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STRUCTURAL CHARACTERISTICS OF CODE-SWITCHES IN FOUR-YEAR-OLD BILINGUALS

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Abstract

The structure of code-switches at early periods of childhood bilingual development is underresearched. This article reports findings from mixed utterances of two four-year-old bilingual children who simultaneously acquire Russian and English within a Russian monoethnic family. The objective of the paper is to describe structural characteristics of code-switches observed in conversations of the siblings with their parents and grandparents. Structural analysis has been done within the framework of the Matrix Language Frame (MLF) model elaborated by C. Myers-Scotton. The results of the study demonstrate that code-switches by both children frequently followed the main principles and rules of the MLF model, though their choice of Russian as the Matrix Language (ML) signaled its increasing dominance in the children's bilingual development at this period. Violations of the MLF model rules appeared only in those rare cases when English acted as the ML in the children's mixed utterances because their English Grammar acquisition lagged behind their Russian one. The structural types observed in four-year-old child bilingual speech are predominantly intrasentential, with English bare forms being the most frequent sub-types used within Russian morphosyntactic frame. The research is significant because the detailed analysis of code-switches can give insight not only into the child bilingual development but also into new ways of interrelation of two languages in close contact.

Keywords: Child bilingualism, code-switches, Russian, English, the Matrix Language, the Embedded Language.

1. Introduction

Early bilingualism is usually studied in bi-ethnic families where parents or other caregivers interact with their children in their native languages. However, since Saunders (1988) published his inspiring work on providing native – non-native bilingualism to his three children within his own family and described their bilingual development, several other cases have been studied in different countries (see the overview in Chirsheva (2013). In Russia, such cases have been described in some works on Russian-English bilingualism developed in monoethnic settings – within Russian families where some caregivers use their native language in communication with children, while others interact with the children in English, their non-native language (Chirsheva & Korovushkin, 2019). The importance of specific types of input in bilingual child language acquisition continues to be a disputable problem (Hoff, 2020).

In the families where caregivers interact with children in two languages these young bilinguals find themselves in the so-called "bilingual mode" (Grosjean, 2001) when both of their languages are activated to a different extent and two grammars are coactivated (Goldrick, Putnam, & Schwarz, 2016). Therefore, the children very frequently combine units of their two languages to produce mixed utterances.

While code-switches and code-mixing with various combinations of languages have been researched in the speech of young bilinguals (Nicoladis 2019; Vihman, 2016, 2018; Yow, Patrycia, & Flynn, 2016) Russian-English code-switches in early bilinguals' speech have been underresearched, with only several works dealing with them (Chirsheva & Korovushkin, 2017, 2019; Chirsheva, Korovushkin, & Mushnikova, 2018).

2. Problem Statement

The analysis of structural characteristics of code-switches can demonstrate how balanced or non-balanced bilingualism is developed in lexical, semantic, morphosyntactic and pragmatic aspects. Moreover, a longitudinal study of children's mixed speech may reveal the dynamics of their bilingual development (Yow, Tan, & Flynn, 2018). One of the disputable problems in the study of child bilingual speech is in the assumption that the MLF model elaborated for the analysis of adult code-switches can hardly be used to research early child mixed utterances. Although for some combinations of languages this problem has been solved (Nicoladis, 2019; Vihman, 2016, 2018), this is only beginning to be done for Russian-English early bilingual speech (Chirsheva & Korovushkin, 2017). Therefore, this paper can contribute to understanding important aspects of how early childhood bilingualism is developed and how two languages interact when they are acquired in very close contact.

3. Research Questions

The research questions for the paper are: (a) How often do the two languages of four-year-old bilingual children act as the ML and the EL? (b) Which structural types are more frequent in the mixed speech of the children? (c) How do structural types and sub-types of code-switches characterize the bilingual development of children?

To answer these questions we suggest the following hypotheses: (a) the dominant language in childhood simultaneous bilingual development acts predominantly as the ML in mixed utterances; (b) rare "classical" switches and frequent "bare forms" of the EL signal of the children's lack of confidence in both the grammar of non-dominant language and the grammar of mixed bilingual speech.

4. Purpose of the Study

The purpose of the paper is to describe structural aspects of code switches in two four-year-old siblings who simultaneously acquire Russian and English in Russian monoethnic settings. The additional objectives that support the main one are: (a) to demonstrate how the MLF model can be used to research child code-switches; (b) to describe structures of code-switches and their frequency in each child at the age of four and to compare them to find out the most typical ones; (c) to show how structural analysis of code-switches can contribute to the study of simultaneous childhood bilingualism.

5. Research Methods

The data for this study are 627 mixed utterances extracted from a videotaped speech of each child at the age of four years old. The overall duration of video-recording is about 40 hours (approximately the same amount for each child). The supportive data are the parents' and grandparents' written diaries.

The analysis of the children's code-switches consists of the following steps.

1. Distinguishing between utterances with code-choice and code-switching.

2. Classifying code-choice cases for their dialogical variations into (a) initializing dialogues in a non-dominant language; (b) code-maintenance, i.e. using the same language as the initial one in the response; (c) code-shift, i.e. choosing another language in the reacting utterance.

3. Classifying code-switches into intersentential and intrasentential.

4. Describing the structure of intersentential code-switches.

5. Classifying intrasentential code-switches into clause-switches, parenthetical switches, EL islands, and insertions.

6. Stating the roles of the two languages as the ML and EL in intrasentential code-switches, with the frequency evaluation.

7. Describing each sub-type of switches both qualitatively and quantitatively.

8. Comparing the difference in the frequency of structural types and sub-types of code-switches in the speech of two siblings. Explaining how the code-switches and their frequency interact with the development of child bilingualism at a four-year-old age period.

The description of intrasentential code-switches will be done within the MLF model originally elaborated for the study of adult bilingual speech (Myers-Scotton, 1997; Myers-Scotton & Jake, 2017). However, we argue that early code switches can also be analyzed within the premises of this model.

6. Findings

The description of mixed utterances in two bilingual children's speech begins with code-choice, followed by intersentential switches and ends up with intrasentential code-switches. Quantitative analysis of the data is represented in Table 01 below.

Table 01. Types of code-switches (CS) in the two bilingual siblings' speech

Types of CS Children	Code-choice		Intersententional CS		Intrasententional CS		Total	
	Amount	%	Amount	%	Amount	%	Amount	%
Mike	79	26	61	20	163	54	303	100
Alex	168	52	75	23	81	25	324	100
Total	247	39	136	22	244	39	627	100

6.1. Code-choice

Bilingual episodes in the children's mixed speech can be divided into code-choice and code-switches. Code-choice cases are whole dialogue cues produced in one of the languages within bilingual dialogues; therefore, code interaction is observed only outside such utterances, so we do not analyze them with the help of the MLF model.

Code-choice in Mike's bilingual speech included 26 % (79 cases), while in Alex it made more than half of all his mixed speech (52 %, or 168 cases). The overall amount of code-choice in the bilingual speech of two children is 247 utterances, which makes 39 % of the data under study here.

Code-choice cases are classified into three categories: a) initial dialogue cues in a non-dominant language, i.e. the utterances that the children produce to start a dialogue; (b) code-maintenance in English dialogues with adults, i.e. the English responses; (c) code-shift cues from a non-dominant to a dominant language, i.e. the utterances that the children produce in Russian when they give their response to adults' English dialogue cues.

Quantitative analysis of the three code-choice variations is represented in Table 02 below.

Table 02. Variations of code-choice in the two bilingual siblings' speech

Types of CS Children	Initial dialogue cues		Code-maintenance		Code-shift		Total	
	Amount	%	Amount	%	Amount	%	Amount	%
Mike	25	32	12	15	42	53	79	100
Alex	12	7	71	42	85	51	168	100
Total	37	14	83	34	127	52	247	100

Mike initiated English dialogues with adults 25 times (32 % of all his code-choice), Alex did that in 12 dialogues (7 % of all his code-choice), with the total number of 37, which makes 14 % of all code-choice in our data (examples 1 and 2, respectively).

(1) Mike (outdoors): "***Where are we going?***"

(2) Alex: "***Granny, what are you doing?***"

Initial dialogue cues are the least frequent cases in both children, which can indicate the lack of self-confidence in their English language competence that they feel and that reflects the real state of affairs: they have not acquired enough English grammar and vocabulary to start conversations. Besides, the initial English utterances are short constructions containing everyday expressions (questions, commands or statements). The importance of such cases of code-choice is in the fact that they demonstrate the children's willingness to speak English and their attitude to this non-dominant and "weak" language in their linguistic repertoire.

Mike maintained English in his 12 responses (15 %) within English dialogues with adults, Alex did that in 71 dialogues (42 %), with the total number for both children being 83, which makes 34 % of all code-choice in our data (examples 3 and 4, respectively).

(3) Mike (in response to his grandmother's question: "*Is it yours? Is it for you?*"): "***For me.***"

(4) Alex (in response to his grandmother's question: "*Shall I c*ollect *all the boats?*"): "***Yes, collect all the boats***".

Maintaining English in their responses to adults' English replicas had pragmatic value: the children wished to speak English, they agreed with their interlocutors, confirmed their ideas, or just wanted to please them. Quantitative characteristics demonstrate that Alex tried to maintain English in his responses much more frequently than Mike, which may partially be explained by the fact that he was the youngest in the family and wanted his parents and grandparents to compliment him. Like in initial dialogue cues, the structures of these utterances were quite simple and did not vary lexically.

Code-shifts from English to Russian were fixed in 42 (53 %) responses made by Mike and in 85 (51 %) responses made by Alex in the dialogues initiated by adults in English, which makes 52 % of all code-choice in our data (examples 5 and 6).

(5) Mike (while watching the cartoon "Three Billy-goats" and in response to his granny's question: "*Do you like to eat grass?*"): "***Нет! Я же не козел!***" [No! I am not a goat!]

(6) Alex (while listening to the book "*The bear who wants to read*" and in response to his granny's question: "*And you – can you read?*"): "***Нет, а Миша может***". [No, I can't, but Mike can.]

When children chose to respond in Russian to English utterances they demonstrated that though they understood what they had been told they either did not know how to express themselves in English or did not want to do that. Sometimes it was evident that the children used code-shifts as a kind of bilingual discourse strategy: by choosing another language they stressed their disagreement with their English interlocutors. Alex changed the English code to the Russian one in twice more cases than Mike, and these were usually the situations when he felt it difficult to express his ideas in English.

Unlike initial dialogue utterances and code-maintenance, the constructions in the responses produced in Russian were much more elaborated and diverse both in grammar and vocabulary.

6.2. Intersentential code-switches

Mike had 61 cases (20 %), and Alex had 75 (23 %) of intersentential code-switches (22 % of all the episodes of our data). Both boys usually began them with English sentences and finished up with Russian ones. This fact could be explained by a kind of relief strategy: they tried to speak their "weak"

language, but could not find enough means in it to express themselves, so they switched to Russian (examples 7 and 8).

(7) Mike: "*This is a king lion. This is a girl. Это просто картинки*". [These are just pictures.]

(8) Alex: "*Granny, open the door! Я кричал это, когда еще был на лестнице*". [I was shouting this when I was still on the stairs.]

However, their intersentential code-switches were sometimes constructed in reverse order: they began them with Russian sentences followed by English ones (examples 9 and 10).

(9) Mike: "Это кошка. *And this is a dog*."

(10) Alex: "Я сам водичку налью. *Give me the water*. "

In such situations, the boys seemed to remember that they had chosen "the wrong" language and switched to English, which we interpret as cases of bilingual self-correction and language awareness.

6.3. Intrasentential code-switches

Intrasentential code-switches make 54 % (163 cases) of Mike's mixed utterances, and those of Alex's make 25 % (81 cases). The overall amount of intrasentential code-switches is 244 units, which makes 39 % episodes in our data. They are divided into the following variations: clause-switches, parenthetical switches, and insertions (together with island switches). Quantitative analysis of intrasentential code-switches sub-types is represented in Table 03 below.

Table 03. Sub-types of intrasentential code-switches in the two bilingual siblings' speech

Sub-types of CS Children	Clause-switches		Parenthetical CS		Insertions and Islands		Total	
	Amount	%	Amount	%	Amount	%	Amount	%
Mike	3	2	36	22	124	76	163	100
Alex	0	0	21	26	60	74	81	100
Total	3	1	57	24	184	75	244	100

6.3.1. Clause-switches and parenthetical switches

These sub-types of switches do not demonstrate the interrelation of two grammars, so they are not analyzed in terms of the MLF model. Clause-switches have been observed only in three of Mike's utterances (see example 11), with none in Alex.

(11) Mike: "*It's me, когда я был маленький*".[… when I was small.]

Parenthetical switches were extracted from 36 episodes of Mike's speech: 18 of them were English (example 12) and 18 are Russian (example 13). 21 English parenthetical switches were observed in Alex's speech (example 14). These switches were represented mainly by forms of address.

(12) Mike: "*Granddad, иди сюда, пожалуйста!*" […, come here, please!]

(13) Mike: *"Папа, it is Alex's."* Daddy, …]

(14) Alex: "*Granny, я хочу это читать, когда пойду спать. А сейчас я хочу смотреть мультики*". […, I want to read this when I go to bed. And now I want to watch cartoons.]

In his parenthetical switches Alex sometimes also used English etiquette word *please* at the end of his Russian utterances.

6.3.2. Insertions and Island switches

Quantitative analysis of insertions and EL island switches in the boys' mixed speech is represented in Table 04 below.

Table 04. Variations of insertions and EL island switches in the two bilingual siblings' speech

Sub-types of CS Children	Insertions proper		Bare forms		Classical CS		EL islands		Total	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Mike	45	36	24	20	9	7	46	37	124	100
Alex	36	60	6	10	2	3	16	27	60	100
Total	81	44	30	16	11	6	62	34	184	100

Close coactivation of two grammars and vocabularies is found only in insertions and island switches; therefore, before describing them we characterize the way two languages act as the ML and the EL in the siblings' mixed speech.

6.4. The Matrix and the Embedded Languages (ML and EL)

One of the languages in bilingual utterances provides the morphosyntactic frame for the sentence, which means that it supplies all grammatically relevant morphemes (system ones, in terms of the MLF model) and establishes the order of morphemes and words in this sentence; the other language is the EL and its presence is limited by the ML. These procedures are regulated by two main principles and several additional rules, formulated as hypotheses within the MLF model (Myers-Scotton & Jake, 2017).

Further research into the bilingual speech of heritage immigrants added new insights into the interrelation of two languages at the stages of first language attrition: the gradual shift of language dominance results in the appearance of the so-called Composite ML (Bolonyai, 1998; Schmitt, 2000).

The dominant language in a bilingual child's repertoire usually acts as the ML because its grammar and vocabulary have been acquired and practiced better than those of the non-dominant language. The amount of intrasentential code-switches was different in Mike's and Alex's speech (163 and 81 cases, respectively); however, both boys preferred Russian as the ML in 93 % of all their mixed utterances (see examples 15 and 16).

(15) Mike: "*А вон **granddad** стоит*". [There is **granddad** over there.]

(16) Alex: "*У меня живот, будет **baby**?*" [I have a (big) tummy, will I have a **baby**?]

There were very few violations of both main principles of the MLF model in Russian sentences; however, the majority of the sentences with English morphosyntactic frame (two-thirds of them) demonstrated violations of the System Morpheme Principle (see examples 17 and 18): the children used the EL prepositions and conjunctions, which, being system morphemes, must not appear separately, without content morphemes, within a sentence in a different language (the ML).

(17) Mike: "*He is working **на** computer.*" [He is working **with the** computer.]

(18) Alex: "*Granny, I want bread **и** butter.*" [Granny, I want bread **and** butter.]

6.4.1. Insertions proper and bare forms

Insertions proper and bare forms have the same structure: they are built with the help of single content morphemes. The difference is the following: insertions proper are found in those syntactic positions that do not require any system morphemes (that of a subject or a direct object), while bare forms require system morphemes but are used without them.

Insertions proper are quite numerous in both siblings' Russian and English morphosyntactic frames: 45 insertions (33 English and 12 Russian) in Mike's speech and 36 (30 English and 6 Russian) in that of Alex. The English ones are more frequent in both boys (examples 19 and 20), than Russian ones (examples 21 and 22), which supports the idea that the children felt more confident when they built Russian morphosyntactic frames and inserted English lexemes into them.

(19) Mike: "*Я хочу peach.*" [I want a **peach.**]

(20) Alex: "*Почему у granny дверь не закрывается?*" [Why doesn't **granny**'s door close?]

(21) Mike: "*Granny, nana is coming.*" [Granny, **daddy** is coming.]

(22) Alex (in response to his granny's question: "*Is there still water in your ears?*"): *"No, теперь no.*" [No, there is none **now**.]

Bare forms are found in those morphosyntactic frames that limit the use of the EL grammatical categories because they are not congruent with the ML grammar (Myers-Scotton, 1997, pp.110-113). Such situations are frequent when two typically different languages interact.

We argue that there are several pragmatic factors, especially in child bilingual speech, the most evident one being the children's lack of confidence in non-dominant grammar. This argument is supported by the fact that both of our children used only English bare forms: Mike had 24 and Alex 6 ones (examples 23 and 24).

(23) Mike: "*У меня нет handkerchief.*" [I don't have a **handkerchief**.]

(24) Alex (asked in response to his granny's suggestion: "*You can play here in the bath*"): "*А чем play?* " [What to **play** with?]

In Mike's utterance (example 23) the English noun lacks the inflection (for the Genitive case) that is required by the Russian morphosyntactic frame. Alex used an English infinitive (example 24) that in a Russian morphosyntactic frame should have a specific ending (-it').

Bare forms in the siblings' Russian morphosyntactic frames were represented most frequently by nouns and in some rare cases – by adjectives and verbs. Presumably, the children were in doubt about how to supply them with proper affixes, which resulted in the use of such words as bare forms.

6.5. Classical code-switches

Classical code-switches are the ones that are well-formed in full accordance with the rules of the ML. To use such code-switches a bilingual should be competent in the ML, while the EL can be acquired to a different extent. Both boys had very few classical code-switches at the age of four: 9 in Mike's speech and 2 in Alex's (examples 25 and 26).

(25) Mike: "*Rabbit-ы бывают такие*". [**Rabbit**s can look like this.]

(26) Alex: "*А где другие checkers-ы?*" [And where are other **checkers?**]

All of the siblings' classical code-switches were English nouns supplied with Russian plural inflections. The rare appearance of such code-switches gave the evidence that the children were not efficient in bilingual playing on words.

6.6. Island switches

The EL islands consist of two or more EL content morphemes or combine EL content morphemes with EL system ones. The EL islands are then inserted into the ML morphosyntactic frame in different ways that follow the rules provided by the additional hypotheses of the MLF model (see the description of EL Island Trigger Hypothesis and the EL Implicational Hierarchy Hypothesis (Myers-Scotton, 1997 p. 6).

The boys had several structural variations when they built EL islands: a noun in a plural form, a noun with an indefinite article, a noun with a definite or indefinite pronoun, a combination of two nouns, an adjective combined with a noun, etc. (examples 27 and 28).

(27) Mike: "*Это просто **pictures** – не знаю, какие*". [These are just ***pictures***, I don't know what kind of them.]

(28) Alex: "*У меня нет **a car**.*" [I don't have ***a car***.]

All the EL islands at this age period were English ones inserted into Russian sentences. There were 46 of them in Mike's speech and 16 in that of Alex. Variability in the structures of EL island switches was also more evident in Mike's mixed utterances. Judging by these facts we may suppose that Mike's bilingual grammar was developing more actively at the age of four because he gained more English input from his father and grandparents than his younger brother did two years later.

7. Conclusion

The abundance of code-shifts from English to Russian showed that the children's bilingualism was developing as a passive one: their English production lagged behind their comprehension of English speech. Sometimes they tried to maintain English in their responses but found it difficult, which resulted in simplified constructions of their English utterances.

Intersentential code switches demonstrated the ability of children to build sentences in both languages and use them alongside. However, such switches were among the least frequent in both children. Moreover, comparing the grammar and vocabulary of Russian and English sentences used in the same utterance we can see that the English ones were less diverse and expressive than Russian ones.

In intrasentential code-switches that have been analyzed with the help of the MLF model the most striking feature demonstrating Russian language dominance lies in the fact that it acted as the Matrix Language in the majority of all mixed utterances. It means that the children felt confident only when they produced Russian morphosyntactic frames where they used Russian word order and Russian grammatically relevant morphemes. Most of those rare cases when the children tried to build English morphosyntactic frames resulted in the violations of the MLF model principle of system morphemes.

Another evidence of non-balanced bilingual development is provided by frequent use of English bare forms and rare cases of classical code-switches. Bare forms showed that the children were not sure how to make them properly inserted into the Russian morphosyntactic frame; therefore, they left many English words uninflected. Classical code-switches that require a certain degree of linguistic creativity

and fluency in two languages were very few in the speech of these four-year-old children, which demonstrated that bringing Russian and English grammar into close interaction was too difficult for them.

The EL islands showed that the children had acquired the EL system morphemes and the syntactic rules that provide proper morpheme order. Therefore, the fact that they used English articles and plural forms of nouns within their EL islands is the evidence that their competence in English grammar at the age of four was developing. At the same time, some English grammar forms were underrepresented in the EL island switches, which shows that the children did not feel free in the use of their non-dominant language. The fact that the boys did not use Russian EL island switches within English morphosyntactic frames demonstrated a non-balanced development of their bilingualism at the age of four.

The structural characteristics of the siblings' mixed speech differed insignificantly. We explain some differences in the number of certain types or subtypes of code-choice or code-switches by parameters of communicative situations and variations in the children's input. Studying the structural properties of child code-switches at various age periods may give insight into some subtle details of their bilingual development. Therefore, the analysis of mixed speech makes a valuable contribution to the description of childhood bilingualism and its dynamics.

Acknowledgments

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