

ACQUISITION OF RUSSIAN NOMINAL DERIVATION IN MONOLINGUALISM AND BILINGUALISM

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Abstract. The case study focuses on the acquisition of Russian derivational morphology in terms of nouns by monolingual (Russian) and simultaneous bilingual (Russian-German) children of early age. The results are based on analysis of representative natural longitudinal recordings transcribed and stored in CHAT format using the CHILDES system. The first patterns and methods of nominal word-formation along with the morphemes used by children are revealed. The properties of word-formation that indicate the productive use of the nominal derivatives, such as the presence of *simplex-derivative* pairs, chains and word families, as well as occasionalisms are noted. The similarities and differences in the acquisition of nominal derivatives, including their semantic domains, in mono- and bilingual situations are discussed.

Keywords: nouns, word-formation, derivatives, simplexes, compounding, Russian, German

1. Introduction

The article highlights early development of nominal derivation in Russian. The results of a comparative analysis of this process in monolingual (Russian) and bilingual (Russian and German) situations are discussed. Despite the fact that the features of bilingual (and more broadly, multilingual) development of children are currently being intensively studied all over the world (e.g. Bayram *et al.* 2018; De Houwer, Ortega 2019 among others), the grammatical aspects and, especially, the derivational morphology have still been

insufficiently investigated. The early natural simultaneous “one parent – one language” bilingualism also remains almost undescribed (De Houwer 1990; Döpke 1992, 2000). In addition, in recent years researchers into the bi- and multilingual language acquisition have increasingly mentioned the need to take into account the individual peculiarities in each case and therefore appealed for collection of new data of child speech (CS).

Russian-German bilingualism, the one we are focusing on, is of particular interest as it combines the grammatical systems of, first, a morphologically rich language and a morphologically poor one¹ and second, a language with a predominantly affixal system of word-formation (typical for Slavic languages) and a language with a predominantly compound system of word-formation (typical for a number of Germanic languages). Thus, the paper touches upon the problem of interference, i.e. the influence of how the typological features of one language learned by a child are reflected in the acquisition of this fragment of the language system in another one. Simultaneous bilingualism provides some opportunities for such observations. Simultaneous bilingual children, having “a remarkable ability to differentiate their two languages from early in development”, show “signs of cross-linguistic influence, or processing their two languages in ways that show influence from the other language” (Nicoladis 2018: 81, see also De Houwer 1990; Döpke 1992, 2000).

The last question involves the use of recent results obtained by an analysis of the acquisition of affixation and compounding by monolingual children in typologically different languages (e.g. Dressler *et al.* 2017; Mattes *et al.* 2021, see also Argus, Kazakovskaya 2013 and

¹ The concept of morphological richness has been developed in Dressler (1999 among his others). Its importance for language acquisition was demonstrated in, e.g. Xanthos and Gillis (2010); Xanthos *et al.* (2011); Savickienė and Dressler (2007), Dressler *et al.* (2017, 2022). Based on the data of inflectional morphology, compounding and such derivatives as diminutives, it is shown that “a greater richness of the morphological structure facilitates acquisition” (Dressler *et al.* 2022).

Kazakovskaya, Argus 2018 for the mostly agglutinating Estonian and the inflectional Russian). Based on them we can assume the presence of a greater number of compounds in the Russian speech production of a bilingual child acquiring German than in the speech of a Russian-speaking monolingual child, as well as other possible manifestations of interference. Until recently, the Russian-German type of child bilingualism was considered to have been poorly studied when compared to other bilingual pairs (for example, those with Spanish or English). However, this gap is gradually being closed (e.g. Gagarina *et al.* 2017, 2018; Mak *et al.* 2019; Protassova 2007; Stadtmiller *et al.* 2022; Tribushinina *et al.* 2017).

When learning word-formation models, an important but not the only (see, e.g. Swan 2004; Mattes 2022) indicator of their productivity is considered to be the presence of an occasionalism in CS, built on a certain model (e.g. Clark, Berman 1984)². As regards the Russian language, this was demonstrated in a number of investigations, starting with the pioneering studies of A. N. Gvozdev (1949/1961), see also (Ceitlin 1989/2009; Kharčenko, Ozerova 1999; Jurjeva 2006 among others). As regards German, productivity problems are discussed in Dressler (2007), Mattes (2018). Meanwhile, with rare exceptions (Gagarina, Reichel 2013; Argus, Kazakovskaya 2013; Kazakovskaya, Voeikova 2021) the results obtained in terms of Russian word-formation are based on the analysis of disparate diary observations of parents and are not compared in a so-called bilingual aspect. The involvement of longitudinal data of spontaneous speech of a monolingual and a bilingual child, which our study is based on, will make it possible to receive a more complete and more reliable overall picture of the development of the word-formation component of system-language competence.

Thus, the main purpose of our study is to detect similarities and differences in the acquisition of Russian nominal derivation by

² On the terminological distinction between neologisms and occasionalisms see, e.g. Mattiello (2017: 23–26).

mono- and bilingual children. Achieving this goal involves solving the following specific issues:

- identification of the proportion of nominal derivatives and their stems;
- identification of the leading type of word-formation processes;
- detection of frequent word-formation morphemes, patterns and models;
- determining the order of development of semantic domains of nominal derivatives; and
- establishing the frequency of occasionalistic derivatives.

In addition to finding similar and distinctive features of nominal word-formation in mono- and bilingualism, two research questions on related problems are raised. Do non-derived nouns (i.e. simplexes) always precede nominal derivatives in the early CS? Do word-formation morphemes begin to be used primarily with simplexes and only after that with derivatives and compounds? The solution is related to the verification of the hypothesis according to which the development of derivation is carried out in accordance with a building-block model of complexity (Zurek 1990; Dziubalska-Kořaczyk 2014), see also Argus and Kazakovskaya (2018) based on Estonian and Russian L1.

In the next part of the article, the language data under observation, including how it was collected and analysed, will be described (Section 2). After that the results obtained will be presented, providing an answer to each of the questions posed and grouped as similarities (Section 3.1) and differences (Section 3.2) in the acquisition of Russian nominal derivation in mono- and bilingualism. Finally, the main conclusions and the prospects for research will be formulated (Section 4).

2. Data and method

Longitudinal recordings of the spontaneous speech of the Russian-speaking boy Filipp (Russia, St. Petersburg) and the girl Anna (Germany, Berlin), simultaneously acquiring Russian and German languages, serve as material for observing the development of nominal word-formation. In both instances, the recordings of adult/caregiver (mother) speech interaction were conducted several times a month in a natural setting—usually at home while playing, bathing, or eating, but on the street or outside the city as well. Spontaneous speech was recorded on a dictaphone, and then all the data of both the children and their caregivers were transcribed and stored in CHAT format using the CHILDES system (MacWhinney 2000)³.

The data for approximately the same observation period is included in the analysis of each of the corpora (see Table 1). In general, the size of the analysed data amounted to 45 hours of recordings containing 122,697 tokens.

Table 1. Data analysed

Subject (language/s)	Age of sub- jects	Length of obser- vation (months)	Length of recordings (hours)	Child speech (tokens)	Child- directed speech (tokens)	All tokens
Filipp (Russian)	1;5–2;8	16	28	16,468	40,253	56,721
Anna (Russian, German)	3;0–4;2	15	17	21,455	44,512	65,976
Total		31	45	37,923	84,765	122,697

Anna has been learning to speak two languages from birth—German, in which her father and her German relatives speak to her, and

³ We sincerely thank T. Pranova, M. Voeikova and N. Gagarina for the data provided.

Russian, which she uses for communication with her mother. Before 2;6 the influence of the German input was more abundant, which made German the dominant language. However, after 2;6 Russian has begun to prevail in the girl's speech environment. This type of bilingualism can be characterised as "asymmetric and simultaneous" (Gagarina, Reichel 2013: 197).

The period beginning from 3;0 (i.e. a few months after the start of the strengthening of the Russian input) was chosen for the comparative analysis. The mean length of the girl's utterances at that time was about two words (MLU: 1.8). By the end of the observations it had increased to three words (MLU: 2.9). It is important that during the first recording (3;0) her Russian speech production consisted mainly of repetitions after the mother, along with affirmative (*yes-*) or negative (*no-*) reactions to the mother's utterances. This suggests that Anna already understood well the phrases addressed to her in Russian and had a receptive vocabulary. At the same time, she often found it difficult to express her thoughts, to select a suitable word and to choose the appropriate language that causes both the code switching and code mixing (e.g. Lanza 2001).

At the beginning of the observation period, at the age of 1;5 Filipp's MLU was the same, 1.8. A similar MLU (being one of the indicators of so-called language age) of both subjects permits comparison, despite their different biological age. However, by the end of the observations, this index exceeded that of found in Anna's speech and approached five words (MLU: 4.8). Also Filipp's strategy in language acquisition could be defined as repetitive (e.g. Voeikova 2015), which also gave an additional basis for comparing these children.

Concluding the data review, one should note that certain features of Anna's speech development—viz. her grammatical errors and the use of spatial prepositions—were described in Gagarina and Reichel (2013) and Jakovleva (2016). The speech portrait of Filipp has been studied to a greater extent. In particular, the acquisition of his verbs is described in Gagarina (2008), adjectives in Voeikova (2015), and pronouns in Krasnoščekova (2016). The development of

dialogical (i.e. conversational) skills as well as epistemic modality is reflected in Kazakovskaya (2019, 2020). Some facets in the acquisition of word-formation–affixation and compounding–are shown in Protassova and Voeikova (2007), Kazakovskaya (2017) and Kazakovskaya and Voeikova (2021). An attempt to compare both affixation and compounding with the data of the compound-rich Estonian language was made in Argus and Kazakovskaya (2013, 2018) and Kazakovskaya and Argus (2021). Systematic study of derivational morphology in the comparative–Russian-German–standpoint is being undertaken for the first time.

For the analysis in each CS a) the proportion of nominal derivatives was determined, b) the degree of their diversity (in lemmas) and frequency (in tokens) was established, c) the number of new (i.e. first-appearing) nominal derivatives and old (i.e. repeated) ones⁴, as well as the ways of word-formation (affixation vs compounding), “working” morphemes and their semantics within the new derivatives were taken into account, d) occasionalistic derivatives and other specific phenomena accompanying the acquisition of word-formation such as *simplex-derivative* pairs, chains and families were revealed.

A chi-square test (statistical significance threshold of $p < 0.05$) was used for the statistical analysis.

3. Results and their discussion

3.1. SIMILARITIES IN THE ACQUISITION OF NOMINAL DERIVATION

The results indicating similarities in the development of Russian nominal word-formation in early mono- and bilingualism are presented first.

⁴ This analysis was carried out by eliminating repetitions of derivative lemmas documented in previous recordings.

3.1.1. THE PROPORTION OF DERIVATIVES IN NOUNS

The analysis shows that the proportion of nominal derivative tokens in the speech of both children is comparable since the differences between them are not statistically significant ($p > 0.05$). As Table 2 demonstrates, more than a third of nouns are such derivatives, namely 30.7% in Filipp's speech and 32.6% in Anna's. The percentage of derivative lemmas also exceeds this value in both CS, but to varying degrees (see Section 3.2).

Table 2. *Nominal derivatives (lemma/token)*

	Nouns	Derivatives	Derivatives among nouns (%)
Filipp	874/3,803	575/1,168	65.8/30.7
Anna	982/2,771	388/902	39.5/32.6

Another indicator of the development of derivation mechanisms can be the size of new lemmas in relation to those already documented in CS, that is, to the old ones. Table 3 shows that in the speech of both subjects, the percentage of new derivatives is high for lemmas and for their tokens.

Table 3. *New nominal derivatives (lemma/token)*

	All derivatives	New derivatives	New derivatives among all derivatives (%)
Filipp	575/1,168	280/456	48.7/39.0
Anna	388/902	210/355	55.4/39.4

Nevertheless, when making a comparison with the data presented in Table 2, it becomes obvious that Anna, with an equal share of new tokens ($p > 0.05$), has a higher percentage of new lemmas than Filipp ($p < 0.05$). Therefore, the proportion of her repetitions is lower. We believe that the high repeatability of nominal derivatives by Filipp can be explained by his general strategy of language acquisition which is more repetitive than creative (e.g. Voeikova 2015).

3.1.2. NOMINAL PATTERNS: AFFIXATION VS COMPOUNDING

In both situations—monolingual and bilingual—the vast majority of nominal derivatives are formed by affixes, while compounds are equally rare ($p > 0.05$). Table 4 shows different patterns of affixal derivatives and their number, along with compounds, the majority of which have at least one noun member, and further shows the proportion of each group among all derivatives in the CS under observation.

Table 4. *Affixal derivatives and compounds (based on new lemmas)*

	Noun + affix	Verb + affix	Adjective + affix	Compounding
Filipp	244 (84.7%)	29 (10.1%)	7 (2.4%)	8 (2.8%)
Anna	168 (78.1%)	38 (17.7%)	4 (1.9%)	5 (2.3%)

In both CS, the proportion of denominal derivatives represented by the “noun+affix” pattern is especially high and comparable ($p > 0.05$): *ruč-k(a)* ‘hand-DIM’ (Filipp 1;8) ← *ruk(a)* ‘hand’, *korabl-ik* ‘ship-DIM’ (Anna 3;0) ← *korabl* ‘ship’. Conversely, deadjective derivatives (based on the “adjective+affix” pattern) are equally rare ($p > 0.05$): *čern-ik(a)* ‘blueberry’ ← *čern(yj)* ‘black’ (Filipp 2;3), *sladost(i)* ‘sweets’ ← *sladk(ij)* ‘sweet’ (Anna 3;4). The middle position of frequency within affixal derivatives is occupied by deverbal nouns (the “verb+affix” pattern): *peč-en’j(e)* ‘biscuit’ ← *peč* ‘to bake’ (Filipp 2;0), *lej-k(a)* ‘watering can’ ← *lit* ‘to pour’ (Anna 3;0). However, in the speech of bilingual Anna, their share is almost twice as high, which is significant ($p < 0.02$) (see Section 3.2). In general, the distribution obtained reflects the system-linguistic property of nominal derivation in Russian (Švedova 2005). That is, the formation of nominal derivatives occurs mainly from nouns despite the fact that almost any class of word to the point of prepositions can serve as the stem for word-formation.

The dominant affix in nominal word-formation is the suffix (see all examples mentioned above). As for the order of emergence in the

speech of both subjects, suffixation⁵ precedes prefixation (derivatives like *po-drug(a)* ‘girlfriend’ ← *drug* ‘friend’ (Anna 3;5) documented very rare), as well as precedes their simultaneous implementation—*pod-osin/ov-ik* ‘boletus’ ← *osin(a)* ‘aspen’ (Filipp 2;1)—and compounding—*tr+e+ugol’+nik* ‘triangle’ ← *tr(i)* ‘three’ + INTRF + *ugol* ‘angle’ (Anna 4;2)—including the synthetic types of the former, e.g. *mux+o+mor-Ø*⁶ ‘fly agaric’ ← *mux(a)* ‘fly’+INTERF+ *mori(t)* ‘to starve’ (Filipp 2;1), see more in Dressler *et al.* (2019).

The proportion of compound lemmas was small. In the speech of either child, it does not exceed 3% (see Table 4). Thus, the assumption concerning the influence of the acquired compound-rich German, which would be expressed by the appearance of more compounds in the Russian speech of bilingual Anna, has not been confirmed. At the same time, in each corpora, compounds serve as the stems for derivatives. This is most often observed within diminutivisation, e.g. *samoljot-ik* ‘airplane-DIM’ ← *sam+o+ljot-Ø* ‘airplane’ (Filipp 1;9, Anna 3;4), *os’minož-ek* ‘octopus-DIM’ ← *os’m/i+nog* (lit. *eight legs*) ‘octopus’ (Anna 4;1).

3.1.3. SUFFIX INVENTORY

In both CS, the inventory of morphemes with which derivatives are formed is quite wide. More than 40 suffixes (excluding their allomorphs) were recorded in Filipp’s speech and about 30 in Anna’s; 21 of the suffixes were used by both children. The vast majority of these suffixes are productive in the modern Russian language.

Their distribution in patterns is as follows.

1. Suffixes *-k*, *-ik*, *-ok/ek*, *-yšk/ušk*, *-onok*, *-nik*, *-ess* (see examples presented within the text), *-ušek*: *vorob-ušek* ‘sparrow-DIM’ ← *vorobej* ‘sparrow’ (Filipp 2;3), *-c/ic*: *zermal’-c(e)* ‘mirror-DIM’ ← *zermal(o)* ‘mirror’ (Anna 3;10), *-očk/ečk*: *mam-očk(a)*

⁵ See “early positional salience” in Slobin (1973).

⁶ Hereafter the sign “Ø” will be used for a zero suffix.

‘mom-DIM’ ← *mama* ‘mom’ (Anna 3;3), -š: *xrju-š(a)* ‘piggy’ ← *xrjukat* ‘to oink’ (Filipp 2;1), -en’k/in’k: *za-in’k(a)* ‘hare-DIM’ ← *zajac* ‘hare’ (Filipp 2;6), -nic: *bol’-nic(a)* ‘hospital’ ← *bol’* ‘pain’ (Anna 3;7), -čik: *čemodan-čik* ‘suitcase-DIM’ ← *čemodan* ‘suitcase’ (Anna 3;10) form derivatives mostly within the “noun+affix” pattern.

2. Suffixes *-ux*, *-enij/anij* (see examples presented within the text), *-k*: *zokol-k(a)* ‘hairpin’ ← *zokolot* ‘to pin up (hair)’ (Anna 3;10), Ø: *pricep-Ø* ‘trailer’ ← *pricepit* ‘to attach’ (Filipp 2;0) are used within the “verb+affix” pattern.
3. The suffix *-ost’*: *slad-ost(i)* ‘sweets’ (Anna 3;4, see above) is used within the “adjective+affix” pattern.

The most frequent morphemes are suffixes with diminutive semantics serving diminutivisation (e.g. Savickienė, Dressler 2007): *pal’čik* ‘finger-DIM’ ← *palec* ‘finger’ (Filipp 1;8), *jabloč-k(o)* ‘apple-DIM’ ← *jablok(o)* ‘apple’ (Anna 3;0). The number of diminutives exceeds the number of those which can be covered by the notion of non-diminutives. In the former, following *Academic Russian Grammar* (Švedova 2005), we include the nominations of

- a) animal babies: *utj-onok* ‘duscling’ ← *utk(a)* ‘duck’ (Filipp 2;1), *l’vj-onok* ‘lion cub’ ← *lev* ‘lion’ (Anna 3;3),
- b) females: *zajč-ix(a)* ‘hare-FEM’ ← *zajac* ‘hare’ (Filipp 2;2), *princ-ess(a)* ‘princess’ ← *princ* ‘prince’ (Anna 4;0),
- c) singulatives: *goroš-in(a)* ‘(one) pea’ ← *gorox* ‘pea’ (Filipp 2;8), *snež-ink(a)* ‘snowflake’ ← *sneg* ‘snow’ (Anna 3;4), as well as words that are
- d) stylistic (colloquial) modifications (SM): *okošk(o)* ‘window-SM’ ← *okno* ‘window’ (Filipp 2;8), *kolen-k(a)* ‘knee-SM’ ← *kolen(o)* ‘knee’ (Anna 3;11), interpreted in some papers as diminutives.

The proportion of diminutives in relation to all nominal derivatives documented in both CS (see Table 5) is comparable ($p > 0.05$). Nearly two-thirds of the early derivative lemmas and their tokens consist of diminutives. Their share among all nouns is expectedly

lower. At the same time, it is exactly the same for both subjects in terms of the number of tokens ($p > 0.05$).

Table 5. *Diminutives (lemma/token)*

	Deriva- tives	Diminu- tives	Diminutives among derivatives (%)	Diminutives among nouns (%)
Filipp	575/1,168	413/840	71.8/71.9	47.2/22.1
Anna	388/902	262/619	67.5/68.6	26.7/22.3

A high proportion of diminutives is an important characteristic of a particular corpus. It determines the degree of intensity of their usage by the child and, thus, whether the corpus belongs to the diminutive-rich or diminutive-poor ones. Recent studies have shown that despite the acquisition of a diminutive-rich language (which Russian is considered to be, opposite to, for example, German or Estonian), the speech of Russian children and their caregivers may not reflect this property. Specifically, the corpus of monolingual Filipp, being the basis for the current comparison, is diminutive-rich (Kazakovskaya, Argus 2021; Kazakovskaya, Voeikova 2021). Consequently, the corpus of bilingual Anna having a similar number of diminutives can also be characterised as diminutive-rich. Thereby the high proportion of diminutives is an essential feature of both CS under observation.

It is also important to note that the proportion of diminutives may not always depend on child gender. In particular, in the earlier studies conducted on different monolingual data it was claimed that there were more diminutives in girls' speech than in boys' (Gleason *et al.* 1990; Protassova, Voeikova 2007; Kazakovskaya, Argus 2021). However, in the speech of bilingual Anna, the percentage of diminutive lemmas in relation to all nouns is lower than in Filipp's ($p < 0.001$).

3.1.4. DEVELOPMENT OF THE DERIVATION SYSTEM: WORD-FORMATION PAIRS, CHAINS AND FAMILIES OF NOMINAL DERIVATIVES

The analysis of the development of connections within nominal word-formation in both CS revealed the following common trends. As Table 6 shows, based on the most frequent denominal pattern, the proportion of derivatives having an appropriate simplex pair (i.e. paired derivatives) in CS like *ded* ‘grandfather’ (1;5) → *ded-ušk(a)* ‘grandfather-DIM’ (Filipp 2;1) or *pčel(a)* ‘bee’ (3;0) → *pčel-k(a)* ‘bee-DIM’ (Anna 3;1) is quite high. The paired derivatives approach the half in Anna’s speech and exceed this figure in Filipp’s ($p < 0.05$).

Table 6. *Derivatives and their simplexes*
(based on the “noun+affix” pattern)

	All derivatives	Derivatives with simplexes (% among all derivatives)	Simplexes precede derivatives (% among paired derivatives)	Simplexes and derivatives appear simultaneously (% among paired derivatives)	Derivatives precede simplexes (% among paired derivatives)
Filipp	244	141 (57.8)	72 (51.1)	29 (20.6)	40 (28.4)
Anna	168	80 (47.6)	36 (45)	19 (23.75)	25 (31.25)

In addition, the pairs where a simplex precedes a derivative (as in both examples above) or appears simultaneously with it—*dyr(a)* ‘hole’ → *dyr-k(a)* ‘hole-SM’ (Filipp 1;5), *život* ‘belly’ → *život-ik* ‘belly-DIM’ (Anna 3;4)—also make up the majority of paired derivatives in both CS ($p > 0.05$). The consistent appearance of the derivative and, in general, the presence of a ‘simplex – derivative’ pair can be interpreted as an indicator showing productive rather than lexicalized use of the derivative by a child. The former also accompanies the acquisition of derivational morphology at the early stages of language acquisition.

Another important indicator of productivity is the presence of word-formation chains and families. These chains consist of more than two single-root words (i.e. more than one pair), e.g. *dyr(a)* ‘hole’

→ *dyr-k(a)* ‘hole-SM’ → *dyroč-k(a)* ‘hole-DIM’. The combination of chains creates word-formation families, e.g.

koz(a) ‘goat’ → *kozlj-onok* ‘goatling, goat baby’ → *kozlj/onoč-ek*
 ‘goatling-DIM’
 → *koz-očk(a)* ‘goat-DIM’
 → *kozj-ol* ‘goat-MALE’ → *kozl-ik* ‘goat.MALE-DIM’
 (Filipp),
kupat’sja ‘to bathe’ → *kup-anij(e)* ‘bathing’
 → *kupa-l’nik* ‘swimsuit’ (Anna).

In both corpora, more than ten word-formation chains of various sizes were documented. In most cases, the first acquired constituents of word-formation families besides diminutives are animal babies and females:

jož ‘hedgehog’ → *jož-ik* ‘hedgehog-DIM’
 → *jež-onok* ‘hedgehog baby’
 → *jež-ix(a)* ‘hedgehog-FEM’ (Filipp),
nos ‘nose’ → *nos-ik* ‘nose-DIM’
 → *nos+o+rog* ‘rhinoceros’ (Anna).

3.1.5. OCCASIONALISTIC NOMINAL DERIVATIVES

Occasionalistic nominal derivatives are equally infrequent in both CS. Their percentage proportion of the total number of nouns is very low. At the same time, all occasionalisms documented are built according to productive models. These are denominal diminutives in Filipp’s speech, e.g. *det-ik*⁷ ‘child-DIM’ ← *det(i)* ‘children’ (1;10), *garmoš-išk(a)** ‘accordion-DIM’ ← *garmon* ‘accordion’ (2;1) as well as deverbatives in Anna’s speech, e.g. *lep-enij(e)** instead of *lep-k(a)* ‘modelling’ ← *lepit* ‘to mould from plasticine’ (3;9), *ščita-nij(e)** ← *ščitat* ‘to calculate’ (3;8).

⁷ Hereafter the asterisk “*” will be used for marking children’s occasionalisms.

A wide look at Anna's speech production shows that her inflection innovations are more frequent than word-formation ones. Erroneous grammar forms most often occur during the formation of number and case forms, especially in non-declinable (e.g. *sal'to* 'somersault'), material (e.g. *xleb* 'bread') or pluralia tantum nouns (e.g. *nožnicy* 'scissors'), see more in Gagarina and Reichel (2013).

3.1.6. SEMANTIC DOMAINS OF DERIVATIVES: FREQUENCY AND EMERGENCE

A comparative analysis of the semantics of nominal derivatives in CS has revealed, first, the frequency of different semantic categories and, second, the order of their emergence. In addition to high-frequency diminutives (see Table 5), the next position in frequency is occupied by stylistic (colloquial) modifications of nouns (8–6%), as well as designations of various types of activities and/or their results (6–8%).

The names of instruments, animal babies and different objects like *otkryt-k(a)* 'greeting card' ← *otkryt* 'to open' (Filipp 2;2) or *sneg/ov-ik* 'snowman' ← *sneg* 'snow' (Anna 3;4) also have some frequency (importantly, comparable in both corpora) (6.5–3.5%).

Derivatives denoting females and males, e.g. *pet-ux* 'rooster' ← *pet* 'to sing' (Anna 4;2), singulatives (see examples above), locations, e.g. *skvoreč-nik* 'birdhouse, lit. house for starlings' ← *skvorec* 'starling' (Anna 3;0), agents, e.g. *pomošč-nik* 'helper' ← *pomošč* 'help' (Anna 4;0) and abstract notices like *nastroj-enij(e)* 'mood' ← *nastroit* 'to tune' (Anna 3;6) are equally infrequent (3–0.5%).

The inventory of semantic groups of derivatives also matches so each child has 12 of them. Almost half of the categories (namely five, three of which are frequently used by both children) appear in the same order (see Table 7). In general, the emergence of subjects and objects precedes that of activities or their results along with the abstract names. The appearance of less frequent derivatives in CS and the intensity of enrichment of the derivative repertoire is individual (see Section 3.2.4).

Table 7. *Semantic domains in order of emergence (similarities)*

	Filipp (age)	Anna (age)
Diminutives, stylistic modifications, objects	1;5–1;8	3;0–3;1
Activities/results	2;2–2;5	3;4–3;5
Abstract notions	2;6–2;8	3;6–3;7

The same order in the emergence of the semantic domains represented by derivatives, as well as their frequency in both CS, may indicate that semantics is associated more with the cognitive development and its mechanisms rather than with purely linguistic ones.

3.2. DIFFERENCES IN THE ACQUISITION OF NOMINAL DERIVATION

Together with the presence of prominent similarities in the acquisition of nominal derivation in mono- and bilingual situations, some differences were noted.

3.2.1. NOUN TOKENS

The most obvious differences include the proportion of nouns in CS (see Table 8). The percentage of noun tokens in the monolingual data is almost twice as high as in the bilingual data ($p < 0,001$).

Table 8. *Noun tokens*

	All words	Nouns	Nouns among all words (%)
Filipp	16,486	3,803	23.1
Anna	21,455	2,771	12.9

However, this finding requires some clarification. As this table shows, though the number of nouns in Anna's speech is indeed lower than in Filipp's (2,771 vs 3,801), the total number of words in the bilingual corpus exceeds the corresponding value in the monolingual one.

Meanwhile, a careful analysis of the dialogue recordings from each CS shows that this excess is largely due to the peculiarities of bilingual communication in the early stages. So, Russian and German are switched or mixed in Anna's speech, and there occur hesitation pauses supplemented by various fillers. Also, functional words along with discourse markers are often used. Such words and markers are much less evident in Filipp's speech. Their scarcity, together with the lack of code switching, reduces the overall length of the dialogue and thereby increases the proportion of nouns. Thus, the quantitative discrepancy mentioned above can be associated not only with the smaller Russian vocabulary of Anna (as expected), but also with the specifics of adult-child communication in a bilingual situation.

3.2.2. DERIVATIVE LEMMAS

The next dissimilarity exists in a smaller number of derivative lemmas in relation to nouns in Anna's speech (see Table 2 above). There are almost 50% fewer of them than in Filipp's speech ($p < 0.001$). This result may indicate a smaller size of the bilingual child's active vocabulary, on the one hand, and a different speed in the development of derivational processes on the other. We connect its slowdown in the bilingual situation with the simultaneous development of the derivational relations in German, where a different way of word-formation (*viz.* compounding) prevails.

In particular, a higher proportion of verbal derivatives in Anna's speech reflects the results obtained in the study of word-formation based on the data of spontaneous speech of German-speaking children aged 1;9 to 3;0 (Schipke, Kauschke 2011). It was found that they produce more verbal than nominal derivatives and their compounds are based more on verbs than on nouns. Moreover, the results showed simultaneous development of compounding and derivation.

3.2.3. DEVELOPMENT OF NOMINAL DERIVATION

Anna's speech contains a smaller number of paired derivatives ($p < 0.05$), that is, those derivatives that have the corresponding simplex in the data (see Table 6). The result may indicate a higher degree of lexicalization of the derivatives used by her. This is especially noticeable in the first recordings of her dialogue with her mother. After 3;6, this trend clearly changes. Almost all derivatives in the girl's speech appear after the simplex, e.g. *čaj* 'tea' (3;0) → *čaj-nik* 'teapot' (3;7), *karandaš* 'pencil' (3;1) → *karandaš-ik* 'pencil-DIM' (3;11) or, at least, simultaneously with it, e.g. *mašin(a)* 'car' (3;7) → *mašin-k(a)* 'car-DIM' (3;7), *počt(a)* 'post office' (3;7) → *počt-aljon* 'postman' (3;7).

A smaller number of word-formation chains and families were also documented in Anna's speech. She has a little more than ten of them, while Filipp has twice as many. We tend to explain this result with a lower intensity of the derivational development in a predominantly affixal Russian language, which is carried out against the background of the development of a compound-rich German language. At the same time, it may seem curious that, on one hand, there is the small number of Russian compounds mentioned above and, on the other hand, a high proportion of diminutive lemmas and their tokens, which are not typical for German. Thus, the typological features of Russian in terms of nominal word-formation do not seem to undergo noticeable changes in contact interaction with German.

Perhaps the influence of the German word-formation system should be seen in Anna's production of so-called childish compounds such as *mama-kurica* 'mom-hen' (3;9), *kaljaka-maljaka* 'scribble' (3;11), as well as in a certain number of reduplications not documented in Filipp's speech. We are talking not only about the conventional doubling of adjectives like *bol'šoj-bol'šoj* 'big-big' (3;0)⁸,

⁸ This adjective was documented later with the usual prefix *pre-*: *bol'šoj-pre/bol'šoj* (3;7).

verbs like *šla-šla-šla* 'went-went-went' (3;7), *lezu-lezu* 'climb-climb' (3;11), adverbs like *daleko-pre/daleko* 'far far away' (3;9), *bystro-pre/bystro* 'quickly-very quickly' (3;10), *bol'no-bol'no-bol'no* 'hurt-hurt-hurt' (4;0) or even onomatopoeias from baby talk like *bum-bum* 'boom-boom' (3;3) or *njam-njam* 'yum-yum' (3;8), which are used to indicate the intensification and/or duration of some attribute or action, but about the repetition of nouns. And if the context of the earliest reduplication *ryby-ryby* 'fishes-fishes' (3;3) does not have an unambiguous interpretation, the later ones indicate that Anna attempted to strengthen the corresponding semantics with the help of repetition. To illustrate, the girl said *mjač-mjač* 'ball-ball' (3;7) at the moment when she rolled out plasticine and wanted to make a very big ball out of it. Or she said *mizinec-mizinec* 'pinky-pinky' (3;10) in the conversation with her mother, remembering what the smallest finger on her hand is called in Russian. In the first instance, this reduplication can be related with the development of augmentative semantics, and in the second one, with a diminutive one.

3.2.4. SEMANTIC DIFFERENCES

Finally, characterising the features of the semantic development of derivatives, the intensity of the process with which this occurs in a bilingual child should be noted. So, in Filipp's speech all semantic domains appeared sequentially during 16 months, whereas in Anna's speech this process was carried out twice as fast. And whereas Filipp's earlier derivatives turned out to be denominal ones (viz. quite simple diminutives and animal babies), Anna's speech consisted of more complex domains, such as locatives and instruments. The former are built on a less frequent and more complex deverbal pattern. Moreover, as mentioned, according to this pattern all of Anna's occasionalisms were created. This finding can be associated with her higher level of cognitive development as a child acquiring two language systems, and to some extent with her age.

4. Concluding remarks

Despite the fact that these results have the status of a case study to date, there undoubtedly are more similarities than differences in the acquisition of nominal derivation in mono- and bilingualism. Similar conclusions were made when describing the acquisition of spatial prepositions by Anna compared to the monolingual Russian-speaking girl Toma (Jakovleva 2016).

Meanwhile, the quantitative analysis of different facets of nominal word-formation—from the number of lemmas to the inventory of suffixes—indicates that bilingual Anna is somewhat lagging behind monolingual Filipp in this component of system-language competence. In general, this confirms the well-known trend that, on the one hand, there is the superiority of bilinguals in “cumulative” language development (and, according to the recent evidence, cognitive), but on the other hand, they lag behind monolingual peers in each of their languages (Białystok 2009; Miller *et al.* 2018 among others). Our results are consistent with those studies that point to the cognitive advantages of bilinguals. However, there is also contrary evidence (Nicoladis 2018). The question of why the results in the cognitive domain are different remains unanswered.

The specific research question of the present study was to examine how a building block model of complexity (Dziubalska-Kołączyk 2014; Zurek 1990) can be applied to the emergence of nominal derivatives in the course of development of a bilingual child. According to this model, a child should start with simple stems and the derivational complexity should increase during development. That is, children should start to use derived nouns only after they have already acquired the corresponding simplexes. Our study showed that despite the different proportion of nominal derivatives in relation to all nouns (Table 2), in terms of new derivative lemmas, the proportion of paired derivatives in the speech of both subjects was equally high ($p < 0,05$) and derivatives with the preceding simplex were quite frequent (Table 6). The analysis of word-formation chains

and the general sequence in the appearance of derivatives indicated that in most instances suffixes were first used with non-derived stems (or roots), after which they were attached to different derived stems, derivatives and compounds, including synthetic ones. Particularly, both subjects under observation, first, use suffixes (mainly diminutive and stylistic ones) with simplexes like *dyr-k(a)* ‘hole-SM’ (Filipp 1;5), *det-k(i)* ‘children-DIM’ (Anna 3;9) and then with derivatives *grib/oč-ek* ‘mushroom-DIM-DIM’ (Filipp 1;8), *det/išk(i)* ‘children-DIM’ (Anna 4;2). After that both children began to produce compounds: *magnit+o+fon* ‘tape recorder’ (Filipp 1;11), *nose+o+horn* ‘rhinoceros’ (Anna 3;8). However, in Filipp’s speech, compounding was accompanied by suffixation, including the zero one like *sam+o+ljot-Ø* ‘aeroplane’ slightly later (at 2;0), whereas in Anna’s speech, different types of compounds appeared during one recording session and much later (at 3;8). This circumstance, as the fact that some nouns appear in CS as derivatives (and without simplexes documented to the end of observations), does not allow us to confirm completely a building block model of complexity in early bilingualism. This hypothesis was also confirmed only partially on the monolingual data of Russian and Estonian (Argus, Kazakovskaya 2018: 34–35).

The following briefly outlined main prospects conclude the present Russian-German investigation. One of the objectives, in addition to increasing the data analysed, was the study of adjective and verb derivatives in a bilingual situation, which has been conducted so far only for Russian L1 (Kazakovskaya, Voeikova 2021). The next important aim is to analyse the child-directed speech, that is, the linguistic input children receive. We plan to study the following problems: firstly, the influence of input on the development of a child’s language system; secondly, the mechanisms involved in this process, specifically fine-tuning (Snow 1995); and thirdly, the peculiarities of caregiver communicative strategies with mono-, bi- and plurilingual children, see the initial experience of analysing Russian-Italian-Norwegian trilingualism in Kazakovskaya and Khačaturjan (2015).

Of particular interest is the reactive tactics of caregivers towards children's code mixing or switching, as well as children's errors, the study of which has been actively conducted in recent decades (e.g. Lanza 2001; Kilani-Schoch *et al.* 2009; Kazakovskaya 2021).

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ABBREVIATIONS

CS – child speech

CDS – child-directed speech (input)

DIM – diminutive

INTERF – interfix

MLU – mean length of utterance

L1 – first language acquisition

SM – stylistic modification

RESÜMEE

VENE NIMISÕNATULETUSE OMANDAMINE ÜKS- JA KAKSKEELSES SITUATSIOONIS

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Uurimus keskendub ükskeelsete (vene) ja simultaansete kakskeelsete (vene-saksa) laste vene keele nimisõnade tuletusmorfoloogia omandamisele. Analüüsi ja tulemuste aluseks on pikiuuringuga kogutud lindistused, mis on transkribeeritud CHAT-vormis, kasutades CHILDES-i süsteemi. Esitatud on esimesed mallid ja nimisõnatuletuse mehhanismid koos morfeemidega, mida lapsed kasutavad. Nimisõnatuletiste produktiivsele kasutusele osutavateks teguriteks on lapse kõnes leiduvate tuletamata tüvede ja tuletise ehk sõnapere ja juhutuletiste kasutamine. Arutletakse nimisõnatuletuse omandamise, sh tuletiste semantika omandamise sarnasuste ja erinevuste üle ükskeelsetes ja kakskeelsetes situatsioonides.

Võtmesõnad: nimisõnad, sõnamoodustus, tuletised, tuletamata tüvi, liitmine, vene, saksa

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