

## **Auditory Processing Deficits In Adults With A History Of Reading Difficulties**

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Aspects of auditory processing related to the identification and sequencing of short stimuli were investigated in adult subjects with a history of reading difficulties (RD) and in a normal control group (NC). The RD group included individuals with persisting reading problems as well as compensated dyslexics with no remaining reading impairment.

Three sets of tests were administered: a 2AFC tone detection task, a same-different frequency discrimination task, and an identification/sequencing task similar to the Tallal repetition test. Stimuli were long (250 ms) or short (20 ms) tones. The frequency of the tones was 1 kHz in the detection task; ranging between 600 Hz and 1400 Hz in the frequency discrimination task; and 800 Hz and 1200 Hz in the sequencing task. In detection and frequency discrimination, a 300 ms bandlimited (600–1400 Hz) noise masker followed the test tones in the "masked" conditions at ISIs of 0, 40, 100, and 230 ms. Thresholds were determined in each condition using an adaptive procedure.

RD subjects were unimpaired with the longer tones, though deficits in frequency discrimination were observed for some of them. Backward masking interferences for short tones were substantially elevated (by 15 dB or more) at 0 ISI for most RDs and at longer ISIs for about a third of them. Most RDs were also impaired in sequencing brief two- or three-tone stimuli. Frequency discrimination thresholds were higher for the RD group than for the NC group, and more susceptible to backward masking.

In sum, pronounced abnormalities in auditory processing including temporal and spectral processing were found in a group not commonly associated with auditory impairments. It is hypothesized that for these reading-impaired individuals a history of processing-based language learning disability may commonly have contributed to the development and expressions of their reading problems.

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