

## EEG Analysis of Brain Dynamics in Children with Language Disorders

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**Abstract :** Current study established for EEG signal analysis in patients with language disorder. Language disorder can be defined as meaningful delay in the use or understanding of spoken or written language. The disorder can include the content or meaning of language, its form, or its use. Here we applied Z-score, power spectrum, and coherence methods to discriminate the language disorder data from healthy ones. Power spectrum of each channel in alpha, beta, gamma, delta, and theta frequency bands was measured. In addition, intra hemispheric Z-score obtained by scoring algorithm. Obtained results showed high Z-score and power spectrum in posterior regions. Therefore, we can conclude that peoples with language disorder have high brain activity in frontal region of brain in comparison with healthy peoples. Results showed that high coherence correlates with irregularities in the ERP and is often found during complex task, whereas low coherence is often found in pathological conditions. The results of the Z-score analysis of the brain dynamics showed higher Z-score peak frequency in delta, theta and beta sub bands of Language Disorder patients. In this analysis there were activity signs in both hemispheres and the left-dominant hemisphere was more active than the right.

**Keywords :** EEG, electroencephalography, coherence methods, language disorder, power spectrum, z-score

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