Helmholtz Research School (HRS)

Audiology and speech, voice and language pathology

Plasticity and dynamics of sensori-motor systems
Programme design in brief

Research Questions
I. Early detection of hearing impairment.
   a. Follow-up of children that failed the newly introduced universal neonatal screening.
   b. Testing children with auditory processing difficulties by comparing physiological tests (long-latency auditory evoked potential) with psychophysical tests.
II. Diagnostic procedures
   a. Development of a clinically acceptable test of spectral resolution to fine-tune hearing aids of patients.
   b. Speech prediction from pure-tone audiogram. We calculate the speech audiogram from the pure-tone audiogram using the SII approach and a SII-words core transform established earlier. Diagnostic and rehabilitative procedures are assessed.
III. Procedures for hearing aid fitting
   a. The research focuses on the competence of the hearing aid dispenser in his new task in the triage of the patients, the required training to be able to perform these tasks and the cost-effectiveness of a deregulated system.
   b. In a European project (HEARCOM) a system is developed to classify the hearing capacity of people with hearing complaints and to classify the environment in relevant terms (Speech quality, reverberation, background noises). The basic concept is to have all tests and material available on the internet. Next we are developing a website both for patients and professionals.
   c. Hearing loss and hearing-aid fittings in people with learning disabilities were assessed
IV. Technical improvement in hearing aids
   a. Improvement of hearing-aid algorithms. An algorithm to improve speech intelligibility in noise in cochlear implant users was developed and evaluated.
   b. An array microphone system developed by TU-Delft and marketed by Varibel is being assessed
V. Stuttering in pre-school children. The cost-effectiveness of the Demands-and-Capacities-Model based treatment (the Dutch standard treatment) compared to the Lidcombe-Programme (the Australian standard treatment): a randomized trial.
VI. Traditionally, voice quality is judged perceptively, but acoustic measures are more objective. Therefore the “Dysphonia Severity Index” (DSI) was constructed, using four different objective (acoustic) measures. However, the applicability of the DSI still needs to be examined. To be able to offer optimal therapy to particular groups of patients, it is very important to carefully compare the effects of different treatment strategies.
VII. Is the phonologic and speech motor development in ex-premature children different from children born a-term?

Key figures

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Theses


Article/Letter to the editor


Part of book - abstract


Programme design in brief

The central theme of research at the Department of Neuroscience is "Plasticity and Dynamics of Sensori-Motor Systems". This central theme is investigated by 18 groups using a variety of technical approaches, including molecular biology, cell biology and physiology, neuroanatomy, systems electrophysiology, and behavioral and clinical studies. At the systems level the research topics of the individual groups focus on transduction mechanisms or motor learning. Of special interest are the interactions of visual, auditory, vestibular or proprioceptive sensory inputs with motor outputs such as the oculomotor system, locomotion, and hand and neck movements. At the cellular level the research topics center around the synaptic mechanisms underlying these dynamic and plastic processes.

Key figures

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Theses

Andreev, D. (2006, september 13). The role of CaMKII in cerebellar learning. EUR. Prom./coprom.: Prof.Dr. C.I. de Zeeuw, Dr. Y. Elgersma & Drs. M.T.G. de Jeu.


Nagaraja, R.Y. (2006, september 27). Modulation of synaptic transmission by metabotropic glutamate receptors and endocannabinoid signaling. EUR. Prom./coprom.: Prof.Dr. C.I. de Zeeuw & Dr. C.R.W. Hansel.


Article/Letter to the editor


Part of book - abstract