



DTAS' årsmøde 2024
11.-12. november

Hotel Vejlefjord

Sanatorievej 26, 7140 Stouby
Tlf.: 7682 3380
E-mail: receptionen@vejlefjord.dk
www.hotelvejlefjord.dk

Program

(version 24. oktober 2024)

Mandag d. 11. november

12:00 – 13:00

Frokost

13:00 – 15:00
Kongesalen

Velkommen

Sinnet G. B. Kristensen
Formand DTAS

Insights from working with routine clinical records from 731,213 US Veteran hearing-aid recipients

Graham Naylor, Professor of hearing sciences
Hearing Sciences – Scottish Section, School of Medicine, University of
Nottingham, UK

Præsentationen vil være på engelsk, 60 min

Balancefunktion hos patienter med nedsat hørelse – er den altid normal?

Dan Dupont Hougaard, Ledende overlæge
Øre-, Næse-, Halskirurgisk & Audiologisk Afdeling,
Aalborg Universitetshospital

Præsentationen vil være på dansk, 45 min

Fotografering v. DTAS-fotograf (15 min)

15:00 – 17:15
Kongesalen

Posters / Udstilling / Kaffepause

17:15 – 18:00
Kongesalen

Towards Ear-EEG based hearing assessment using natural sounds

Anna Sergeeva, Postdoc
Center for Ear-EEG, Department of Electrical and Computer Engineering -
Biomedical Engineering, Aarhus University

Præsentationen vil være på engelsk, 45 min

18:00 – 18:30	Generalforsamling
19:00 – ?	Middag efterfulgt af hyggeligt samvær

Tirsdag den 12. november	
8:00 – 9:00	Morgenmad
9:00 – 12:30 Kongesalen	<p>Demens og høretab Jesper Hvass Schmidt, Professor, overlæge, PhD. Øre-næse-hals/Høreklubben afd. F, Odense Universitetshospital Klinisk Institut, Syddansk Universitet <i>Præsentationen vil være på dansk, 45 min</i></p> <p>Krav og retningslinjer for høreapparattilpasning, digital visitation og måling af bruger-oplevet kvalitet Gert Ravn, B.Sc.Eng. Senior Technology Specialist Technical Audiological Laboratory, FORCE Technology <i>Præsentationen vil være på dansk, 45 min</i></p> <p>Brugerdrevet høretest Jesper Hvass Schmidt, Professor, overlæge, PhD. Øre-næse-hals/Høreklubben afd. F, Odense Universitetshospital Klinisk Institut, Syddansk Universitet <i>Præsentationen vil være på dansk, 45 min</i></p> <p>Can your client hear that difference? How would they describe it? Can they find it by themselves? Implications for hearing-aid fine-tuning Graham Naylor, Professor of hearing sciences Hearing Sciences – Scottish Section, School of Medicine, University of Nottingham, UK <i>Præsentationen vil være på engelsk, 60 min</i></p>
12:30	Frokost - hjemrejse

Udstillere



Posters

Poster #1

Longitudinal effects on discrimination abilities after changes in hearing-aid use time

Lisbeth Birkelund Simonsen^{1,2,3}, Abigail Anne Kressner^{1,3}, Torsten Dau¹, Søren Laugesen²

¹ Technical University of Denmark, Hearing Systems Section, 2800 Kgs. Lyngby, DK

² Interacoustics Research Unit (IRU), 2800 Kgs. Lyngby, DK

³ Rigshospitalet, Copenhagen Hearing and Balance Centre, 2100 København Ø, DK

Increased use of hearing aids has a wide range of personal and socioeconomic benefits. Previous studies highlighted benefits in relation to dementia risk, reversal in cross-modal re-organization of auditory cortex, and improved speech-in-noise abilities. These findings suggest a more dynamic progression in speech-in-noise abilities, where individuals may improve their performances, contrary to the purely degenerative trends seen in pure-tone-thresholds. However, more detailed studies incorporating both subjective and objective longitudinal data are needed.

This study investigates how the discrimination abilities of hearing-impaired listeners change over a 6-month period, using an ecologically valid speech-in-noise test, the Audible Contrast Threshold (ACT) test, and the electrophysiological version of ACT (E-ACT).

Hearing-impaired patients (n=47) from the Copenhagen Hearing and Balance Centre, Rigshospitalet, location Bispebjerg Hospital, participated in a longitudinal study. At the 6-month visit, 40 participants returned, and data collection for the 12-month visit is ongoing. The control group (n=23) consisted of hearing-aid users at the time of recruitment. The treatment group (n=25), included first-time users (n=12) and hearing-aid "owners" with limited device use (n=13). Both groups participated in the discrimination tests and completed the Social Participation Restrictions Questionnaire (SPaRQ) at all three visits.

The study will explore the relationship between changes in hearing-aid use time and changes in the aforementioned discrimination measures.

Rollover in normal-hearing and hearing-impaired individuals: Speech intelligibility and ACT measurements

Emma Søndergaard Pedersen¹, Josephine Bach Rasmussen¹, Lukas Jürgensen^{1,2}, Michal Fereczkowski^{1,2}, Tobias Neher^{1,2}

¹ Department of Clinical Research, University of Southern Denmark, Odense, DK

² Research Unit for ORL – Head & Neck Surgery and Audiology, Odense University Hospital & University of Southern Denmark, Odense, DK

Speech intelligibility decreases at high presentation levels – so-called rollover – have been observed for both normal-hearing (NH) and hearing-impaired (HI) individuals. In this project, rollover was assessed with speech intelligibility and psychoacoustic measurements at three moderate-to-high levels. For the speech intelligibility measurements, sentences from the Dagmar, Asta, Tine (DAT) corpus were presented against either stationary speech-shaped noise (SSN) or the International Speech Test Signal (ISTS). For the psychoacoustic measurements, the Audible Contrast Threshold (ACT) test was used. Both NH and HI participants were tested ($N = 18$). For both participant groups, a tendency for rollover in the speech intelligibility measurements was observed. For the HI group, the performance decrease was significant with the ISTS masker. No rollover was found in the ACT measurements. The NH group outperformed the HI group in terms of both speech intelligibility and ACT scores. The NH group also performed better with the ISTS masker than with the SSN masker, whereas the HI group did not. This could indicate that gap listening abilities were not preserved in the HI participants. A larger study sample is needed to test for the presence of rollover (or lack thereof) in the ACT measurements.

Computerised Dynamic Visual Acuity in Benign Paroxysmal Positional Vertigo patients and its reliability

Nanna Krogh Bebe¹, Katrine Jessen Jürgensen¹, Christian Brandt², Jesper Roed Sørensen³

¹ University of Southern Denmark, Odense, DK

² Research Unit for Oto-Rhino-Laryngology, Odense University Hospital, Odense, DK

³ Department of Ear, Nose, and Throat Surgery and Hearing Clinic Odense University Hospital / Svendborg Hospital, DK

The functional impact of the vestibulo-ocular reflex (VOR) can be examined by a computerised Dynamic Visual Acuity (cDVA). Currently, there is limited knowledge of the applicability of cDVA on Benign Paroxysmal Positional Vertigo (BPPV) patients, and demographic variables. The study aims to achieve three objectives: 1) to unravel the distinction between control and BPPV participants when performing cDVA, 2) to analyse the reliability of cDVA and 3) to investigate the influence of age, gender and glasses with or without bifocal prisms. 25 control and 8 BPPV participants completed a Vestibular Activities Avoidance Instrument (VAAI) questionnaire, Video Head Impulse Test (v-HIT) and a cDVA. Control participants underwent a test-retest of the cDVA.

DVA-loss was not significantly different between the control and BPPV participants. In control participants, the test-retests of cDVA were found reliable and neither gender nor use of regular or bifocal glasses did provide changes in DVA-loss. Increasing age had a negative effect on DVA-loss. The findings suggest that cDVA is a reliable measurement for adults without vestibular deficits. Control and BPPV participants demonstrated no difference in cDVA performance. Gender and the use of regular or bifocal glasses did not affiliate with DVA-loss in control participants. Age impacted DVA-loss negatively.

Hearing aid performance evaluation with designed stimuli

Amina Ljuca¹, Natasha MekKayay Korczak¹, Carsten Daugaard²

¹ University of Southern Denmark, Odense, DK

² FORCE Technology, Edisonsvej 24, 5000, Odense C

It is difficult to distinguish modern hearing aids by their functionality. Even from the same manufacturer, it is difficult to explain how the state-of-the-art model excels in functionality from last year's model. As with other purchases the consumer asks for comparable data to confirm the right choice. One solution could be to look to standards describing hearing aid functionality performance. One of the most interesting standards is the IEC600018-16, where test signals are designed to evaluate the performance of noise reduction systems.

Inspired by these signals, four hearing aids from two manufacturers were exposed to a bouquet of designed signals, to learn which signals had the potential to distinguish between the noise reduction algorithms in the hearing aids. From each manufacturer was a state-of-the-art and a mid-prize hearing aids. Each hearing aid was programmed with 2 settings. One where the software noise reduction parameters turned off, and one with it full-on.

The hearing aids were placed on an IEC60318-4 coupler in an anechoic room and exposed to a sound field of the designed stimuli. Postprocessing of the results revealed that some stimuli were more efficient in disclosing functionality. The analysis also revealed that extracting the envelope of the recorded signals for the hearing aids and comparing it to a recorded reference of the sound field might aid in revealing the differences.

The most important results of the analysis will be presented in the poster.

Hearing aid performance evaluation with designed stimuli

Maria Christina Eriksen¹, Michelle Morin Talakoubi¹, Carsten Daugaard²

¹ University of Southern Denmark, Odense, DK

² FORCE Technology, Edisonsvej 24, 5000, Odense C

Objective: There is no evidence for determining when a HA is properly inserted. The purpose of this project was to examine any differences in the insertion of HAs using closed domes. This included investigating whether there was a measurable difference between different insertion methods.

Method: Nine participants (68-83 years) took part in this project, with four having no prior experience with HAs. REM were used to examine and compare the acoustics of a closed dome from ReSound. REOG were performed when the HA was inserted by a person with an audiological background, when the participants inserted the HA themselves, and when using assistive tool (Insertion tool by PandDInventions) and the smartphone app (ReSound Smart 3D). The results of the four different REOG measurements were compared.

Results: The results indicate individual variations in sound pressure at the eardrum. The greatest difference in sound pressure is observed when comparing the participants insertion by insertion performed by a person with an audiological background. Insertion performed with the assistive tool and smartphone app did, on average, not improve. Overall, significant individual differences are seen between the various insertion methods.

Conclusion: Based on the results of the study, it can be concluded that misplacements of HAs with domes lead to variations in sound pressure in the ear canal.

Investigating the role of modulation frequency selectivity in the age-related reduction of speech intelligibility

Jonathan Regev¹, Andrew J. Oxenham², Helia Relación-Iborra¹, Johannes Zaar^{1,3}, Torsten Dau¹

¹ *Hearing Systems Section, Department of Health Technology, Technical University of Denmark, 2800 Kgs. Lyngby, Denmark*

² *Auditory Perception and Cognition Laboratory, Department of Psychology, University of Minnesota, Minnesota, 55455 Minneapolis, USA*

³ *Eriksholm Research Centre, 3070 Snekkersten, Denmark*

Amplitude modulation (AM) carries important information in speech signals. The modulation-filterbank model, describing frequency selectivity in AM processing, has successfully explained outcomes of speech-intelligibility tests. Recent evidence has indicated that older listeners with normal hearing (NH) may exhibit a reduction in AM selectivity compared to young listeners, which may contribute to age-related speech intelligibility difficulties.

This potential link was investigated in young and older listeners with NH. AM tuning was measured using a 4-Hz sinusoidal target modulation and noise modulation maskers centered between 1 and 16 Hz. Speech-reception thresholds (SRTs) were measured with tone-vocoded speech, presented in maskers with varying AM content. It was hypothesized that maskers with AM content around 4 Hz would impair intelligibility more than other AM content, and that older listeners, due to reduced AM tuning, would show higher SRTs than young listeners for maskers with AM content above or below 4 Hz.

The results replicated an age-related reduction of AM tuning. Conversely, the effect of age on SRTs failed to reach significance. The SRTs also showed that maskers carrying AM were detrimental to intelligibility, irrespective of modulation frequency content.

Overall, the results did not support the hypothesis. The findings also contrast with previous literature reporting a particular importance of frequencies from 4 to 16 Hz.

This work provides a basis for further investigations of the role of AM masking and AM tuning in speech intelligibility.