

Variants in the Pronunciation of Voiced/Voiceless Consonant Pairs in Taiwanese Russian (based on aural and acoustic analysis)

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ABSTRACT

This study describes Chinese-Russian phonetic interference. Pairs of Russian voiced/voiceless consonants are analysed for variants of pronunciation. Two male and two female Taiwanese informants read a sample text containing all the Russian phonemes distributed in the same proportions as in Russian speech. The side of the text was 2,500 phonemes based on standard modern pronunciation. The sample for the experiment was recorded in the Phonetics Laboratory of St. Petersburg University. A group of professors of Russian as a foreign language ranked the level of reading by the Taiwanese as average to somewhat above average. The recording was subjected to evaluation by ear and acoustic analysis. The pronunciation of 2,788 consonants (1,200 voiced and 1,588 voiceless) was analysed. Spectral characteristics of non-standard realizations of consonants by the Taiwanese readers were compared:

- a) to standard (correct) realizations of consonants produced by the same speakers and
- b) to the same sample text rendered correctly by two native speakers of standard Russian. This process generated 667 sonagrams and the same number of oscillograms.

1. INTRODUCTION

Chinese and Russian are very different genetically and typologically. When the two languages come into contact, even when the Taiwanese speaker is proficient in Russian, traces of interference occur and may be classified as residual accent. Residual accents characteristically are especially persistent. Defining such traits quantitatively and qualitatively and noting their frequency of occurrence is useful for both theoretical and practical purposes in particular, for teaching Russian phonetics. The purpose of this study is to show the particular features of Taiwanese realizations of Russian voiced/voiceless consonants and to determine their acoustic characteristics. The more

non-standard accent variants a consonant has and the more frequently the non-standard variant is affected by interference, the more difficult it is for the Taiwanese speaker of Russian to correct his/her pronunciation of the sound.

2. THE RESULTS OF AURAL AND ACOUSTIC ANALYSES

In Russian there are 11 pairs of correlated voiced/voiceless consonants: /b-p, b'-p', v-f, v'-f', d-t, d'-t', z-s, z'-s', ʒ-ʃ, g-k, g'-k'/. But only two of these pairs exist in the variant of Chinese spoken in Taiwan: /b-p, g-k/. In order to define which consonants (voiced or voiceless) are most difficult for Russian-speaking Taiwanese, a sample reading was recorded in the Phonetics Laboratory of St. Petersburg University in an experiment. Approximately 3,000 phonemes were subjected to aural and acoustic analysis. As a result, the following conclusions were reached:

1. Voiceless consonants vary more than voiced: voiceless consonants are realized in 44 variants, and voiced in 39. The consonants /t/ and /t'/ vary the most (9 and 8 variants, respectively), while the consonants /v'/, /f'/ and /k'/ are almost always pronounced correctly, except for one variant. Voiced consonants are replaced mostly by their corresponding voiceless counterparts or by partially voiceless realizations, while voiceless consonants are replaced by corresponding voiced, or partially voiced, and aspirates. It should be noted that the pronunciation of voiced-voiceless consonants most frequently occurring in all the readings is predominantly correct. This is undoubtedly due to the readers' above average command of Russian.

2. Of all the voiced consonants, maximal variation occurred in the pronunciation of /ʒ/, that is, the voiced sibilant is most difficult for the Taiwanese. It is pronounced correctly on average in 71% of the cases. The least standard voiceless consonant is /t'/, with an average occurrence of correct pronunciation in 81% of all cases. The replacement of /v/ by voiceless /f/ or by half-voiced consonants occurs with maximal frequency in 19% of the cases. Next most

frequent are substitutions for /z/ - 18% of the time, for /b/ - 14%, /d/ - 12%, /g/ - 12%, /z/ - 11%, /d'/ - 7%, /b'/ - 6%, /z'/ - 6%, /v'/ - 0%, and /g'/ - 0% of the time.

Arranged from most frequent to least frequent occurrence of correct variants, the percent of all examples of voiced consonants are as follows: /v'/ - 100%, /b'/ - 94%, /g'/ - 92%, /z'/ - 91%, /z/ - 87%, /g/ - 87%, /b/ - 86%, /d/ - 85%, /d'/ - 83%, /v/ - 78%, /z/ - 71%. As a rule, voiced consonants are replaced by corresponding voiceless ones before sonants and by voiceless consonants preceding vowels.

3. Voiceless consonants are replaced by corresponding voiced or half-voiced consonants less frequently than are voiced consonants. These substitutions in order of highest to lowest percent of occurrence are: /t'/ - 7 %, /f/ - 4 %, /p/ - 2 %, /t/ - 2 %, /k/ - 1 %. The consonants /p'/, /f'/, /s/, /s'/, /k'/ and /ʃ/ are not replaced by corresponding voiced consonants. Unaspirated stops are more often replaced by aspirates: /t'/ - 9 %, /p/ - 8 %, /p'/ - 5 %, /t/ - 3 %, /k/ - 3 %.

4. A total of 388 voiced and voiceless consonants spoken by Taiwanese were analysed acoustically (of these, 58 were pronounced correctly and 330 incorrectly), as well as 279 consonants spoken by native speakers of Russian. The acoustic correlations of voiceless or devoiced consonants in place of voiced are characterized by: 1) a complete or partial absence of the fundamental voice and 2) the presence of more noise at all frequencies. The most frequent substitution in the system's group of paired voiceless unaspirated stops is their replacement by aspirates. On spectrograms, aspirates differ from standard voiceless consonants through greater noise and a longer lasting stop opening. Thus, within the group of voiced/voiceless pairs of consonants, voiced ones present the greatest difficulty for the Taiwanese.

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