



Abstract

Significant differences were found in the bioelectric responses of the brain to words with the same meaning in Russian and Japanese in different series in the electrophysiological experiment on a sample of 18 people. Two groups were used: those who knew Japanese and Russian, and those who knew only Russian as their native language. Differences in mutual articulation of these words were found due to differences in evoked potentials of the late latency (300-500 MS) in the frontal, central and parietal leads, and also in the earlier - 200 MS - latencies in the central, temporal and frontal leads).

Experiment

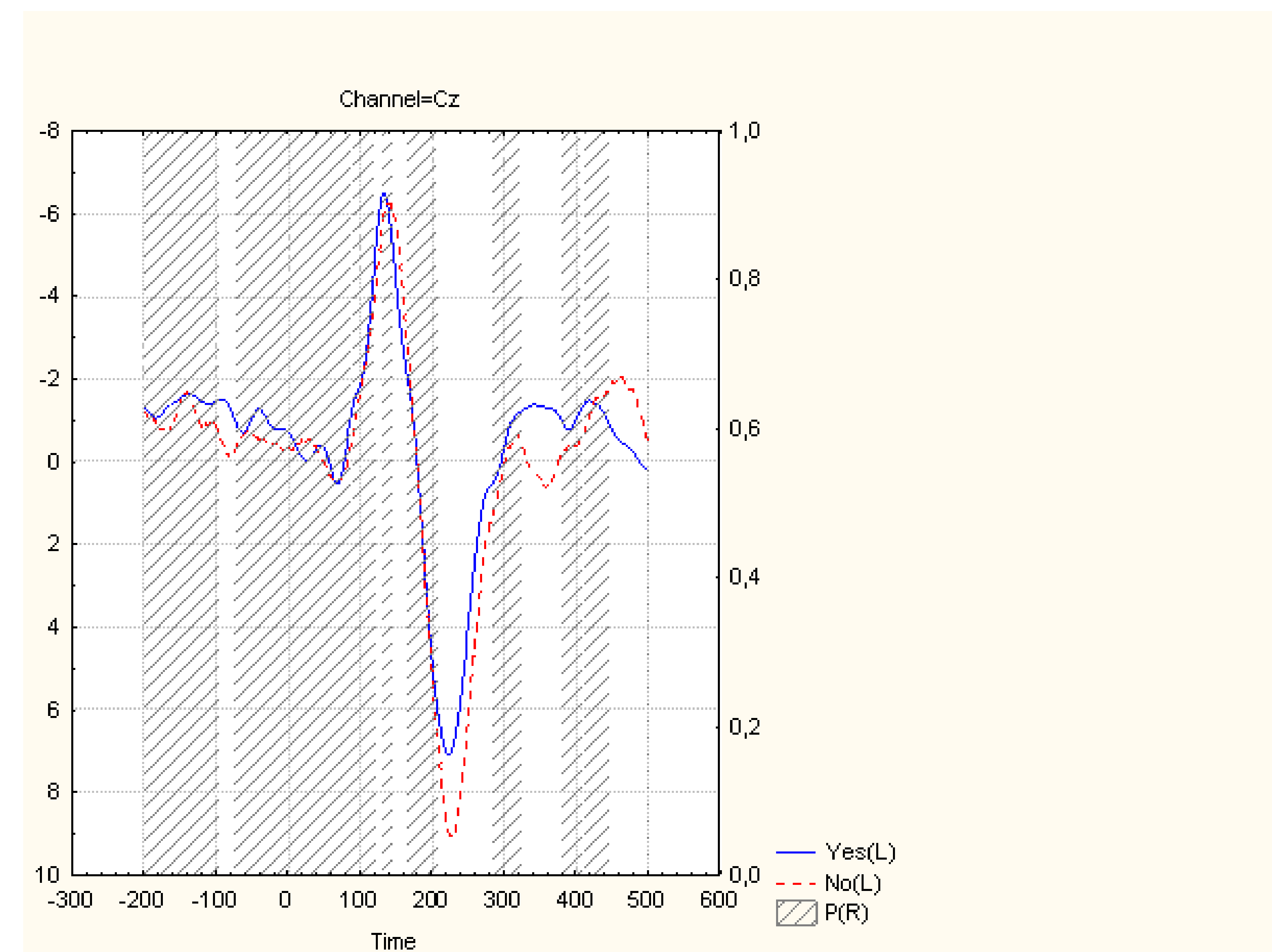
In the current electrophysiological study, the statement was used that internal speech - the silent production of words in its co-knowledge - is also associated with an efferent copy. The study involved 18 people, among whom male - 10 people, and 8 - female. Age 18 to 25 years. The education of the subjects is unfinished higher. All participants in the experiment had no history of traumatic brain injuries and mental illness at the time of this study, and were right-handed.

Brain electrical activity was recorded in a monopolar manner using the Neuro-KM 19-channel electroencephalograph (Russia). The electrodes wsound stimulus, the subjects were wearing headphones in which they listened to stimuli pre-recorded on the recorder. As a visual incentive, a cross was presented in the center of the screen, on which it was necessary to fix the look. Total time of experiment from 40 to 55 minutes due to different time for presentation of instruction. ere arranged in a system of 10-20% with two mostoids.

The Presentation v.18.0 program was used to present incentives. Brainsys was used to process the data.

The experimental scheme corresponds to the standard schemes described in similar studies: within 700 ms, the test subject is shown a visual or sound stimulus; then a fixing cross appears on the screen, on which the subject should focus his/her gaze and which is the starting command of internal speech (1500 ms); the fixing cross ceases to be displayed on the screen and a pause occurs during which the test subject does not perform internal speech and prepare for the next stimulus.

Results & Discussion



The differences in internal articulation are best seen on central fronal and, in some cases, parietal leads. As an example here, I will give the data from the Cz electrode for both visual series. In the figure with the native language of respondents, differences in P100, N100, P200, N200, as well as in P300 (latency shift) and N400 are significant according to the criterion.

Similar results can be found on temporal and parietal leads, but they are more noisy. The results obtained on the left hemisphere (C3, F3, Fz, Pz, P3, F7) were more significantly different.

Conclusions

It has been experimentally proved that the late components of in internal speech are similar, regardless of the conditions of initiation, the knowledge of the language, that is, the semantic component, plays a role. Significant differences between EP during perception and speech were found. Significant differences in EP were found when speaking meaningful and non-meaningful words (in groups that know and do not know Japanese).

This processing is initially reflected in the region of the first large solid component of ERP (N100), which interacts with the auditory cortex in both hemispheres to distinguish voiced from vocal consonants.

Subsequently, after about 300 ms, there was a time-varying response, which appeared to arise as a result of brain processes in the right temporal lobe to carry out similar discrimination along the boundaries of the phonological category.

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