

## **Abstract EFAS/DGA 2007**

### **Auditory Processing**

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#### **Background:**

Within the EU-project HearCom, two important goals are:

1. Characterization of auditory communication problems of individual hearing-impaired people.
2. Standardization of, among others, audiological methods.

In this context a standardized battery of diagnostic tests will be developed. In addition to the audiogram, this battery will characterize the residual hearing capacities of hearing impaired persons in an 'Auditory Profile'. Spectral and temporal resolution will be components of the auditory profile, besides loudness function, speech perception in noise, binaural hearing, listening effort, and cognitive abilities.

#### **Aims:**

In the present study, we investigated to which extend spectral and temporal resolution can be measured clinically with 'combination tests' that measure both spectral and temporal resolution simultaneously.

#### **Methods:**

Two combination tests (referred to as 'tone test' (Larsby and Arlinger, 1998/1999) and 'sweep test' (Hilkhuisen et al, 2005)) were tested on test-retest reliability and learning effect, and compared to more conventional methods. Also, the obtained spectral and temporal resolutions were compared to speech perception in two different noises.

#### **Results:**

We found that the tone test had less learning effect, was better related to conventional methods, had more relevance for speech perception, and was faster than the sweep test. However, the sweep test had better test-retest reliability.

#### **Conclusions:**

Based on the results, we recommend to include the tone test in the Auditory Profile, and we changed the tone test slightly to improve test-retest reliability. Currently, the preliminary auditory profile tests are being validated in an international multi-center study.

#### **Literatur:**

Larsby B, Arlinger S (1998) A method for evaluating temporal, spectral and combined temporal-spectral resolution of hearing. *Scand Audiol* 27:3-12

Larsby B, Arlinger S (1999) Auditory temporal and spectral resolution in normal and impaired hearing. *J Am Acad Audiol* 10:198-210

Hilkhuisen GLM, Houtgast T, Lyzenga J (2005) Estimating cochlear-filter shapes, temporal-window width and compression from tone-sweep detection in spectral and temporal noise gaps. *J Acoust Soc Am* 117:2598-2599

