

# i and ĭ in Russian: Allophones or Phonemes?

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## Introduction

In this paper, I will be discussing the status of [i] and [ĭ] in Russian phonology. I will be speaking with native Russian speakers and testing with Russian and English words the relations between [i], [ĭ], and [ɪ] and how current work pertains to these perceived distinctions, and ultimately determining whether [i] and [ĭ] can be considered separate phonemes.

Russian the most-spoken Slavic language in the world, and has over 150 million L1 and 100 million L2 speakers. Although there is a standard Russian form used both in written and spoken language widely across Russian-speaking countries, Russia itself still contains multiple dialects - a Northern group and a Southern group, or a Central group as well depending on which book you consult (Dalby 442). As such, there is still considerable linguistic variation even within accepted spoken language that can lead to conflicts in classification, as seen above.

The consultants I will be working with will be henceforth labeled as Consultant A and Consultant B. Consultant A is a woman in her mid-50's who moved to the United States from St. Petersburg 30 years ago and is fluent in both Russian and English. Consultant B is a woman in her 80's who has lived in St. Petersburg all of her life, is fluent in Russian, and can read and pronounce English words but cannot speak the language.

## 1. Russian vowel inventory

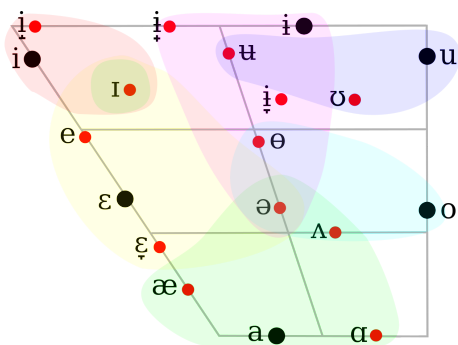


Fig. 1 Vowel Inventory

people have said that it has been assimilated with the /i/ phoneme.

Courtesy of Jones and Trofimov, in their book *The Pronunciation of Russian*, this is a visual representation of the Russian vowel phonemic inventory. Red dots indicate sounds that are “principal members of Russian phonemes” (54) and black represent cardinal vowels. However, it is highly subject to interpretation as to whether [ĭ] is considered its own phoneme, as the book suggests. It has been determined that they were distinct a some earlier point in time pre-1900, but many

In the orthography, palatalization of the consonants preceding the vowels is indicated on the vowel itself. Almost every vowel phoneme is paired with a palatalized “soft” alternative. However, with [i] and [ĭ] there is no such pairing, though they are often taught as a pair

regardless. In Russian it is also important to note that there is a heavy amount of palatalization and stress that can change the perception of vowel sounds in words. The palatalization will be the focus here, as it brings about the most changes in [i]/[ɨ] pronunciation.

## 2. Current evidence against [i] and [ɨ] as distinct phonemes

The most widely accepted theory is that [ɨ] is an allophone of /i/, and this argument primarily comes from the Moscow school of phonology. There is one big reason for this, which is that [ɨ] only appears after a *hard* or non-palatalized consonant and so there seems to be a very set complementary distribution (Chew 2003). This is a highly productive rule and many people leave it at that. This is the strong majority and because according to this analysis there are no clear examples that would say otherwise other than some marginal examples (discussed in the next section) there is no reason to say otherwise. If it were that simple, personally I do not think there would be such a conundrum.

## 3. Current potential evidence for i and ɨ as distinct phonemes

Main arguments against [ɨ] being an allophone for [i] come from the St. Petersburg School of Phonology. Some defenses of this theory are as follows (gathered from Dalby, Plapp, and Padgett):

- (a) Russian speakers can very clearly distinguish [i] from [ɨ], unlike [ɪ], which has been accepted by all Russian phonologists as an allophone for either or both [i] and [ɨ], and they can produce this sound in isolation
- (b) The presence of [ɨ] in general is very rare, and there are only a couple instances of word-initial [ɨ], including the minimal pair *и́кать* 'to produce the sound и' and *ы́кать* 'to produce the sound ы', as well as borrowed words like *Ыб* (Ib River).
- (c) There are several phonological rules that are not productive in certain environments unless [i] and [ɨ] are treated as phonemes.

The argument in (c) is the one that most intrigues me. For reason (a) perhaps this can be explained by the fact that differences in palatalization are orthographically placed on the vowel so Russian speakers are more sensitive to vowel differences there, as well as it being its own distinct vowel in the alphabet. The rare examples in (b) can be explained by borrowed words often not following phonological rules, and the words for pronouncing the sound do not really count. However, the results from Plapp and Padgett show that there potentially may be an issue characterizing [i] and [ɨ] as being treated as one and the same in Russian phonology.

Plapp's analysis specifically refers to the rules of Surface Palatalization and Velar Palatalization that are also highly productive in Russian. Surface Palatalization occurs when . Velar Palatalization occurs after a velar; however, there are certain cases where it does not seem to be triggered, such as the word for 'to torment', [mucit']. Here Surface Palatalization only seems to be triggered. Plapp's theory is that Velar Palatalization only occurs when the underlying phoneme is /ɨ/ and to account for the presence of [i] in the surface representation one has to follow the 'spelling rule', which is what the rule discussed in §2 is describing and thus would explain the alternation. Both Plapp and Padgett agree that the environments seemingly allowed for [ɨ] to appear are very limited.

#### 4. iɨ testing with Russian examples

From materials gathered by Plapp, I elicited examples which she discussed in her attempt to account for variances that occur with certain suffixes. I also looked at examples from Padgett's formant studies and analyzed the data from my own elicitations in Praat to see where the palatalization really should be characterized in words with [i] and [ɨ] - should it be on the vowel or on the consonant before it? I took some spectrograms of Russian words and analyzed the formants to try and determine where the palatalization is happening time-wise. Below are the formants for two different words from both speakers.

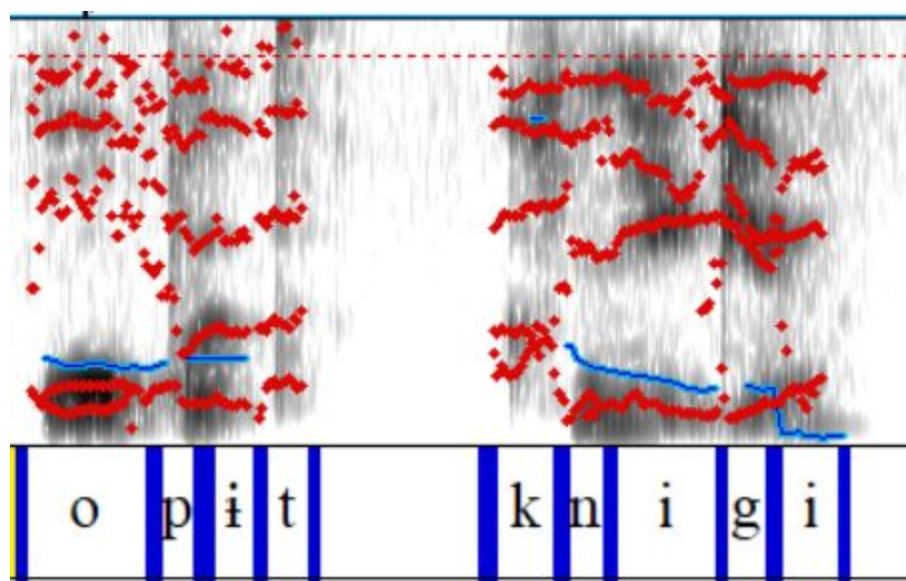


Fig. 4.1 Consultant A: 'experience', 'book (pl)'

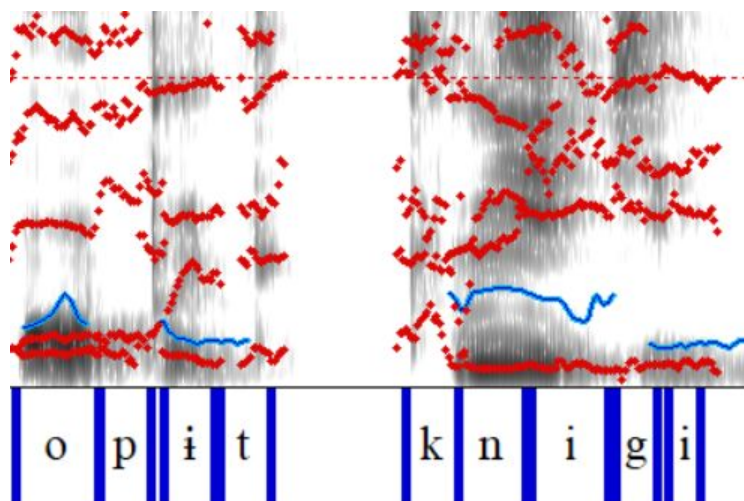


Fig 4.2 Consultant B: 'experience', 'book (pl)'

The second word in its singular form is [kniga] and [i] is the suffix added on. Based on the widely accepted rules, the [g] would be palatalized; however, in Consultant A's speech it is not. This can be seen from the fact that the formants are more affected by the [g] and thus drop at that point, whereas in Consultant B's speech it is treated as almost a fricative with the formants almost not being affected by the presence of the [g] whatsoever. This was something that I was not expecting to find and thought would be consistent across speakers. This occurred for other words elicited as well, and as such it was difficult to determine conclusively whether the palatalization of the [g] was just a pronunciation quirk and which form was irregular in general Russian speech. Referring to Plapp and Padgett they suggest that the non-palatalized form is the correct pronunciation for the plural [i] ending and that is how I pronounce it as well, so it is still weird that it is occurring after what seems to be a non-palatalized [g] in at least two of the three cases.

## 5. i/ɨ testing with English examples

I tested minimal pairs with [i] and [ɨ] in English to see how the consultants would interpret the difference. This was done based on the assumption that a person's intuition for foreign languages is based off of their native language's phonology (Goldrick et al.) and that they would thus not be able to hear what the actual difference is. From that, I was wondering whether [ɨ] would occur in these contexts or not instead. I also made sure to test the i/ɨ situation in front of approximants and velar consonants as velars are where the greatest variation was determined by Plapp in her work on i vs. ɨ and approximants tend to affect vowels fairly often.

### 5.1 Results

The chart below indicates what vowel Consultant A and Consultant B pronounced for each given word, some real and some actual. The final column indicates whether their analysis was the same. I only included two examples of words that in proper pronunciation have an [ɪ] sound as all of them were pronounced the same by both consultants except for ‘wheel’. Examples that are bolded were mispronounced in the same manner by both speakers. It is of note as well that Russian does not have any approximants/glides other than [l], [ɫ], and [j].

English word	Consultant A	Consultant B	Different
beach	iː	iː	
<b>bitch</b>	<b>iː</b>	<b>iː</b>	
seep	iː	iː	
sip	ɪ	ɨ	Yes
lip	ɪ	ɨ	Yes
<b>kill</b>	<b>ɨ</b>	<b>ɨ</b>	
<b>ill</b>	<b>ɨ</b>	<b>ɨ</b>	
giff	i	ɨ	Yes
bid	ɪ	ɨ	Yes
<b>hill</b>	<b>ɨ</b>	<b>ɨ</b>	
wheel	ɨ	iː	Yes
<b>will</b>	<b>ɨ</b>	<b>ɨ</b>	

In my analysis going forward about the state of the phonemes, I am going to use the examples where the result was unanimously incorrect. I did want to acknowledge a couple of notes first.

There are a few trends that are pretty noticeable here, the first of which is that Consultant B did not use [ɪ] at all, and this can probably be accounted for due to the fact that Consultant A has lived in the United States for 30 years and has heard plenty of English to know that is a sound to be pronounced. However, Consultant A does not use [ɪ] in all of the situations whatsoever, and there are still plenty of locations that hint at some more intrinsic rule.

Another thing that is striking about the data is the fact that ‘wheel’ was incorrectly pronounced by the speaker more acquainted with English. My hypothesis is that because ‘wheel’ and ‘will’ were at the end of the list she had less guarded speech and quickly finished the sentence off, as well as the fact that [w] is a non-existent sound in Russian so saying an [i] after it quickly can lead to it being [+back]. Perhaps more elicitation with less guarded speech will produce more intriguing results.

## 5.2 Careful speaking and sound recognition

In careful speech, both speakers knew there was a difference between the minimal pairs elicited. Interestingly enough, this was primarily interpreted as a length distinction, which was unexpected. Consultant B even specifically said, “seep, sip, there’s a difference in length there” but did not acknowledge that they are different sounds, just the same sound lengthened. Neither speaker could hear the difference between any of the *i/i̟* variations though in English despite pronouncing different words differently. Perhaps this could be evidence for them being variations of the same phoneme, as when it is taken away from Russian orthography it is less clear that they are distinct phonemes in a Russian person’s brain.

## 5.3 Formant study

In these examples, just like for the Russian ones in §4, I looked at the formants to see where the palatalization was falling. I decided to choose the pair ‘keel’ and ‘kill’. Both speakers used an [i̟] sound instead of [i] so I thought it would be the best option for seeing how [k] is affected in this environment as well as the *i/i̟*.

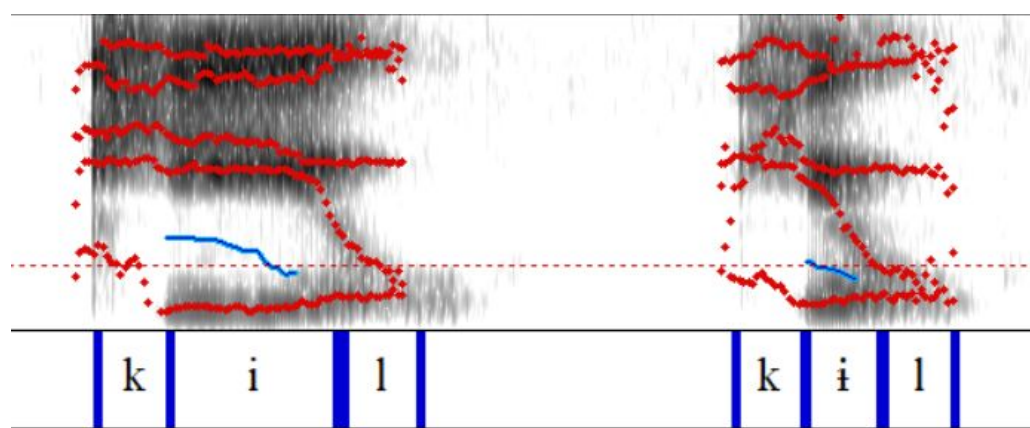


Fig. 5.1 Consultant A: ‘keel’ vs. ‘kill’

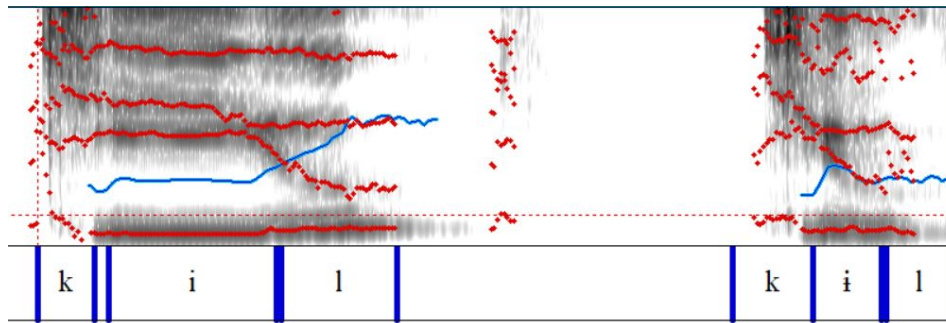


Fig. 5.2 Consultant B: 'keel' vs. 'kill'

Both consultants palatalized the *k*, it seems, despite the sound after it being different and them noticeably pronouncing it differently. This is also not a result I was expecting, as I was not expecting [ɨ] to ever occur after a palatalized [k], but then I thought about how I pronounce these words, with English being my first and primary language, and it seems that when [k] is an initial sound it is difficult not to aspirate it and that is more so what is occurring here. Here I thought that perhaps the [i] and [ɨ] were occurring in the same environment, and it certainly sounds like that, but what I found is that for the [k] in 'keel' both speakers showed a strong dip in Formant 1. I am not sure if that was just in the presence of their [i] sound, but as the dip is being shown on the [k] and not changing for the [i] sound itself it is clear that the palatalization is occurring on the consonant there. Thus, there would not be a minimal pair in this situation and it would follow how it works in Russian, that they subconsciously palatalize the [k] in English before [i] sounds as well. Because they note the distinction between [i] and [ɨ] in English in such a way, however, I am led to believe that they have to be thought of as distinct phonemes in Russian.

## 6. Conclusion

Based on the analyses of Russian words and English words I elicited, I do believe that /i/ and /ɨ/ should be treated as separate phonemes. There are certainly places where the palatalization is not applying the way it should and [i] is still occurring, so perhaps it is the /ɨ/ changing into [i] just because it is a velar. However, I would like to work on this more to elicit some more conclusive examples and perhaps test more speakers from various places. Even within St. Petersburg there are many people with different pronunciation patterns, and I would like to see if this is even something that can be studied on a Russian-scale level or this should be determined more regionally. What I can say with some level of confidence is that the palatalization certainly seems to be applying on the consonants and should not be shown as part of the vowel. Even there remains some questions though - is it a part of the vowel itself or underlying in the consonant and then later changed by some phonological rule? I cannot be sure.

I especially would like to look more into how Russian phonology is carried over into English and how knowledge of the language affects that transfer. I was very much intrigued by

the results I got from both speakers and hope to see a trend through asking Russian speakers of various levels of fluency and exposure to Russian language and culture. Perhaps testing with suffixes in English would also be a good next step, as suffixes are the main point of contention in Russian and that same quirk may apply here.

I would like to thank Plapp and Padgett especially for their interesting works on [i]/[ɨ] distinctions and with palatalization; they were very useful in finding examples where widely-accepted Russian phonological rules do not seem to apply and provide reasoning off of which to base my own formant studies.

## References

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