᴛ. ɴᴇᵁᴛ. ₛ𝒢.   *sings,* ₃ₚ.ₛ𝒢, ₚʀᴇₛ
"The child sings"

(4)   *Knigi-   -te   na   masa -ta*
Book, ꜰᴇₘ. ₚʟ.   *the,* ᴅᴇᴛ. ꜰᴇₘ. ₚʟ. *on*   *table,* ꜰᴇₘ. ₛ𝒢. *the,* ᴅᴇᴛ. ꜰᴇₘ. ₛ𝒢.
"The books on the table"

These examples show that the definite article, which functions as a determiner in the NP, does not always follow the head noun. Rather, it follows the adjective if the head noun is modified by one – as in (1).

Apart from that some of the countable Bulgarian masculine nouns have alternative plural forms – e.g. *ramo* 'shoulder' – *ramene* 'shoulders' / *ramena* 'shoulders', *prozorets* 'window' – *prozorči* 'windows' / *prozoreč* 'windows' due to the fact that in contemporary Bulgarian language there exists the so called *numerical form*. These two plural forms select the following determiners *ramene-te* 'the shoulders', *prozorči-te* 'the windows'.

The notion of indefiniteness in Bulgarian is not expressed by means of articles but by the cardinal number one – *edin* (NOM. MASC.), *edna* (NOM. FEM.) and *edno* (NOM. NEUT). These words are used in indefinite noun phrases which are part of a neutral description.

(5)   *Edn -a žena varvi po ulica   -ta.*
a,*DET.FEM.* woman, *FEM.SG.* walk,*3p, SG.PRES* along street, *FEM.SG* the, *DET. FEM. SG.*
"A woman is walking along the street."

The words *edin, edna, edno* denoting the semantic feature [-definiteness] in Bulgarian can be also used in constructions which introduce new referents. In this case the noun representing the new referent appears usually in post verbal position.

(6)   *Kruša -ta   ja   e risuvalo edn-o dete.*
Pear, *FEM.SG* the, *DET. FEM. SG.* she, *DAT. FEM.SG.* AUX sketch, *3p.SG.PRET.* a, *DET.FEM* child, *NEUT, sg.*
"A child sketched the pear."

The words *edin, edna, edno* denoting the semantic feature [-definiteness] in Bulgarian may be omitted in the case when the noun phrase does not introduce a referent.

(7)   *Kruša -ta   ja   e risuvalo dete.*
Pear, *FEM.SG* the, *DET. FEM. SG.* she, *DAT. FEM.SG.* AUX sketch, *3p.SG.PRET.* child, *NEUT, sg.*
"A child (not an adult) sketched the pear."

The lack of a specific word in Bulgarian for the indefinite article, the fact that it can be replaced by the cardinal number *one* (depending on the gender of the noun and its plural form) and the possibility to omit the indefinite article in most cases (esp. when the meaning of the sentence is clear without it and it is not under logical stress), make us suggest that the Bulgarian L2 learners of English will omit the English indefinite article at the early stages of their L2 acquisition.

The descriptive outline of the main characteristics of the English and Bulgarian nouns allows us to **hypothesize** that:

1)   the L1 of the Bulgarian young learners will influence the children's L2 production and there will be a huge number of omissions of the indefinite English article.

2)   the unification of the diacritic features of *definiteness*, which involves phrasal morphology, will not appear at the earlier stages of L2 acquisition – The *Word / Lemma* and *the Category Procedure* as the Processability theory predicts that it takes place only when information exchange between structure constituents becomes possible (i.e. the *Phrasal procedure*).

The following section presents the results from a study testing the formulated above hypotheses.

The study subjects were 72 Bulgarian speaking children learning English as their L2 in one state primary school in the town of Ruse (Bulgaria). Their age ranged from 8 to 11 years old during the study period (October – December 2011). The mean age of the subjects was 8;9 and their mean exposure to English – 20;5 months as the study commenced. Fig. 3 presents the mean age of the study participants at the start of the study.
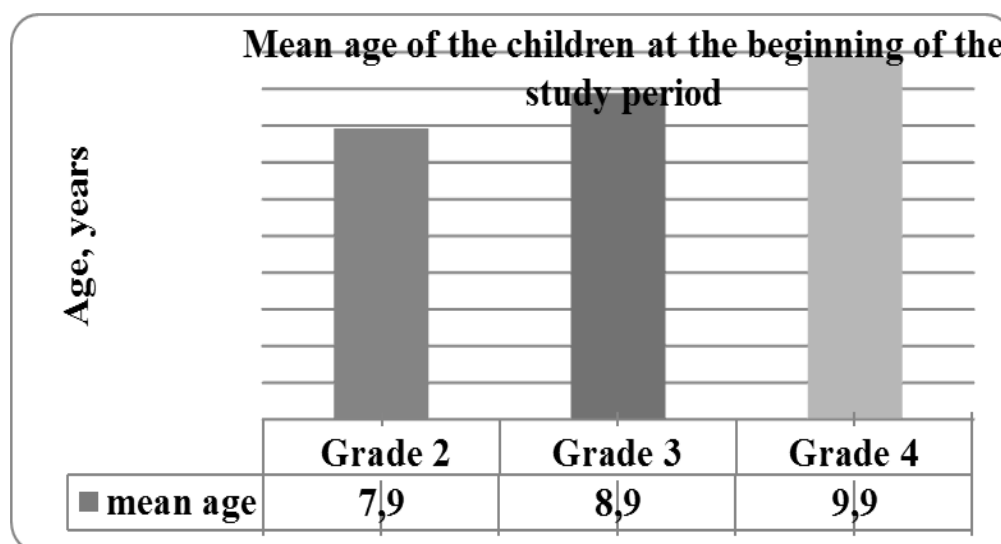
Fig. 3. **Mean age of the Bulgarian children studying English as L2 at the start of the study**

The analysis of the use of articles by Bulgarian speaking children who learn English as L2 was done by excerpting errors from their notebooks and by noting down errors related to the use of articles in children's oral production in the English language lessons observed. Articles were coded depending on their appropriateness in the context of the excerpted sentences as: 'correct use of the indefinite article *a*', 'incorrect use of the definite article *the*' (overuse), 'incorrect use of the indefinite article *a*' (overuse) or 'null article' in definite contexts or indefinite contexts. Examples of the types of contexts or article use:

1) incorrect use of the definite article *the* in indefinite contexts (overuse):
- He has got the car (should be *He has got a car*);
- It lives in the small house (should be *It lives in a small house*);
- This is the tall man. (should be *This is a tall man*)
2) incorrect use of the indefinite article *a* (overuse):
- * I can see a dogs. (should be *I can see dogs*)
- * It has a small eyes and four legs;
- * There is a pictures.
3) incorrect use of the 'null' article (Ø) in indefinite context:
- It's Ø shirt. (should be *It's a shirt*);
- It's Ø big animal.(should be *It's a big animal*);
- Have you got Ø pen? (should be *Have you got a pen?*);
- It lives in Ø house. (should be *It lives in a house*).
4) incorrect use of the 'null' article (Ø) in definite context:
- They go to Ø plane. (should be *They go to the plane*);
- * I must listen Ø teacher.(should be *I must listen to the teacher*);
- Ø pen in in Ø box (should be *The pen is in the box*);
- They aren't washing Ø dishes. (should be *They aren't washing the dishes*).

The first step to confirm or reject the study hypotheses, was the calculation of the correct and wrong uses of the target language articles in the four contexts. The distribution of the incorrect uses of *the* and *a* was calculated (see Table 3).

Table 3

Percentage of correct uses of English articles in the first two categories

	[+definite]	[-definite]
[+specific]	89 % ***the*** 11 % *a*	73 % ***a*** 27 % *the*
[-specific]	92 % ***the*** 8 % *a*	85 % ***a*** 15 % *the*

As seen from the results the accurate use of articles is considerably higher in all of the four categories. The percentage of correct uses of the definite article *the* in definite contexts is higher than that of the indefinite article *a* in indefinite.

According to the study hypotheses the Bulgarian children successfully supplied the correct articles in the definite contexts. This good performance of the study subjects could be interpreted as a result of the fact that the grammatical category of *definiteness* has already been formed in the L1 of the young learners and transferred to the foreign language article semantics.

The results also show that the indefinite semantic context constitutes a bigger problem. Accuracy in this case was lower than in the [+ definite] contexts, which as Morales [18] and Lardiere [14] suggest could be as a result of the difficulty young learners face with the acquisition of the semantic characteristics of indefiniteness which are more complex than that of definiteness.

Results also revealed that the percentage of incorrect uses of the null articles in the envisaged contexts was quite high (Table 3).

The analysis of errors in these two contexts shows that the Bulgarian young learners of English as L2 tend to omit the definite and the indefinite article in the respective contexts. The omission of the indefinite article *a* in the indefinite specific or non-specific context can be interpreted as a result of the transfer of semantic knowledge from L1 to the L2 and coincides with the formulated study hypothesis.

Table 3

Percentage of correct uses of the English articles (null articles in definite and indefinite contexts)

	'null' article in definite contexts	*'null'* article in indefinite contexts
[+specific]	20 % ***the*** 80 % *null*	9% ***a*** 91 % *null*
[-specific]	21 % ***the*** 79 % *null*	24 % ***a*** 76 % *null*

It is much more difficult to offer a plausible interpretation of why the study subjects have omitted the definite article the in the [+definite] semantic context. The only possible explanation for all fluctuations from the rules of the target language is the insufficient level of development of processability procedures that would allow the L2 learners to successfully mark the relevant diactritic features – [+definiteness] or [-definiteness] within the target language noun phrases.

The present paper has focused on examining how the semantic features of the L1 and the processability procedures for handling the grammar of the L2 affect the article choice of Bulgarian 9-10-year old learners of English. The results obtained support the idea that the acquisition of the L2 grammatical features is a complex process in which the L1 and the processability procedures are intrinsically related. On the one hand, the L1 semantic universals are transferred to the L2 and target language article choice is strongly influenced by that and on the other hand, the gradual development of the computational mechanisms needed for processing the foreign language determine the level of mastery of the target language.

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