PHARYNGEALIZATION IN THE SIBERIAN TARTARS' LANGUAGE (MRI INVESTIGATION)

ФАРИНГАЛИЗАЦИЯ В ЯЗЫКЕ СИБИРСКИХ ТАТАР (ПО ДАННЫМ МРТ)

MRI VERİLERİNE GÖRE SİBİRYA TATARLARIN GIRTLAK SESLETİMLERİ

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ABSTRACT

Three Western-Siberian Tartar dialects (Tobol-Irtysh, Tom and Baraba) have been studied by the magnetic-resonance imaging technique, the results of this investigation are presented and discussed. The pharyngealizaton functions in all the dialects but has a different status: in Baraba-Tartar it is the main constitutive-differential feature of the consonantal system, in the Tom dialect it is a variant of pronunciation; in the Tobol sub-dialect its status is not clear. The presence of pharyngealization in all Sberian-Tartar dialects proves their close relation to other Southern-Siberian Turkic languages.

Keywords: Phonetics, Consonantism, Pharyngealization, Turkic Languages, Siberian-Tartars' Language.

АННОТАЦИЯ

С помощью магнитно-резонансного томографирования были изучены три диалекта западно-сибирских татар; представлены результаты данного исследования и их обсуждение. Фарингализация функционирует во всех трех диалектах, но в каждом имеет свой статус: в барабинско-татарском она является основным конститутивно-дифференциальным признаком консонантизма, в томском диалекте она – вариант произнесения, в тобольском говоре ее статус пока не установлен. Существование фарингализации в диалектах сибирских татар доказывает их близкое родство с другими тюркскими языками Южной Сибири.

Ключевые Слова: Фонетика, Консонантизм, Фарингализация, Тюркские Языки, Язык Сибирских Татар.

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ÖZET

Magnetik-rezonans tomografi kullanılarak Batı Sibirya Tatarlarının üç ağzı üzerine araştırmalar yapılmıştır. Makalede araştırma sonuçları ile ilgili yorumlar ileri sürülmüştür. Her üç ağızda gırtlak kullanımı bulunur, ancak her birinde gırtlak sesletimi farklı olarak gözlemlenmiştir. Barabin-Tatar ağzında gırtlak sesletimi sessiz harfler sisteminin esas belirleyicisi; Tomsk ağzında sesletimin farklılaşması iken, Tobol ağzında ise statüsü daha belirlenmiş değildir. Sibirya Tatarların ağızlarında gırtlak sesletiminin var oluşu Güney Sibirya'nın diğer Türk Ağızları ile akrabalığını göstermektedir.

Anahtar Kelimeler: Fonetik, sessiz harfler sistemi, faringalizasyon, Türk Dilleri, Sibirya Tatarların dili.

On the territory of the Russian Federation there live more than 180 peoples, the minority ones being 63 and the most part of whom live behind the Urals – in Siberia, in the North and in the Far East (Cheremisina, 1992).

The Siberian, or Western-Siberian, Tartars inhabit the forest and steppe area of Western Siberia and are divided into three main groups: Tobol-Irtysh, Tom and Baraba Tartars. The first group occupies territories of Tyumen and Omsk regions, the second – of Tomsk, Novosibirsk and Kemerovo regions, the third one is found in Novosibirsk region. If ethnic-linguistic parameters are to be taken into account, the Tobol-Irtysh Tartars can be sub-divided into Tyumen, Tobol, Zabolotny, Tevriz and Tara Tartars; Tom people – into Eushtas, Chats and Kalmaks; the Baraba Tartars comprise more or less homogenous compact ethnic unity (Tumasheva, 1977: 11–12). The scientific investigation of the Tartar dialects of Siberia is considered to be initiated by V.V. Radloff, who published some Siberian dialectological texts and used the Siberian-Tartars' phonetic material in his "Comparative Grammar of the Turkic Languages" (Radloff, 1882–1883), though paying special attention to their ethnic composition. It was he who worked out the first scientific classification of the Siberian-Tartars' dialects, which has become an essential and important part of any linguistic investigation (Tumasheva, 1977: 7). It is to be pointed out, however, that the first records concerning "non-Russians" in Siberia date back to the 18th century and can be found in the reports of I. Strahlenberg, G.Ph. Miller, B.G. Georgi, P.S.Pallas. Those works had only a descriptive character and concentrated not on the linguistic problems but rather on the everyday life of the aborigines.

Hitherto, there is a heated scientific discussion of the Siberian-Tartars' genesis and the typological belonging of their language.

Within the Integration Project of the SB RAS Presidium our research team managed to carry out a tomography investigation of the articulatory peculiarities of the Kalmak, Baraba and Tobol dialect pronunciations of the Siberian-Tartar language bearers.

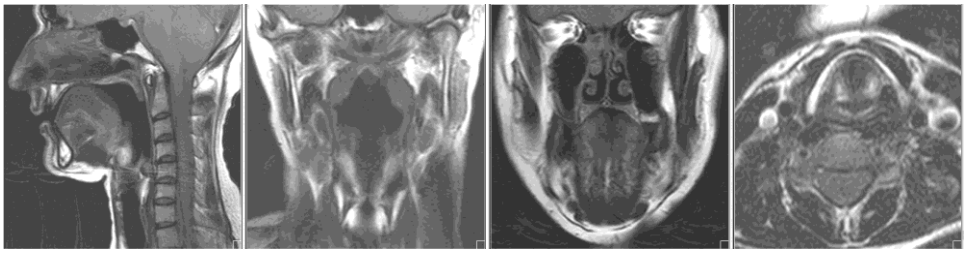
MRI Experiment

The tomographic non-invasive experiments providing the information on the organ of speech activity when articulating the speech sounds were carried out at the Laboratory of Medical Diagnostics (International Tomography Center SB RAS) on Philips Achieva Nova Dual 1.5 T scanner with Head/Neck synergy SENSE coil (Philips medical systems; Eindhoven, Netherlands). The graphic processing, archiving and a morphometry of MR-images were done at the working Philips ViewForum RS.1 (Dell) station.

Specially taught volunteers – the bearers of the aforementioned dialects of the Siberian-Tartar language – took part in the experiments. For each dialect a programme was worked out containing 40 lexical units. Image data were acquired by repeated sound pronouncing (the vowels and fricative consonants were captured for 20–25 sec.) or by post-sound fixation of vocal organs position (used for occlusive consonants during 6–9 sec.) after a sufficiently deep breath.

T_2-weighted images (T_2W TSE SENSE) were obtained in three projections with the parameters as follows: FOV – 250 mm, FOV reduction – 90%, Reconstruction 256x256, Scan% – 80, Slice thickness – 6 mm, Flip angle = 90, TR/TE = 1000/80.0. To make a detailed study of all the vocal organ positions while articulating separate sounds and to take into account the articulation peculiarities the scans were obtained in three orthogonal slice orientations: the sagittal sequences were captured along the median plane (orientating on the nose tip and taking the hard palate, basis cranii, vocal cords), the slice width was equal to that of the mouth cavity; the frontal sequence was done along the central pharyngeal-laryngeal axis with the width from the lips up to the back side of pharynx; the axial slices were taken along the cutting edge of the teeth from the vocal cords up to the nasopharynx and the hard palate (Fig. 1) (Letyagin et al., 2012).

Then, the decoding of the tomograms obtained was done and dialect articulation peculiarities were described at the Nadelyayev's Laboratory of Experimental-Phonetic Researches (LEPR IP SB RAS).



a) b) c) d)

Figure 1: Tomogram of an articulatory organ when producing Shor vowel /i/: a) sagittal slice; b) frontal slice; c) frontal pharyngeal slice; d) axial slice

Results and Discussion

Pharyngealization functioning very actively in the Southern-Siberian Turkic languages has been studied by the scientists since the mid-twentieth century (Nadelyaev, 1980: 37–39), though special attention has been paid to the Tuvan vocal system where this phenomenon is especially pronounced due to glottal, palatal and labial vowel harmony. Only 15 years ago pharyngealization was proved to function in a consonantal system as well (on the basis of the Shor language (Urtegeshev, 2002, 2004)).

We consider pharyngealization as a complex tuning of the articulatory organ, which is characterized by the speech apparatus tenseness, the considerable backward root position relative to the back pharynx side which is in its turn moves forward toward the tongue root. The larynx rises or lowers. The strong velarization and uvularization of a tuning is

witnessed. Acoustically the sound pharyngealization is perceived as rough, constrained and low-timber pronunciation.

The problem of this phenomenon origin in the Turkic languages of Southern Siberia remains unsolved, though there exist several hypotheses concerning it (refer to, e.g., Selyutina, 2008: 69–75). The most acceptable, in our opinion, idea of pharyngealization appearing was proposed by V.M. Nadelyayev and claimed that the phenomenon was a substrate heritage of some Baikal-Sayan regional languages comprising a Circum-Baikal language union (Nadelyaev, 1986).

The experimental-phonetic research of the Baraba-Tartars' consonantism carried out previously proved that pharyngealization is the main constitutive-differential feature (CDF) of the Baraba consonantal phonemes. An analogous situation is in the Shor language, while in Tuvan this is an allophonic characteristic (Ryzhikova, 2005; Urtegeshev, 2002, 2004; Kechil-ool, 2006). It is interesting to point out, that in 1947 T.A. Trofimova claimed that the Baraba Tartars had more mongoloid traits in comparison with other groups of Siberian Tartars and were close to Shor and Tuvan peoples (Trofimova, 1947), this statement being proved at the linguistic level.

In the Kalmak dialect the cases of pharyngealization have been fixed by MRI investigation, but pharyngealized sounds function in the sub-system of less-noise consonantism and have the status of the facultative variants. In another Tom sub-dialect – in Chat – pharyngealization is characteristic only of forelingual (laminal) noise occlusive consonants (Selyutina et al., 2011: 338).

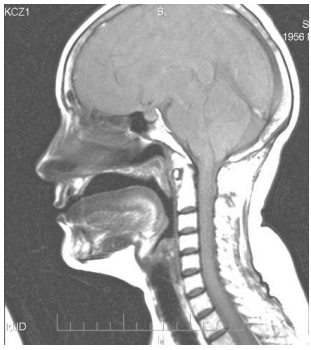
The latest tomographic data of the Tobol dialect of the Tobol-Irtysh language prove that pharyngealization is being actively utilized in both sub-classes of noise and less-noise consonants. At present the question of its status remains unsettled: whether the consonantal characteristic in accordance with pharyngealization / non-pharyngealization be one of the phonemic features, structuring the whole Tobol consonantism or it should be considered as an allophonic (supersegmental) parameter. If we are to suggest that the Tobol consonants are opposed by voicedness / voicelessness with voiceless phonemes being pharyngealized and voiced ones – not, than pharyngealization is one of the consonantal system CDFs. If the presence / absence of an additional pharyngealized colouring correlate with the word-form palatal row – in back row word-forms the consonantal components become pharyngealized, in front row sets the complementary work of pharyngeal / laryngeal part of the speech apparatus is lacking, than the feature under discussion should be qualified as allophonic, in accordance with the additional distribution parameter.

Presented in Figure 2 are tomograms of different Siberian-Tartar articulations.

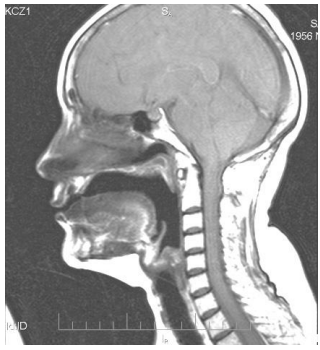
a)

b)

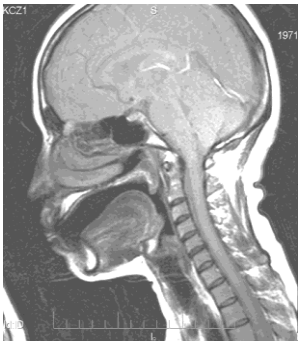
c)



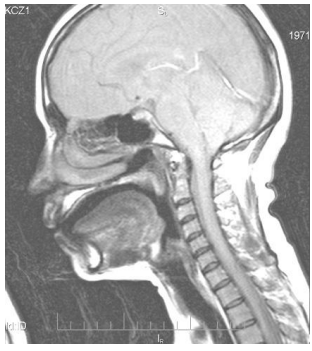
d)



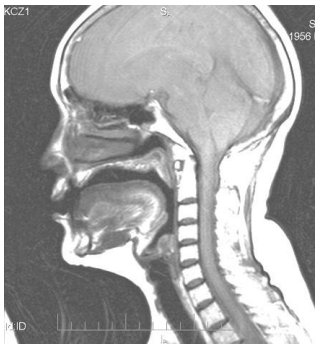
e)



f)



g)



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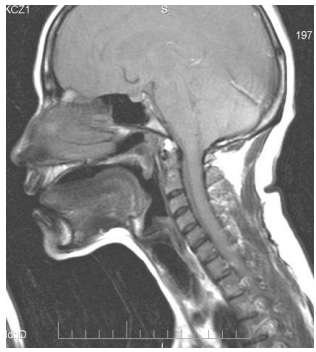

i)

Figure 2: a) pharyngealized less-noise consonant /**’l**/ in Kalmak word-form **al** ‘Take!’, b) non-pharyngealized less-noise consonant /**l**/ in Baraba-Tartars’ word-form **al** ‘Take!’, c) pharyngealized less-noise consonant /**’l**/ in Tobol-Tartar word-form **al** ‘Take!’, d) pharyngealized noise consonant /**’t**/ in Baraba-Tartars’ word-form **aty** ‘horse=his’, e) non-pharyngealized noise consonant /**t**/ in Baraba-Tartars’ word-form **butaj** ‘wheat’, f) Tobol pharyngealized voiceless noise consonant /**’p**/ in a word-form **apa** ‘woman’, g) Tobol non-pharyngealized voiced noise consonant /**b**/ in a word-form **aba** ‘older sister’, h) pharyngealized noise affricate /**’t** /in Baraba-Tartars’ word-form **ach** ‘hungry’, i) non-pharyngealized noise affricate /**ts**/ in Tobol word-form **tsats** ‘hair’

The contrastive analysis of the Siberian Peoples’ languages consonantisms carried out on the data obtained by both conventional and modern experimental-phonetic techniques has allowed establishing general and specific traits in pharyngealized consonants manifesting. In the Tobol dialect of the Tobol-Irtysh Tartar language as well as in the Shor language (Mrass dialect), pharyngealization is being realized phonologically in both noise and less-noise consonantal sub-systems. In the Kalmak language pharyngealization functions only within the less-noise sub-system. In Baraba-Tartar pharyngealization, being the main CDF of the system, appears systematically in the sub-class of the noise phonemes, never occurring with the less-noise consonants. If further investigations prove our hypothesis concerning the pharyngealization / non-pharyngealization correlation with the palatal vowel harmony, it will become possible to conclude that in the Tobol-Tartars’ dialect there does exist glottal vowel harmony similar to that of the Tuvan language though having its specificity in Tobol-Tartar.

Conclusions

The results of the instrumental investigation of the Siberian Tartars’ dialects phonetics let us conclude that the specific phenomenon of pharyngealization that has been fixed in some Siberian Turkic languages actively functions in Tobol, Baraba and Kalmak dialects. This fact proves the close relation of Siberian-Tartar with other Southern-Siberian languages rather than with literary Tartar whose dialects they have been considered to be for quite a long period of time. Further complex study of the Tartar dialects of Siberia, using purely linguistic and experimental-phonetic methods, will aid in establishing peculiarities of historical and linguistic contacts of the ethnic groups that used to live on the vast Siberian territory and emerged into independent nationalities with their own languages during long ethnogenesis process.

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