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Lexical and Morphological Development for English and Russian in a 3-Year-Old Multilingual Child

Processability Theory (PT) adequately describes the developmental stages of L2 learners across languages. To date, little is known whether PT can predict the grammatical development of bilingual and multilingual children. A longitudinal study examined the lexical and morphological development of a child growing up with Russian and English and exposed to Ukrainian using PT from 2;11 to 3;06. The results show a strong correlation between the child's vocabulary growth and the development of morphological skills, supporting Lexical Functional Grammar. Grammar development in both languages progressed alongside lexical acquisition, indicating the cumulative nature of language development. The study supported Pienemann's hypothesized sequences in PT, revealing different stages for Russian and English. It suggests that NP agreement precedes VP agreement in the child's English. However, there was no evidence supporting the acquisition of the S-procedure before the subordinate stage in English. These findings contribute to understanding Russian-English bilingualism in early childhood.

Key words: processability theory, Russian-English, language development, vocabulary, morphological development

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Processability Theory as a Theoretical Framework

Multilingualism is an increasingly prevalent phenomenon in today's globalized world, and it is vital to understand the development of language skills in multilingual children. One aspect of this development is the acquisition of morphological and lexical features in several languages, which can pose challenges for young learners.

The framework that was used in the present study for tracking the morphological development in the bilingual child is centered on the Processability Theory (PT). Being originally a metric for L2 development, the PT gained importance in various linguistic environments as evidenced by numerous articles, theses, and papers attempting to shed light on the hypothetical sequence of morphosyntax acquisition in L2 English (Pienemann, 1998; Zhang & Widyastuti, 2010), L2 Italian (Di Biase & Kawaguchi, 2002), L2 Swedish (Pienemann & Hakansson, 1999), L2 Spanish (Bonilla, 2015) and L2 Japanese (Kawaguchi, 2010). Although the PT was used to track the sequence and peculiarities of bilingual L1 development in several recent studies (e.g., De Houwer, 2009; Itani-Adams, 2013; Medojevic, 2014; Salleh, 2017), little is known about the processing hierarchy in children growing up with Russian and English.

Designed to investigate L2 acquisition, the PT was developed by Manfred Pienemann in 1998 and is rooted in Levelt's approach to language production (Pienemann, 1998). According to Levelt's speech production model, any produced utterance undergoes three stages: conceptualization, formulation, and articulation. During pre-verbal conceptualization, which encompasses micro- and macroplanning, a communication intention is developed, and relevant information is organized (Levelt, 1989). The formulation level comprises lexicalization, which implies selecting an appropriate lexical item from the speaker's vocabulary, as well as syntactic planning, which is necessary to integrate a lemma into the utterance considering such categories as number, gender, aspect, or tense. A lemma is defined as a form of a word that appears as an entry in a dictionary and is used to represent all the other possible forms. For example, the lemma "build" represents "builds," "building," "built" (Cambridge Dictionary). Then, the utterance is encoded based on semantic and syntactic information and finally articulated.

Core Assumptions of Processability Theory

Pienemann points out that the fundamental assumption underlying the PT is that learners master grammatical inventory through a step-by-step procedure, beginning from the simplest level of a lemma and progressing gradually to phrasal, sentence, and subordinate procedures (Pienemann, 2015). This hierarchy reflects the order of stages that are necessary prerequisites for moving from the lowest procedure to more complex morphological and syntactic structures.

The main premises are outlined in the PT as follows:

1. Processing components exhibit relative autonomy and focus on specific

linguistic tasks. Processing occurs beyond the speakers' conscious awareness, and it is not necessary for them to have explicit knowledge of the morphological structures employed in their speech.

2. Processing is incremental, meaning the lexico-grammatical form is constructed while the stage of conceptualization is still in process.

3. The output of the processor is linear although it cannot be mapped linearly onto the underlying meaning (Pienemann, 2005). Non-linearity can arise both at the level of content and of morphology (Levelt, 1983), as demonstrated in the following examples:

Before they were incarcerated, they had committed a felony (1).

Finally, he scores the goal (2).

The first describes two actions that occurred in a non-natural sequence, requiring the speaker to retain the proposition expressed in the main clause. The second example illustrates the storage of grammatical or morphological information rather than lexical data: subject-predicate coordination implies that the speaker should consider the person and number markings before uttering the verb. These examples highlight the cognitive processes involved in maintaining and organizing linguistic information, showcasing the role of sequencing and morphological considerations in sentence construction.

Lexical-Functional Grammar

Grammatical processing involves accessing a grammatical memory store (Pienemann, 2005). This grammatical information is temporarily held in memory and may not perfectly represent the speaker's intended conceptualization.

Being universal, lexical-functional grammar (LFG) is designed to determine the morphological and syntactic structures of typologically different languages and based on the idea of the unification of lexical features that includes several stages:

1. Encoding grammatical information within lemmas.
2. Temporary storage of grammatical information.
3. Incorporating grammar data into the constituent structure (Bresnan, 2001).

A brief overview of the theory highlights that the main components of LFG encompass lemmas, constituent structure, and functional structure. Within LFG, each lexeme is annotated with diacritic features, such as number, gender, tense, and others.

The constituent structure, often referred to as C-structure, illustrates the relationships between the components within a sentence that is exemplified by noun and verbal phrases, which fall into separate words. For instance, in the sentence "The young lady drinks juice," the primary constituents are a noun phrase ("the young lady") and a verb phrase ("drinks juice").

In order to convey the intended meaning of a sentence, it is necessary to establish a connection between semantic content and grammatical information. The function structure (f-structure) represents grammatical functions and associates attributes (e.g., number) with corresponding values (e.g., singular or plural).

Joan Bresnan (2001) claims that f-structure is universal and can be applied to various languages (Bresnan, 2001), since it serves as a bridge between lexical meaning and grammatical representation. On the other hand, the constituent structure (c-structure) varies across languages and is influenced by their typological characteristics. Overall, lexical functional grammar has been chosen as the theoretical groundwork for the PT hierarchy owing to its universality and formalism.

Previous Research Supporting PT

Previous studies mainly focused on investigating how morphological and syntactic structures are learned across different ages, in natural and artificial learning settings, using various research methods. Research in specific language families (Germanic, Romanic, Japonic, Sino-Tibetan) supported Pienemann's PT framework. Glahn et al. (2001) studied 47 adults learning Swedish, Danish, or Norwegian as a second language, finding that subordinate clauses appeared after mastering earlier stages. They also noted the order of development between number and gender agreement. Artoni and Magnani (2015) supported PT by studying Russian case systems and how learners progressed from basic to flexible word order frameworks, concluding that similarities between a learner's native language and the target language do not allow skipping developmental stages.

Jansen's (2008) cross-sectional study focused on the interaction between German morphology and syntax, showing 100% scalability. It investigated word order acquisition in English and German learners, supporting Pienemann's proposed implicational sequence.

Lucija Medojevic (2014) resorted to the PT to develop a Serbian hierarchy by studying language proficiency in Serbian-Australian adolescent bilinguals. Four morphosyntactic structures were chosen for the research and distributed within word-level, lexical, phrasal, and inter-phrasal stages. Results showed that case and number markings on nouns were acquired before agreement in noun phrases, while subject-predicative agreement occurred in the final inter-phrasal stage, supporting the PT's universal nature applicable to all languages.

Di Biase and Kawaguchi (2002) supplemented the PT by highlighting variation in learners' automatization levels within each developmental stage. Their study focused on Japanese L2 learners' production of passive constructions. Despite all participants reaching stage 4 according to the PT hierarchy and being capable of producing passive voice, automatization levels ranged from novice to expert users.

Challenges and Considerations Regarding PT

While the aforementioned studies completely supported the stages of morphology and syntax acquisition predicted in PT, the research conducted by Dyson (2009) revealed both consistent and incompatible evidence towards the PT hierarchy. The empirical material provided by Charters and Jansen (2011) contradicts the order of plural marking acquisition within PT: bare plural -s – plural with numerical quantifiers – plural with other quantifiers. English L2 learners with Vietnamese background started using plural markings with numbers earlier than lexical plural without any quantifiers.

Further research is needed to address the challenges of applying the PT to typologically different languages and to clarify the ambiguity surrounding the emergence criterion. Hudson's (1993) study revealed discrepancies between learners who reached stage 4 according to the PT framework and native speakers, highlighting the limitations of using developmental stages for assessment. Spinner (2011) emphasized the difficulty of distinguishing between intermediate and advanced L2 learners based solely on the PT, as main grammatical structures had already been acquired by both groups. The definition of the emergence criteria used in the PT also sparks debates among researchers. Originally, emergence referred to the productive use of a structure in multiple contexts (Pienemann, 1998), but Meisel (1981) shifted the focus to the transition from one level to another, rather than complete acquisition and accurate usage. Jansen (2008) highlighted the challenge of determining if a learner has truly acquired a structure when there is no evidence of its context or production in their speech.

Few studies explore claims of the PT in bilingual young children. One key study by Salleh (2017) observed a bilingual child speaking Malay and English, supporting PT's universal developmental sequence in both languages. It highlighted the mutual influence between English and Malay on linguistic structures.

Itani-Adams' research (2013) showed that a child's language development in Japanese and English aligned with Processability Theory's predicted sequence. The study tracked Hannah's speech data from 1;11 to 4;10 in both languages, aiming to identify language-specific developmental patterns in her lexicon. Results consistently supported PT's expected sequence in the acquisition of Japanese and English.

PT and Multilingual Children: A Research Gap

Significantly, the PT has not been employed in the study of multilingual children who are exposed to both Russian and English from birth. Thus, this study aims to serve as the first longitudinal examination of Russian-English L1 Acquisition conducted within the theoretical framework of the PT.

Another noteworthy contribution to the field of bilingual language acquisition comes from Antonella Devescovi (2005). Her study focused on examining how

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age and vocabulary size contribute to MLU in bilingual children. She found that both age and vocabulary played a significant role in shaping MLU, but interestingly, vocabulary had a larger impact.

Bassano et al. (2005) state that as the lexicon expands beyond a certain point, changes in morphosyntax take place, highlighting the interconnectedness of lexical and morphosyntactic developments.

However, there is limited knowledge regarding the correlation between lexicon and morphology in children growing up with Russian and English. To address this gap, this case study aims to investigate the extent of the correlation between lexical and grammatical development during early language acquisition in a multilingual 3-year-old child, focusing on these particular languages.

The present study endeavors to provide insight into two primary research questions:

1. Is there a correlation between lexical and morphological development in a multilingual Russian-English child, and to what extent?
2. Does the multilingual child conform to the predicted sequence of morphological acquisition postulated by the PT?

In bilingual language acquisition, researchers are interested in how morphosyntactic development and vocabulary size in each language relate. Janet L. Patterson's study (2000) of 102 Spanish-English children (aged 21 to 27 months) uncovered insights into vocabulary growth and revealed a difference in expressive vocabulary size among bilingual children.

Developmental Stages for English Morphology

The PT's core claim is that learning any language involves acquiring five speech-processing procedures in consecutive order. These procedures follow similar developmental paths due to shared language processing mechanics. The PT's transitional paradigm is believed to be applicable to language-specific trajectories and provides a basis for assessing individual speech development and comparing morphological progress in language acquisition. Slobin (1985) argues that children have an innate capacity for language acquisition that is not dependent on the particular language they are learning. This capacity is evident in the rapid and spontaneous acquisition of language by children, without the need for explicit instruction.

English and Russian, belonging to distinct linguistic families - Germanic and Slavic, respectively - exhibit notable differences in their morphological structures. English, characterized by limited inflectional morphology, contrasts with Russian, which boasts a more intricate system encompassing noun, pronoun, and adjective declensions for gender, number, and case. Such structural disparities pose challenges for learners navigating the complexities inherent in the inflectional patterns of each language.

Moreover, while both languages possess sophisticated tense systems, English delineates a spectrum of tenses including simple present, present continuous, present perfect, past simple, past continuous, past perfect, future simple, and future continuous. In contrast, Russian's tense system diverges from English by emphasizing aspects,

establishing a distinctive contrast between the two languages.

Table 1, which should be read bottom-up, schematically summarizes the universal sequence of developmental stages for English morphosyntax.

Table 1. *Developmental Stages for English Morphology Based on the PT (Pienemann, 2005)*

Stage	Processing procedures	Linguistic structures	Examples
5	Subordinate clause procedure	subjunctive mood, subordinate clauses	the child insists he continue listening to music
4	Sentence procedure SV agreement	3rd person sg -s	he asks a question
3	NP procedure	phrasal plural marking	a lot of birds
	Phrasal procedure	have + V-ed	three signs
	VP procedure	MOD + V	have thrown
		be + V-ing	can crawl
2		past -ed	is sliding
	Category procedure	walked	
		plural -s	squirrels
		possessive 's	mommy's
		verb -ing	rushing
1	Lemma access	single words	merry-go-round
		formulae	my name is Nick

Each processing procedure comprises several morphosyntactic structures, which are not supposed to emerge simultaneously as soon as a person reaches a certain developmental stage (Di Biase et al., 2015).

The initial stage of morphology acquisition is referred to as lemma access, during which speakers employ invariant lexical items, formulas, and fixed expressions devoid of morphological and grammatical features, for instance: “petrol station,” “sleep,” “merry-go-round.” At this stage, learners are supported to memorize new information as chunks.

According to Bettoni (2015), at the first lemma stage learners produce only formulaic expressions and single words. Irregular verbs belong to lemma access, as they are not affixed with morphemes and do not require information exchange between words.

The category procedure is distinguished by the emergence of certain nominal (-s for plural, 's for possessive case) and verbal items (-ing for Gerund, -ed for the past tense) in the utterances produced by speakers.

Having acquired the primary morphological affixation types that constitute a single nominal or verbal lexical item, learners embark on the third stage of the PT called the phrasal procedure stage. At this level, the data are supposed to be coordinated between the constituents of a noun or a verbal phrase. The linguistic structures typical for the verbal phrasal procedure include:

1. The auxiliary “have” and a notional verb in the past participle form are used to

express the completion or perfection of an action, such as “have fallen.”

2. The auxiliary “be” and the gerund form of a notional verb are employed to indicate an action in progress, as in “is walking.”

3. A modal verb followed by a bare infinitive is utilized to express possibility or ability, for example, “can swing.”

The noun phrasal procedure is instantiated through the plural affixation components. The plural markings at the category procedure level are applicable to nouns only without any connection to other elements or lexical items as seen in the example “snails crawling,” whereas plural nouns coordinated and accompanied by numerical or non-numerical quantifiers are predicted to develop at this stage, as illustrated by the phrase “a lot of trucks.”

The final linguistic stage named S-procedure is deemed to be reached when a speaker can integrate various morphological features of noun and verbal phrases to establish sentential agreement between a subject and a predicate. As an illustration, this unification of morphological features is embodied in the structure “third person singular – s”. In the sentence “The boy likes movies,” the subject-verb agreement is observed in the number (singular) and person (3d person) categories. Moreover, the speaker can assemble the features to form the subordinate clause procedure. In the example sentence, “The lawyer insisted the accused give his evidence in detail,” the information in the main clause caused the use of the subjunctive mood in the subordinate part.

Developmental Stages for Russian Morphology

While notable research has been conducted on child speech in Russia, particularly in the 1920s attributed to Rybnikov (1926) and Gvozdev (1928), the present study represents the first application of the PT to Russian L1 acquisition in early childhood in the context of bilingualism. Rybnikov and Gvozdev conducted extensive research on children's speech in Russia. Rybnikov collected and published diverse diary entries from parents, while Gvozdev documented his son Zhenya's speech. Both studies made valuable contributions to Russian language research. However, the application of the Processability Theory to the acquisition of the Russian language in early childhood bilingualism has yet to be explored until now.

Gvozdev (1961) outlined the main periods in the formation of the grammatical structure of the Russian language.

During the initial stage, sentences predominantly consist of amorphous root words that are used in one unchanged form (from 1;3 to 1;10).

The grammatical structure of the sentence, namely the grammatical categories, is acquired during the second stage (from 1;10 to 3;0) and includes the category of number, as well as the difference between diminutive and non-diminutive nouns: “a table” versus “a small table.” The imperative mood is formed synthetically by adding suffixes to the stem of the verb and early acquired by children, as it expresses various desires that are of great importance in everyday communication.

The third period is the development of the morphological system of the Russian language, characterized by the acquisition of declension of nouns and adjectives and conjugation of verbs (from 3 to 7 years). The conditional mood appears in the child's speech later, since it expresses something supposed, and not really existing.

The developmental stages for the acquisition of Russian morphological structures are hypothesized and set out in Table 2.

Table 2. *Developmental Stages for Russian Morphology Based on the PT*

Processing procedures	Linguistic structures	Examples
Subordinate clause procedure	Complex and compound sentences	the child insists he continue listening to music
Sentential	Subject – predicate – object agreement	he asks a question
Phrasal procedure	Noun phrase	a lot of birds
	Agreement within NP	three signs
	Verb + verb	have thrown
	The future tense of verbs (analytical form)	can crawl is sliding
Category procedure	Imperative mood markings	idi 'go', napishite 'write'
	Person and gender markings on verbs	chitala '(she) read', chital '(he) read' idu '(I) go', idesh '(you) go', idut '(they) go'
	Gender markings on adjectives	krasnaya (f) – krasnyi (m) – krasnoy (n) 'red'
	Plural markings on nouns, adjectives	devochki 'girls', krasivye 'nice'
Lemma access	Diminutive nouns	domik 'a small house', tarelochka 'a small plate', sinii (blue)– sinen'kii (bluey)
	Single words, formulae, chunks	igrat' 'to play', privet 'hello', kak dela 'how are you'

1. At the lemma access level, the production of single lexemes or strings of words is expected without any grammatical or morphological unification features.

2. Both nominal and verbal features are supposed to appear at stage 2:

2.1. Being applied to both nouns and adjectives, diminutive suffixes convey the meaning of a slighter degree and intensity, which predominantly refer to size description: chashka (a cup) – chashechka (a small cup), sinii (blue)– sinen'kii (bluey)

2.2. Plural markings on nouns and adjectives. The plural of nouns in Russian

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is formed by adding endings -y, -i, -o, -a depending on the gender: zhurnal (singular, masculine) – zhurnaly (a magazine – magazines), pis'mo (singular, neutral) – pis'ma (a letter – letters). Plural markings on adjectives depend on the hard (a stem ends in a hard consonant and requires flexion yie in the plural form) and soft (a stem ends in a soft consonant and needs -iie in the plural) types of declension of adjectives in Russian: novyi (new, singular, masculine) – novyie (new, plural), sinii (blue, singular, masculine) – siniie (blue, plural).

2.3. Gender markings on adjectives. In Russian, adjectives show gender agreement with the nouns they modify to maintain grammatical harmony in sentences. For instance, the adjective "krasivyy" (beautiful) changes based on the gender of the noun:

- with a masculine singular noun: "dom krasivyy" (the house is beautiful).
- with a feminine singular noun: "mashina krasivaya" (the car is beautiful).
- with a neuter singular noun: "okno krasivoye" (the window is beautiful).

2.4. Person and gender markings on verbs. In Russian, person and gender markings play a significant role in verb conjugation. In the present tense, verbs are inflected based on the person (1st, 2nd, or 3rd) and whether they are used in the singular or plural form (Jakobson, 1981):

"ya idu" (I go, I am going)

"ty idesh'" (you go, you are going)

"my idem" (we go, we are going).

In Russian, the present tense can express both a regular action and an action happening at the moment of speaking.

The past tense form of the verb is formed by adding suffixes -l- or null morpheme to the infinitive. Verbs in the past tense form have grammatical categories of gender (masculine, feminine and neuter) and number (singular, plural), which are expressed through inflections such as -lo-, -la-, -li-, -l-. Here are some examples to illustrate these markings:

"devochka prishla" – a girl came (past tense, feminine)

"mal'chik prishel" – a boy came (past tense, masculine)

"vremia nastalo" – it was time for (past tense, neuter)

"deti prishli" – children came (past tense, plural)

2.5. Imperative mood markings in Russian are formed differently for the singular and plural forms. For the singular, it is formed from the stem of the present tense of imperfective verbs or the simple future tense of perfective verbs with the help of a zero suffix or the suffix -i-. The plural imperative can be formed by adding the postfix -te to verbs in the first person plural of the indicative mood, if it expresses a request, a wish addressed to many persons or to one person in a polite form (Jakobson, 1981).

3. The phrasal procedure in Russian includes noun and verb phrases. Agreement within the noun phrase requires components like nouns, modifiers (e.g., adjectives), determiners, and pronouns to match in gender, number, and case. For example, when a masculine singular noun is modified by an adjective,

both the noun and the adjective must be in the masculine singular form. Similarly, if the noun is in the accusative case, all modifiers and determiners should also be in the accusative case.

The verb procedure involves the use of auxiliary verbs and structures like “verb + verb.” The future tense in Russian is typically expressed using the analytical form, where the auxiliary verb “budet” (will be) is used with the infinitive form of the main verb to indicate future actions. For instance, “On budet govorit” (He will speak) or “Ya budu pisat” (I will write).

Additionally, the verb procedure involves conjugating the verb to match the subject, tense, and aspect of the sentence. The phrase “khochet tantsevat” includes two verbs, with “khochet” (wants) conjugated in the present tense and the third person singular form, while “tantsevat” (to dance) remains in the infinitive form and the imperfective aspect.

4. In Russian, the SPO agreement refers to the grammatical agreement of the subject, predicate, and object in a sentence. Wade (2010) highlights the importance of subject-predicate agreement in understanding sentence meaning due to the more flexible word order in Russian compared to English. In a basic SPO sentence, the subject, typically in the nominative case, is followed by the predicate containing the verb and other necessary elements. The predicate must agree with the subject in terms of number and gender. For example, the sentence “Mama gotovit obed” (Mother is cooking lunch) illustrates the SPO agreement: “Mama” (Mother) is the nominative subject, “gotovit” (is cooking) agrees with “mama” as a third person singular predicate, and “obed” (lunch) is the accusative object.

5. The subordinate clause procedure in Russian involves a gradual progression from simple sentences to more complex sentence structures with multiple clauses. In addition to the use of coordinating and subordinating conjunctions, subordinate clause development implies the appropriate use of word order and case marking to indicate the relationships between clauses and their constituent parts.

Using a longitudinal case design, this study collected language samples spanning a duration of 8 months and subjected them to analysis, with the aim of examining the language development of the bilingual child across his two L1s. The findings of this study make a valuable contribution by offering insights into the linguistic progression of bilingual Russian-English children, thereby potentially influencing approaches to language teaching and acquisition during early childhood education.

So, English and Russian have distinct features in how their words are structured. English, being more analytic, heavily depends on word order and prepositions to show how words relate to each other in a sentence. On the other hand, Russian, as a synthetic language, uses a complex set of inflections to convey these relationships. This difference can be confusing for children learning both languages at the same time.

The main difficulty arises from how words are formed differently in each language. English has a simpler structure with fewer inflections, mainly used for showing plurals and possession. In contrast, Russian nouns have a more intricate system with six cases, two numbers, and three genders, each demanding specific changes to the word endings.

Methodology

Data

This inquiry delves into the developmental trajectory of a multilingual toddler, Nick, who has been exposed to both Russian L1 and English L1 since birth. Nick's mother spoke to him in English during the morning and afternoon hours, summing up to 5-6 hours of daily exposure. In the evenings, the family conversed in Russian. Therefore, it can be inferred that the child is aware of the fact that the mother speaks both languages. Nick was raised in Central Ukraine and comes from an ethnic Ukrainian-Russian family background and was exposed to Ukrainian for approximately two hours per day. He has some receptive abilities in Ukrainian but does not actively speak it.

Weekly video recordings were made between the ages of 2;11 and 3;4. The videos were recorded for a total duration of approximately 15-30 minutes per week in each language, and were created during free playtime, storytelling, or mealtimes involving a second interlocutor (the child's mother). These naturalistic settings allowed for the collection of spontaneous speech, which accurately represents the child's actual language abilities.

Data Analysis

The data was transcribed and analysed using the CLAN software (MacWhinney, 2000). The speech from both interlocutors in the videos was transcribed into separate text files. The Cyrillic Russian utterances were transliterated into the Latin-based text in accordance with the BGN Romanization System for Russian (2013), which is referred to as the British Standard and used by the Oxford University Press.

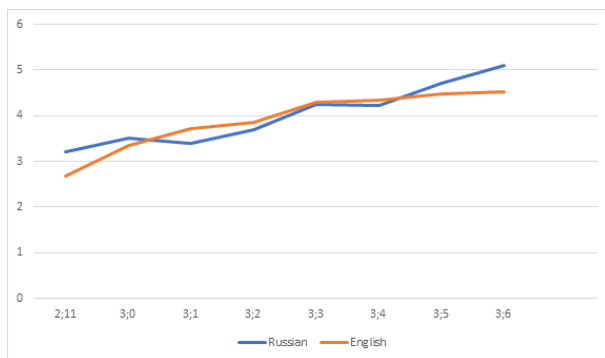
To examine the trajectory of the child's language development and assess the applicability of Processability Theory, the data was analyzed using a combination of frequency analysis, corpus analysis, and comparative methods.

Results

Mean Utterance Length (MLU), which was introduced by Roger Brown (1973), is a language productivity measure utilized to examine speech development in both children and adults. Traditionally, MLU is computed by collecting a sample of 100 spoken utterances and dividing the total number of morphemes by the number of utterances. A higher MLU signifies a higher level of language proficiency.

Figure 1 displays the morphosyntactic development in the bilingual child. The lowest MLU observed in English was 2.69 at the age of 2;11, while the highest MLU of 4.53 was recorded at 3;6. In terms of expressive language skills, the child displayed relatively strong abilities in Russian, with scores ranging from 3.21 to 5.11. Notably, these scores varied in Russian, with a value of 3.50 at 3;00 decreasing to 3.40 a month later.

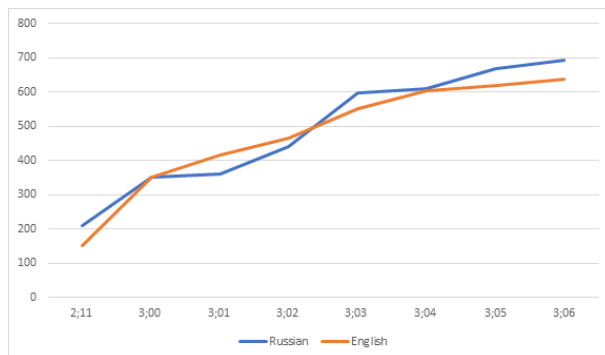
Figure 1. *Nick's MLU in Russian and English*



Despite this fluctuation, the child's lexical performance was comparable between Russian and English, with an average MLU of 4.01 and 3.91, respectively. The slightly stronger performance in Russian could be attributed to greater exposure and input in that language.

The size of the child's vocabulary was determined by calculating the cumulative number of word types, which included both previously learned and newly acquired words in each recording session. Figure 2 illustrates the steady expansion of the child's vocabulary over time. At 2;11, the child knew 210 words in Russian and 150 words in English. As the child grew older, the number of different words he acquired in both languages increased, with the largest vocabulary size observed at 3;06, when Nick knew 692 words in Russian and 638 words in English.

Figure 2. *Nick's Vocabulary Sizes in Russian and English*



The results showed that grammatical development in each language is closely tied to the expansion of vocabulary. As the vocabulary expanded, there was a gradual increase in the utilization of morphemes and grammatical structures.

Tables 3 and 4 provide a snapshot of different linguistic structures in the child's English and Russian at various ages, specified by the age in years and months. The correct use of these structures is indicated by a plus sign (+) in the corresponding cell, while a forward slash (/) indicates their absence and a minus sign (-) stands for their incorrect use.

At 2;11, the child demonstrated the ability to produce only a limited number of linguistic structures from the list under consideration in English. However, at 3;0, the child exhibited a marked expansion in language development as evidenced by the use of phrasal plural marking. When Nick was 3;0, he overused the ending “-s” in plural phrases, for example, “bigs dogs.” Additionally, he used “doors” to refer to a single object, which may have been influenced by Russian, where this word is commonly used in the plural form. By 3;2, the child's linguistic repertoire was further enhanced with the inclusion of “be” + present participle form, and modal auxiliary verbs + base form of the verb. The child underused the plural “-s” in the phrase “two dandelion”, tended to confuse the word order in the structure “MOD + V”, for example, “mommy no can find,” and underused the auxiliary verb “to be” in the structure “be+V-ing,” as in “hare sleeping.” At 3;3, Nick used more instances of verbal phrases in his speech, specifically “MOD + V” and “be + V-ing,” and made fewer mistakes. However, he continued to omit the verb “to

Table 3. *Sequence of Morphological Structure Acquisition in Nick's English: Ages 2;11 to 3;6*

Linguistic structures	2;11	3;0	3;1	3;2	3;3	3;4	3;5	3;6
Clauses	/	/	/	/	/	/	/	/
3rd person sg -s	/	/	/	/	/	/	/	/
phrasal plural marking	/	+14	+6 -2	+16 -1	+14	+14	+12	+21
have + V-ed	/	/	/	/	/	/	+1	+10
MOD + V	/	/	/	+4 -4	+11 -1	+14 -3	+3	+11
be + V-ing	/	/	/	+41 -22	+65 -19	+97 -35	+26 -12	+48 -14
past -ed	/	/	+1	+5 -1	+2	+1	+4	+2
plural -s	+8 -1	+65 -2	+27 -1	+47	+32 -1	+32	+27 -1	+43
possessive 's	/	/	/	/	+3	/	/	/
verb -ing	+3	+159	+105	+63	+65	+97	+26	+48
single words	+	+	+	+	+	+	+	+
formulae								

be” where necessary (“the bear touching”) and once used the wrong word order after the modal verb “can” (“it no can go”). As for noun phrases, he overused the “-s” in one sentence: “that sticks.” At 3;4, the number of examples where Nick used modal verbs and the present progressive extended, reaching 14 and 97 sentences, respectively. A significant advancement was observed at 3;5, when the child acquired the “have” + past participle structure and demonstrated the ability to employ complex and coordinate clauses in his speech. This developmental milestone marks a noteworthy progression in the child's linguistic abilities and represents a critical stage in the acquisition of more advanced language skills.

The data in Table 4 reveals that at 2;11, the child had achieved competence in the noun phrase procedure in Russian, thereby exhibiting the ability to express plural, gender, and person markings on verbs, nouns, and adjectives. Although there were instances of incorrect usage of verbal endings, for example, “ya khodit”. Subsequently, at 3;0, the child commenced utilizing verbal structures such as “verb + verb” and “budet + infinitive” sometimes overusing verbal flexions, as seen in “ona ne budet padaet.”

Moreover, at 3;1, the child had achieved further linguistic development, as evidenced by the emergence of subject-predicate-object agreement within a simple sentence. In the first 36 such structures, the child underused the agreement between

Table 4. *Sequence of Morphological Structure Acquisition in Russian: Ages 2;11 to 3;6*

Linguistic structures	2;11	3;0	3;1	3;2	3;3	3;4	3;5	3;6
Clauses	/	/	/	/	/	/	+7	+5
Subject – predicate – object agreement	/	/	+20	+5	+4	+10	+21	+16
			-16	-2	-1	-2	-1	-1
Agreement within NP	+21	+12	+11	+2	+3	+5	+7	+9
	-3	-4						1
Verb + verb	/	+1	+4	+6	+8	+6	+5	+7
The future tense of verbs (analytical form)	/	+8 -1	+1	+2	+7 -1	+3	+2	+3
Imperative mood markings	+12	+18	+14	+14	+12	+13	+14	+17
		-1						
Person and gender markings on verbs	+116	+94	+87	+103	+100	+92	+101	+105
	-6	-2	-3	-5	-2		-1	-1
Gender markings on adjectives	+33	+16	+13	+14	+15	+12	+22	+19
				-2				
Plural markings on nouns, adjectives	+18	+12	+16	+10	+7	+8	+6	+10
Diminutive nouns	+3	/	+10	+2	+10	+3	+2	+2
single words formulae	+	+	+	+	+	+	+	+

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predicates and objects in 16 sentences. Notably, a substantial advancement was identified at 3;5, whereby the child demonstrated the utilization of clauses, representing a significant linguistic milestone. At this point, the number of accurately constructed sentences regarding subject-predicate-object agreement increased to 21 out of 22 instances.

The emergence factor in the PT examines the sequence in which linguistic structures appear in a learner's interlanguage system. It suggests that structures are acquired in a predictable order based on the learner's developmental stage. On the other hand, the mastery factor relates to the accuracy of structure production. This study mainly focuses on the emergence factor when investigating Nick's development in English and Russian.

At 2;11 in the English context, Nick's speech production comprised 150 types with the mean length of utterance of 2.69. During the sessions, Nick produced mostly chunks or separate words such as "no," "yes," "green," "one more," "tea," "drink," and "go for a walk." The majority of utterances were at the two-word or three-word stage, as seen in examples like "this purple," "drink tea," "eat cookies," "this big house," and "some more puzzles." However, when considering the mixed utterances a more complex grammatical structure can be observed:

[1] Nick (2;11):
open rubbish bins i look
'open rubbish bins and look'

In terms of morphological development provided in the PT, Nick was at the beginning of the category stage. At this point, the grammatical categories of the number for nouns and the gerund for verbs were discernible in the speech data.

[2] Nick (2;11):
buttons
eat cookies
this preparing
going fall

It can be suggested that the child had not yet acquired some equivalent English terms and, as a result, filled the gap with Russian lexemes, which demonstrates evidence of relative code-mixing:

[3] Nick (2;11):
i this yellow
'and this yellow'
ya no cold
'I'm not cold'
vkliuchit' mul'tik

‘turn on a cartoon’

ya khochu stand

‘I want to stand’

In the English recording sessions at 3;0, Nick’s vocabulary increased to 352 items. There was a significant improvement in his morphological development, which is demonstrated by his MLU rising from 2,69 at 2;11 to 3,35. Consistent with this value, Nick’s utterances consisted mainly of at least three words. At this age, the child began combining numerals and quantifiers with nouns to describe plural entities. Importantly, the child did not overextend suffix –s or generalize it to other lexical units:

[4] Nick (3;0):

one sweeper i two sweepers

‘one sweeper and two sweepers’

two brushes

two flat tyres

a lot of cars standing traffic jam

The corpus data demonstrates that there is still a tendency for relative mixing from Russian in the English context, particularly in the use of pronouns and conjunctions:

[5] Nick (3;0):

mommy, ty wash hands

‘mommy, you wash hands’

i now motorcycle standing

‘and now motorcycle standing’

ya put cars

‘I put cars’

no, oni run away home

‘no, they run away home’

The late acquisition of English pronouns could have resulted in Nick more frequently using his name to refer to himself instead of the first-person singular pronoun, particularly in the English context compared to the Russian one.

In terms of English morphological development, Nick was at the noun phrase procedure stage, although not all the morphosyntactic structures of the category procedure emerged in the child’s speech, which was deprived from suffix –ed for the past tense.

A noun phrase is defined as “a phrasal constituent whose head is a noun” (Kroeger, 2005). It typically consists of a noun that is preceded by a determiner, which can be articles, numerals, demonstratives (e.g., this, those), possessive pronouns, quantifiers (such as “a lot of,” “much,” “more”), distributives (like “all,” “both,” “every”), and adjectives.

At 3;1, Nick's English MLU increased to 3,71 with 415 different word types in the recording session, which indicates parallel morphosyntactic and lexical development. The lexical morphology is exemplified in utterances (6) from the corpus, which can be categorized into three grammatical structures: plural "-s" for nouns (6a-c), "-ing" for ongoing actions (6d-f), and past "-ed" (6g).

- [6] Nick (3;1):
- a. dogs climbing up ladder
 - b. I am got horns and hooves
 - c. digging some holes
 - d. look, dog sitting bed and watching movie
 - e. alarm-clock no more ringing
 - f. witch taking lettuce
 - g. and asked

Regarding the noun phrasal procedure, Nick's plural utterances appeared in more complex variations, such as "numeral + noun + suffix -s" (7a), "demonstrative pronoun + adjective + noun + suffix -s" (7b, c), "quantifier + quantifier + default noun" (7d). However, some cases (7c, d) demonstrate the overextension or underuse of the suffix -s to other lexical items.

- [7] Nick (3;1):
- a. two receipts I got
 - b. these not new animals
 - c. these too bigs dogs
 - d. some more candy

It is interesting to note that the child started producing irregular forms of number (8a, b) and past tense (8c-e) that still refer to the first lemma stage from a morphological perspective.

- [8] Nick (3;1):
- a. white teeth
 - b. bare feet
 - c. ya found spider-web
'I found a spider-web'
 - d. Nick built house and door
 - e. lit a fire and put boiling water

During the English recording sessions at the age of 3;2, Nick's vocabulary expanded to include 465 words with the MLU value of 3.85. At this point, Nick started producing verbal morphology and progressed to the verbal stage of the phrasal procedure, reflected in his use of a range of verb forms and structures.

Specifically, he demonstrated the ability to exchange grammatical information within such linguistic structures as be + V-ing (9a, b, c), MOD + V (9d), V + to + V (9e), let's + V (9f), V + Ving (9g):

[9] Nick (3;2):

- a. I'm drinking coffee
- b. this robot is getting off
- c. I'm going soon to cook
- d. wolf can no blow down
'the wolf cannot blow down'
- e. the car want to go that way
'the car wants to go that way'
- f. mommy, let's build like this
- g. this start spinning
'it starts spinning'

The noticeable mixing from Russian includes the use of pronouns (10a) and word order (10b, c), which varies a lot between the two languages. English commonly follows a subject-verb-object word order, while Russian exhibits more flexibility due to its inflectional nature. In Russian, word endings change to indicate their role in the sentence.

[10] Nick (3;2):

- a. ty buy bread
'you buy some bread'
- b. you no can find
- c. is sleeping this mother-bear ?

Similar to the previous month, the corpus of 3;2 is abundant in noun phrase variations that include components such as quantifiers (11a, b), numerals (11c), adjectives (11d):

[11] Nick (3;2):

- a. a lot of animals
- b. I take some photographs
- c. take two dandelions
- d. new toys

At 3;3, Nick's total number of distinct words reached 552, and his MLU value increased to 4.29. As the child's vocabulary grew, the utterances became more complex and sophisticated, aligning with the cumulative nature of children's language development.

A closer examination of the VP stage, which involves the interaction between

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auxiliary and lexical verbs, reveals the presence of grammatical constructions such as “be + V-ing” (12a), “MOD + V” (12b), “V + to + V” (12c, d, e), and “will + V” (12f) in the child's output. However, the grammatical structure “HAVE + Ved” is notably absent, indicating that Nick had not yet acquired this particular construction by the age of 3;3.

[12] Nick (3;3):

- a. this snake is going at snail's pace
- b. where can see this hosepipe
- c. I also want to go alone
- d. I need to turn right
- e. want to catch a teddy-bear
- f. I will take this

The corpus data indicates no lexical mixing from Russian in the English context. However, there were instances of grammatical mixing in the form of non-adherence to fixed word order in negative and interrogative utterances (13a, b), as well as the omission of auxiliary verbs (13c).

[13] Nick (3;3):

- a. mommy, where you can find this
- b. it no can go under bridge
- c. no want to push this boy

At 3;4, there was a slight improvement in Nick's morphological development, as indicated by an increase in his MLU value to 4.48 and the expansion of his vocabulary to include 605 lexical items. The child continued to develop the ability to produce multiword verb phrases, primarily observed in the use of progressive, modal, and prepositional verb structures. Nick demonstrated frequent usage of “be + V-ing” (14a, b) and “Modal + V” (14c, d) at this stage, while “have + Ved” did not emerge in the recordings. Examples (14e, f) from the child's corpus highlight the correct use of “to” between verbs, which is an important milestone in language development.

[14] Nick (3;4):

- a. look, it's going now
- b. it's going to rain
- c. and excavator will take this sand
- d. I will be a driver [/] bad driver
- e. I want to read about clocks
- f. I need to squeeze

The child has not yet reached the S-procedure stage, as there were no instances of the third-person singular form (-s or -es) observed in the sentences:

[15] Nick (3;4):

- a. he know to ask about slippery road
'he knows how to ask about slippery road'
- b. and Nick put on a cap and an umbrella
'and Nick puts on a cap and takes an umbrella'

At the age of 3;5-3;6, there was a slight advancement in the child's MLU, which reached 4.53. By the end of the research, his overall vocabulary consisted of 638 lexical items. Nick demonstrated his ability to integrate information across clauses and to produce utterances that consist of two subjects and predicates, with or without conjunctions (16a). Both complex and compound sentences appear in the speech at this point, including embedded questions (16b), combination of two independent clauses (16d, f), and relative clauses (16e).

[16] Nick (3;5-3;6):

- a. mommy think it's a wheelbarrow
- b. mommy, ask who's put this syringe here
- c. let's talk what is fair and what is not fair!
- d. this bear will sit here and we will talk together
- e. I not like who is giving me orders .
- f. and we did these maths problems in morning and now in dark [: the darkness]
we read these problems .

Regarding the phrasal procedure, the utterances in the child's corpus indicate the emergence of "AUX + Participle II" with a clear distinction between the auxiliary verbs "have" and "has" depending on the person (17a, b, c). The delayed acquisition of "have + Ved" by the Russian-English bilingual child can be attributed to the absence of this verb structure in Russian. Additionally, the child demonstrated the ability to express more complex ideas and convey more precise meanings by using infinitive (17d) and gerund forms (17e, f).

[17] Nick (3;5-3;6):

- a. we've got tools
- b. oh, roof has fallen
- c. wolf has blown down the mommy's house
- d. I want to be a nurse
- e. I'm tired of waiting in hospital
- f. it's time for sleeping

It is noteworthy to mention that the sentence procedure had not been reached at that stage, although the child produced subordinate clause utterances. The following examples demonstrate that the child did not use the third person singular form on verbs to construct the present simple tense:

[18] Nick (3;5-3;6):

you not know how to solve mathematical problems
and Miss Lucky live in <atti> [/] attic
and grandma live in attic

During the initial Russian recording session at the age of 2;11, a baseline was established for Nick, which included a lexicon of 210 words and an MLU of 3.21. Remarkably, by this age, Nick had already progressed beyond the lemma and category stages of language development. This progress was evident through his ability to use both singular and plural forms (19a, b), employ gender markings on nouns, verbs, and adjectives (19d), and apply diminutive suffixes (19c).

[19] Nick (2,11):

a. medvedi
bears
b. zaitsy
rabbits
c. domik
a small house
d. sidit kresle
sits chair
'(he) sits on the chair'

Similar to the English context, Nick resorts to using his name to refer to himself. At that point, there were few occurrences of mixed utterances in the Russian context (20a). The following examples of code-mixing demonstrate that the child acquired English numbers (20b, c) earlier than the Russian ones.

[20] Nick (2,11):

a. Nick press button, ona zuzzit
Nick press button, it is buzzing
'Nick is pressing the button, it is buzzing'
b. one, two, three
c. six, seven, eight

At that stage, the child's utterances were devoid of prepositions but showed evidence of using the case system, specifically the prepositional case (21a, b). The acquisition of the case system is an important milestone in the speech development, as it enables one to express more complex ideas and relationships between different elements of a sentence.

[21] Nick (2;11):

- a. oni lezhat batute
they are on the trampoline
- b. djadja dome
the man home
'the man is at home'

In terms of Russian morphological development, Nick was at the noun phrasal procedure that is reflected in the use of number and gender agreement in the structures: "adjective + noun" (22a, b, e), "demonstrative pronoun + noun" (22c), "possessive pronoun + noun" (22d).

[22] Nick (2;11):

- a. grjaznaja mashina (feminine, singular)
a dirty car
- b. poliarnye medvedi (plural)
polar bears
- c. eta kniga (feminine, singular)
this book
- d. moj banan (masculine, singular)
my banana
- e. i koleso mokroje (neutral, singular)
and a wet wheel

In the recording session at 3;0, the total number of distinct words reached 350, with an MLU value of 3.5. This indicates that, on average, the child produced language output consisting of 3 to 4 words and/or morphemes per utterance.

Regarding Nick's morphological development based on PT, he entered the verbal phrase stage. This stage is characterized by the use of auxiliary verbs and is evident in grammatical structures such as "budet + verb" (will + verb) (23a, b, d) and "verb + verb" (23c).

[23] Nick (3;0):

- a. ty budesh' sobirat'
you will collect
- b. budet padat'
will fall
- c. glyan', Nick ne mozhet podnimat'
look, Nick cannot pick it up.
- d. net, Nick budet stroit' .
no, Nick will build

Nick's utterances demonstrate characteristics of earlier developmental stages, specifically in terms of category (24a, b) and noun phrase procedures (24c, d). Despite progressing to the verbal phrase procedure stage, Nick continues to incorporate linguistic structures and elements associated with previous stages. This is a common aspect of language acquisition, where new structures are built upon existing ones. It is natural for learners to integrate prior knowledge into their evolving linguistic system as they acquire more complex structures. The presence of these earlier stage features in Nick's utterances aligns with the expected language development trajectory according to the PT. It indicates that Nick's language development follows a typical course, highlighting the gradual and iterative nature of proficiency acquisition.

- [24] Nick (3;0):
- a. mama, plyvi pryamo syuda
mother, swim right here
 - b. mama, voz'mi eto
mother, take this
 - c. eti mashiny
these cars
 - d. kakoy tyazhëlyy
so heavy

At the age of 3;0, instances of lexical and grammatical mixing were observed in the Russian context. Lexical mixing involved the inclusion of individual English words. Furthermore, the child displayed a tendency to transfer the English grammatical negation mechanism into his Russian utterances. For instance, in sentence (25b), the child placed the particle "ne," meaning "not," immediately before the verb it negates, which is a characteristic of English negation. Another example (25c) illustrates that the child avoided double negation, which is typical in the English language. These instances indicate the influence of the child's bilingual exposure and the interplay between the two languages in the speech production.

- [25] Nick (3;0):
- a. helicopter
 - b. zhivot ne bol'she bolit
the belly does not hurt any more
 - c. nikto prygaet
nobody is jumping

At 3;0, there was a notable advancement in the child's Russian language development. He transitioned from the phrasal procedure to the sentence procedure, demonstrating more sophisticated grammar usage and the ability to construct simple sentences following a basic Subject-Verb-Object agreement. However,

despite this progress, there was a slight decline in the child's MLU compared to the previous month (3.4 versus 3.5).

In Russian, the verb form in a sentence must agree with the subject in terms of number (singular or plural), person (first, second, or third), and gender (masculine, feminine, or neuter). Additionally, the direct object aligns with the verb in terms of gender, number, and case. For example, in sentence (26a), the verb “tushit” (puts out) agrees with the subject “Nick” in the third person singular, and the object “pozhar” (fire), which is masculine singular, is used in the accusative case.

Nick resorts to various words order types, such as Subject-Verb-Object (SVO) (26b, c, d), Object-Subject-Verb (OSV) (26f), and Verb-Subject-Object (VSO) (26e). These alternative word orders allow for emphasis on specific parts of the sentence or convey a particular tone. The flexible word order in Russian enables more diverse and nuanced expressions.

[26] Nick (3;1):

a. i tut Nick tushit pozhar
and here Nick puts out the fire

b. Nick zhmët knopku
Nick is pressing the button

c. da, Nick kushal banan
yes, Nick ate a banana

d. mashiny yedut
cars are going

e. derzhit mama ruka
holds mother a hand
'mother holds a hand'

f. mnogo mashin ya khochu
a lot of cars I want
'I want a lot of cars'

During the period of 3;2-3;4, a significant progress was observed in Nick's language skills, evidenced by the expansion of his vocabulary to include 610 lexical items, and an increase in his MLU values to 4.23. The morphological development remained at the sentence procedure (27) indicating a consolidation of grammatical features across phrases. At this stage, the child demonstrated the ability to combine noun and verb phrases, resulting in subject-verb-object agreement, as the phrasal procedure had been automatized. It is compatible with the assumption that the PT stages are acquired in the implicational order and each one is a pre-requisite for the next higher procedure (Gisela Hakansson, 2013; Kempen & Hoenkamp, 1987). For instance, in order to reach a sentence stage, two previous procedures – the lemma and phasal stages – must have been activated, whereas the subordinate clause procedure has not yet been acquired.

[27] Nick (3;2-3;4): a. ty vzyala moyo moloko
you have taken my milk
b. parovoz kak sil'no yedet
the train is going so fast

In achieving agreement between lemmas or phrases, their diacritic features must be compatible. For instance, in the sentence “Nick v kabine yedet” (Nick is driving in the cab), the first lexeme “Nick” is assigned to the noun category and matches the verb “yedet” in features such as person and number. This information must be shared among all constituents of the sentence: “yedet” is a 3rd person singular present tense verb that agrees with the subject “Nick,” while the spatial adverbial “v kabine” corresponds to the prepositional case of the noun “kabina,” indicating the location of the subject.

Table 5. *Nick's Morphological Development in Russian and English*

Age	Russian	English
3;6	Subordinate clause procedure	Phrasal procedure
3;5	Subordinate clause procedure a ya dumayu, chto budet den' 'and I think that there will be a day'	Phrasal procedure
3;4	Sentence procedure	Phrasal procedure, verbal phrase 'I want to read about clocks'
3;3	Sentence procedure Nik v kabine yedet 'Nick is driving in the cab'	Phrasal procedure, verbal phrase 'this snake is going', 'I will take this', 'I need to turn'
3;2	Sentence procedure ty vzyala moyo moloko 'you have taken my milk'	Phrasal procedure, verbal phrase 'it can drive here', 'cars are driving'
3;1	Sentence procedure Nik kushal banan 'Nick ate a banana'	Phrasal procedure, noun phrase 'two receipts', 'these new animals'
3;0	Phrasal procedure, verbal phrase ty budesh' sobirat' you will collect	Phrasal procedure, noun phrase 'two flat tyres', 'a lot of cars'
2;11	Phrasal procedure, noun phrase grjaznaja mashina 'a dirty car'	Category procedure 'buttons', 'bins', 'preparing', 'going'

The corpus data provides additional examples of unification types in Nick's utterances, including subject-predicate agreement (28a), "NP + finite verb structures" (28b), and "noun + VP combinations" (28c, d).

[28] Nick (3;2-3;4):

a. ty idësh' v domik

you are going to the small house

b. mototsikl Nika slomalsya

Nick's motorcycle has broken

c. net, on budet stoyat'

no, he will stand

d. vse idut spat' domoy

everyone is going home to sleep

At this stage, the corpus data reveals instances of coordinate elements that share the same grammatical type, specifically verbs connected by the conjunction "i" ("and"). The emergence of coordinate elements in Nick's utterances indicates his growing understanding of how phrases can be linked together to create more sophisticated sentence structures. This is an important milestone in language development, as it allows children to express more complex thoughts and ideas.

[29] Nick (3;2-3;4):

a. mama, davay poydem tuda i otkroyem okno

mommy, let's go there and open the window

b. on vysypal seno i potom saditsya

he unloaded the hay and sat down after that

c. dyadya vykhodit i poyekhal pryamo

the man came out and drove straight ahead

d. my zabrali i ponesli i vysypali pryam na ulitse

we took, and carried, and poured right in the street

Upon examining Nick's Russian morphosyntactic structures at 3;5-3;6, a significant developmental leap became apparent. Nick progressed from using short and simple sentences with basic vocabulary to employing more intricate linguistic structures enriched with a wider range of lexical and grammatical elements. His utterances demonstrated the combination of multiple elements of equal status within a sentence, particularly coordinate verbs. Moreover, this advancement was manifested by a notable increase in his lexicon to 692 lexical items, and an elevation in his MLU values to 5.11.

[30] Nick (3;5-3;6):

a. ya vyrastu, kak mama, a potom tebe budu chistit' zuby

I will grow up, like mother, and help you to brush your teeth then.

- b. Nik vykhodit, poshol v kafe
 Nick goes out and heads for a café.

From the syntactic perspective, Nick reached the subordinate procedure, as he involved two clauses in a sentence to convey his thoughts and ideas. The corpus contains examples of both the subordination and coordination procedures at this point. The latter involves combining two or more independent clauses to create a compound sentence using the conjunction a “and” (31a, b) or omitting it (31c).

[31] Nick (3;5-3;6):

- a. oni pokushali, a teper' oni poyekhali dal'she rabotat
 they ate, and then they drove away to continue working
 b. Nik tak yedet, a ono pishchit tak
 Nick is driving like this, and it is buzzing like this
 c. a Nik tozhe sel naverkh, mama – vniz
 and Nick sat upstairs, mother – downstairs

Another significant subordinate procedure that emerged in the child's speech at this stage is subordination, which involves using one clause to modify another. During the recording sessions, the child resorted to producing noun subordinate clauses introduced by the conjunction *chto* “that”, as demonstrated in examples (32a, b). The production of an adverbial clause appeared only once in the investigated data, when the child specified the main clause by indicating the direction (32c).

[32] Nick (3;5-3;6):

- a. a ya dumayu, chto budet den'.
 and I think that there will be a day.
 b. mama dumayet, chto budet kholodno .
 mother thinks that it will be cold.
 c. Nik znayet, kuda nado khodit'
 Nick knows where it is necessary to go

The present study makes a valuable theoretical contribution by providing new evidence on the acquisition sequence of morphological structures in a Russian-English-Ukrainian multilingual child. The findings reveal a systematic progression in Nick's language development, showcasing the gradual acquisition of various linguistic structures, such as phrasal plural marking, verb forms, and complex clauses, indicating the child's progression in language development.

In the early stages of language development, at age 2;11, Nick primarily reaches noun phrasal procedure in Russian. This suggests that he is at an early stage of language acquisition, focusing on basic phrases and simple noun descriptions.

At ages 3;1 and 3;0, Nick's language development continues as he shows an

understanding of noun phrases in English. His use of phrases like “two receipts” and “these new animals” indicates his growing ability to use noun modifiers and construct descriptive noun phrases.

Further development in Nick's language skills is evident at ages 3;3 and 3;2, where he demonstrates an expansion of his repertoire of verbal phrases in both Russian and English. This expansion signifies his increasing proficiency in expressing a wide range of actions, intentions, and descriptions using verbal phrases.

As Nick progresses to the age of 3;4, there is a notable shift in his language usage. While using sentence procedures in Russian, he begins to employ verbal phrasal procedures in English.

At the age of 3;5 and 3;6, Nick demonstrates the use of subordinate clause procedures in both Russian and English, that indicates his understanding and ability to form complex sentences with subordinate clauses.

Discussion

Within the context of the longitudinal investigation encompassing Nick's Russian and English acquisition progress between the ages of 2;11 and 3;06, several observations arise pertaining to his morphological and lexical development.

Nick's mastery of both Russian and English languages offers insights into the cumulative nature of language development. Notably, his grammar skills in both languages grew alongside his vocabulary. At 2;11 years old, Nick's morphological skills were limited, mostly producing gerunds and plural -s forms, with an active vocabulary of around 150 words. By 3;5, he notably advanced, employing “have” + past participle structures, using complex clauses, and expanding his vocabulary to about 620 words in English. In Russian, at 2;11, Nick adeptly expressed plural, gender, and person markings, with a lexicon of approximately 210 words. By 3;5, his Russian vocabulary expanded to around 667 words, showcasing the application of clauses and marking a significant milestone. These observations support the cumulative nature view of language development, indicating that growth in vocabulary aligns with the development of grammatical skills. They suggest that language acquisition unfolds gradually and cumulatively over time.

Another noteworthy observation pertains to the hypothesized PT sequences in Nick's language acquisition. In the case of Russian, the morphological structure acquisition aligns with the PT sequence: phrasal stage > sentence stage > subordinate clause stage. However, a slight deviation is observed in Nick's English language development, where the sequence differs: word stage > category stage > noun phrasal stage > verb phrasal stage > subordinate clause stage (syntax). Notably, the child bypasses the sentence procedure in English and progresses directly to the subordinate clause sentences without acquiring the 3rd person singular -s form.

The pace and level of language acquisition differ between Russian and English developmental trajectories. At 2;11, Nick reaches the noun phrasal stage in Russian but stays at the category stage in English. By 3;1 - 3;2, he moves

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to the sentence stage in Russian for 4 months, while in English, he progresses through noun and verbal phrasal stages. These differences highlight timing and sequencing disparities in Nick's language development, showcasing variations in acquisition pace and level.

The research in this paper supports the idea that noun phrase agreement precedes verbal phrase agreement in learning Russian and English. This claim is backed by analyzing the child's speech patterns, which initially combine quantifiers with plural nouns in English and demonstrate agreement between nouns and adjectives in Russian regarding gender and number. Later, the child starts integrating verbal features or using auxiliary verbs to form verbal phrases. These observations suggest a sequence where NP agreement comes before VP agreement in both Russian and English language acquisition.

It should be highlighted that morphemes belonging to the same PT stage are not acquired simultaneously in the child's English. The results indicate that the child exhibited a delayed production of "have/has + Ved" compared to other structures expected to be acquired during the verb phrasal stage. Another example is the delayed appearance of irregular past simple verbs, which are associated with the first lemma access stage. These verbs emerged in the child's speech at a later stage, specifically at 3;1, when the child was undergoing the noun phrasal procedure.

The data supports Lexical Functional Grammar (LFG), emphasizing words as key to sentence construction. The child's growing vocabulary links closely with understanding morphosyntactic features. Using MLU, higher scores signal greater proficiency. This bilingual study shows a strong link between vocabulary growth and grammar in English and Russian. As the child's vocabulary expands, so does the use of grammar, highlighting the link between words and structure.

Overall, the research offers theoretical implications for understanding the underlying processes involved in bilingual language acquisition, highlighting the interaction between language systems and the developmental patterns observed in bilingual children.

Conclusions

This study tracks the lexical and morphological development in a Russian-English-Ukrainian multilingual child using the PT perspective from 2;11 to 3;06. Key observations show a strong link between vocabulary growth and morphological development, supporting Joan Bresnan's LFG. The child's grammar progress in both languages aligned with acquiring more words, typical in children's language development.

Regarding PT, the child's linguistic development follows Pienemann's theory sequences: verb phrasal stage - sentence stage - subordinate clause stage for Russian, and word stage - category stage - noun phrasal stage - verb phrasal stage for English. The data supports NP agreement preceding VP agreement in English language acquisition.

The child started producing complex and compound sentences from a syntactic perspective before supplying third person singular -s on verbs. Some morphemes within the same PT stage were acquired at different times; for instance, “have/has + Ved” emerged later than other structures expected in the verb phrasal stage.

Overall, PT applies to bilingual children learning two distant languages, seen in Nick's development in Russian and English. These findings significantly contribute to understanding Russian-English bilingualism dynamics in early childhood. Nevertheless, it would be intriguing to explore whether the lexical sizes of nouns and adjectives expand upon the acquisition of the Noun Phrase (NP) procedure, and if the lexical sizes of verbs increase with the acquisition of the Verb Phrase (VP) procedure.

Conflict of Interest Disclosure

The Authors report no conflicts of interest.

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Research Ethics Statement

The study is based on empirical data collected from my son, and as a parent-researcher, I assumed the responsibility for ensuring the well-being, privacy, and confidentiality of the child throughout the research process.

In this research, stringent measures were taken to uphold the privacy and confidentiality of participants, particularly with regards to the child involved, who was assigned a pseudonym to ensure the anonymity. Voluntary participation was emphasized, and no form of coercion was employed. The research was conducted with the utmost commitment to honesty, integrity, and transparency, adhering to ethical standards and steering clear of any conflicts of interest that could impede the objectivity of the study. The findings were diligently represented, devoid of any misrepresentation or fabrication, in order to maintain the integrity of the research outcomes.

Written consent was obtained from the child's parents, indicating their voluntary agreement to have their child participate in the research.

Data Availability Statement

Data associated with the current study will be made available upon reasonable request to the corresponding author.

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