

Test-retest reliability of Mismatch Negativity and Late Discriminative Negativity response in children with listening difficulties

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Abstract

Mismatch Negativity (MMN) and Late Discriminative Negativity (LDN) event related potentials are objective indicators of auditory discrimination. The aim of the study was to determine the test-retest reliability of MMN and LDN recorded to simple speech contrasts in children with listening difficulties. MMN and LDN responses were recorded from Fz and Cz electrodes for a /da/-/ga/ contrast twice within a 10-day period. Intraclass Correlation coefficients (ICC) were used to determine test-retest reliability of MMN and LDN. Eight five children (55 males, aged 7.0-12.8 years) with listening difficulties participated in this research. Children were grouped into four clusters based on their reading, language, nonverbal intelligence, and cognitive skills such that children within each cluster had similar profiles of strengths and difficulties. ICC for MMN were better than LDN. Results showed that MMN amplitude did not differ between visits, but LDN amplitude reduced significantly (more positive peak amplitude) at visit 2 compared to visit 1. At visit 1, MMN and LDN were detectable in only 41%/42% and 18%/21% (Fz/Cz) of participants respectively. MMN was most replicable (71%) for children with listening difficulties in the cluster with relatively good nonverbal intelligence and language skills. The results do not support the clinical utility of LDN for objective assessment of auditory discrimination. Although MMN had better test-retest reliability, overall detectability was poor; improved detectability is needed for MMN to have robust clinical utility in children.

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