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Basic auditory discrimination in children with auditory processing disorders (APD)

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Auditory processing disorder (APD) is defined as a processing deficit in the auditory modality. Discrimination deficits are observed in multiple auditory processes as stated by the American Speech-Language-Hearing Association (ASHA, 1996). The purpose of the central auditory assessment is to determine whether an auditory processing disorder is present and, if so, to describe its parameters. Still, adequate tests which allow for a differential diagnosis are missing. To date, clinical audiology in the diagnosis of APD is mostly based on utilisation of speech material, which is not sufficient to delineate basic acoustic processing in APD.

In the present study, twenty-two children between 7 and 17 years of age, referred to an audiological clinic for diagnosis of APD, were evaluated with both standard audiologic tests and basic auditory discrimination tests. With our tests processing of the basic acoustic features frequency, level, and duration was investigated at two different stages of the central auditory system: (i) Auditory brainstem processing was evaluated by quantifying the ability for interaural frequency-, intensity-, and signal duration discrimination; (ii) Diencephalic/telencephalic processing was tested by varying the same acoustic parameters (plus signals with sinusoidal amplitude modulation) but presenting the test signals in conjunction with noise pulses to the contralateral ear (dichotic signal/noise stimulation). Eleven children showed decreased discrimination abilities. Elevated thresholds were found in all tests but most consistently in the dichotic frequency- and in the temporal discrimination tests. From 13 children which were diagnosed with APD in the audiological clinic only six had deficits in basic auditory performance. Still, out of 9 children not diagnosed with APD in five auditory discrimination abilities were significantly reduced. The diagnostic procedure used to evaluate APD (AVWS in Germany) so far seems not to be sufficient to reliably assess central auditory processing and to differentiate pure auditory from higher order processing deficits.

Literatur:

American Speech-Language-Hearing Association, ASHA (1996): Central auditory processing: Current status of research and implications for clinical practice. American Journal of Audiology, 5:41-54

