

## Neuropsychological Assessment and Rehabilitation Settings for Developmental Dyslexia in Children in Greece: The Use of Music at Intervention Protocols

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**Abstract :** The main aim of the current protocol is the contribution of neuropsychology in both assessment and rehabilitation settings for children with dyslexia. Objectives: The purpose of this study was to evaluate the significant role of neuropsychological assessment including both Psychometric and electrophysiological tests as well as to investigate the effectiveness of an Auditory Training program, designed via Music designed for children with Developmental Dyslexia (DD). Materials: In our study, participated 45 third-, and fourth-grade students with DD and a matched control group (n=45). Method: At the first phase of the protocol, children underwent a clinical assessment, including both electrophysiological, i.e. Event Related Potentials (ERPs) esp. P300 waveform, and psychometric tests, being conducted in Laboratory of Neuropsychology, at University of Thessaly, in Volos, Greece. Assessment's results confirmed statistically significant lower performance for children with DD for all tests, compared to the typical readers of the control group. After evaluation, a subgroup of children with DD participated in a Rehabilitation Program including digitized musical auditory training activities. Results: The electrophysiological recordings after the intervention revealed shorter, almost similar, P300 latency values for children with DD to those of the control group, indicating the beneficial effects of the Intervention, thus enabling children develop reading skills and become successful readers. Discussion: Similar research data confirm the crucial role of neuropsychology in both diagnosis and treatment of common disorders, observed in children. Indeed, as for DD, there is growing evidence that brain activity dysfunction does occur, as it is confirmed by neuropsychological assessment and also musical auditory training may have remedial effects. Conclusions: The outcomes of the current study suggest that due to the neurobiological origin of DD, neuropsychology may give the means in both neuropsychological assessment and rehabilitation, enabling professionals to cope with cerebral dysfunction and recovery more efficiently.

**Keywords :** diagnosis, dyslexia, ERPs, Music, neuropsychology, rehabilitation

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