Russian

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1. Language description

Russian is one of East Slavic languages in the Slavic group of the Indo-European family. It is the most widely spoken of the Slavic languages, with approximately 153 million L1 and 113 million L2 Russian speakers (Simons & Fennig, 2017). It is the largest native language in Europe and the eighth most spoken language in the world. The Russian language is the official language in Russia, Belarus and Kazakhstan, and it is also widely spoken in Ukraine, Latvia, and to a lesser extent, the other post-Soviet states and former members of the Eastern Bloc.

There is not a lot of dialectal variation in Russian. All the dialects belong to one of the two regional groups: Northern and Southern dialects. It is more common to observe dialectal variation in the pronunciation of vowels rather than consonants. However, few consonants may also have their dialectal counterparts, e.g., /g/ is pronounced as /ɣ/ by a speaker of the Southern Russian dialect (Sussex & Cubberly 2006).

Consonant system

Table 1

Consonant system of the Russian language (Knyazev & Pozaritskaja, 2012)

	bilabial	labiodental	alveolar	postalveolar	palatal	velar
plosive	b bʲ p pʲ		d dʲ t tʲ			g gʲ k kʲ
fricative		v vʲ f fʲ	z zʲ s sʲ	ʒ (ʒʲ) ʃ ʃː		x xʲ (ɣ)
affricate			t͡s	t͡ʃ		
nasal	m mʲ		n nʲ			
trill				r rʲ		
approximant			l	lʲ	j	

NB: Phonemes in parenthesis are disputed or are dialectal versions of the consonants.

The full repertoire of Russian consonants and their possible positions in a syllable is given in table 2. In addition, the following two morphophonological processes are characteristic of the Russian consonantal system:

(1) **Devoicing**: voiced consonants – /b/, /bʲ/, /d/, /dʲ/ /g/, /gʲ/, /v/, /vʲ/, /z/, /zʲ/, /ʒ/ – become devoiced word finally (e.g., *grib*$_{sg}$ [*grʲi**p***] – *griby*$_{pl}$ [*grʲi**bɨ***]) or when they are followed by another voiceless obstruent (e.g., *grozd'*$_{sg}$ [*gros**ʲtʲ***] – *grozdi*$_{pl}$ [*groz**dʲ**dʲi*]). In non-monosyllabic words, due to the Open Syllable principle in Russian (Knyazev & Pozaritskaja, 2012), when a vowel is followed by a voiced consonant, this consonant becomes part of the next syllable. Thus, voiced consonants do not appear in syllable final positions. For example, when a monosyllabic *gri**b***$_{sg}$ [*grʲi**p***] becomes a disyllabic *griby*$_{pl}$ [*grʲi**bɨ***]) the voiced /b/ is an onset of the second syllable, as in *gri–by*.

(2) **Voicing**: voiceless consonants (/p/, /pʲ/, /t/, /tʲ/, /k/, /f/, /fʲ/, /s/, /sʲ/, /ʃ/) become voiced when they are followed by a voiced obstruent.

Table 2

Consonants in syllable-initial and syllable-final positions

Syllable initial		**Syllable final**	
Consonant	**Words (IPA)**	**Consonant**	**Words (IPA)**
b-	bar (bar)	-b	
bʲ-	bʲek (jogging)	-bʲ	
p-	pot (sweat)	-p	pop (pope)
pʲ-	pʲir (feast)	-pʲ	t͡sɛpʲ (chain)
d-	dom (house)	-d	
dʲ-	dʲet (oldman)	-dʲ	
t-	tus (ace)	-t	dʲet (oldman)
tʲ-	tʲir (shooting gallery)	-tʲ	mutʲ (dreg)
g-	gas (gasoline)	-g	
gʲ-	ˈgʲirʲə (kettle-ball)	-gʲ	

k-	kot (cat)	-k	mak (poppy)
kʲ-	kʲit (whale)	-kʲ	
v-	val (shaft)	-v	
vʲ-	ˈvʲerə (faith)	-vʲ	
f-	fon (background)	-f	rof (moat)
fʲ-	ˈfʲigə (figue)	-fʲ	krofʲ (blood)
z-	zof (call)	-z	
zʲ-	ˈzʲerkələ (mirror)	-zʲ	
s-	sor (trash)	-s	nos (nose)
sʲ-	ˈsʲerə (sulphur)	-sʲ	gusʲ (goose)
ʒ-	ʒɨr (fat)	-ʒ	
ʃ-	ʃum (noise)	-ʃ	mɨʃ (mouse)
ʃː-	ʃːit (shield)	-ʃː	vʲɐʃː (thing)
x-	xor (chorus)	-x	mox (moss)
xʲ-	xʲit (hit)	-xʲ	
t͡s-	t͡sɛpʲ (chain)	-t͡s	ɐˈtʲet͡s (father)
t͡ʃ-	t͡ʃɨn (rank)	-t͡ʃ	not͡ʃ (night)
m-	mak (poppy)	-m	dom (house)
mʲ-	mʲir (peace)	-mʲ	sʲemʲ (seven)
n-	nos (nose)	-n	son (sleep)
nʲ-	nʲis (bottom)	-nʲ	konʲ (horse)
r-	rok (rock)	-r	sor (trash)
rʲ-	rʲis (rice)	-rʲ	garʲ (smoke)
l-	lak (nailpolish)	-l	gol (goal)
lʲ-	lʲuk (hatch)	-lʲ	molʲ (moth)

j-	jɪ'vo (his)	-j	roj (swarm)

Syllable structure

The patterns of syllable structures in Russian are flexible, allowing for a wide variety of syllable types, varying in both onset and coda complexity (see table 3).

Table 3

Typical syllable structures in the Russian language

Syllable structure	**Examples in IPA**
VC	ˈ**ar**kə (arch)
	ˈ**ok**nə (window)
CV	ˈramə (frame)
	rʲɪˈka (river)
CVC	ˈnos (nos)
	ˈ**lap**kə (paw in diminutive)
CCVCC	ˈtrosʲtʲ (cane)
	ˈgvosʲtʲ (nail)

Possible consonant clusters

Consonant clusters occur frequently in Russian and they may consist of 2 to 5 consecutive consonants (Švedova, 1980). The most frequently occurring combinations are given in Table 4.

Table 4

Examples of the most frequent types of consonant clusters in Russian

Number of consonants	**Cluster structure** (Obstruent = O, Sonorant = S)	**Cluster**	**Words (IPA)**	**Cluster**	**Words (IPA)**
2	O + O	kv-	kvas (kvas)	-ft	ʃrʲift (font)
	O + S	trʲ-	trʲi (three)	-tm	rʲitm (rythme)

	S + O	lʒ-	lʒɛt͡s (liar)	-rs	vors (pile)
	S + S	mn-	ˈmnogə (many)	-nr	ʒanr (genre)
3	O + O + S	skrʲ-	skrʲip (squeak)	-ktr	spʲektr (spectrum)
	O + O + O	stv-	stvol (trunk)	-kst	tʲekst (text)
	S + O + O	mzd-	mzda (tax)	-rst	pʲerst (finger)
	S + O + S	mgl-	mgla (mist)	-mbr	tɛmbr (tone)
4	O + O + O + O	vzdv-	ˈvzdvoətʲ (double)	-fstf	grafstf (Gen, pl from 'grafstvə, county)
	O + O + O + S	vzglʲ-	vzglʲat (look)		
	S + O + O + O	-mstv-	bʲɪˈzumstvə (madness)	-lʲstf	pɐˈsolʲstf (Gen, pl form pɐˈsolʲstvə, embassy)
	S + O + O + S	-nstr-	dʲɪmɐnˈstrat͡səə (demonstration)		
5	O + S + O + O + O	-drstv-	ˈbodrstvəvətʲ (to be awake)		
	S + O + S + O + S	-ntrpr-	kəntrpɾɐˈɛkt (counter project)		
	S + O + S + O + O	-ndrsk-	ˈflandrskʲəj (Flemish)		

2. Age and order of acquisition of Russian consonants by monolingual children

There is currently limited evidence on the order and age of acquisition of consonants and consonant clusters by Russian-speaking children (Vinarskaya & Bogomazov, 2005). Specifically, the main body of research focuses on a selection of consonants and not the full repertoire of phonemes available in the Russian language (Gvozdev, 1948). In addition, the reported findings typically come from observations of individual children (Bel'tjukov & Salaxova, 1973, 1975; Eliseeva, 2008; Timm, 1977; Yakobson, 1985; Zharkova, 2005), raising questions about generalizability of these results. Therefore, it is currently not possible to report the age norms for the acquisition of the various phonological phenomena in Russian, including the order of mastery of consonants and consonant clusters.

This section brings together evidence from the studies on phonological development in Russian, and when necessary, refers to other works, which discuss general patterns observed in cross-linguistic data. The literature review is summarized in two tables. Table 5 gives an overview of the order of acquisition of phonological features/contrasts (Bel'tyukov & Salaxova, 1973, 1975; Olmsted, 1971; Yakobson, 1985) and individual consonants (Eliseeva, 2008; Timm, 1977; Zharkova, 2005). Table 6 presents a more detailed overview of the order and age of acquisition of individual phonemes (Eliseeva, 2008).

In his seminal work, Yakobson (1949/1985) has proposed a classification based on the general patterns of phoneme acquisition observed in world languages; his framework, however, did not include empirical evidence from Russian-speaking children. One of the first attempts exploring phonological development in Russian using experimental evidence has been done by Timm (1977). The researcher has tested the hypotheses formulated by Olmsted (1971) that phonemic contrasts with greater phonological discriminability according to the findings of Miller and Nicely (Miller & Nicely, 1961) should be first acquired. Using transcripts of spontaneous speech from one boy Andrik aged between 1;7 and 2;9 (years;months), Timm has confirmed that nasality is acquired first (i.e., fewer errors are made producing nasal consonants), followed by voicing, then friction and finally by place of articulation (see Table 5).

Table 5

The summary of the order of acquisition of the Russian phonemic contrasts by monolingual children

Theory of cross-linguistic acquisition of phonemic contrasts in children proposed by Olmsted (1971)	Timm (1977)		Yakobson (1985)		Bel'tyukov & Salaxova (1973, 1975)		Zharkova (2005)		Eliseeva (2008)	
nasality	1		1		1-2		1		3	
voicing	2		NA		1-2		2		5	
friction	3		4		6		4		2	
	5	(a) dental	2	(a) labial	3-4	(a) dental	5	(a) velar	4	(a) labial

place of articulation		(b) labial (c) post-alveolar (d) velar (e) alveolar		(b) dental		(b) labial (c) /s/, /sʲ/,/z/, /zʲ/ vs /ʝ/, /f/, /fʲ/, /ʂ/, /ɕ:/, /x/, /xʲ/		(b) labial (c) alveolar (d) dental (e) post-alveolar		(b) coronal
palatalization *	4		5		3-4		3		6	
plosiveness*			3		5				1	
* not included in the original classification proposed by Olmsted (1971)										

Following up on these findings, Bel'tjukov and Salaxova (1973, 1975) have reported on longitudinal data from 4 typically developing Russian-speaking monolinguals (3 girls and 1 boy), discussing similarities observed in the order and age of mastery of phonemic contrasts. Importantly, the study gives no details on the data collection method, the participants' ages or criteria for considering phoneme acquired (e.g., 85% of adult-like productions).

The order of consonant acquisition proposed by Zharkova (2005) comprises the list of consonants produced by two Russian-speaking girls by the age of 18 months and is based on mothers' diaries. The author discusses in great detail the order of phoneme acquisition, however, due to young age of the participants, the time of full mastery of these consonants is unavailable.

In contrast, Eliseeva (2008) has recently proposed an alternative classification, indicating the order and age of phoneme acquisition in one monolingual girl, the author's daughter Liza aged between 0;8 and 8;0. The data were presented as a mother's diary. The consonants were considered mastered when they were no longer substituted with other consonants in spontaneous speech (see Table 6).

Table 6

The order of consonant acquisition reported by Eliseeva (2008)

	Age of acquisition

Phonemes	First emergence	Adult-like proficiency
/p/ /v/ /m/	0;8–1	/p/: 0;8 /v/: 2;7 /m/: 2;0
/kʲ/	1–1;1	/kʲ/ :1;0
/sʲ/ /j/	1;1–1;2	/sʲ/: 1;10 /j/: 1;1
/b/ /tʲ/ /x/	1;2–1;3	/b/: 1;2 /tʲ/: 1;2 /x/: 2;5
/f/ /dʲ/	1;3–1;4	/f/: 2;8 /dʲ/: 1;3
/k/ /nʲ/ /ʁ/	1;4–1;5	/k/: 1;4 /nʲ/: 1;4
/g/ /gʲ/ /t/ /n/ /d/ /zʲ/	1;5–1;6	/g/: 1;5 /gʲ/: 1;5 /t/: 2;7 /n/: 2;7 /d/: 2;7 /zʲ/: 1;5
/bʲ/ /mʲ/ /s/ /pʲ/ /xʲ/	1;6–1;7	/bʲ/: 1;9 /mʲ/: 2;8 /s/: 2;7 /pʲ/: 2;8 /xʲ/: 1;6
/z/	1;9–1;10	/z/: 2;11
/vʲ/	1;10–1;11	/vʲ/: 2;7
/fʲ/	2;1–2;2	/fʲ/: 2;8
/t͡s/	2;4–2;5	/t͡s/: 3;1
/ʃː/	2;10–2;11	/ʃː/: 3;9
/lʲ/	3–3;1	/lʲ/: 3;7
/l/	3;3–3;4	/l/: 3;7
/ʃ/ /ʒʲ/ /ʒ/ /t͡ʃ/	4;5–4;6	/ʃ/: 4;8 /ʒʲ/: 4;8 /ʒ/: 4;8 /t͡ʃ/: 8;0

/rʲ/ /r/	4;8	/rʲ/: 6;0 /r/: 6;0

Despite inconsistencies in the results, several patterns of acquisition can be observed across studies. Specifically, it appears that Russian-speaking children first begin to differentiate between nasal and non-nasal consonants, and after that they learn to produce voicing and palatalization contrasts (Table 1). Evidence on the acquisition of other phonemic contrasts is mixed, indicating that there could be some variability and possible lexical effects during the early stages of phonological development. More data are needed to clarify these points. However, the existing preliminary evidence on the age of phoneme emergence was used for sorting items in the *Speakaboo* naming task, as it has been done for other *Speakaboo* adaptations.

3. Common phonological processes

Common phonological processes which are part of the normal language development of a Russian-speaking child are described in the study conducted by Eliseeva (2008). Basing on a case study with a monolingual girl Liza (author's daughter) aged between 0;8 and 8;0, Eliseeva singles out the substitution of consonants, the substitution of vowels, omission of consonants, assimilation and metathesis (See table 7).

Table 7

Common phonological processes according to Eliseeva (2008)

Process	**Example**
Substitution of consonants	lʲ→ nʲ: * nʲanʲə* (lʲalʲə, baby)
Substitution of vowels	u → a: *maxə* (muxə, fly)
Omission of consonants	*saxə* (saxər, sugar)
Assimilation	*zʲizʲə* (lʲizə, Lisa)
Metathesis	*kɐpʲetʲək/kɐpʲitʲək* (pɐkʲetʲək, plastic bag)

4. Permitted lexical variations

Table 8

Permitted variation

Word	**IPA**	**Permitted variation**

11. лимон (lemon)	lʲ	ɪ	m	o	n					lʲɪmonʧ͡ʃək (diminutive form from lemon)
23. телефон (telephone)	tʲ	ə	lʲ	ɪ	f	o	n			tʲəlʲɪfonʧ͡ʃək (diminutive form from telephone)
24. шоколад (chocolate)	ʃ	ə	k	ɐ	l	a	t			ʃəkɐlatkə (diminutive form from chocolate)
25. яблоко (apple)	j	a	b	l	ə	k	ə			jablətʃ͡kə (diminutive form from apple)
31. цыплёнок (chicken)	ʦ	ɨ	p	lʲ	o	n	ə	k		ʦɨplʲonəʧ͡ʃək (diminutive form from chicken)

5. Performance of typically developing Russian toddlers

In 2019, 36 monolingual Russian children aged between 2.8 and 5.1 and 28 Russian-Dutch bilinguals aged 2.6 – 5.3 were tested using the Russian version of Speakaboo (Reshetnikova, 2018). The children attended a regular (Russian) kindergarten and insofar as the teachers were able to assess, all experienced normal (language) development, except for one monolingual girl who was excluded from the study. The average age of monolingual children was 4.2 and the mean age of bilinguals was 4.5 years.

The test was taken by the developers of the Russian version. The game Doors was used for children of all ages. If the child could not spontaneously name the target word correctly, he or she would be given some help (description or a sentence to complete). If the word was still not mentioned, it would be prompted. If the child then did not repeat the word, the researchers moved on to the next word.

All the children's utterances have been scored on the Russian score form. The Russian-language test contains a total of 33 words which contain 35 unique consonants: 18 of them are at the syllable-initial position due to the rules of Russian phonotactics. Overall, in the test there are 92 consonants and 8 consonant clusters. If a child only realises the /b/ in the /br/ cluster, this is counted as an error.

Because not all words could be assessed (not all pictures were named), not all children had all 92 consonants and 8 consonant clusters assessed. This was taken into account when calculating the scores. Table 9 shows the averages from the entire group.

Table 9

Average scores of normally developing monolingual Russian children and bilingual Russian-Dutch children

	Monolinguals	Bilinguals
Age	4.2	4.5

Number of consonants incorrect	16.9	17.3
Number of words not spontaneously used	5.98	13.6
Number of consonants assessed	99.8	97
Number of consonants correct	82.9 (99.8 – 16.9)	79.7 (97 – 17.3)
Percentage of consonants correct (PCC)	83.0 (82.9/99.8 * 100)	82.2 (79.7/97 * 100)

Example of an average score

	Case Russian monolingual: Boy, 3.4	Case Russian-Dutch bilingual: Girl, 5.3
Number of mistakes:	11	13
Words repeated:	6	14
Unable to assess:	0	0
Consonants assessed:	100	100
Consonants correct:	89	87
PCC:	s88	85

X: consonant substituted *ø: consonant omitted* *R: word repeated (after prompt)*

Word	IPA									R	Process/remarks
1. дом (house)	d	o	m								
2. нож (knife)	n	o	ʃ								
3. мяч (ball)	mʲ	a	ʧ								
4. заяц (hare)	z	a	ə	~~ʦ~~							ʦ → t
5. сыр (cheese)	s	ɨ	r								
6. гусь (goose)	g	u	sʲ							v	utkə (duck)
7. чай (tea)	ʧ	a	j							v	tʃaʃkə (cup)
8. дверь (door)	d	vʲ	e	~~rʲ~~							rʲ → j
9. ключ (key)	k	lʲ	u	~~ʧ~~						v	tʃ → ʧ- kʲlʲʊʧɪ (keys)
10. петух (rooster)	pʲ	ɪ	t	u	x						
11. лимон (lemon)	~~lʲ~~	ɪ	m	o	n						lʲ → j
12. палец (finger)	p	a	~~lʲ~~	ə	ʦ						lʲ → j
13. лошадь (horse)	l	o	ʃ	ə	ʧʲ						
14. ремень (belt)	~~rʲ~~	ɪ	mʲ	e	nʲ						rʲ → j
15. жираф (giraffe)	ʒ	ɨ	r	a	f						
16. белка (squirrel)	bʲ	e	l	k	ə					v	bʲelətʃkə (squirrel dim)
17. кисти (brushes)	kʲ	i	s	~~ʧʲ~~	ə					v	kʲistətʃkʲə (Brushes dim) tʲ → t
18. зебра (zebra)	zʲ	e	b	r	a						
19. гитара (guitar)	gʲ	ɪ	t	a	r	ə					
20. качели (swing)	k	ɐ	ʧ	e	~~lʲ~~	ə					lʲ → ø
21. мальчик (boy)	m	a	lʲ	ʧ	ə	k					
22. огурец (cucumber)	ɐ	g	ʊ	~~rʲ~~	e	ʦ					rʲ → j
23. телефон (telephone)	tʲ	ə	lʲ	ɪ	f	o	n				
24. шоколад (chocolate)	ʃ	ə	k	ɐ	l	a	t				
25. яблоко (apple)	j	a	b	l	ə	k	ə				
26. бутылка (bottle)	b	ʊ	t	ɨ	l	k	ə				
27. конфета (candy)	k	ɐ	n	fʲ	e	t	ə				
28. автобус (bus)	ɐ	f	t	o	b	ɵ	s				
29. расчёска (comb)	r	ɐ	~~ʃ:~~	o	s	k	ə				ʃ: → ʂʲ
30. девочка (girl)	dʲ	e	v	ə	ʧ	k	ə			v	tʲiotʲə (woman)
31. цыплёнок (chicken)	ʦ	ɨ	p	~~lʲ~~	o	n	ə	k			lʲ → j
32. велосипед (bicycle)	vʲ	ə	l	ə	sʲ	ɪ	pʲ	e	t		
33. холодильник (fridge)	x	ə	l	ɐ	dʲ	i	lʲ	nʲ	ə	k	
Total amount of errors (substitutions and omissions)											**A.** 11
Total amount of consonant produces 100 minus consonants of words that were not produced											**B.** 89
(B-A) / B * 100											**PCC** (89-11)/89*100 = 88

Speakaboo – Score form Russian 0.1

Figure 1. Scan of a completed score form for Russian

6. Sources

Bel'tjukov, V.I. & Salaxova A.D. (1973) Lepet slyshashchego rebjonka [Babbling of a hearing infant]. *Voprosy psixologii* [Issues in Psychologies], 19 (2), 105–116.

Bel'tjukov, V.I. & Salaxova A.D. (1975) Ob usvoenii rebjonkom zvukovoj (fonemnoj) sistemy yazyka [On the Child Acquisition of Phonological System of the Language]. *Voprosy psixologii* [Issues in Psychologies], 21 (5), 71–80.

Gvozdev, A.N. (1948) Usvoenie rebjonkom zvukovoj storony yazyka [Child acquisition of the language sound system]. Moscow — Saint-Petersburg: Izdatel'stvo Akademii pedagogicheskix nauk RSFSR.

Eliseeva, M.B. (2008) Foneticheskoe i leksicheskoe razvitie rebjonka rannego vozrasta [Phonetic and Lexical Development of a Child]. Saint-Petersburg: Izdatel'stvo RGPU im. Gertsena.

Knyazev, S.V. & Pozharitskaja S.K. (2012). *Sovremenniy ruskiy literaturnyy yazyk: Fonetika, orfoepiya, grafika i orfografiya* [Contemporary standard Russian: Phonetics, orthoepy, graphics and orthography]. Moscow: Gaudeamus.

Olmsted, D. L. (1971). *Out of the mouth of babes.* The Hague: Mouton.

Reshetnikova, V. (2018). *Russian Version of Child Speech Development Test Speakaboo: Adaptation, and Collection and Analysis of Preliminary Normative Data* (Unpublished term paper). Higher School of Economics, Moscow, Russia.

Simons, Gary F. & Fennig, Charles D. F (Eds.). (2017). Ethnologue: Languages of the World, Twentieth edition. Dallas, Texas: SIL International. Online version: http://www.ethnologue.com.

Selkirk, E. (1984). On the major class features and syllable theory. In Aronoff & Oehrle (eds.) Language Sound Structure: Studies in Phonology. Cambridge: MIT Press. 107–136.

Sussex R. & Cubberley, P. (2006) Dialects of Russian. The Slavic languages. Cambridge, Cambridge University Press.

Timm, L. A. (1977). A child's acquisition of Russian phonology. Journal of Child Language, 4(3), 329–339.

Vinarskaya, E.N. & Bogomazov G.M. (2005) Vozrastnaya fonetika: uchebnoe posobie dlya studentov [Age Phontecis: student manual]. Moscow: AST: Astrel'.

Švedova, N. J. (Ed.). (1980). Russkaja grammatika [Russian grammar]. Moscow, Russia: Nauka.

Yakobson, R. O. (1985) Zvukovye zakony detskogo yazyka i ix mesto v obshchej fonologii [The Phonetic Laws of the Child Language and Their Place in the Phonology] In V.A. Zvegintsev (Ed.), Roman Yakobson. Izbrannye raboty [Roman Yakobson. Selected works] (pp. 105–115). Moscow: Progress.

Zharkova, N. (2005). Strategies in the acquisition of segments and syllables in Russian-speaking children. In M. Tzakosta, C. Levelt & J. van de Weijer (Eds), *Developmental paths in phonological acquisition. Special issue of Leiden Papers in Linguistics*, 2(1), 189–213.