The Effects of Auditory Integration Training (AIT) on Mismatch Negativity in Children with Autism

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Introduction & Background

- Autism is a neurodevelopmental disorder present in 1 in 59 children.
- Motor symptoms of autism (e.g., lack of social interaction, communication, and restricted range of interests).
- Children with autism have abnormal electrophysiological responses both in central and autonomic nervous centers activity.

Auditory Cognitive Materials (Mismatch Negativity)

- Children with autism show increased brain responses to different auditory cues, indicating a heightened sensitivity to environmental sounds.
- Auditory integration training can be performed using auditory integration training software, which involves the presentation of different frequency and intensity stimuli.
- Mismatch negativity (MMN) is a test of the auditory system's ability to detect changes in auditory stimuli.

Methods of EEG Recording and AIT Procedure

- All children were trained using a 12-channel Electrical Encephalogram system (Brain Vision Analysis 2.0) consisting of a Neurelectro Neuroscan system.
- MMN data were acquired at 500 Hz, with an auditory stimulus presentation rate of 1 Hz.
- EEG data were analyzed using NeuroMeasure (v. 1.8) and Neuroscan (v. 4.3).

Results 2D Time plots and ERP change post-AIT

- Mismatch negativity (MMN) was measured in the early auditory processing phase, reflecting differences in evoked potentials between two different sounds.
- MMN scores were significantly increased post-AIT.

Summary of Results

- Auditory integration training resulted in significant improvements in MMN scores compared to pre-training levels.
- This suggests that AIT may improve auditory processing in children with autism.
- Further research is needed to determine the long-term effects of AIT on MMN and other auditory processing measures.

Methods, AAN Activity Measurements during AIT

- The auditory cortical potentials were measured using EEG (EEG) systems.
- Auditory AAN activity was measured using a combination of EEG and electroencephalography (EEG-EEG) techniques.

Results in summary: AIT improves MMN scores, indicating better auditory processing in children with autism.