Psychophysiological Mechanisms of Linguistic Modeling of The Word Structure In Children-Bilinguals With Speech Dysfunctions

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ABSTRACT

Abstract. Based on longstanding investigations of work with bilinguals and monolinguals, having different speech dysfunctions, the author analyzes psychophysiological reasons of troubles in speech implementation of Tatar-bilinguals in junior childhood. The investigator shows the mechanism of speech disturbances of Tatar-bilinguals during linguistic modeling of the word, paying attention to interference processes of native language in the second acquired language. The work contributes to the development of problems of logopedia and neuroscience, neurolinguistics, bilingualics and intercultural communication, taking into consideration the peculiarities of physiological speech in bilinguals, the relation of processes of language and thinking, language and culture, interaction of cognitive and rational components in the processes of world categorization.

INTRODUCTION

The problems of speech psychophysiology, during the investigation of bilinguals' speech, present an urgent direction in modern scientific space of both natural and humanitarian cycles, as the characteristics and coordination of word of left and right hemispheres in linguistic activity of bilinguals are of great interest for such branches, as medicine, psychology and linguistics. It is not a secret, that children-bilinguals are frequently subject to emergence of specific speech mistakes in second non-native language, conditioned both by the peculiarities of interaction of linguistic systems, and disturbance of speech development of not dominating language. Today many of them in pre-school age have one or another speech dysfunctions, conditioned both by bilingualic peculiarities of ontogenesis and organic lesions of speech systems [1; 2; 3; 4].

Relevant character of the work is conditioned by the fact, that the level of development of the word structure determines not only the presence of speech underdevelopment of cortical genesis, but also determines the specificity and the degree of its manifestation. However, in scientific literature, there stays underinvestigated both the problem of differential diagnostics of speech dysfunctions in children-bilinguals, and specificity of word structure, formed by children-bilinguals with speech dysfunctions [3; 4; 5]. The observances over the linguistic behavior of bilinguals and polyglots, suffering with brain focal lesion, provide an important material for neurolinguistics. Speech dissociations are frequently met (when bilinguals with brain pathology lose fully or partially an ability to speak one language at relative preservation of ability to speak another), as well as the cases of interference between different languages (in the form of elements of one language into the speech in another language).

Linguistic reflection of reality, including speech recognition, is carried out from the periphery of the nervous system (i.e. from sense receptors) to its central parts. The investigators of speech fairly mention that harmonious and comfortable bilingualism of the child is developed in that case, when cortical and subcortical mechanisms of speech perception and speech production in native language are developed fully [3; 5; 6]. We agree with I.S. Karabulatova, who mentions the interconnection of psychophysiological and linguistic processes at creative bilingualism [7]. The author underlines, that "fast speed, hyperactivity of modern native speaker forms "clipping" thinking, which illustrates the disturbances in process of retardation-exaltation; as a result, the linguists have problems with new "ersatz-bearer of language and culture, who uses the native language in communication; confessional language; the language of international communication; state language; language, related to national development; additional foreign language" [7: 793]. Within the frames of neuroscience, many doctors do not know about significant achievements, which exist in cognitive neurology in the last decades, and
how they can influence on the clinical practice. In this connection, a collective work on cognitive neurology of such authors, as Cappa Stefano, Abutalebi Jubin and Demonet Jean-Fr, is of great importance [8]. This book presents an introduction to cognitive and behavioral aspects in clinical practice of neurology, what is of great importance in differential diagnostics of speech disturbances in bilinguals.

If the speech is not formed fully, then the structure of thought and notion itself is destroyed, all speech, I.S. Karabulatova and Z.V. Polivara

urable manifestations in the structure of system speech disturbance. A word combination of consonants or the vowel in front of the combination of consonants. It is quite, Patricia

osition of such words, as the softness of the consonant [t], the exercises for combinations of consonants in the beginning, middle and end of the words shall

skl, skl’, vkr, vkr’, skr, skr’, vpl, vpl’, spl, spl’ and others.

A typical peculiarity of these combinations is the fact, that they are frequently emerged as a result of adding of two consonants of additional word component to the existing combinations; usually, it is the consonants [v] and [s], more rarely – [k].

To the most frequently met combinations of four consonants in the beginning of Russian words belong vzgr, vzdv, vzbr, vzbr’, vskr, vsk’, vstr, vstr’ , vskl, vskl’, vskhr, vskhr’, vspl, vspl’, and also the combinations kstr, kstr’ and others. Teaching to these combinations can be subdivided into three steps. Firstly, it is possible to take the combinations vzgr; vzgr’, vzdv; vzdr; vzbr; vzbr’ ; secondly – vskr; vsk’, vstr; vstr’; vskl, vskl’, vskhr; thirdly – kstr, kstr’, vspl.

During the analysis of consonant combinations in intervocalic position in Tatar and Russian languages, we considered the consonant combinations between vowels, and revealed that, first of all, it is necessary to turn attention to syllable boundary in Russian and Tatar languages.

According to fair state of Russian phonology scientists, in Russian language in the majority of consonant combinations in intervocalic position, the syllable boundary is before the combination that is why the non-final syllable of the word is usually open. However, between the vowels there can be such consonant combinations, at which the syllable boundary goes between the consonant combination, thus, making the non-final syllable closed. For instance: pu/dra (powder), o/kno (window), o/gnya (flame), but: am/bar (warehouse), kar/ta (map), voy/na (war), tol/pa (crowd).

Syllabic division in Tatar differs from the Russian one mainly by the fact, that in dissyllabic and multisyllable words, the second and following syllables show a strong dislike for two consonants nearby in the beginning of combinations, for instance: [kosh/ta] "on the bird", [kis/ken] "cut". The accumulation of two consonants (flowing or sonorant + stop) in the end of the first syllable is possible, for instance, [ayt/kan] «the one, who said», [tart/ly] «he dragged».

Consequently, in one cases, which are far less, the syllable boundary in Russian and Tatar languages coincide, and in the majority of cases the syllable boundary does not coincide in these languages. That is why there are definite difficulties in acquisition of pronunciation of Russian consonants in intervocalic position by Tatar students. In the analyzed texts, the following combinations of consonants between vowels are more frequently met:

1) from two consonants br, tr, dr, kr, pr, vl, gl, dl, pl, shl, sn, dn, ln, zn, sn, tn, vn, zhn, kn, vs, dv, zd, sv, rv;
2) from three consonants stv, cstr, str, tr, vtr, dsv, zgl, spr, rsk, tkr, skr;
3) from four consonants dstv, rsvt, stsv, vsd, ystr, bstr, nstr, stv;

The analysis of combination of vowels in the end of the words in the compared languages showed, that in Tatar language, the combination of two consonants is frequently observed, the first is sonorous, the second is noisy, for instance: tart – pull, shart – condition, kyrk – forty, ant – swear, ayt – holiday etc. Besides, the combinations of noisy with noisy consonants are also possible: act – bottom, bottom part, est – top, top part, dust – friend. In Russian language, as distinct from Tatar, firstly, different combinations of consonants are possible in the end of words. Secondly, the number of different combinations in Russian language is much more that in Tatar. Although, it is necessary to mention that, as compared to the beginning and middle of the word, i.e. the position between two vowels in the end of the words of Russian language, much less combinations of consonants are met. These combinations deserve special attention not only due to frequency of their usage, but also because of the fact, that their wrong pronunciation stably exist even among those Tatar language representatives, who speak Russian quite well. Consequently, the development of linguo-corrective measures, aimed at overcoming of disturbances in word sound and syllable structure by children-bilinguals go to the foreground.

The main task of our investigation is to develop and evaluate the system of devices for the linguistic modeling of word structure in children-bilinguals, taking into consideration the specificity of functioning of consonant combinations in native language. Our linguo-corrective effect is based on the system of devices for work with linguistic blocks on word structure formation, which included two interconnected blocks of devices: I. The linguistic modeling devices, aimed at formation of sound word structure, at development of visual, acoustic and tactile analyzers, and the interconnections between them.

II. The linguistic modeling devices, aimed at formation of syllabic word structure, using visual, acoustic and tactile analyzers, and the interconnections between them.

At the initial stage of corrective effect, the word structure modeling fully developed on the speech therapist, who added letters and syllables at random. The child had nothing to do but to reproduce the word, received from initial syllable.

At later stages of logopedic work, when all initial syllables were elaborated and adopted, the speech therapist provided a child with an opportunity to model a word himself. Here the child faces difficulties, that are why he uses the help of speech therapist and acts under his control. For this, we developed the linguistic blocks, having standard root base and a set of flexions with different complexities and conditions of consonant combinations. Such blocks provide an opportunity not only to model the words of different complexity of
syllable structure, but also act as additional analyzer supports, allowing seeing the inflexion, activating visual memory and causing the interest in realization of linguistic reality.

At last stages of studying, when a child fully acquired knowledge and skills, he models the word structure from the initial word individually, without the help of the speech therapist.

All devices were subsequently and closely interrelated. Exclusion or non-acquisition of one of the devices will prevent a child from moving on and, finally, to acquire the structure of all 14 classes of words. The system of linguistic modeling devices was implemented at logopedic lessons, taking into consideration the requirements of educational and upbringing program for children with general speech underdevelopment (5-7 years) of T.B. Filicheva [13].

Upon completion of acquirement of all suggested syllable word structures, the control tests were executed. The results showed positive dynamics. The state of syllabic structure in children-bilinguals became better. The children started to pronounce correctly the words of not only 1–6 classes (In accordance to A.K. Markova [14]), but also to reproduce the structure of words of 7, 8, 9 classes. Both at reflected and individual naming of words, their tense and stunted pronunciation was rarely met. When pronouncing the words of 10, 11, 12, 13 and 14 classes, the children still had difficulties, shown in stunted, pronounced in syllables, reproduction. It is explained by more complex and foreign syllabic structure of another language, including more syllables and combinations of consonants in another positions, and another tempo-rhythmic organization of speech in whole, than in native language.

In our work, we made an attempt to make a contrastive analysis of peculiarities of word structure of languages, different in structure (at the example of Russian and Tatar) and to show, that difficulties, that can be faced by the child-bilinguals in speech practice in conditions of diagnostics, according to traditional logopedic procedures; we also tried to show the specific character of logopedic work with children-bilinguals in formation of word structure. In our opinion, it will provide the speech therapists, neurologists and neuropsychologists with the opportunity to take a fresh look and to evaluate the speech dysfunctions of bilinguals. Thus, the deformations of word contour, in particular, its syllabic content, can show the kinetic apraxia and interest of efferent cortical systems of brain. Frequently, these disturbances can be explained by the specificity of functioning of consonant combinations in native language. In whole, we can state the validity of conclusions, obtained by our colleagues that «This native-language benefit is thought to arise from greater use of top-down linguistic information to assist degraded speech comprehension» [15: 1].

Conclusion:

Thus, the interaction of languages, linguistic contacts presents a complex process, covering not only speech activity in acquisition of second language, but also the personality of the child in whole. The study of interconnections of Russian language with any unrelated language have great theoretical and practical value, as it allows determining the influence of linguistic and non-linguistic factors on the development of speech of bilinguals, and also provide an opportunity to reveal in time and to evaluate correctly speech dysfunctions, conditioned by organic and social reasons.

REFERENCES