

PHONETIC AND PHONOLOGICAL VOWEL REDUCTION IN RUSSIAN

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ABSTRACT

The present paper reports the results of an empirical study that was designed to provide acoustic evidence that there exist at least two different vowel reduction patterns in the Russian language. The acoustic characteristics of the three peripheral vowels [i, a, u] were examined. Given that low vowels are dispreferred in unaccented positions, particular attention was paid to immediately pre-tonic [a] sounds that result from 1st degree reduction and which are weakened to [ə] by some speakers. The acoustic and statistical analyses revealed that vowel reduction in Russian is a speaker-specific phenomenon. Although all subjects centralised unaccented high vowels, two of them applied two degrees of reduction, whereas the other two exhibited a different reduction pattern as in their speech the differences between the acoustic parameters of the [a] and [ə] sounds did not reach the level of statistical significance ($p > .05$). The acoustic data strongly suggest that if a speaker applies one degree of vowel reduction, then the [i, e, a, ə, u] inventory is simplified to [i, ə, u] rather than [i, a, u] as there is a highly significant difference ($p < .001$) between the sounds found in immediately pre-tonic position and the [a] sounds placed in stressed syllables.

KEYWORDS: Phonetic vowel reduction; phonological vowel reduction.

1. Introduction *

Vowel reduction, i.e. a process that neutralises phonological contrasts between vowels in unstressed syllables, is definitely one of the most characteristic features of stress-timed languages. In English, for instance, many vowels in unaccented syllables are reduced to schwa, whereas in Russian the process appears to be more complex because the five-element vowel inventory found in accented syllables is reduced to a sub-system consisting of [i, u, a] in immediately pre-tonic position, which is further reduced to [i, u,

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ə] in other pre-tonic and post-tonic positions. It is claimed in the phonetic literature that the low vowel [a] that results from 1st degree reduction differs both qualitatively and quantitatively from [ə], which is the outcome of 2nd degree reduction. However, Barnes (2006) maintains that there is only one degree of phonological reduction in Russian which simplifies the [i, e, a, ɔ, u] system to the [i, a, u] sub-system. The author argues that further reduction of the low vowel to schwa is the result of phonetic vowel reduction that does not take place in certain phonological contexts, e.g. in hiatus and in phrase-final position.

The major objective of the present paper is to provide acoustic evidence that will shed more light on the process of unaccented vowel reduction in Russian and verify Barnes' (2006) hypothesis as to the phonetic nature of 2nd degree reduction.

2. Phonological vowel reduction in Russian

The vowel system of the Russian language consists of the five phonemes /i, e, a, ɔ, u/ (cf. Avanesov and Sidorov 1970: 257; Kniazev and Pozaritskaya 2005; Kasatkin 2006). All the vowels, as well as the high front [ɨ] which is an allophone of /i/, are found in accented syllables. In unaccented syllables, the five-element inventory is reduced to two sub-systems, consisting of three elements [i, a, u] and [i, ə, u]. The former is found in immediately pre-tonic position and the latter in other unaccented pre-tonic and post-tonic positions. However, the reduction process a given vowel undergoes does not only depend on its position in relation to the main stress, but also on its phonological environment (cf. Avanesov 1972; Avanesov and Sidorov 1970; Comrie 1990b; Gussmann 2002; Kniazev and Pozaritskaya 2005; Crosswhite 2000a, 2000b, 2004; Kasatkin 2006). Since the extent to which an unstressed vowel is reduced is determined by its position, Russian is described as a language whose vowels are subject to two degrees of vowel reduction. Avanesov and Sidorov (1970) explain that 1st degree reduction, which is also referred to as moderate reduction, takes place in syllables immediately preceding the stress, whereas 2nd degree reduction occurs in other unaccented syllables. In moderate reduction, if the preceding consonant is non-palatalised, only [a] and [ɔ] undergo the process whose outcome is the vowel [a]. Thus in this environment 1st degree reduction neutralises the phonetic contrast between the phonemes /ɔ/ and /a/. Palatalised consonants seem to have a stronger neutralising effect on the following vowel because in such contexts unaccented [e, a, ɔ] are always pronounced as a neutral vowel, which in the Russian phonetic literature is represented with the symbol [ɐ],¹ or alternatively with

¹ While describing the same phenomenon, Western authors, e.g. Crosswhite (2000a, 2000b, 2004), Aguilar et al. (2003), use the IPA symbols [ɨ, ɐ] to represent [ɐ, ɐ] respectively. Somewhat surprisingly, Reformatskij (1970b) uses the symbol [Λ] to represent word final weak vowels, as in *чувство* 'sense', in which the final vowel sound undergoes 2nd degree reduction, and which is transcribed by Reformatskij as [чʉствΛ]. Western authors would rather transcribe the word as [ˈtʃʊstvə]. One drawback of using standard IPA symbols while writing about Russian phonology is that the distinction between [ɨ] and the sound for which Russian

[i^ə] (cf. Avanesov 1972; Kasatkin 2006). Naturally, the diachritic is used to show that the high front vowel is substantially more central than canonical [i]. On the other hand, in 2nd degree reduction, or extreme reduction in Crosswhite's (2000a, 2000b) terminology, the three vowels are realised as [ə].

Table 1. The system of Russian weak vowels
(adapted from Avanesov and Sidorov 1970: 259).

Position	After non-palatalised consonants	After palatalised consonants	Vowels resistant to reduction
Stressed syllable	a ɔ	a ɔ e	i i̯ u
1 st degree reduction	a ə	i ^ə	i i̯ u
2 nd degree reduction		i ^ə	

Table 1. shows that the vowels [i, u], as well as [i̯], seem to be resistant to phonetic change in the sense that they are affected neither by the position within the word, nor by the character of the preceding segment. That is the reason why Gussmann (2002) calls them fully independent. Even though the sounds do not undergo phonological reduction, they are susceptible to substantial phonetic reduction in fast speech (cf. Jaworski 2008). Kniazev and Pozaritskaya (2005) have also shown that the vowel [u] is not immune to reduction, particularly when it is placed in the syllable immediately preceding the stress and when neighbouring on a palatalised consonant, as in *возьми рюкзак* 'take the rucksack' realised as [vaz'mi rig'zak]. The authors conclude that "[с] фонологической точки зрения это означает возможность неутрализации всех гласных фонем в одном варианте или полную утрату ими смысловозначительной функции" [from the point of view of phonology, it demonstrates the possibility of all the vowel sounds being reduced to one variant, or the full loss of their contrastive function]² (Kniazev and Pozaritskaya 2005: 219; but see also Comrie 1990b).

Crosswhite (2000b) describes the vowel reduction phenomenon in a number of Russian dialects and she concludes that, despite exhibiting different reduction patterns, they have very similar vowel sub-inventories (see Table 2). In most cases, they have a two-pattern reduction system with the first, moderate reduction, being a step towards enhancing the prominence of the immediately pre-tonic syllable by replacing the mid-close vowels [ɔ] and [e] with [a] and [i], respectively. In the other pattern, which she calls extreme reduction, the vowels [e, a, ɔ] surface as [ə] in all other unstressed positions. This can be thought of as a strategy of avoiding low vowels in unaccented posi-

authors use the symbol [ɨ] is lost. Judging from Kniazev and Pozaritskaya's (2005: 37) vowel quadrilateral, the IPA symbol that can represent the sound is [ə].

² Translation mine – S.J.

tions. As low vowels require long gestures, their articulatory cost is high and for that reason they are not preferred in prosodically weak positions (cf Table 2).

Table 2. Vowel sub-inventories in Russian dialects (after Crosswhite 2000b: 110).

Other pre-tonic syllables			Immediate pre-tonic syllable		Stressed syllable		Post-tonic syllables		
i		u	i	u	i	u	i		u
	ə				e	ɔ		ə	
			a			ə			
low sonority V's only			peripheral V's only		all underlying vowel qualities		low sonority V's only		

This pattern is sometimes modified when a vowel is preceded by a palatalised consonant. Crosswhite (2004) mentions in passing an [i]-reduction pattern characteristic of many Central Russian dialects, including Contemporary Standard Russian, in which [e, a, ɔ] are realised as [i] even in immediately pre-tonic position. On the other hand, in the South West of Russia there are dialects where speakers apply only extreme reduction and, consequently, their vowel sub-inventory is made up of [i, ə, u].

Kasatkin (2006) presents by far the most complex vowel system of Russian that includes both accented and unaccented syllables as well as the phonological environments in which each vowel can be used, where the phoneme /a/ has got as many as 6 allophones. According to the author, the true quality of any vowel is manifested in accented syllables whose first (and sometimes the only segment) is the vowel. Likewise, if the preceding consonant is hard, i.e. non-palatalised, and if the duration of a vowel is sufficiently long, the vowel can acquire its canonical quality. All the positional variants of the Russian vowels are presented in Table 3. The dot before a vowel indicates a higher and more anterior articulation caused by the palatalisation of the preceding consonant. Similarly, the diacritic [°] represents a more central articulation of [i], [ɪ] and [a], whereas the symbol [°] denotes a lower variant of [i].

In all the above-quoted sources, both degrees of vowel reduction are presented as phonological phenomena because they occur regardless of speaking rate. However, a recent study by Barnes (2006) questions the phonological nature of 2nd degree reduction because there are contexts in which the vowel [a] does not weaken to schwa despite being placed in an environment conducive to this process. Barnes argues that [a] fails to rise to schwa in hiatus before another [a], as in *соотношение* 'relationship' that is realised phonetically as [saatna'ʃʲɐnʲə] and not *[səatna'ʃʲɐnʲə], even when the speaking rate is fast, nor does it reduce to schwa in phrase-final syllables. The claim is substantiated with the results of an experimental study confirming that in these two contexts the articulatory target for [a] is reached. The author attributes the success in producing a full gesture in both cases to the additional duration provided by the [aa] hiatus on the

Table 3. Vowel reduction in Russian (adapted from Kasatkin 2006: 151).

Phoneme			/u/	/i/	/e/	/ɔ/	/a/
In an accented syllable	In V, VC syllables		u	i	e	ɔ	a
	After non-palatalised consonant		u	i	ɛ	ɔ	a
	After palatalised consonant		·u	i	·e	·ɔ	·a
In unaccented syllables	In V, VC syllables		u	ie	ie	aə	aə
	After a non-palatalised consonant	1st degree reduction	u	iə	iə	aə	aə
		2nd degree reduction	u	iə	ə	ə	ə
	After a palatalised consonant	In all syllables but for open final	·u	ie	ie	ie	ie
		In final open syllables	·u	ie	ie	·ə	·ə

one hand, and to phrase-final lengthening, on the other.³ Since reduction of [a] in Russian is duration-dependent (at least in these two positions), Barnes (2006: 65) concludes that the language has only one phonological vowel reduction process commonly referred to as 1st degree reduction, and one phonetically motivated process which fails to apply if the duration of an unstressed vowel is above the threshold of 60 ms.

Naturally, at very fast rates when the speech apparatus is expected to meet exaggerated articulatory demands, and when maximally effortful gestures cannot fulfil the demands, deeper reductions are probable. It is likely then that speakers of dialects that do not reduce [a] to [ə] in immediately pretonic syllables will do so if asked to speak at their fastest attainable rate. Bondarko et al. (2003) have established a link between the degree of vowel reduction and effort expenditure. In their samples of read and spontaneous Russian speech, the steady states of formants are not visible in the spectra of spontaneously produced utterances, whereas they are present in the same sentences read later by the same subjects. In the light of the results obtained by Bondarko et al. (2003) and Barnes (2006), vowel reduction appears to be a phonetically conditioned process that has phonologised in certain contexts. Padgett and Tabain (2005: 16) explain that phonologisation results from the fact that speakers find it difficult to maintain contrasts between some unaccented vowels, e.g. between /i/ and /e/ in the case of Russian, therefore they stop producing them. Learners, on the other hand, do not perceive such distinctions and, consequently, do not acquire them.

Interestingly enough, some Russians do not make a distinction between [a] and [ə]. Figure 1 shows a spectrogram of the word *подхожу* [pətɕa'ʒu] 'I am approaching' pro-

³ Moreover, some native speakers of Russian claim they do not produce identical word-final vowels when they mark a grammatical difference, e.g. in *'чувство* 'feeling nom. sing.' and *'чувства* 'feeling nom pl' the realised vowels are, respectively, [ə] and [a] (Molchanova p.c.).

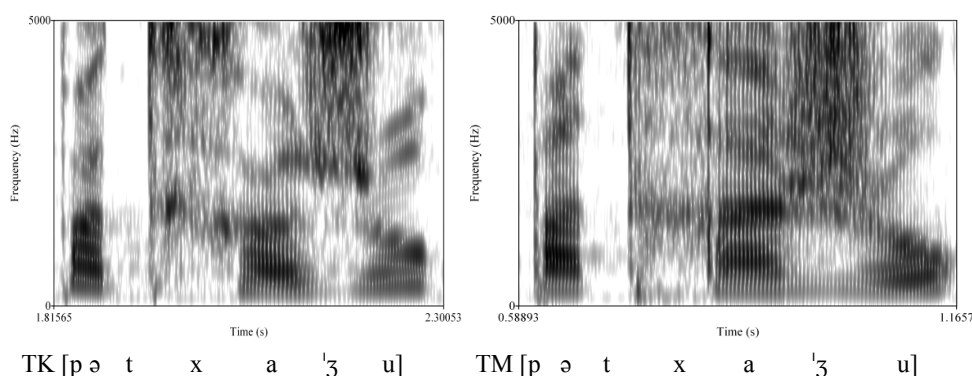


Figure 1. Spectrograms of TK's (left) and TM's (right) slow speech performance of the word *подхожу* [pətxa'ʒu] 'I am approaching'.

duced by two native speakers of Russian TK and TM. In these particular examples, the F1/F2 parameters of TK's [ə] are 752/1338 Hz, whereas those of her [a], 724/1307 Hz. In simple terms, it means that the [a] that is expected to undergo less radical reduction is, in fact, slightly higher and slightly more anterior. The acoustic characteristics of TM's vowels in the same word are, respectively, 793/1481 Hz and 797/1561 Hz. Again, the acoustic parameters show that in this word the [ə] is only slightly higher. On the other hand, the [a] sounds are in both cases almost twice as long as the "schwas". Their duration ratio is 0.04/0.076 s in TK's performance and 0.046/0.08 s in TM's speech. These findings strongly suggest that the auditory impression of two distinct degrees of vowel reduction is generated by the temporal rather than acoustic characteristics of the reduced vowels. As a consequence, it can be argued that there is only one degree of phonological vowel reduction.

The experiment described in the following section was carried out to provide acoustic evidence that will either substantiate some of the claims formulated by Barnes (2006) or confirm the existence of two degrees of phonological vowel reduction in Russian.

2. Experiment

Four female native speakers of Russian (TK, TM, LS, IB) took part in the experiment. The first two subjects were born and brought up in Moscow, while the other two in Sankt Petersburg. All the subjects live in Poland now, but they still use Russian at work⁴ and at home. For the purposes of the experiment the participants were asked to read 137

⁴ It is worth mentioning that all the participants are teachers, thus it can be assumed that they pay more attention to pronunciation than the average person does.

meaningful sentences at a natural, self-determined tempo (see the Appendix). The sentences, which contained the words listed in (1), were read in random order. Each word was used 10 times, thus 20 tokens of each target vowel were obtained.

In order to collect acoustic evidence, twenty accented [i, a, u] sounds, twenty tokens of [i, a, u] found in immediately pre-tonic position and twenty tokens of [ə] found in other pre- and post-tonic positions were extracted from the recorded material. Neither word-initial nor word-final vowels were taken into consideration. As palatal and palatalised consonants also exert a significant influence on vowel height, all tokens of [a] and [u] were found in non-palatalised environments, except for the high front [i] which always follows a palatal or palatalised consonant.

The recordings were made in December 2008 in the computer room of Collegium Balticum in Szczecin. The Praat programme (version 4.2.21) was used to digitise the data and carry out the acoustic analyses. The sound files were downsampled from 16 kHz to 11 kHz in order to reduce the number of formants in the signal to approximately five. Formant values were determined by means of LPC analysis with 25 ms window length and 5 ms time step. The phonological contexts in which the target vowels were found as well as the words that were used in the experiment are presented in (1).

(1)	accented [a]	[p_d/t]	<i>падать</i> ['padətʲ] 'fall', <i>паккий</i> ['patkij] 'sharp-set',
	1st degree reduction	[p_d/t]	<i>подбадривать</i> [pad'badriʋətʲ] 'encourage', <i>подарок</i> [pa'darək] 'gift'
	2nd degree reduction	[p_d/t]	<i>подбородок</i> [pədba'rədək] 'chin', <i>потому</i> [pətə'mu] 'because'
	accented [u]	[d_b]	<i>дубу</i> ['dubu] 'oak' (dat. sing), <i>Дублин</i> ['dublin] 'Dublin'
	unaccented [u]	[d_b]	<i>дубовый</i> [du'bɔʋij] 'oaken' (adj), <i>дубина</i> [du'binə] 'thick stick'
	accented [i]	[dʲ_tʲ]	<i>родители</i> [ra'dʲitʲiəli] 'parents', <i>породить</i> [pəra'dʲitʲ] 'give rise'
	unaccented [i]	[dʲ_tʲ]	<i>детей</i> [dʲi'tʲej] 'children' (gen. pl), <i>детектив</i> [dʲi'tʲektʲif] 'detective'

It is worth emphasising that even though the phonological environments in which the target vowels are placed are not the same, in this study we are not going to compare these sounds with each other, thus the different contexts appear to be irrelevant.

3. Results and discussion

The four scatterplots in Figure 2 show the acoustic characteristics of all the accented and unaccented [i] and [u] vowels produced by the subjects. The scatterplots show

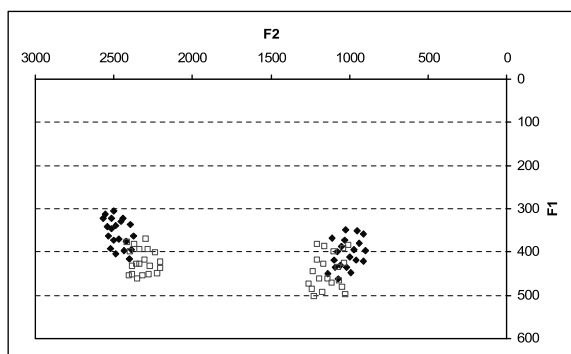


Figure 2a. Scatterplot of F1 and F2 values of [i] and [u] sounds produced by speaker TK.

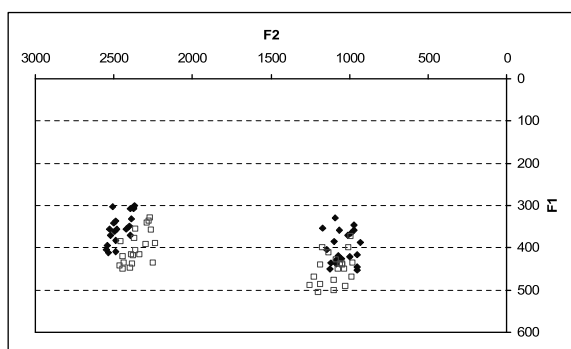


Figure 2b. Scatterplot of F1 and F2 values of [i] and [u] sounds produced by speaker TM.

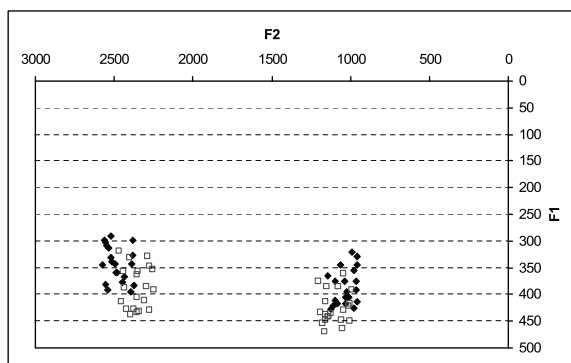


Figure 2c. Scatterplot of F1 and F2 values of [i] and [u] sounds produced by speaker IB.

clearly that in both cases the unaccented vowels are more central in the dimension of F1 and F2.

In order to prove that the difference between the F1 and F2 values of the stressed and unstressed vowels is statistically significant, a t-test for independent samples was carried out for all the subjects. In this test, the difference between two sets of data is regarded as statistically significant if the p-level is lower than 5% ($p < .05$).

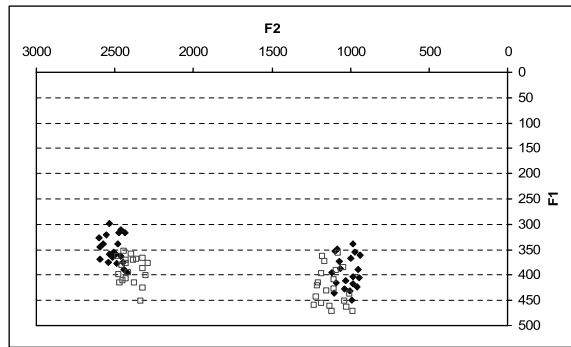


Figure 2d. Scatterplot of F1 and F2 values of [i] and [u] sounds produced by speaker LS.

As far as the two high vowels are concerned, the test revealed that the four sets of accented and unaccented [i] and [u] sounds are different in terms of statistics ($p < .001$) (see the acoustic data in Tables 4 and 5). The data indicate that [i] and [u] are susceptible to phonetic change, as the vowels were regularly undershot by the subjects in unstressed syllables. It is worth emphasising that these results are very similar to those obtained by Padgett and Tabain (2005). These data strongly suggest that accented high front and back vowels differ both qualitatively and quantitatively from their unaccented counterparts. It is by no means surprising that sounds which require relatively long lingual gestures are not fully articulated in prosodically weak positions. These results also confirm the findings of a recent cross-linguistic study by Jaworski (2008) which showed that speakers of Spanish and Polish, in which unaccented vowels are believed to be resistant to reduction, also find it difficult to reach the articulatory target for high vowels in fast speech.

Table 4. Acoustic data – mean values and standard deviation of accented vowels.

Speaker	Vowel	Mean F1	SD	Mean F2	SD
TK	i	370	33.46	2475	57.65
	u	404	34.11	1014	71.80
	a	805	33.55	1448	53.62
TM	i	352	36.98	2461	65.33
	u	410	37.05	1027	58.75
	a	816	42.73	1453	58.23
LS	i	350	27.73	2508	56.78
	u	394	32.88	1020	59.22
	a	804	33.81	1413	30.06
IB	i	343	36.77	2494	60.09
	u	387	34.44	1006	56.72
	a	799	40.03	1432	51.22

Table 5. Acoustic data – mean values and standard deviation of unaccented vowels.

Speaker	Vowel	Mean F1	SD	Mean F2	SD
TK	i	422	48.65	2316	67.04
	u	445	41.06	1134	81.36
	a	702	37.85	1434	49.55
	ə	674	48.59	1462	50.32
TM	i	398	41.76	2367	68.33
	u	453	42.54	1069	69.46
	a	708	39.84	1463	43.38
	ə	683	45.77	1454	45.32
LS	i	390	49.97	2398	59.54
	u	424	38.88	1122	75.28
	a	781	49.85	1422	57.23
	ə	606	51.84	1435	41.78
IB	i	385	47.77	2356	60.32
	u	425	43.45	1084	63.27
	a	781	40.83	1449	45.45
	ə	698	47.71	1461	49.03

As for the low vowel [a], the subjects produced interesting, and somewhat surprising, data. The scatterplots in Figure 3 show that speakers LS and IB apply two degrees of vowel reduction, whereas speakers TK and TM apply only one. In the case of LS and IB, there is no doubt that the difference between the accented [a] sounds and those undergoing first degree reduction is insignificant. On the other hand, most of the [ə] sounds, or rather unaccented low vowels undergoing 2nd degree reduction, definitely differ qualitatively from both accented [a] sounds and those found in immediately pre-tonic position.

By contrast, in TK's performance the differences between [a] sounds resulting from 1st degree reduction and those undergoing 2nd degree reduction did not reach the level of statistical significance. The question that automatically arises is whether the “re-

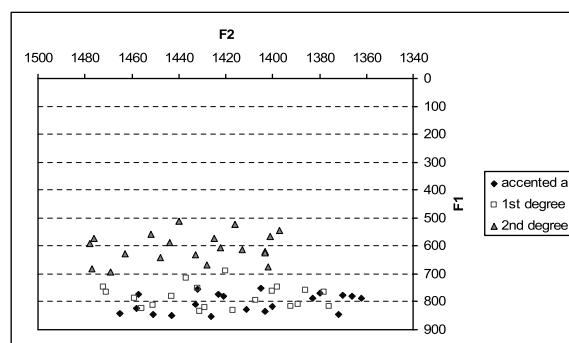


Figure 3a. Two degrees of vowel reduction in Russian: speaker LS.

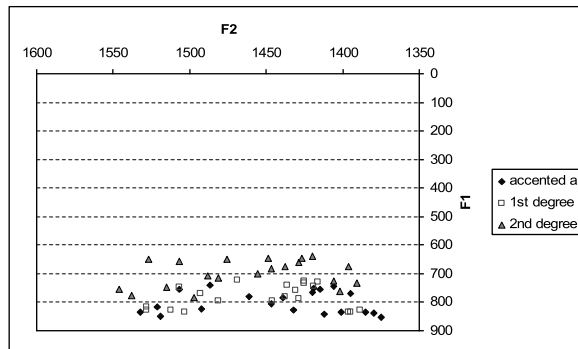


Figure 3b. Two degrees of vowel reduction in Russian: speaker IB.

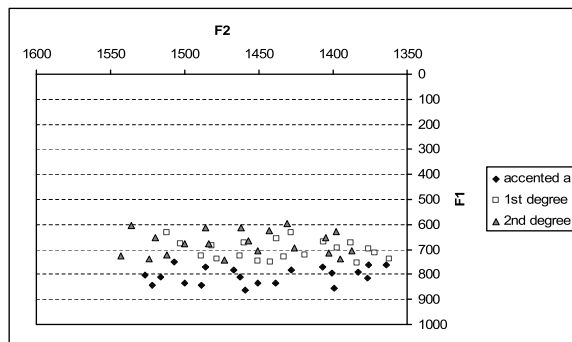


Figure 3c. One degree of vowel reduction in Russian: speaker TK.

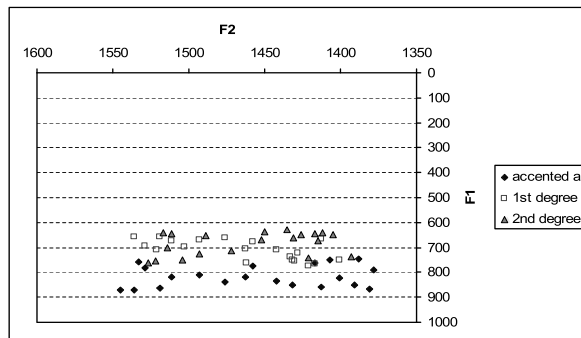


Figure 3d. One degree of vowel reduction in Russian: speaker TM.

duced” vowels should be classified as [ə] or as [a^ə]. In order to answer the question the F1 and F2 values of 20 tokens of accented [a] sounds were measured and compared to those of vowels undergoing 1st and 2nd degree reduction. In both cases the differences are highly significant ($p < .001$).

Given the results, it can be assumed that TK’s vowel system in all unaccented syllables consists of [i^ə, ə, u^ə]. Interestingly enough, speaker TM, the other Moscovite, also exhibits the same reduction pattern, but this should be treated as a coincidence and on

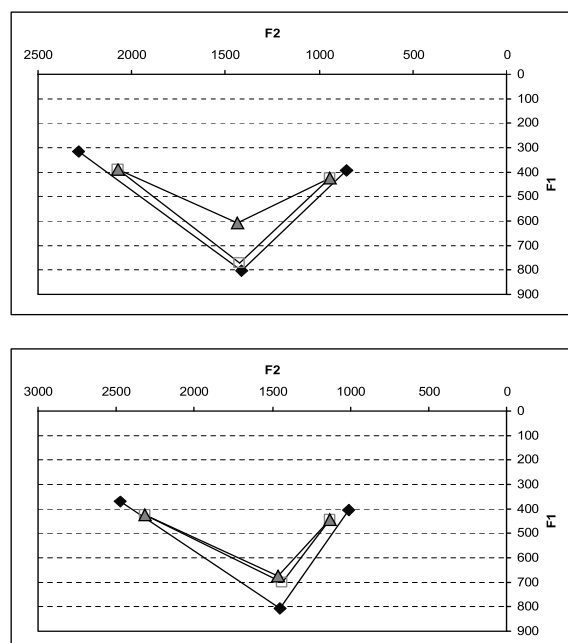


Figure 4. Different patterns of vowel reduction in Russian: speakers LS (top) and TK (bottom).

no account should one claim that this is the main feature of the accent spoken in Moscow. Rather, it can be argued that one degree of vowel reduction is a characteristic feature of “fast speakers”. The average speech rate of the participants seems to substantiate the claim as TK and TM speak considerably faster (7.5 and 7.2 syllables per second, respectively) than LS and IB (6.5 and 6.3 syllables per second). The two reduction patterns are presented in Figure 4.

When asked whether their [a] sounds in immediately pre-tonic and other pre-tonic and post-tonic positions differ in terms of quality, all the subjects claimed that they always produce two distinct vowel sounds, irrespective of speech rate and speaking style. However, judging from the data, their auditory impressions are influenced by the temporal characteristics of the reduced vowels rather than by their quality. Figure 5 presents the durations of all the tokens of [ə] and [a] produced by speakers IB and TM. The former applies two degrees of vowel reduction in her speech, whereas the latter only one. Predictably, the vowels which underwent 2nd degree reduction were, in most cases, considerably shorter than the vowels that were placed in immediately pre-tonic syllables. A t-test revealed that the differences are, in fact, highly significant for all four speakers ($p < .001$).

Somewhat surprisingly, some of the [ə] vowels turned out to be slightly longer than some of the [a] sounds. However, it is almost certain that this can only take place when the duration of [ə] found in one word is compared to the length of [a] placed in a different word. Within the same word [ə] is very unlikely to be longer than [a] (cf. Figure 1).

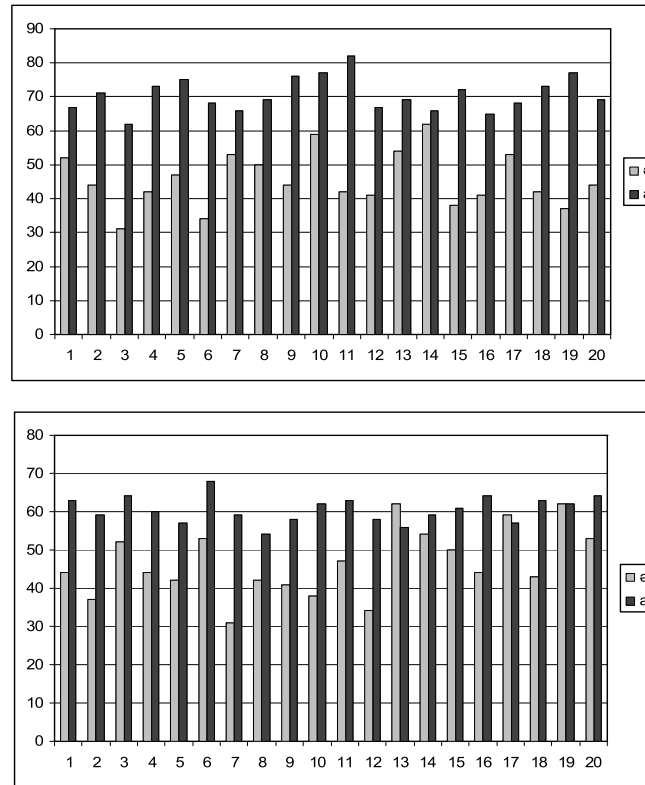


Figure 5. Duration of vowels undergoing 1st and 2nd degree reduction in slow and fast speech; speaker IB (top) and TM (bottom).

Barnes (2006) maintains that phrase-final vowels are not normally reduced to schwa because such sounds are particularly susceptible to lengthening. He argues convincingly that 2nd degree reduction fails to apply if the duration of an unstressed vowel is above the threshold of 60msec. The data in Figure 5 is consistent with Barnes' findings because in TM's speech most of the unaccented vowels undergoing 1st and 2nd degree reduction were, in fact, shorter than 60msec. Despite the fact that the vowels found in immediately pre-tonic position were considerably longer than those found in other unaccented positions, subjects TK and TM still did not manage to produce significant differences in vowel height. This strongly suggests that, at least, some speakers have only one degree of vowel reduction. As a result, duration appears to be the only phonetic indication of 2nd degree reduction. The significant differences in duration do not have any phonological consequences as in Russian there is no distinction between short and long vowels.

4. Conclusion

Phonetic research hardly ever yields uniform results as there are too many variables that have to be taken into consideration. In spite of applying the same procedure, subjects usually produce results that differ to a lesser or greater extent. In the case of this study, the results obtained from speakers LS and IB confirm the existence of two degrees of vowel reduction in Russian, whereas in the speech of the other subjects (TK and TM) there seems to be only one. Judging from the data, one might say that there are two distinct patterns of vowel reduction in Russian and that it is a speaker-specific phenomenon that depends on the speaker's accent. Obviously, one can argue that such findings can result from the fact that [a] sounds produced in some words were compared with [ə] vowels realised in other words. On the other hand, the spectrograms in Figure 1 show that in some cases a schwa sound can be lower than an [a] sound placed in the same word. The data also suggests that, in the case of speakers applying one degree of reduction, the auditory impression of two degrees should be attributed to the differences in duration between immediately pre-tonic [a] sounds and those undergoing 2nd degree reduction.

It is absolutely necessary to bear in mind that in this article read speech was analysed which, by definition, is reduced to a lesser degree than spontaneous, casual speech. Had these utterances been produced naturally, there is little doubt that more profound vowel reductions would have been observed. Also, the fact that all subjects are teachers should not be ignored. Obviously, one may argue that there may be substantial individual differences between the teachers but, generally speaking, they attach more significance to pronunciation than naïve listeners. Consequently, one can hazard a guess that one degree of vowel reduction is much more common in spontaneous speech of less educated individuals.

Even though the evidence presented here strongly suggests that some native speakers of Russian apply one degree of vowel reduction, data produced by only four speakers do not suffice to draw far-reaching conclusions as to the nature of the process investigated in this article. There is no doubt that more detailed research is needed to provide more insight into the process and verify the results.

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APPENDIX

1. Научиться **падать** можно – только очень осторожно.
2. Ставки по ипотеке будут **падать** по мере выхода из кризиса.
3. Не хочу **падать** при каждом ударе.
4. Наездник должен уметь правильно падать с лошади.
5. Рубль продолжает **падать** в цене.
6. Нам не надо **падать** духом.
7. Евро продолжает **падать** в пропасть.
8. Я не буду **падать в обморок** когда увижу их.
9. У него начали **падать** доходы от сотовой связи.
10. Бескрылым **больно падать с высоты**.
11. **Он всегда был падкий** на лесть.
12. **Падкий** я на такие вещи.
13. Был на женщин и зелие **падкий**.

14. Володя всегда был **падкий** на удовольствия.
15. Я вообще **падкий** на рекламу.
16. **Господин Павлов очень падкий** на комплименты.
17. **Господин Павлов не слишком падкий** на славу.
18. Он достаточно **падкий** на женские прелести.
19. Я не такой **падкий** на деньги.
20. Коршун **падкий** до крови и стыни.
21. Русские любят **подбадривать** сами себя.
22. Собаку нужно **подбадривать** к работе.
23. В такие моменты не надо **подбадривать** игрока.
24. Учитель должен **подбадривать** учеников.
25. Не люблю **подбадривать** соперника всякими фразами.
26. Ребята стали **подбадривать** его криками.
27. Нужно **подбадривать** чувство собственной значимости.
28. **Мы пришли подбадривать** этого боксера во время боя.
29. Необходимо чаще **подбадривать** его лаской и вниманием.
30. Ющенко собирается **подбадривать** своих футболистов.
31. Интернет это магазин оригинальных и необычных **подарков**.
32. Мы купили новогодние **подарки**.
33. Я хочу купить оригинальный **подарок** мужчине.
34. **Мне дали подарок** на день рождения.
35. В этом магазине можно найти **подарки** для человека любящего жизнь.
36. Здесь Вы наверняка выберете **подарок** для друга.
37. Каждый из нас хотя бы раз в месяц дарит **подарки** своим близким.
38. Я хочу купить новогодние **подарки** для детей.
39. Второй **подарок** является знаком личного отношения одного человека к другому.
40. Грядет 23 февраля, а **подарок** еще не выбран.
41. Двойной **подбородок** доставляет немало огорчений.
42. Она обновила **подбородок**.
43. По нижней части **подбородка** определяется человеческая воля.
44. Второй **подбородок** появляется в результате ослабления мышц.
45. О вашем характере расскажет подбородок.
46. Отвисший **подбородок** может испортить даже самое прекрасное лицо.
47. Они сделали фотографии пациентов с имплантами **подбородка** и лица.
48. Срезанный **подбородок** говорит о слабой воле человека.
49. Ты можешь подпереть **подбородок** ладонями.
50. Человек с квадратным **подбородком** обладает большой силой воли.
51. Россия опасна **потому**, что ей самой грозит коллапс.
52. Самолет задержали, **потому** что он летел в Иран, а не в Грузию.
53. По одной из версий динозавры вымерли **потому**, что климат Земли резко изменился.
54. Все равно его не брошу, **потому** что он хороший.
55. TABASCO было закрыто **потому**, что стало отставать от других подразделений.
56. Девушки часто смотрят хоккей не **потому**, что интересно, а **потому**, что игроки красивые.
57. Сложная диета неэффективна, **потому** что ее быстрее нарушают.
58. Януковича не отговаривают от дебатов, **потому** что он их сам боится.
59. Социологи не дают информацию, **потому** что работают на одного кандидата.
60. Под дубом трава казалась реже.
61. На том **дубу** сидит птица.

62. На дубе четыре ветки.
63. В Одессе **дубу** и липе придали статус памятников природы.
64. Некогда широколиственные леса с **дубом** занимали обширные пространства по всей Европе.
65. Жила-была в гнезде на **дубу** сорока со своими сорочатами.
66. Бук по прочности и твердости мало уступает **дубу**.
67. На второй этаж ведет лестница из **дуба**.
68. Поэт решительною походкою приближается к самому **дубу**.
69. Паркет из **дуба** прочный и красивый.
70. Город **Дублин** расположен у устья реки.
71. Сегодня **Дублин** - это еще и центр ирландского "экономического чуда".
72. Ирландский город **Дублин** является столицей Ирландии.
73. По статистике, в **Дублине** на протяжении выходных выпивается около 9 800 пинт пива в час.
74. На улицах **Дублина** люди читают стихи.
75. В **Дублин** я приехал несколько часов назад.
76. Расписание полетов в **Дублин**.
77. Я каждый раз ездила в **Дублин** за покупками.
78. Жители **Дублина** недовольны скоростным режимом в городе.
79. Нам удалось забронировать отель в **Дублине**.
80. Наша компания предлагает вам лучший **дубовый** паркет.
81. Штучный **дубовый** паркет соответствует требованиям высшей категории.
82. **Дубовый** паркет никогда не выходил из моды.
83. Малый **дубовый** усач распространен в дубравах лесостепной и степной зон.
84. Поперечнополосатый **дубовый** клит имеет однолетнее поколение.
85. **Мы купили дубовый** книжный шкаф.
86. Продам веник **дубовый** из башкирии для бани и сауны.
87. Ростовские таможенники задержали **дубовый** шпон.
88. Наша компания предлагает к поставке **дубовый** шпон и **дубовые** бочки.
89. Антисемитизм использовался как **дубина** для устранения неугодных.
90. А рассматривать газету как **дубину** в руках той или иной политической группировки я не желаю.
91. И снова над его головой занесена **дубина** гнева.
92. У китайцев есть и вторая **дубина против** Америки.
93. Это наша политическая **дубина против** тех, кто **против** нас.
94. Сейчас дубина пошла гулять по спинам "недостаточно услужливых" губернаторов.
95. Такое лечение – как **дубина против** комара.
96. Но что такое **дубина против** тысяч жалящих тварей?
97. Сейчас история на международном уровне используется как "**дубина**" **против** нашей страны.
98. Калаш проигрывает как **дубина против** лазера.
99. Гороскоп совместимости детей и **родителей** по знаку Зодиака.
100. Требовательность **родителей** к себе становится основой родительского авторитета.
101. Очень многие **родители** недовольны своими детьми.
102. **Родители** боятся конфликтовать со школой.
103. Мало найдется **родителей**, которые хоть раз не шлепнули ребенка.
104. Некоторые **родители** ранее признавались в том, что отдали своих детей добровольно.
105. Для эксперимента пригласили 80 **родителей**, у которых были дети в возрасте от 4 до 5 лет.

106. Но помочь определиться с выбором должны **родители** и психологи.
107. Чем руководствуются **родители** в своем выборе сегодня?
108. Я рассказала **родителям** о моих планах.
109. Выборы могут **породить** хаос.
110. Адронный коллайдер может породить черную дыру.
111. Это может **породить** вторую волну кризиса.
112. Судебное решение не может **породить** право само по себе.
113. Эта деятельность может **породить** новые потребности.
114. Кратеры спутника Сатурна могут **породить** новую жизнь.
115. Казнь Саддама Хусейна может **породить** вопросы о справедливости существующего миропорядка.
116. Меры по поддержке жилищного кредитования могут **породить** новую финансовую пирамиду.
117. Энергетический кризис может **породить** политический хаос.
118. Это **породит** трудные юридические вопросы.
119. Издательство выпустило новое пособие «Английский язык для детей и подростков.»
120. В этой книге вы найдете все о воспитании и обучении **детей** раннего возраста.
121. Международный день **детей** отмечается в первый день лета.
122. По оценкам медиков, только 10 % **детей** и подростков практически здоровы.
123. Соблюдайте элементарные правила безопасности перевозки **детей** в автомобиле.
124. Игрушки для **детей** в нашем магазине продаются дешевле чем в других.
125. Подарки для **детей** бывают разные.
126. Здоровье **детей** страдает от паразитозов.
127. Защита **прав детей** это одна из главных задач органов власти.
128. Родители понимают **права детей** и родители обязаны отстаивать эти права.
129. В отличие от агентств, частный **детектив** выполняет всю работу один.
130. Частный **детектив** оказывает все виды детективных услуг.
131. Для **детективного** романа характерно противопоставление ума и изобретательности.
132. Фильмы **детективы** всегда были любимым жанром любителей криминальных головоломок.
133. Эта игра понравится всем поклонникам **детективного** жанра.
134. В современной жизни услуги **детектива** могут понадобиться неожиданно.
135. Элементами хорошего **детектива** обычно являются захватывающая атмосфера и напряжение.
136. Чем отличается **детектив** от криминального романа?
137. Частный **детектив** и детективные услуги пользуются все большим спросом с каждым годом.

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