

WORD-FINAL OBSTRUENT DEVOICING IN HERITAGE RUSSIAN*¹

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Phonological variables are often a subject of sociolinguistic inquiry, as they possess the qualities sociolinguists look for: they are frequent, are immune from conscious suppression, and are an integral part of larger structures. Final devoicing of obstruents in speech is one such phonological variable as it is found in many languages, such as German, Catalan, Dutch, and Russian.

1. Final devoicing in Russian and background research

Final devoicing in standard Russian is a widely attested phenomenon and the assumption in the field of Russian linguistics is that this phonological process is purely categorical and for that reason not worth further exploration (Avanesov 1949, Shvedova 1980). It is also believed that the majority of regional dialects follow the same pattern, excluding some northwest dialects (Avanesov 1949). The essence of the process is that voiced consonants are devoiced word-finally and are represented by the same sound as inherently voiceless consonants: for example, in *snop* ‘sheaf’ and *bob* ‘bean’, /p/ and /b/ are pronounced as [p]. Devoicing in Russian happens with the following consonants: [b], [v], [d], [g], [z], [zh], [g’], [b’], [v’], [z’], [d’], where the apostrophe marks palatalized or, as it is called in the Russian linguistic tradition, ‘soft’ consonants.

Nevertheless, phonetic research employing acoustic analysis shows that final devoicing in Russian is not complete (Dmitrieva 2005; Dmitrieva et al. 2010; Kharlamov 2012, 2014; Kulikov and McMurray 2014; Matsui et al. 2017; Shrager 2012). Neutralization was found to be incomplete for various groups of speakers (native, non-native) (Dmitrieva 2005, Dmitrieva et al. 2010) and in different experimental conditions (word-reading, picture naming, monosyllabic and disyllabic words, minimal pairs and non-minimal pairs) (Kharlamov 2012, 2014). Although phonetic research has contributed to our understanding of the process of final devoicing in Russian, it has not added much to our knowledge of the sociolinguistics of the phenomenon.

Although sociolinguistic research into final devoicing in Russian is scarce, or even nonexistent, Łyskawa et al. (2016) examined final devoicing in Polish – another Slavic language with similar devoicing patterns. Analysis of spontaneous speech produced by three groups of speakers (two generations of heritage Polish speakers and homeland

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Polish speakers) showed that final devoicing was not categorical. The results of the study revealed that phonological and lexical factors condition the variation in different ways for three groups of speakers. The phonological grammar of heritage Polish speakers appears to have converged on something in between the heritage language grammar and the dominant language grammar. Code-switching produced by heritage Polish speakers provides further evidence for this convergence. Łyskawa et al.'s (2016) study suggests that final devoicing patterns in Russian are worth examining as they might be significantly different from the categorical model.

My current exploratory research aims to determine whether final devoicing in Russian spontaneous speech is categorical, and if it is not categorical, what patterns of devoicing we can see in the collected data.

2. Data and methods

Data in the study comes from the Heritage Language Documentation Corpus (University of Toronto), which was created in the 2000s as a part of the Heritage Language Variation and Change Project and contains recordings of three generations of heritage Russian speakers. The corpus currently includes data from more than 30 heritage Russian speakers and data is still being collected.

The speakers are divided into generations defined as follows: 1) first generation speakers were born in the Soviet Union or Russia and immigrated to Canada after the age of 18 and have been living in Canada for at least 20 years; 2) second generation speakers were born in the Soviet Union or Russia and immigrated under the age of six, and their parents are first generation speakers, or were born in Canada but their parents still can be referred to as first generation speakers; and 3) third generation speakers were born in Canada and their parents are second generation speakers. The Russian language proficiency of each speaker is enough to maintain a relatively fluent conversation with an interviewer for about an hour.

In my exploratory research I examined 12 heritage Russian speakers from the corpus: five speakers from Generation 1, four speakers from Generation 2, and three speakers from Generation 3 (there are no more recorded speakers from Generation 3). In Generation 1, there are no speakers younger than 37 (according to the definition of first generation); thus, Generation 1 speakers represent only the middle or older age groups (defined in Table 1a), while speakers in Generations 2 and 3 represent three age groups: younger, middle, and older. The distribution of the speakers whose speech was analyzed in the paper can be seen in Tables 1a and 1b. The appearance of one extra male speaker in Generation 1 is explained by the fact that the transcribed part of the interview with one of the speakers was too short.

Table 1a. Distribution of the speakers according to age and generation

	Generation 1	Generation 2	Generation 3
Younger (20-29)	Absent by definition	1	1
Middle (30-50)	3	2	1
Older (50+)	2	1	1

Table 1b. Distribution of the speakers according to gender and generation

	Generation 1	Generation 2	Generation 3
Male	3	2	1
Female	2	2	2

From each speaker, I extracted all tokens ending with an inherently voiced consonant from 20 minutes of conversation, starting approximately 10 minutes from the beginning of each interview. There were 696 tokens in total. Each token was impressionistically coded as voiced or devoiced. The devoiced group included partially devoiced and fully devoiced tokens. No acoustic analysis was performed.

Following Łyskawa et al. (2016), I looked at the following **linguistic factors** that potentially affect variation: word type (open class, preposition, other closed class) and the segment following the inherently voiced consonant (voiceless obstruent, voiced obstruent, sonorant or [j], vowel, pause). The potential importance of the following segment was also based on the assumption (following Avanesov 1949, Shvedova 1980) that final obstruent consonants of the word become devoiced if they are followed by:

- 1) a pause (end of the sentence): *On kupil hleb*². [b] → [p] or
- 2) a voiceless consonant: *rod sredniy* [d] → [t]

The devoicing does not occur if the consonant is followed by:

- 1) a vowel: *sad ogromniy* [d]
- 2) a sonorant: *gruz raboty* [z] or
- 3) a voiced consonant: *drug druga* [g].

The **social factors** I considered were gender, age, and generation, as there were no other social characteristics available in the corpus.

Some tokens were excluded from the dataset:

- Cases with neutralization where it is impossible to determine whether devoicing occurred or not: *imet' v vidu* 'mean';
- Cases where the final consonant could not be heard properly;
- Cases where final dental [v] was replaced by bilabial [w]³; and

² If it is not stated otherwise, the examples are generated by the author.

³ This feature might be the remnant of a certain dialect of Russian, or, most probably, evidence of English influence.

- All instances of the preposition *v* (346 tokens), as this preposition assimilates with the following sound and does not behave as an individual token.

For each factor, I examined the distribution of devoiced tokens and also made cross-tabulation comparisons, where relevant. Logistical regression analysis was performed to determine significant factors affecting word-final devoicing.

3. Results

The collected data shows variation: speakers devoice some consonants but do not devoice them in similar environments:

- (1) ja vyuchila iz togo (R3F25A_IV)
 I learned from that
 ‘I learned from that’
 [iz] should become [is] before voiceless [t], but it stays [iz]
- (2) Vse prishli iz kudova (R3F25A_IV)
 everybody came from (?)somewhere
 ‘Everybody came from somewhere’
 [iz] becomes [is] before voiceless [t]

The overall distribution of the variants showed that 61.3% (214) tokens were devoiced. The distribution by word class showed that open class words are the most frequent tokens in the collected data: 181 out of 349 (51.8%). Prepositions account for 30.9% of the data (108 tokens) and other closed class words account for 16% of the data (56 tokens). Devoicing occurs equally frequently in open class words (76%) and in other closed class words (77%), but among prepositions, more than half of the tokens are not devoiced (72%).

Examination of the correlation between the following segment and devoicing (Figure 1) showed that inherently voiced consonants are predominantly devoiced before pauses and voiceless consonants and that they tend to stay voiced before sonorants, voiced consonants, and vowels.

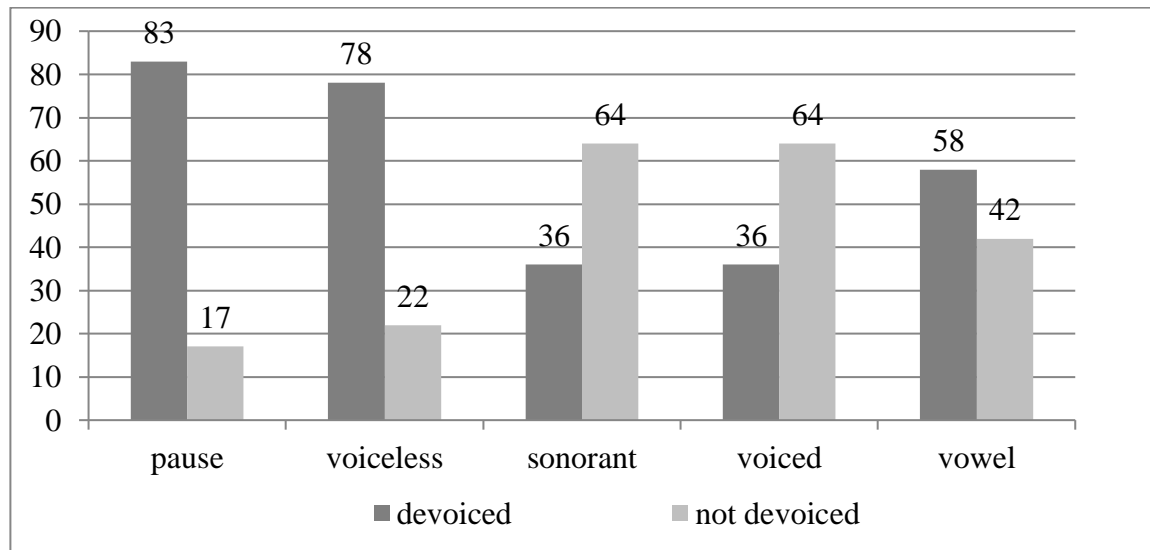


Figure 1. Devoicing and the following segment

For open class words (Figure 2), inherently voiced consonants before voiceless consonants showed a near-categorical rate of devoicing. Consonants before pauses or vowels seem to strongly favour devoicing, while consonants before voiced consonants seem to disfavour it. The highest level of variability is found before sonorants.

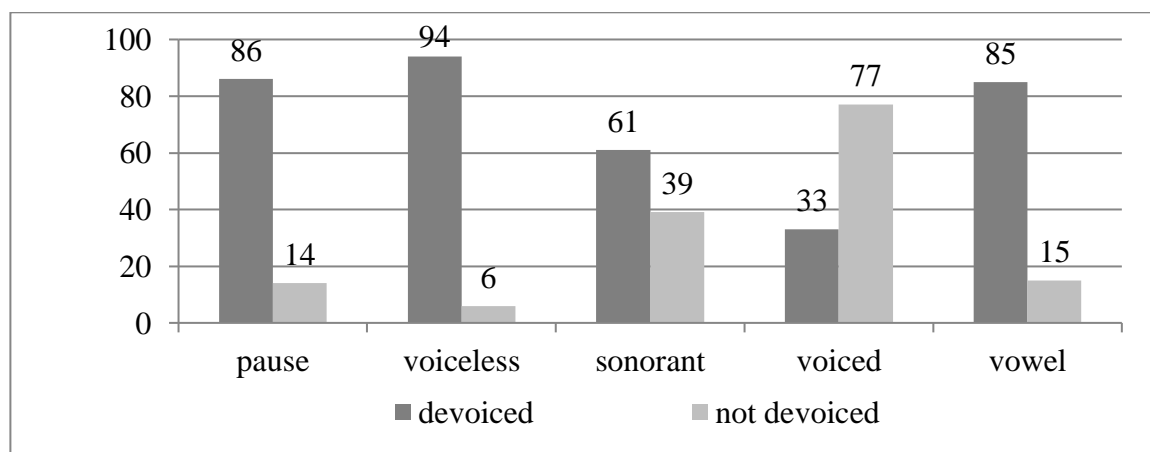


Figure 2. Open class words and the following context

Correlations between class and the following context showed that some contexts are categorical for certain classes of words. For closed class words (Figure3), three

contexts were found to be categorical: all tokens were devoiced before pauses, before voiced consonants, and before vowels. Voiceless consonants seem to favour devoicing, but devoicing seems to be random before sonorants.

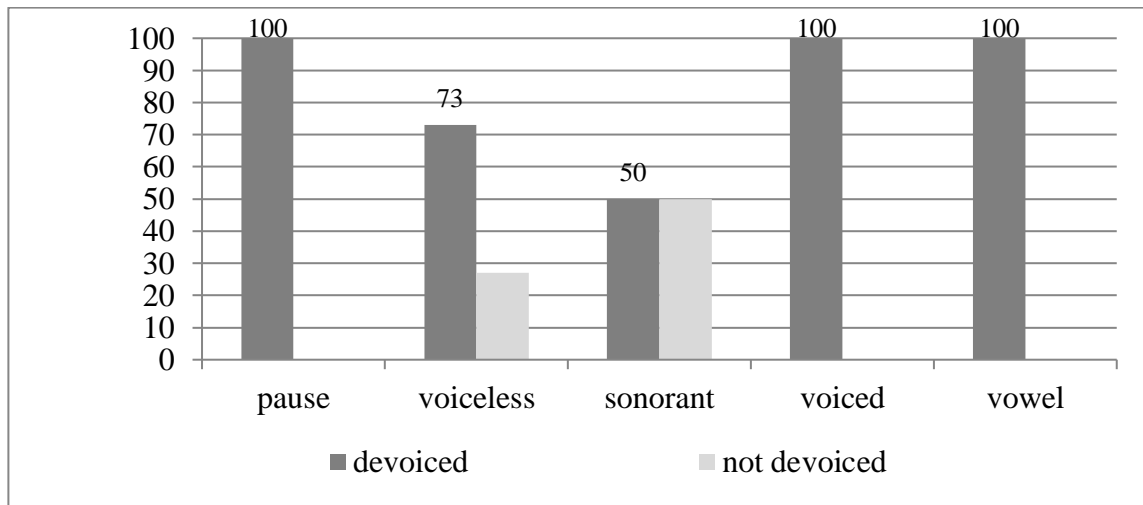


Figure 3. Closed class words and the following context

As shown in Figure 4, before sonorants and vowels, devoicing was categorical for prepositions: in these positions, final obstruents retained their voicing feature and devoicing did not occur. Before voiceless consonants, devoicing was favoured, while before voiced consonants, final obstruents tended to retain their voicing feature.

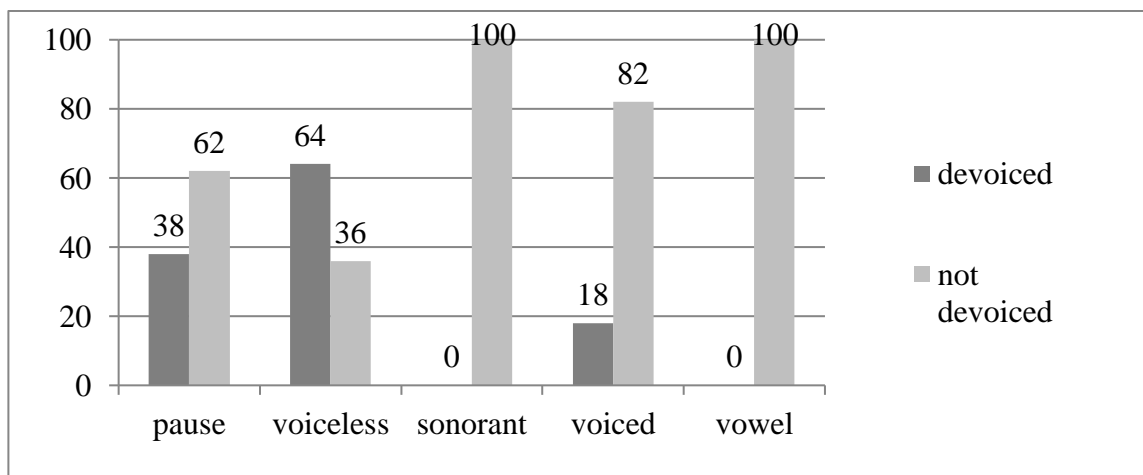


Figure 4. Prepositions and the following context

Data showed the following trends in terms of social factors. Through Generations 1 to 3, the rate of devoicing gradually decreases (Figure 5): from 70% in Generation 1 to 47% in Generation 3.

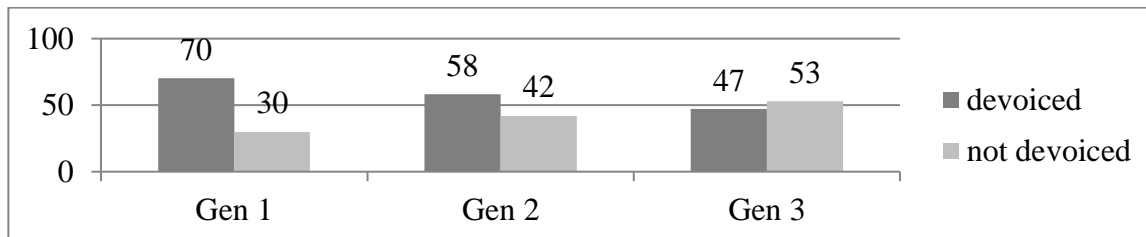


Figure 5. Devoicing and generation

With respect to age, younger speakers devoice less than middle and older speakers (Figure 6). Devoicing rates in middle and older speakers are not significantly different.

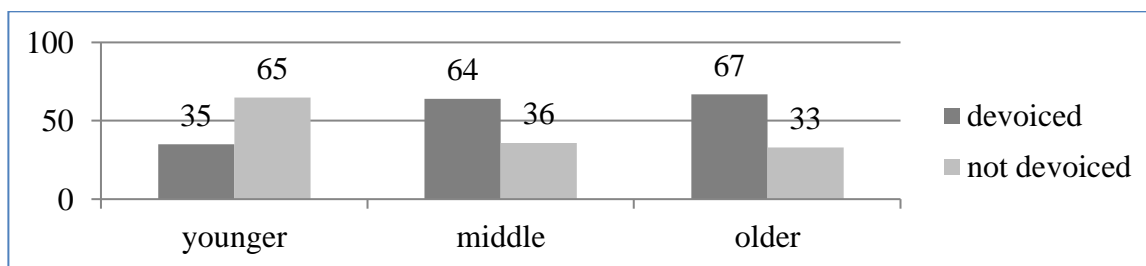


Figure 6. Devoicing and age

Examination of devoicing and gender revealed that male speakers devoice slightly more than female speakers (Figure 7).

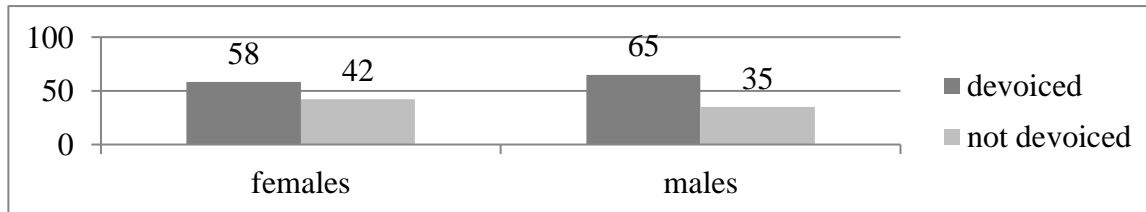


Figure 7. Devoicing and gender

Cross-correlations between social and linguistic factors showed the following results. Figures 8 to 12 display rates of devoicing, regardless of word type. Devoicing before pauses (Figure 8) seems to be near-categorical for Generation 1. For subsequent generations, devoicing in this position is less obligatory, but the trend still favours devoicing in this position.

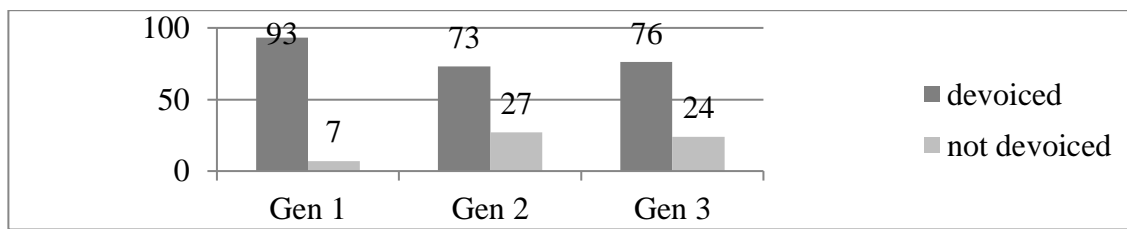


Figure 8. Generation and the following context (pause)

Before a voiceless consonant (Figure 9), devoicing occurs in all three generations, although this trend is weaker in Generation 3.

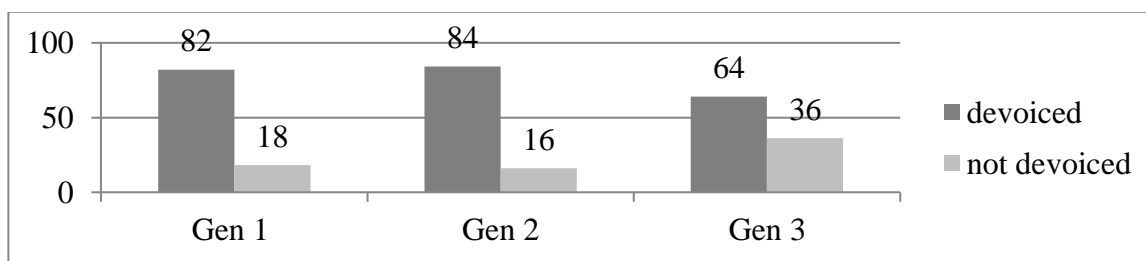


Figure 9. Generation and the following context (voiceless consonant)

Before sonorants (Figure 10), devoicing is not favoured in any of the generations; this trend appears to be even stronger in later generations, becoming near-categorical in Generation 3.

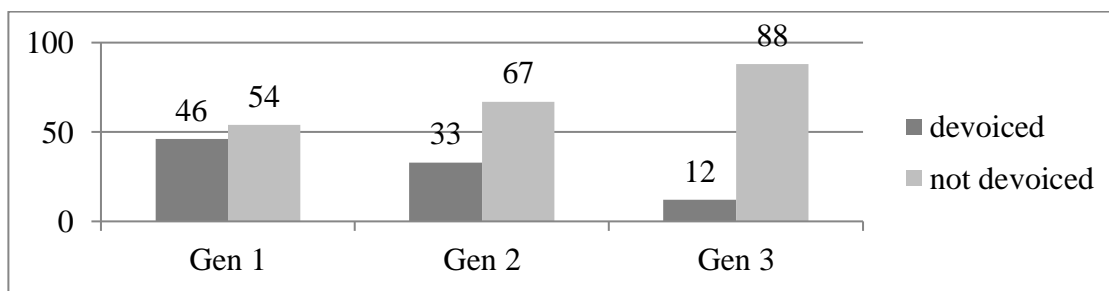


Figure 10. Generation and the following context (sonorant)

Before voiced consonants in general, devoicing is disfavoured in Generations 2 and 3, while in Generation 1, the devoicing rate is above 60%. The lowest rate of devoicing in this context is found in Generation 3.

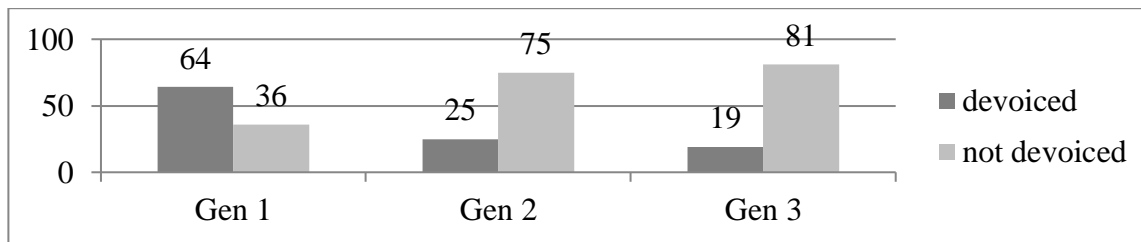


Figure 11. Generation and the following context (voiced consonant)

Before vowels (Figure 12), a pattern similar to the context before voiced consonants can be seen: the highest rate of devoicing is observed in Generation 1, the lowest is observed in Generation 3, and Generation 2 occupies an intermediate position.

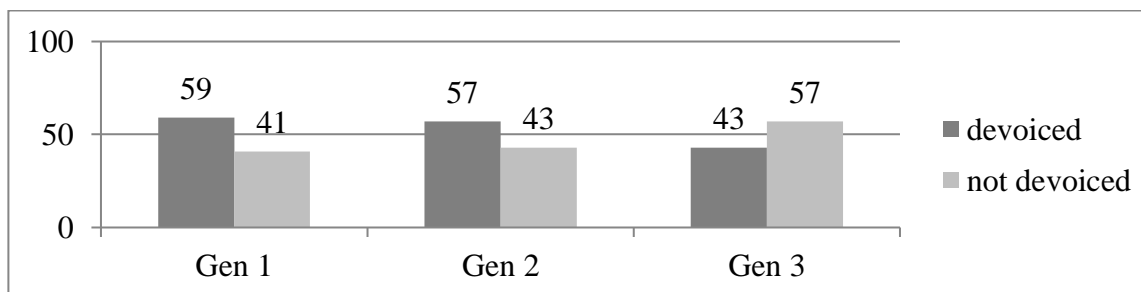


Figure 12. Generation and the following context (vowel)

The correlation between devoicing rate, generation, and type of word (Figure 13) shows that in Generation 1, the highest rate of devoicing is found with open class words: in this group, the devoicing rate reached almost near-categorical numbers. Closed class tokens also tended to be devoiced by Generation 1 speakers, but prepositions undergoes devoicing much less frequently.

Generation 2 speakers showed another pattern: closed class words are devoiced more frequently in their speech than open class words, and prepositions were devoiced at almost the same rate as in Generation 1.

In Generation 3, there was not much difference in the devoicing rates between open and closed class words. The rate in each of these groups was relatively close to the overall distribution in the entire dataset (61.3%). The devoicing rate among prepositions is similar to the rates of Generations 1 and 2.

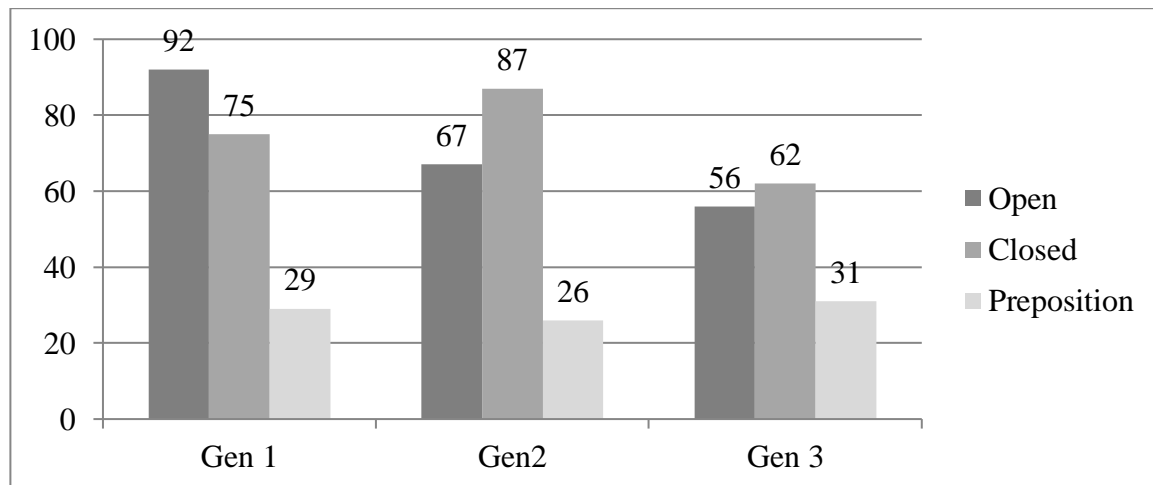


Figure 13. Devoicing, generation and type of word

Logical regression analysis showed that **factors that are significant for devoicing** rates are generation, type of word, and the following context.

4. Discussion

To interpret the results, we need to look back to the “rules” of devoicing, which can be found in *Essays on Russian Dialectology* (Avanesov 1949) and in *Russian Grammar* (Shvedova 1980). These sources state that final consonants of the words are devoiced if they are followed by a) a pause (i.e., occur at the end of a sentence) or b) a voiceless consonant. Devoicing does not occur if the consonant is followed by a) a vowel, b) a sonorant, c) or a voiced consonant. This “rule” is considered to be categorical. These statements are usually applied to nouns. Nothing is said about devoicing with other types of words.

Figure 1 shows that some variation happens in the listed contexts and it is not possible to claim that the rule is categorical, although a trend is definitely present: there are contexts that favour devoicing (before pauses and voiceless consonants) and contexts where devoicing is less likely to occur (before sonorants, voiced consonants, or vowels).

Nevertheless, this is only an overview of the situation and more fine-grained analysis shows that actual patterns differ greatly from what was originally stated in the “rules”. First of all, the contexts stated in the rules are not categorical for open class words, which nouns are (Figure 2). An especially high level of variation appears before sonorants, where only 36% of open class tokens are devoiced. Indeed, some contexts seem to be categorical or near-categorical for closed class words and prepositions, but these contexts might be different from what is stated in the rules. Thus, among closed class words (Figure 3), categorical devoicing seems to appear before pauses (as stated in the rule) and before voiced consonants and vowels (contradicting the rule). With closed

class tokens, a great amount of variation occurs before sonorants (where only 50% of the tokens undergo devoicing).

Available linguistic sources do not comment on the sociolinguistics of final obstruent variation in Russian, especially regarding the variety of Russian spoken by immigrants in Toronto. Three generations of Russian-speaking immigrants in Toronto show different patterns in each generation, displaying certain general trends.

Generation 3 speakers predictably tend to pattern more like English speakers, converging with them in the overall devoicing rate. The overall devoicing rate among Generation 3 speakers is 47%, which is the closest figure to the rate of devoicing observed by Łyskawa et al. (2016) in Toronto native English speakers, who devoice in 37% of cases.

Generation 3 speakers are also the most advanced among the three generations in not devoicing before voiced consonants, sonorants, or vowels. The most plausible explanation of this pattern is convergence with the dominant language grammar, similar to the situation observed in Łyskawa et al. (2016). Additional evidence for this explanation is the fact that younger speakers in Generations 2 and 3 devoice at the same rate (35%) as Torontonians English speakers.

The idea of convergence with a dominant language grammar is also supported by the trends observable in Figures 8-12. According to Smith (2013), devoicing in Toronto English follows the overall pattern of English, where weakening of final obstruents occurs before pauses and sentence boundaries, and assimilation occurs before voiceless consonants. That is why the devoicing rates in my data are more or less stable across all three generations in contexts where devoicing is already favoured in Toronto English: before pauses and voiceless consonants. The devoicing rates in contexts that are not favoured in Toronto English – before sonorants, voiced consonants, or vowels – steadily decrease from Generation 1 to Generation 3.

5. Conclusion

This pilot study of final obstruent devoicing in heritage Russian is quite promising for further research. The most interesting results will likely be obtained via cross-tabulation of factors, e.g., Generation + Type of Word + Following Context. Comparison with the homeland variety can also help reveal differences between heritage Russian and the Russian spoken by monolingual speakers living in Russia.

Research in devoicing patterns can help us understand language dynamics within the community as a whole and add more evidence for the discussion of possible outcomes for two competing grammars.

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