

# LOW-LEVEL AUDITORY FUNCTIONS AND MUSICAL APTITUDE

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## Background

Most recently the correlation between low-level functions (LLFs) in the auditory domain - such as pitch discrimination, order threshold, spatial hearing, pattern identification - and language proficiency has become the topic of research. Latest findings indicate that impaired LLFs might be a major cause of dyslexia. It was shown that training impaired LLFs in dyslexic children significantly improved their spelling scores as compared to controls undergoing conventional remedial teaching.

## Aims

It is hypothesized that a similar correlation might exist between certain LLFs and musical aptitude. If such a correlation exists it could be utilized in two ways: First, in order to discover possible musical talents at an early stage of life; second, in order to improve musical education by ameliorating those LLFs in which students show deficiencies.

## Method

In a cohort of 392 children, age 5 ... 12 years, 152 of whom played a musical instrument, the following seven LLFs in the visual, auditory and motor domains were assessed:

- 3.1 Visual order threshold
- 3.2 Auditory order threshold
- 3.3 Spatial hearing
- 3.4 Pitch discrimination
- 3.5 Auditory motor timing
- 3.6 Auditory choice reaction
- 3.7 Frequency pattern test

## Results

In four LLFs, the group of 152 playing an instrument achieved significantly better scores than the controls of 240 children playing no musical instrument, namely auditory order threshold, pitch discrimination, auditory motor timing, and frequency pattern test.

## Conclusions

So far, the results seem to lead us to the chicken-egg-question: They suggest that either highly developed LLFs improve musical proficiency or that musical proficiency improves LLFs. A third possibility might be a reciprocal facilitation of both. Further studies will be necessary to decide which of the three is most likely.