



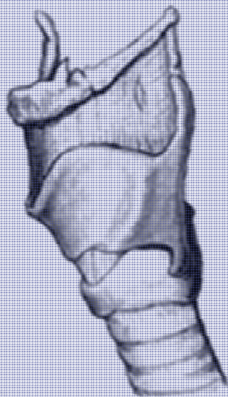
**XXVith Congress of Union of
European Phoniaticians (UEP)
and
the annual meeting of
Swedish Phoniatic Society (SFF)**



**”EXAMINATION AND
TREATMENT IN
PHONIATRICS —
TODAY AND TOMORROW”**

**Palaestra
Lund University**

Lund, Sweden, May 12-14, 2011



**PROGRAMME
AND
LIST OF ABSTRACT**



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Programme

WEDNESDAY MAY 11TH

12.00-16.00 UEP Board Meeting
Nordic Voice Ergonomics Group Meeting

THURSDAY MAY 12TH

08.00-10.00 Registration and coffee
10.00-11.00 Opening ceremony

Welcome addresses

Lucyna Schalén (UEP), Gunnar Björck (SFF) Måns Magnusson (University of Lund)

Malmö Opera Children' Choir

Prof Jurgen Wendler

UEP from yesterday up until today: looking back at 40 years between crisis and success

11.00-12.00 Main speaker

Prof Sten Ternström

Instrumental voice analysis, occupational aspects

12.00-13.00 Lunch

13.00-15.00 Session 1: Perceptual and instrumental analysis of voice and speech

Chair persons: Christiane Neuschaefer-Rube and Roland Rydell

Fuchs M, Meuret S

The diagnostic value of the voice range profile (VRP) in the phoniatic counselling of professional boy singers at the onset of the voice change in puberty

Gómez P, Fernández-Baillo, R, Rodellar V, Fernández L, Muñoz C

Amplitude phonation asymmetry estimation by independent component analysis.

Jacobi I, van der Molen L, van Rossum M, Hilgers F

Voice and speech functioning in advanced head and neck cancer before and after concomitant chemoradiotherapy.

Deuster D, Sandmann K, Vauth M, Knief A, am Zenhoff-Dinnesen A

Voice and gender: correlations between self-assessment of voice, appearance, behaviour and mean fundamental frequency

Favero E, Spadola Bisetti M, Velardo P, Canale A, Albera R, Schindler A

Reliability and normative data of a repetition test for speech screening

Schindler A, Mozzanica F, Madaschi S, Gniocchio D, Ottaviani F

Reliability and validity of the INFVO perceptual rating scale in Italian speaking patients

Woisard V, Ribaute J, Gaillard P, Ghio A
Free classification of voice disorders by expert and non-expert listeners

15.00-15.30 Coffee and exhibition

15.30-17.00 Session 2: Occupational voice disorders

Chair persons: Ekaterina Osipenko and Lucyna Schalén

Södersten M, Lindhe Ch

Research survey over "Occupational voice disorders and voice ergonomics"

Sala E, Rantala L, Hakala S, Holmqvist S,

Speech communication conditions in school class-rooms

Neuschaefer-Rube Ch, Schröder A-K,

Occupational voice demands and performance in transsexuals

Wiskirska-Woznica B, Czerniga P

Comparison between personal characteristics in teachers to their outcomes from emotional VHI

Lyberg Åhlander V, Pelegrín-García D, Rydell R, Löfqvist A

Teachers' voice use in teaching environments: A field study using Ambulatory Phonation Monitor (APM)

17.00-17.30 Session 3: Singing voice

Chair persons: Virginie Woisard and Roland Rydell

Fuchs M, Meuret S, Gelbrich G

Classification of singing activity in children and adolescents

am Zehnhoff-Dinnesen A, Reichmuth K, Fiori A, Dobel C, Glanemann R

Computer-assisted verb-learning program – a pilot study in children with cochlear implant

18.00-19.30 Party Reception

FRIDAY MAY 13TH

08.00-10.00 Registration

09.00-10.00 Main speaker

Stellan Hertegård

Regenerativ medicine in Phoniatics: Stem cell treatment of vocal fold scaring

10.00-10.30 Coffe and exhibition

10.30-11.30 Swedish Phoniatic Society Seminar: Vocal fold augmentation in the office. Different procedures

Advantages, difficulties, hints and tips

Chair person: Katarina Olofsson

Gunnar Björck

Injection trough the thyroid membrane

Roland Rydell

Oral approach with curved needle

Stellan Hertegård

Trough a flexible fiberendoscope

Bosse Alkestrand

Through the cricotyroid membrane

Clark Rosen

Different materials and future products for VF injection

General discussion

11.30-12.15 Session 4: Voice improvement therapies

Chair persons: Bozena Wiskirska Woznica and Bosse Alkestrand

Lindén M

Titanium Vocal Fold Medialization Implant- TVFMI (Heinz Kurz GmbH)

Domeracka-Kolodziej A, Niemczyk K, Bruzgielewicz A, Sielska-Badurek E
Early functional results achieved with autologous fat injection laryngoplasty in patients with unilateral vocal fold paralysis

Lindestad P-Å, Hertegård S, Möller R

Botox treatment of perioral and jaw muscles, techniques and results

12.15-13.00 Lunch

13.00-13.45 Main speaker

Clark Rosen

Self report forms for evaluation of voice, cough and dyspnea

13.45-15.00 Session 5: Voice and speech evaluation and therapies

Chair persons: Antoinette am Zehnhoff-Dinnesen and Gunnar Björck

Fernández-Baillo R, Gómez Vilda P

A new non-invasive methodology for the estimation of the glottal gap

Müller R, Kuch D

Objective diagnostics of nasality in children with a cleft lip and palate

Larsson H, Hertegård S,

High-Speed Studio a low cost high speed camera system

Wiskirska-Woznica B, Maciejewska B, Rajewska-Rager A, Rajewski A

The vocal organ assessment in young patients with anorexia nervosa

Meuret S, Fuchs M
Longitudinal pilot study of the quality of esophageal voice after total laryngectomy

15.00-15.30 Coffee and exhibition

15.30-16.30 Swedish Phoniatic Society Speaker

Jonas Hydman
Laryngeal innervation and reinnervation: What about the superior laryngeal nerve?

16.30-17.30 Session 6: Swallowing and reflux related problems

Chair persons: Antonio Schindler and Anna Britta Mjönes

Olofsson K, van Doorn J, Kulneff L, Linder J, Nordh E, Blomstedt P
Deep brain stimulation in Parkinsons' patients: A pilot study evaluating effects on swallowing function

Schindler A, Ginocchio D, Borghi E, Mozzanica F, Peri A, Ottaviani F
The role of fees in the decision making on oral feeding after supracricoid laryngectomy

Pedersen M
High-speed films for evaluation of laryngeal reflux

17.30-18.30 Swedish Phoniatic Society SSF Assembly

19.00 Gala dinner

SATURDAY MAY 14TH

09.00-10.00 UEP General Assembly

10.00-10.30 Coffee and exhibition

10.30-11.30 Main speaker

Mårten Annertz:
Radiologic imaging in phoniatics and laryngology

11.30-12.15 Session 7: Imaging technologies in language brain research

Chair persons: Antonio Schindler and Per Åke Lindestad

Knief A, Hoster N, Deuster D, Schmidt C-M, Scheider M, Pantev Ch, am Zehnhoff-Dinnesen A
Habituation to auditory stimulation is altered in stutterers

Shaheen E, El-Dessouky H, Mohamed N, Fahim CH
Relation between brain morphology and language profile in Fragile X-syndrome

Rosslau K, Herholz S, Knief A, Dobel Ch, Pantev Ch, am Zehnhoff-Dinnesen
A comparison of neuronal correlates for specific music and speech perception between professional singers and actors

12.15-13.00 Lunch

13.00-14.00 Session 8: Miscellaneous

Chair persons: Michael Fuchs and Hans Dotevall

Brucker Ch, Triep m, Mattheus W, Kirmse C
Importance of false vocal folds on higher-harmonics in voice generation: results from a CDF study and invitro-model studies

Szkielkowska A, Ratynska J, Wlodarczyk E, Kurkowski M, Skarzynski H
Auditory perception in children with dysphonia

Szkielkowska A, Wlodarczyk E Ratynska J, Skarzynski H
Specific language impairment (SLI) and central auditory processing disorders

Schindler A, Mozzanica F, Brignoli F, Maruzzi P, Evitts P, Ottaviani F
Reliability and validity of the Italian self-evaluation of communication experiences after laryngeal cancer (SECEL) questionnaire

14.00-14.30 Closing of the congress

Abstracts

Session 1: Perceptual and instrumental analysis of voice and speech

Chair persons: *Christiane Neuschaefer-Rube and Roland Rydell*

THE DIAGNOSTIC VALUE OF THE VOICE RANGE PROFILE (VRP) IN THE PHONiatric COUNSELING OF PROFESSIONAL BOY SINGERS AT THE ONSET OF THE VOICE CHANGE IN PUBERTY

Prof. Dr. Michael Fuchs, Dr. Sylvia Meuret

Department of Otorhinolaryngology, Section of Phoniatics and Audiology, University of Leipzig, Germany

Aim: During the voice change due to swift laryngeal growth, the capacity and quality of the singing voice is temporarily limited, especially with boys. For members of professional boys' choirs with high artistic demands, this is a vulnerable phase in which the singing voice must be protected from overstrain. The goal of the study was to investigate what significance the VRP has for the diagnosis of the voice change.

Materials and methods: With 36 boys of the Leipziger Thomanerchor, a total of 435 VRPs were conducted over 3.5 years at 3-month intervals, analysing 6 frequency parameters and the Voice Range Profile Index for Children (VRPIc). Using tests according to Friedman and Wilcoxon and a linear regression, the question of which modifications begin even before the onset of voice change (OVC) was pursued, in order to predict the time remaining before OVC.

Results: The upper ($P=0.002$) and the lower ($P=0.008$) limits of the voice range showed a significant drop 3 months before OVC. The VRPIc is lowered by 0,58/month ($P<0.001$) down to an average rating of -0.22 at the OVC. The size of the chest and falsetto registers showed no significant changes; the borderline between the two evinced a tendency to drop as early as 3 months before OVC.

Conclusions: It was shown for the first time that longitudinal VRP data are useful for accurate diagnosis of the OVC with boys and for predicting the time remaining, making it possible to avoid voice problems resulting from vocal overstrain. The results give the choir director valuable information to plan the pieces the children are to sing.

AMPLITUDE PHONATION ASYMMETRY ESTIMATION BY INDEPENDENT COMPONENT ANALYSIS.

Gómez P, Fernández-Baillo, R, Rodellar V, Fernández L, Muñoz C

VOICE AND SPEECH FUNCTIONING IN ADVANCED HEAD AND NECK CANCER BEFORE AND AFTER CONCOMITANT CHEMORADIO THERAPY

Irene Jacobi: The Netherlands Cancer Institute, Department of Head and Neck Oncology & Surgery, Amsterdam, Lisette van der Molen: The Netherlands Cancer Institute, Department of Head and Neck Oncology & Surgery, Amsterdam, Maya A. van Rossum: University Medical Centre Leiden, Department of Ear, Nose, Throat, Leiden, Frans J.M. Hilgers: The Netherlands Cancer Institute, Department of Head and Neck Oncology & Surgery, Amsterdam, Institute of

Phonetic Sciences, University of Amsterdam, Amsterdam, The Netherlands Academic Medical Centre, University of Amsterdam, Amsterdam, The Netherlands

Aim: In head and neck cancers, swallowing, nutrition, or trismus are the primarily reported outcome measures to indicate organ functioning. Here, tumor and treatment effects on voice and articulation were analyzed in patients with advanced cancer treated with concomitant chemo-radiotherapy.

Materials and methods: Thirty-five patients with larynx/hypopharynx, nasopharynx, or oropharynx/oral cavity cancer were recorded before, ten weeks after, and one year after concomitant chemoradiation. Effects of tumor site and treatment in terms of voice quality, glottal behavior, effort and articulation were analyzed acoustically, and voice measures were matched with radiation doses on the larynx.

Results: Voice and articulation showed effects of treatment and tumor site: Before treatment, nasality, regularity, and effort differed significantly between the three tumor sites: The nasopharynx patients showed significant nasality and the larynx/hypopharynx group was significantly worse in terms of stability and voicedness compared to the other tumor sites. Ten weeks after treatment, acoustic measures of effort, noise and irregularity deteriorated, in particular for the larynx/hypopharynx group. For the nasopharynx group, nasality went back to normal. One year after treatment, to a large extent, voice measures had hardly improved. Considering articulation, within the group of patients with oral cavity/oropharynx cancer, alveolar-apical fricatives were articulated significantly weaker and more post-alveolar. Ten weeks after treatment, the intra-oral pressure built-up during the articulation of the velar-dorsal plosives decreased significantly for the nasopharynx patients and got significantly worse for both nasopharynx and oral cavity/oropharynx patients one year after treatment.

Conclusions: Voice suffered significantly from treatment effects in particular in larynx/hypopharynx cancer patients, while articulation deteriorated in the nasopharynx and oropharynx/oral cavity group. Since voice and articulation do not recover from the side-effects of treatment, in view of quality of life, speech therapy to improve motoric skills and velopharyngeal insufficiency should be considered also in this patient group.

VOICE AND GENDER: CORRELATIONS BETWEEN SELF-ASSESSMENT OF VOICE, APPEARANCE, BEHAVIOUR, AND MEAN FUNDAMENTAL FREQUENCY

Dirk Deuster, Katja Sandmann, Melanie Vauth, Arne Knief, Antoinette am Zehnhoff-Dinnesen

University Hospital Muenster, Department of Phoniatics and Pedaudiology

Aim: Voice could be regarded as a secondary sexual characteristic, for which mean fundamental frequency (F0) plays a major role. However, F0 does not characterise a voice as male or female in itself since moderate lower female and higher male voices can usually be identified correctly. Based on our experience with transsexual patients we hypothesise that besides acoustical characteristics other gender characteristics like appearance and behaviour influence the perception of voices.

Methods: We investigated 50 volunteers, who were recruited by advertisements in regional newspapers. Inclusion criteria were: no voice problems in everyday life, no professional voice training or therapy, and no surgery of larynx and neck. Distribution of age ranged from 20,1 to 81,7 years; distribution of gender was balanced (27 female, 23 male). The examination included videostroboscopy, measurement of voice range profile and F0, and questionnaires

for self-assessment of voice, appearance, and behaviour concerning masculinity and femininity respectively. The questionnaires were marked to the nearest number on a scale of 1 (strongly agree) to 7 (strongly disagree). Statistical analyses were performed using Kendall rank correlation coefficient.

Results: Mean F0 ranged from 77,8 to 174,6 Hz in men and 146,8 to 261,6 Hz in women. In men, F0 was significantly correlated with self-assessment of masculinity of voice ($\tau=0,372$, $p=0,035$). In women, no correlation between self-assessment of femininity of voice and F0 could be found, but femininity in voice correlated with self-assessment of femininity in appearance ($\tau=0,416$, $p=0,021$) and behaviour ($\tau=0,503$, $p=0,005$). Men did not show corresponding correlations.

Conclusion: Self-perception of gender characteristics of voice seems to be different in men and women. The lower F0's the more masculine men assessed their voices. In contrast, the more women assessed their appearance and behavior feminine the more they assessed their voice feminine. Currently, voice recordings of these subjects were re-assessed by professionals and laymen.

RELIABILITY AND NORMATIVE DATA OF A REPETITION TEST FOR SPEECH SCREENING

E. Favero*, M. Spadola Bisetti*, P. Velardo*, A. Canale*, R. Albera, A. Schindler**

*Department of audiology and Phoniatics, University of Turin, Turin, Italy

** Department of clinical sciences "L. Sacco", University of Milan, Milan, Italy

Aim: to assess reliability of a repetition test and establish normative data.

Material and method: 557 children aged between 36 and 71 months have been included in the study; exclusion criteria were: walking age > 14 months, deafness, speech sound disorder, cleft lip/palate, cerebral palsy, mental retardation, autistic spectrum disorders, one or both parents non italian speaking. The children have been divided into 3 groups depending on the age: 170 children aged 36-47 months, 182 children aged 48-59 months and 205 children aged 60-71 months. The Schindler's repetition test was administered to each child twice with a six months interval to establish normative data. Besides, 30 children from each age group have been tested by a second examiner the same day and after a week interval after examiner 1 test. For each word the examiner scored whether it was repeated without distortion of substitutions. Inter-subject and intra-subject reliability have been analyzed through k coefficient.

Results: in each age group plosives, fricatives and affricates were present in 100% of the children. In the group aged 36-47 only 50% of the children managed to repeat couples of consonants; the % increased to 80% and 95% in the other two groups of children. Inter-subject and intra-subject reliability ranged between 0.6 and 1.

Conclusions: the Schindler repetition test is reliable and applicable in clinical practice for speech screening in children

RELIABILITY AND VALIDITY OF THE INFVO PERCEPTUAL RATING SCALE IN ITALIAN SPEAKING PATIENTS

Schindler Antonio, MD, Mozzanica Francesco, MD, Madaschi Sara, SLP, Ginocchio Daniela, MD Ottaviani Francesco, MD, PROF

Department of Clinical Sciences "L. Sacco", University of Milan, Milan, Italy

Aim: To evaluate the reliability and validity of the INFVo scale in Italian speaking patients.

Materials and methods: 40 patients with substitution voice were enrolled in the study. The maximum phonation time (MPT), the diadochokinesis of the three syllables [pataka], the number of syllables per second uttered reading a passage and the number of phonetic distortions in a repetition test were recorded and used for perceptual assessment. Each patient also completed the Italian VHI. Three licensed speech-language pathologists rated the recordings autonomously using the INFVo scale. The intra- and inter-rater reliability of INFVo was evaluated with Pearson and intraclass correlation coefficients tests. Pearson test was used to analyze the correlation between INFVo scores and aerodynamic and VHI data.

Results: The intra- and inter-rater reliability reached optimal values in all four parameters of the INFVo scale. The parameters of INFVo scale appeared inverse correlated with aerodynamic measures. The number of distortions correlated positively with all the INFVo parameters. Only the functional subscale of the VHI appeared positively correlated with the parameters I, N, and F of the INFVo scale.

Conclusions: The INFVo perceptual scale constitutes a reliable and valid tool for the perceptual assessment of substitution voices in Italian speaking patients.

FREE CLASSIFICATION OF VOICE DISORDERS BY EXPERT AND NON-EXPERT LISTENERS

Virginie Woisard***, Julie Ribaute*, Pascal Gaillard***, Alain Ghio**.

Laboratoire Aix en Provence

*Voice and deglutition Unit -University hospital Rangueil Larrey - Toulouse – France

** Laboratory Parole et Langage – Aix en Provence - France

*** Laboratory Jacques Lordat – Octogone- Toulouse Mirail University- France.,

Aim: To verify the role of the GRB parameters (of the GRBAS scale) as main criteria for the classification of voice disorders and to understand the strategies underlying the perception of voice disorders.

Materials and methods: The speakers are 45 patients with an history of dysphonia of several aetiologies (functional dysphonia, Reinke oedema, laryngeal paralysis). The stimuli are composed with a sentence extracted of French text of “la chèvre de M. Seguin” recorded by each speaker. A perceptive and acoustic analysis was performed for each stimulus giving the score of the GRB of the GRBAS scale and prosodic parameters. Two types of listeners: 18 experts (logopedists and phoniaticians), 15 non experts (students in the field of health care without any experience) participated at a free classification task. The analysis of the phylogenetic trees obtained by this method allows the identification of several classes of stimuli. The analysis of the comments associated to the classes and the correlations between the score of the GRB, the prosodic parameters and the classes contribute to the interpretation of the data.

Results: The results confirm that the grade of alteration (G) is the main factor of classification for the both groups of listeners. Moreover, the reference to the gender and the frequency of the voice is more important for the non expert as others criteria related to the identity of the speakers. Another strong criteria is the prosodic parameter of duration including the speech rate.

Conclusion: Perception of voice disorders is a complex process. Difference between expert and non expert seems related to an analysis focused on the signal for the experts and linked to the speaker for the non experts. The grade of alteration and the rate of speech are the main factors pointed out by the free classification method in the both groups of listeners.

Session 2: Occupational voice disorders

Chair persons: Ekaterina Osipenko and Lucyna Schalén

RESEARCH SURVEY OVER “OCCUPATIONAL VOICE DISORDERS AND VOICE ERGONOMICS”

Maria Södersten* & Christina Lindhe**

*Division of Speech Language Pathology, Karolinska Institutet, Stockholm, Sweden,

**Röstkonsult Christina Lindhe AB, Sweden

At the request from the Swedish Work Environment Authority a research survey over “Occupational voice disorders and voice ergonomics” was made at the division of Speech and Language Pathology at the Karolinska Institute. The survey includes information on voice production, occupational voice disorders, prevalence of voice problems in certain “at risk” professions, such as teachers, personnel in customer contact centres, and artists, as well as information on voice ergonomics factors, such as *vocal loading*, *voice rest*, *background noise*, *room acoustics*, *air humidity*, *stress*, *posture*, *technical equipment* and *voice training*. Apart from increasing knowledge on voice ergonomics, the survey stresses that occupational voice disorders should be included in the occupational safety legislation. Information from the survey can be used as a base for educational programs directed to employers and persons in occupational health services. Suggestions are made how to document voice use during longer periods at work and leisure time with the use of portable systems. The report suggests how voice ergonomics should be systematically included in the assessments of work environments with the use of a specific checklist developed in Finland and translated into Swedish.

SPEECH COMMUNICATION CONDITIONS IN SCHOOL CLASSROOMS

E. Sala¹, L. Rantala², S. Hakala², S. Holmqvist³

¹Department of Otorhinolaryngology-Head and Neck Surgery, Turku University Hospital, Turku, Finland.

²Logopedics, School of Social Sciences and Humanities, University of Tampere, Tampere, Finland.

³ Department of Logopedics, Åbo Akademi University, Turku, Finland

Teaching and learning requires quiet and good speech communication conditions. Noise and reverberation are the most disturbing factors in school environment. They interfere with speech production, increase risk for voice disorders and decrease speech perception, affect attention, learning, memory etc. Vocal nodules are known to result from great vocal load and in other voice disorders poor ergonomic conditions at least increase disability and handicap. Noise can be emitted from traffic and from equipment bound to the building. However, the most important noise source in school environment is the noise caused by activity. Activity noise means sound from speaking, noise when people are moving around, walking, handling things and materials, moving furniture, and equipments used in teaching. Noise is always disturbing to some extent, but noise disturbs more in environments where acoustics is not good enough for the purpose the room has been built.

Aim of the study was to chart ergonomic, especially acoustic and noise conditions for speech communication in school classrooms. Math & meth: Acoustics in unoccupied classrooms

(T_{60} , STI) (N=40) and the noise levels (L_{Aeq} , L_{10} , L_{50} , L_{90}) during teaching were measured. Results: The results showed that there were no classrooms that fulfilled the acoustic criteria set to classroom acoustics according to the standard Acoustic classification of spaces in buildings (SFS 5907). Also the activity noise levels appeared to be too high for speech communication. Conclusions: There is a great need to inform experts responsible for planning buildings about the ergonomic needs and criteria that concern learning spaces. Ensuring good ergonomic conditions for speech communication enhances learning and teachers' working welfare.

OCCUPATIONAL VOICE DEMANDS AND PERFORMANCE IN TRANSSEXUALS

Christiane Neuschaefer-Rube* and Anne-Kathrin Schröder (née Müller)*

Clinic for Phoniatics, Pedaudiology and Communication Disorders,
University Hospital and Medical Faculty of the RWTH Aachen University,
Aachen, Germany

In transsexuals, changing their gender, an adequate voice adjustment is of basic importance in all days life. To determine the therapeutical results of phonosurgery, hormonal therapy or voice training, an examination in a phoniatic clinic is not sufficient to evaluate the individual's situation. Therefore, we tried to analyse the life quality in the working situation of these patients, in respect of their gender fitting of voice performance and in respect of their voice function during different environmental demands.

Material and Methods: In our study we examined 42 male-to-female transsexuals (mean age 47 +/- 9 yrs.) and 36 female-to-male transsexuals (mean age 31 +/- 7 yrs.) using a questionnaire to determine the characteristics and demands of profession, of working situation, career etc. in respect of voice function and performance, communicative skills, gender fitting, voice therapy etc. The questions were partially based on the Copenhagen Psychosocial Questionnaire (COPSOQ), an instrument to determine psychosocial parameters in professional life that has been proven in a large sample of N=2209 individuals in Germany before.

Results: 78.6 % of the 42 male-to-female transsexuals and 61.1% of the female-to-male transsexuals were working in a fulltime job. Being asked for consequences of the gender transformation, more than 70% transsexuals of both groups told us that they were working at the same place they worked before belonging to their native gender. In respect of the self-assessment of voice function and gender fitting, there were significant differences. Although the female-to-male transsexuals reported less voice problems than the male-to female, statistical analysis revealed that their satisfaction in respect of gender fitting ($p = .002$) was higher significant than their satisfaction with voice function ($p = .031$). However, within both groups, voice has been designated as most important parameter to determine gender assignment compared to dress, hairstyle, make-up, external sexual characteristics, motion, gender-dependent behavior, and even compared to diction and prosody of speech.

Conclusion: Our contribution shows preliminary results in respect of occupational aspects of voice in transsexuals. Further and more detailed investigations with regard to perceptual and acoustical aspects of the professional voice performance in transsexuals are necessary.

COMPARISON BETWEEN PERSONAL CHARACTERISTICS IN TEACHERS TO THEIR OUTCOMES FROM EMOTIONAL VHI

W., Wiskirska-Woźnica B., Czerniga P.

Chair & Dept. of Phoniatics & Audiology, University of Medical Sciences of Poznań, Poland

Voice by Brodnitz is not only verbal communication tool but also a reflection of feelings, emotions, thoughts and experiences of man.

The aim of our work was to find correlation between personality features (Eyseneck test) of examinee teachers and voice self assessment in Jacobson's VHI scale and to proof it statistically.

Material: consisted two groups of patients, first - 50 teachers aged 35-60 years with complains of voice disorders and control group of 20 persons aged 30-45 years teachers without voice problems. The working period as a teacher was lasted from 10 to 30 years (medium 13). The investigated group was divided in 2 subgroups of functional and oranic voice disorders.

Methods: contains phoniatic examination of larynx phonation function, personality estimation in Eyseneck test and voice self-assessment evaluation in VHI.

Results: showed statistical significant difference in Eyseneck subtests (laying and neurotism) only between teachers with functional voice disorders and control group. Similar results were noticed in emotional subscale in VHI in the same group of patients-with functional voice problems and control group. There was no such a correlation between patients with organic voice disorders.

Conclusions: The Eyseneck personality test and particularly neurotism investigation subscale is not very useful in a group of teachers with functional voice disorders- the most common patients in phoniatic everyday practice, because of very high level of aggravation tendency in laying subscale in this group.

TEACHERS' VOICE USE IN TEACHING ENVIRONMENTS: A FIELD STUDY USING AMBULATORY PHONATION MONITOR (APM)

Viveka Lyberg Åhlander, David Pelegrín García¹, Roland Rydell*, and Anders Löfqvist

Dept. Logopedics, Phoniatics and Audiology, Clinical Sciences, Lund, Lund University, Lund, Sweden,

¹Acoustic Technology, Dept. Electrical Engineering, Technical University of Denmark, Lyngby, Denmark,

*also ENT Department, Lund University Hospital, Lund, Sweden

Aim: To investigate the vocal behavior and voice use in teachers with self-estimated voice problems and their age-, gender and school-matched colleagues without voice problems. The main hypothesis was that teachers with and without voice problems act vocally different with respect to the classroom acoustics and air-quality.

Method: This study is a case-control designed field study. Teachers with self-estimated voice-problems from three schools were matched for age- and gender to voice-healthy school-colleagues, n=14 pairs, 12 F/2M. The self-estimation of voice problems had earlier been performed within a questionnaire survey on voice and work-environment. The subjects had also been examined for laryngeal-, vocal-, hearing- and psychosocial aspects with significant differences between the groups for the Voice Handicap Index-Throat and for vocal recovery time. The teachers' fundamental frequency, Sound Pressure Level, and phonation-time were recorded with an Ambulatory Phonation Monitor (APM) during one workday and they also reported their activities in a structured diary. The ambient noise level was simultaneously recorded with a dosimeter; the room temperature and air quality were also measured. The acoustic properties of the classrooms were measured without any students present.

Results: The results showed that the teachers with voice problems behaved differently from their voice healthy peers, in particular during teaching sessions. The time and cycle doses measured with the APM were significantly higher in teachers with voice problems. Also the F0 pattern, related to both voice level and room acoustics differed between the groups.

Conclusions: The results suggest that teachers with voice problems, compared to their voice healthy peers behave vocally different during teaching. The differences between vocally affected and voice healthy subjects are most clearly shown during field measurements.

Session 3: Singing voice

Chair persons: Virginie Woisard and Roland Rydell

CLASSIFICATION OF SINGING ACTIVITY IN CHILDREN AND ADOLESCENTS

Prof. Dr. Michael Fuchs¹, Dr. Sylvia Meuret¹, PD Dr. Götz Gelbrich²

¹Department of Otorhinolaryngology, Section of Phoniatics and Audiology, University of Leipzig, Germany

²University of Leipzig, Coordination Center for Clinical Trials, Leipzig, Germany.

Aim: This study evaluated a proposed classification system to assess the nature and extent of voice use in young singers to support diagnostic routines, the treatment of voice disorders, and future research in children and adolescents.

Methods: A classification system was developed and studied in 186 children and adolescents (age range 6–19 years, M = 13.5 years). The system was based on three parameters previously shown to contribute to the development of voice disorders in young singers: amount of voice strain, amount of voice training, and the amount of wind instrument use. The subjects were selected on the basis of information from schools and choirs. After this selection, they were interviewed in detail by seven phoniaticians, logopaedists, and voice teachers. The standardized interviews were recorded and used for classification. Afterward, 124 physicians/logopaedists, choirmasters, music teachers, and lay people classified the singing activity by means of six randomized interviews, resulting in a total of 744 second appraisals. The agreement concerning the classification on the part of the interviewers was evaluated for each preselection and each second appraisal result for all three dimensions of the classification for each subject.

Results: All of the second appraiser groups showed moderately strong agreement with the interviewers ($k = 0.65\text{--}0.83$). In the selection in which the test subjects were not interviewed, there was significantly less agreement ($k = 0.29\text{--}0.47$). However, the additional strain caused by the instrument was already appraised with a very high degree of agreement in the preliminary selection ($k = 0.88\text{--}0.93$).

Conclusion: This classification system is a practical instrument for evaluating singing activity in young singers. It is accessible to lay persons, simplifying and standardizing communication among physicians, logopaedists, and singing teachers. It can be used at the level of a group comparison in scientific investigations.

COMPUTER-ASSISTED VERB-LEARNING PROGRAM – A PILOT STUDY IN CHILDREN WITH COCHLEAR IMPLANT

Antoinette am Zehnhoff-Dinnesen¹, Karen Reichmuth¹, Anja Fiori¹, Christian Dobel³, Reinhild Glanemann^{1,2}

1. Clinic and Policlinic of Phoniatics and Pedaudiology, University Hospital of Muenster, Muenster, Germany; 2. Department of Psychology, University of Muenster, Muenster, Germany; 3. Institute for Biomagnetism and Biosignalanalysis, University of Muenster, Muenster, Germany

Aim: After cochlea implantation in children speech and language development has to be supported by specific therapeutical procedures. Especially in bad performers the acquisition of nouns and verbs is decelerated (Szagun 2001). Based on the associative learning program of Breitenstein & Knecht (2002) a computer-assisted verb-learning program has been adapted to train children with cochlear implant (CI). The aim of this study is to evaluate the applicability and the benefit of this program in the first trained children with CI.

Materials and Methods: On 5 consecutive days the computer-assisted verb learning program was applied in 6 prelingually deaf children with CI (3 children of preschool age and 3 schoolchildren). Age at implantation varied between 1.1 and 4.8 years. The non-verbal development stage of the children was normal, their speech and language development was delayed. The training consisted of one 30-45 minute-session daily, presenting 40 everyday-verbs by photo sets and audio datafiles. Based on the principle of statistical learning photo-audio combinations were presented in a relation of 15 correct to 1 incorrect combination.

Results: The increase of the receptive vocabulary concerning the 40 trained verbs amounted individually to values between 9.2 and 44.2% (mean value 23.5%). Additionally, an increase of the productive vocabulary could be observed (in average 12 words). Re-testing after 4 weeks documented the robustness of the training effects.

Conclusions: In this pilot study the applicability and effectiveness of our computer-assisted verb-learning program was documented in 6 children with CI. It can assist conventional therapeutical efforts and is suitable for training at home.

Session 4: Voice improvement therapies

Chair persons: Bozena Wiskirska Woznica and Bosse Alkestrand

TITANIUM VOCAL FOLD MEDIALIZATION IMPLANT –TVFMI (HEINZ KURZ GMBH). SHORT PRESENTATION OF OUR FIRST TWO CASES

Mats Lindén MD, Öronklin Falu lasarett

Incomplete vocal fold closure is a great challenge to all therapists involved.

Patients suffer considerably and those with unilateral vocal fold paralysis especially.

In extreme cases the patient can be aphonic.

Several surgical concepts exist for treating insufficient vocal fold closure. You may have an internal or external approach. Internal approach means injecting different substances into the vocal folds, however this has some drawbacks and is often not fully sufficient in wide glottic

closure defects. External approach was first reported by Payr (1915). Isshiki (1974) introduced four types of external thyroplasty-techniques. Type I, lateral compression, used for insufficient vocal fold closure is performed through a window in the thyroid cartilage. This external procedure is now spread world wide.

Our experience of handling these patients go back some 30 years and when Teflon paste for injection was available we had good results. We are now injecting Hyaluronan - preparations with often insufficient long-time results.

We present two cases with unilateral vocal fold paralysis with vocal cord in lateral position. One patient experienced nearly total aphonia that we were unable to treat with injection technique. The other patient had a very leaky voice and also failed on Hyaluronan injection. Both patients also had unsuccessful voice therapy.

Using the external approach and the TVFMI we were able to restore good vocal fold closure and voice.

This device and method has definitely become a procedure we will use in troublesome cases.

EARLY FUNCTIONAL RESULTS ACHIEVED WITH AUTOLOGOUS FAT INJECTION LARYNGOPLASTY IN PATIENTS WITH UNILATERAL VOCAL FOLD PARALYSIS

Anna Domeracka-Kołodziej M.D. PhD, Kazimierz Niemczyk M.D. PhD, Professor, Antoni Bruzgielewicz M.D. PhD, Ewelina Sielska-Badurek M.D.

Department of Otolaryngology Medical University of Warsaw, ul. Banacha 1a, 02-097 Warszawa, Poland

Aim: This preliminary report is designed to compare early laryngeal function before and after autologous fat injection in patients with unilateral vocal fold paralysis [UVFP].

Material and methods: Two woman [42 and 52 years old] and one man [37 years old] were subjected to the autologous fat injection laryngoplasty for voice disorder and intractable aspiration due to unilateral vocal fold paralysis. They underwent the phoniatric examination, the subjective and their subjective and objective voice quality was estimated.

Results: In all cases, lipoinjection resulted in arytenoid cartilage rotation, increasing vocal fold mass and medialization of the vocal fold. Perceptual analysis showed that the voice was louder, less harsh, and more sonorous. Objective acoustic recordings documented the improvement in voice parameters when compared with pretreatment data. Maximum fonation time increased two times immediately after the medialization procedure.

BOTOX TREATMENT OF PERIORAL AND JAW MUSCLES, TECHNIQUES AND RESULTS

Per-Åke Lindestad, Stellan Hertegard, Riitta Moller

Department of Oto Rhino Laryngology, Head and Neck Surgery, Karolinska University Hospital, Stockholm.

Botulinum toxin is a well documented drug for treatment of focal dystonias such as spasmodic torticollis or spasmodic dysphonia. Treatment of oromandibular dystonia is less often discussed, probably because it is even less frequent than the laryngeal disorders. Our material consists of 40 patients, treated over a period of 15 years. A majority suffered from jaw opening dystonia, thus they had difficulties to close the mouth during speech or eating. A smaller group had biting dystonia, jaw tremor or dystonic movements in the perioral

musculature. Botox treatment can be administered to any of the jaw muscles. Injection in the mouth openers of the floor of the mouth is generally not advisable due to the risk of severe dysphagia. Instead, when there was a problem with involuntary mouth opening, injection of the Lateral Pterygoid muscle was efficient in many cases. Patients with hyper activity and pain in bite muscles like the Masseter and the Temporal had good effect especially on the pain. The Stockholm material will be presented and the modes and doses of treatment will be discussed along with the results.

Session 5: Voice and speech evaluation and therapies

Chair persons: Antoinette am Zehnhoff-Dinnesen and Gunnar Björck

A NEW NON-INVASIVE METHODOLOGY FOR THE ESTIMATION OF THE GLOTTAL GAP

Fernández-Baillo, Roberto; Gómez Vilda Pedro

Laboratorio de Comunicación Oral. Universidad Politécnica de Madrid. Campus de Montegancedo s/n. 28660 Boadilla del Monte. Madrid. Spain.

Objectives: The main objective of this work is to develop a non-invasive methodology which may provide an accurate measure of the completeness of glottal closure during phonation and a set of parameters which define the glottal GAP on an adult normal population.

Methods: This study was carried out using 133 samples classified as normal voices. The distribution by gender was: 75 females and 58 male and the age range went from 18 to 60 years old.

The first phase is to estimate the glottal source profile which is obtained after the processing of 0.2 sec. vowel segments taken from the central parts of each emission recording. And the second phase is the temporal analysis of the glottal source profile. A set of 16 parameters were defined to describe and estimate the GAP and glottal closure.

Results: Values of the glottal GAP for a normal adult population were provided. The statistical analysis of these values shows that the glottal GAP is conditioned by gender, being higher in female population. Besides, three new indices for the study of the dynamic of the vocal folds are proposed: Open efficacy, Closure efficacy and Glottal efficacy.

Conclusions: A new methodology non-invasive and precise for estimating the glottal GAP is introduced in this work. Pre- and post-treatment cases presented and discussed avail this assertion.

OBJECTIVE DIAGNOSTICS OF NASALITY IN CHILDREN WITH A CLEFT LIP AND PALATE

Rainer Müller, Doreen Kuch

Department of ENT, University Hospital Dresden, Germany

Introduction: The subjective and objective assessment of nasality is important for the indication of a speech improving surgery in children with a cleft lip and palate. Up to now, normative data for the objective nasalance (measured by the nasometer) of healthy children in German-speaking countries are missing in literature. Thus, aim of the present study was to investigate the nasalance of healthy children and children with a cheilognathopalatochisis.

Material and method: 20 healthy children and 52 children with a cleft lip and palate aged 3 to 12 years were examined by means of the nasometer (Kay Elemetrics). Five long phonated vowels, 20 single words and 5 sentences without and with nasal sounds were used as voice stimuli

Results: Normal values of the nasalance were measured for healthy children speaking German. Children with a cleft lip and palate showed a significant increase of the nasalance after surgical treatment in a lot of speech stimuli without nasal consonants in contrast to healthy children. If the speech stimulus contained nasal sounds no differences were found. Children with only a cleft palate had a higher nasalance compared to children with a complete cleft.

Discussion: The test program used in this study is too extensive in practise. The examination of the nasalance using only two sentences without nasal sounds is enough for routine diagnostics of the voice of children with a cleft lip and palate.

HIGH SPEED STUDIO A LOW COST HIGH SPEED CAMERA SYSTEM

H Larsson*, Stellan Hertegård **

Dept of Clinical Science, Intervention and Technology, Division of Logopedics*, Division of Ear, Nose and Throat** . Karolinska Institutet, Stockholm, Sweden

High speed cameras for medical purpose are still very expensive. The industry is using high speed cameras for many purposes and they are much cheaper than those currently available for medical use. We have adopted such a camera for larynx examination.

The camera is Hispec 1 from Fastec imaging. It is relatively small and light weight (280 g) with a resolution of about 500x500 at 2000 images/sec. With decreased image size it can be used up to 6000 images/sec. There are two models of the camera; one monochrome and one colour. We have chosen the monochrome which has much higher light sensitivity. A software called High-Speed Studio has been developed to facilitate the image recording. Other options with the software are sound recordings and analysis of the data. Several types of analyses can be performed, like kymography, edge detection, sound synchronisation

The only necessary hardware except the camera is a PC (lap-top) and light source, so the equipment can easily be moved between different places. The system can be attached to any rigid endoscope but with good light conditions it is also possible to use flexible endoscopes. The software has a database for patient data and can collect information from healthcare systems.

This system is quite new, and we find it very easy and handy to use. Data from different type of recordings will be presented.

THE VOCAL ORGAN ASSESSMENT IN YOUNG PATIENTS WITH ANOREXIA NERVOSA

Wiskirska-Woźnica B., Maciejewska B., Rajewska – Rager A., Rajewski A.

Chair & Dept. of Phoniatics & Audiology, University of Medical Sciences of Poznań, Poland, Chair & Dept. of Children Psychiatry, University of Medical Sciences of Poznań, Poland

Normal voice production requires, besides accurate morphology, functions of larynx and nervous system, also an appropriate degree of relaxation, hydration of organism, proper technique of breathing, timing between phonation and respiration. Anorexia nervosa impairs functions of most systems and internal organs. Significant hormonal disorders are observed. It

has been proven that anorexia nervosa affects also the hypothalamus – pituitary – gonads axis and pubescence. It is well known that the normal growth and function of the larynx in depends on adequate level of sex hormones considerably.

The aim of the study was assessment of vocal organ in girls treated for anorexia nervosa, with regard to possible impact of significant decrease in body weight, abnormal breathing, menstruation disorders and emotional problems accompanying anorexia on the phonation function of larynx.

Material and methods: 26 girls in the age of 12-18 were involved in the study, with diagnosed anorexia, with which a complex assessment of vocal organ was performed (perceptual voice assessment in GRBAS scale, videolaryngostroboscopy, acoustic analysis and voice self-assessment in VHI scale).

Results: In 85% of our patients during a routine laryngological examination lack or weakening of pharynx reflexes was noticed. All patients displayed breathing irregularities. 80% had significantly shortened maximum phonation time, proportionally to the duration of underlying condition. Videolaryngostroboscopy examination revealed voice disorders of functional character in 50%, confirmed during acoustic analysis. Larynx structure was inappropriate for their age in 52%.

Conclusions: 1. Observed structural and functional changes of vocal organ in anorexia nervosa indicate involvement in phoniatic care of a group of patients with eating disorders of psychological background. 2. Results of the study suggest paying attention to earlier involvement in the therapeutic process of hormonal substitution in patients in pubescence period, due to which growth and phonation function of larynx may approach physiological characteristics.

LONGITUDINAL PILOT STUDY OF THE QUALITY OF ESOPHAGEAL VOICE AFTER TOTAL LARYNGECTOMY

Sylvi Meuret, Michael Fuchs

Section of Phoniatics and Audiology, Department of Otorhinolaryngology, university clinic Leipzig

Aim: The standard of voice rehabilitation after total laryngectomy is the tracheoesophageal voice with a voice prosthesis. Nevertheless, some patients remain without voice prosthesis due to contraindications or complications regarding the fistula. These patients still have to learn the esophageal voice. We conducted this study to assess the development of the quality of esophageal voice after rehabilitation.

Methods: We investigated 9 laryngectomized patients after completed rehabilitation and 12 months later by the same test material (Post-Laryngectomy-Telephone-Test (PLTT), voice parameters).

Results: After 12 months, all patients advanced in the PLTT. 8 of 9 patients could reach better results in the following parameters: maximum phonation time, words per air injection, fundamental frequency and words per minute.

Conclusion: In this pilot study, we could show that even after the completed voice rehabilitation the quality of esophageal voice can advance tremendously due to daily use. These results could give a hint that the superiority of the tracheoesophageal voice versus the esophageal voice could decline in longitudinal surveys.

Session 6: Swallowing and reflux related problems

Chair persons: Antonio Schindler and Anna Britta Mjönes

DEEP BRAIN STIMULATION IN PARKINSON'S PATIENTS: A PILOT STUDY EVALUATING EFFECTS ON SWALLOWING FUNCTION

Katrina Olofsson, MD PhD, Department of clinical science Division of Ear-, Nose and throat, head and neck surgery, University hospital of Umeå, Sweden

Jan van Doorn, Professor, Department of Clinical Sciences, Division of Speech and Language Pathology. Umeå University, Sweden

Linda Kulneff, MSc, of Clinical Sciences, Division of Speech and Language Pathology. Umeå University, Sweden

Jan Linder, MD, Department of Pharmacology and Clinical Neuroscience, Division of Neurology, Umeå University, Sweden

Erik Nordh, MD PhD, Department of Pharmacology and Clinical Neuroscience, Division of Neurophysiology, Umeå University, Sweden

Patric Blomstedt, MD PhD, Department of Pharmacology and Clinical Neuroscience, Division of Neurosurgery, Umeå University, Sweden

Aim: The main purpose of deep brain stimulation (DBS) in Parkinson patients (PD) is to improve quality of life of which adequate swallowing function is an important component. The aim of this study was to evaluate the effect of DVS on swallowing function in PD patients.

Material and methods: 12 consecutive patients (9 men and 3 women, aged 41-72, mean 66 yrs) were selected on clinical grounds to stereotactic neurosurgery in the nucleus subthalamicus (DBS-STN). Six (6) patients were operated unilaterally while the remaining six patients had bilateral implantations. All patients were evaluated preoperatively under two conditions with PD medication withheld for 12 hours and with PD medication 1.5 times the ordinary dose admitted 1,5 hours before registration, respectively. The postoperative examinations were performed under optimized PD medication and under two conditions; with the stimulator off for 60 minutes and one with the stimulator on 60 minutes before the evaluation. A Fiberoptic Endoscopic Evaluation of Swallowing (FEES) was conducted. The patients were asked to swallow one solid consistency and 4 different liquid consistencies. After the test meal, the patients evaluated their swallowing function using a linear visual analog scale, with a length of 100 mm.

Results: The objective as well as the self-estimated swallowing function was improved only to some degree and in a limited number of patients. The DBS postoperative swallowing registrations as compared to preoperative medication on conditions analyses do not reflect a clinical basis for DBS as a treatment for dysphagia in PD patients, although the patients' limb function improved by stimulation and medication as measured by Unified Parkinson's Disease Rating Scale (UPDRS III).

THE ROLE OF FEES IN THE DECISION MAKING ON ORAL FEEDING AFTER SUPRACRICOID LARYNGECTOMY

Antonio Schindler, Daniela Ginocchio, Elisa Borghi, Francesco Mozzanica, Andrea Peri, Francesco Ottaviani

Department of clinical sciences "L. Sacco", University of Milan, Milan, Italy

Aim: to describe the criteria used in the decision making on oral feeding after supracricoid laryngectomy (SCL) and report the personal experience with FEES.

Material and methods: 22 patients who underwent SCL (8 females, 14 males), with a mean age of 67 ± 4 years (range 56-78) have been included in the study. Each patient underwent FEES with both a nose and tracheostomy approach 4 days after surgery and with week intervals in order to decide the rehabilitation program and when to start oral feeding. Penetration aspiration scale (PAS), pooling score (PS) and the Dysphagia outcome and severity scale (DOSS) were used for quantification of FEES.

Results: the criteria applied in order to start oral feeding after SCL were $PAS < 7$ with at least one consistency and the possibility to have at least 1500 Kcal/die intake ($DOSS > 3$). Eight patients underwent PEG before surgery, while in 14 patients a nasogastric tube was put after surgery. No case of pulmonary complication was found, but in 2 patients oral feeding could not be achieved. In the remaining 20 patients the mean length of enteral feeding was 34 days (range 14-78). The mean number of FEES per patients was 8 (range 5-12) before oral feeding.

Conclusions: FEES is an optimal examination for the management of oropharyngeal dysphagia after SCL, since it allows decision making of oral feeding without complications. The application of FEES after SCL is recommended.

HIGHSPEED FILMS FOR EVALUATION OF LARYNGEAL REFLUX

Mette Pedersen MD, Ph.D., et h.c. Ear-Nose-Throat specialist, FRSM, Danish representative COST2103. The Medical Center, Oestergade 18, 1100 Copenhagen, Denmark.

Mike Ellingsen, Nanotechnology student at Copenhagen University, Denmark.

Aim: The objective of the study was to evaluate the use of highspeed films to quantify swelling in the larynx due to reflux.

Material and methods: A film is shown of a case where mucus two times regurgitated to larynx in a patient with reflux. 8000 pictures during a period of two seconds are seen. Compared to videostroboscopy this is a new possibility to evaluate reflux. We have therefore tried to make video scores of abnormality in highspeed films. In an earlier study it was shown that acoustical measures were different when scores were abnormal. In this study we have used a group of patients before and after treatment for laryngeal reflux with one of three groups receiving either: lifestyle guidance and no other related medication, lifestyle guidance and 40mg esomeprazole, or lifestyle guidance combined with 40mg esomeprazole and alginate.

Results and conclusion: Statistically the arytenoids odema was reduced significantly on highspeed films. Due to the fact that online evaluation on the larynx on highspeed films is the correct visual picture, it is our experience that highspeed films are superior to video stroboscopy for evaluating reflux.

On high speed films of the larynx, inter-arytenoids oedema was evaluated and found to be the basic objective finding in patients with LPR.

Reference: Pedersen M, Munck K (2007). A prospective case-control study of jitter%, shimmer% and Qx%, glottis closure cohesion factor (Spead by Laryngograph Ltd.) and Long Time Average Spectra. *Congress report Models and analysis of vocal emissions for biomedical applications(MAVEBA); pages 60-4.*

Session 7: Imaging technologies in language brain research

Chair persons: Antonio Schindler and Per Åke Lindestad

HABITUATION TO AUDITORY STIMULATION IS ALTERED IN STUTTERERS

Arne Knief¹, Nike Hoster¹, Dirk Deuster¹, Claus-Michael Schmidt¹, Michael Schneider¹, Christo Pantev², Antoinette am Zehnhoff-Dinnesen¹

University Hospital Muenster and University Muenster

1 Department of Phoniatics and Pedaudiology

2 Institute for Biomagnetism and Biosignalanalysis

Idiopathic stuttering was associated with dysfunction of the basal ganglia or a disturbed sequence of speech and motor planning. One of the loops of the speech-motor-control is formed from the acoustic feedback of the speaker hearing his own voice and a network comprising the auditory cortex, the motor region and Broca's area. The malfunction in speech planning in Broca's area and the motor cortex may result in inappropriate inhibition of the auditory cortex. We pose the question whether this dysfunctional inhibition has an impact on the perception and habituation of repeated, non-speech stimuli.

The subjects in the groups of stutterers and controls (10+10 males, right handed) were stimulated with 40 Hz amplitude modulated sounds (frequency=500 Hz, length=500 ms). Four stimuli separated by 500 ms were presented in succession. Then a pause of 7 s followed to the next group. MEG recordings were done with a 275-sensor-magnetometer. On both hemispheres the dipolar sources of the N1m were estimated and source waveforms were calculated. The amplitudes and latencies of N1m were collected from the source waveforms. In all subjects we found a reduction of amplitude from the first to the subsequent stimuli, but no differences between controls and stutterers. The latencies showed a significant interaction between hemispheres and groups. In the control group the latencies of stimuli 2-4 were delayed compared to the first stimulus and the left hemisphere was delayed compared to the right. In stutterers those effects were not observed.

The latencies of the N1m showed in the stutterers a different pattern than in the control group. The stutterers showed no delay of the N1m during habituation. This may be caused by disturbed temporal control loops. The delay could result in insufficient encoding of the speaker's own speech. The effect of dysfunctional habituation appeared to be independent of speech-related tasks

RELATION BETWEEN BRAIN MORPHOLOGY AND LANGUAGE PROFILE IN FRAGILE X SYNDROME

Shaheen E. A. , El-Dessouky H. M., Abdel-Meguid N., M., Abdel, Fahim C., Ibrahim A. S., Aziz R. S.

Fragile X syndrome (FXS) is the second most common genetic, inherited neurodevelopmental disorder. It is caused by mutations of the Fragile X mental retardation 1 *gene* that encodes the Fragile X mental retardation protein (FMR1). Males are more severely affected than females. Moderate to severe delay in Language development in (FXS) have been reported in all aspects of language.

Aim of this work is to correlate between the brain morphology and the language profiles in Fragile X syndrome in order to reach better understanding of the characteristic communicative deficits in this syndrome.

Subjects and methods: This study was conducted on 40 Arabic speaking Egyptian males. Their ages ranged from 6 to 15 years, are divided into Patient Group: 20 full mutation Fragile X syndrome children, and Control group: 20 normal Arabic Speaking Egyptian males. All were subjected to the protocol of assessment applied in the Phoniatic Unit Kasr El-Aini Hospital, as well as the Arabic language test, Audiological screening and to the Magnetic Resonance Imaging.

Results revealed significant difference between fragile x syndrome children and control group regarding Language age items. There are also significant differences between the 2 groups of many of the magnetic resonance items. There is significant Correlation between different items of language under study and some of the magnetic resonance items.

Discussion: FRMP1 is absent in males with full mutation FXS and that leads to brain neurodevelopmental disability. This explains the brain abnormality in FXS which as well affect different aspects of language in those children and that agreed to the findings that were encountered in this study.

COMPARISON OF NEURONAL CORRELATES FOR SPECIFIC MUSIC AND SPEECH PERCEPTION BETWEEN PROFESSIONAL SINGERS AND ACTORS

Ken Roßlau¹, Sibylle Herholz², Arne Knief¹, Christian Dobel², Christo Pantev², Antoinette am Zehnhoff-Dinnesen¹

¹ Department of Phoniatics and Pediatric Audiology, University Hospital Münster

² Institute for Biomagnetism and Biosignalanalysis, University of Münster

Previous research using EEG showed that combined incongruity of semantic and pitch mistakes in french operatic songs elicited different potentials in musicians, suggesting independent processing of melodic and semantic aspects in language. By means of Magnetoencephalographie we investigated differences between professional singers and actors regarding behavioural and neuronal responses to semantic and pitch incongruencies in sung or spoken fragments from German songs, as indices of especially trained neuronal networks for speech and music perception.

We prepared 240 short fragments from German songs by Franz Schubert in sung and spoken version, which were piloted for discriminatory power in a behavioural pilot study. The last word of each fragment was either correct or incorrect in pitch and semantic meaning, resulting in four conditions. During MEG measurements subjects had to judge correctness or incorrectness of the last word of each sung or spoken fragment. MEG data were analysed by means of distributed source models (Minimum norm). The results show that groups of actors and singers differ significantly regarding their behavioural performance as well as regarding their activity related to semantic and pitch incongruities. The mixture of semantic and melodic incongruencies seem to be a special problem for non-musicians. Implications for theories on independent networks for music and language processing and on plastic effects of specialized long-term training are discussed.

Session 8: Miscellaneous

Chair persons: Michael Fuchs and Hans Dotevall

IMPORTANCE OF FALSE VOCAL FOLDS ON HIGHER-HARMONICS IN VOICE GENERATION: RESULTS FROM A CFD STUDY AND IN-VITRO MODEL STUDIES

Christoph Brücker¹, Michael Triep¹, Willy Mattheus¹, Clemens Kirmse¹

¹ Institute of Mechanics and Fluid Dynamics (IMFD), TU Bergakademie Freiberg, Germany

Introduction: During human phonation the periodic emerging and decaying glottal jet interacts more or less with supraglottal structures. This jet flow-structure interaction depends on the vocal fold's function and anatomical situation in the supraglottic space of each person. In previous studies it has already been shown that the flow-vortex dynamics in the supraglottic space of a dynamic glottal model develops differently for a case without and with prominent ventricular folds. The pressure fluctuations that are encountered in the glottal jet edge are known to be influenced by these ventricular folds.

Materials and methods: An existing vocal fold model is used in experiment and numerical simulation for the generation of a typical glottal jet flow. In this study ventricular folds with a flexible outer layer are included in the model of the supraglottic space. In the 3:1 up-scaled experimental model one of these structures is made of transparent silicone, the opposite structure is made of flexible silicone rubber comprising an air cushion. Refractive index matching the working fluid to the transparent false vocal fold allows viewing in detail the jet flow-structure interaction at the opposite fold. With this configuration the effect of the action of the flexible ventricular fold upon the higher harmonics in the glottal jet edge is studied by methods of flow visualization.

Results and conclusions: The excitation of the outer layer of the false vocal folds enforces or dampens the higher harmonics of the glottal jet edge. The variation of the supraglottic geometry can have important consequences with regard to the flow and acoustics in the human voice production.

AUDITORY PERCEPTION IN CHILDREN WITH DYSPHONIA

Szkiełkowska A., Ratyńska J., Włodarczyk E., Kurkowski M., Skarżyński H.

Institute of Physiology and Pathology of Hearing, Warsaw, Poland

Child dysphonia is a common disorder and often results from voice overuse. The authors assumed that voice self-control may be associated with auditory perception.

Aim: The aim of the study was to assess central auditory processing in dysphonic children.

Material and method: 124 children aged were included in the study. All children had normal results on pure tone audiometry. Central auditory processing tests including duration pattern test (DPT), frequency pattern test (FPT), P300 potential, listening to air and bone conducted sounds, pitch discrimination, sound localization and auditory laterality were performed.

Results: In most cases, listening test to air and bone conducted sounds as well as FPT test showed abnormal results.

Conclusion: The results suggest that there may be connection between central auditory processing and voice self-control.

SPECIFIC LANGUAGE IMPAIRMENT (SLI) AND CENTRAL AUDITORY PROCESSING DISORDERS

A. Szkiełkowska, E. Włodarczyk, J. Ratyńska, H. Skarżynski,
Institute of Physiology and Pathology of Hearing, Warsaw, Poland

The aim of this study was the assessment of the incidence of disorders of the central auditory processing in children with the specific language impairment.

Material and method: The material included 70 early school aged children that reported to the Audiology and Phoniatrics Clinic with disorders of language development. All children underwent laryngological and phoniatric examination, including pure tone audiometry and impedance audiometry as well as the evaluation by speech therapist and psychologist. Special questionnaire for parents, searching for the particular criteria of SLI, had been elaborated. Additionally, the electrophysiological tests (N1, P1, N2, P2, P300 waves' records) and psychoacoustic tests of central auditory functions: assessment of the sequence of tones of varying frequency and duration (FPT, DPT, DDT) had been conducted.

Results: Analysis of results has shown disorders in the process of sound analysis in time and frequency domain and elongation of the P300 wave latency in children with SLI.

Conclusions: In children with the specific language impairment the coexisting dysfunctions of the central auditory processing have been observed. This may have a significant influence on process of language development of a child during the physiological period of the communication process development.

RELIABILITY AND VALIDITY OF THE ITALIAN SELF-EVALUATION OF COMMUNICATION EXPERIENCES AFTER LARYNGEAL CANCER (SECEL) QUESTIONNAIRE

Schindler A*, Mozzanica F*, Brignoli F*, Maruzzi P*, Evitts P**, Ottaviani F*

*Department of Clinical Sciences "L. Sacco", University of Milan, Milan, Italy

**Department of Audiology, Speech-Language Pathology, & Deaf Studies, Towson University, Towson, MD USA

Aim: to evaluate the reliability and validity of the Italian version of the SECEL questionnaire.

Materials and Methods: 80 patients treated for laryngeal cancer were enrolled in the study. Each patient managed to complete autonomously the Italian version of SECEL, VHI and SF-36. The voice recording of each patient was used to assess the maximum phonation time (MPT), the number of syllables uttered per second in an oral diadochokinesis and in a reading task. The INFVo scale was used to perform auditory perceptual evaluation. The reliability of SECEL was evaluated with Pearson, intraclass correlation coefficients tests and Cronbach' alpha tests. Pearson test was used to analyze the correlation between SECEL scores and aerodynamic data, INFVo scores, VHI and SF-36 scores.

Results: the SECEL questionnaire demonstrated good test-retest reliability and good internal consistency. High correlation was found between VHI and the attitude and environmental subscales of SECEL and its total score. All the three subscales of SECEL as well as its total score appeared mild to good correlated with all the parameters of INFVo. Moreover, mild to good correlation was found between diadochokinesis, and reading tasks on one side, and the three subscales of SECEL and its total score, on the other side.

Conclusion: the SECEL questionnaire constitute a valid tool for the patient's self assessment of substitution voices.

Poster Abstracts

THE ESTIMATION OF NASAL BREATHING AMONG VOCALISTS WITH VOICE FUNCTION DISTURBANCES ACCORDING TO COMPUTER RHINOMETRY

E.V. Osipenko, A. Gyulumyants

Federal Research Clinical Centre of otorhinolaryngology of Russian Federation Ministry of public health, Moscow

Objective: is to estimate the nasal breathing among vocalists with voice function disturbances.

Materials and methods: we have examined 50 adult vocalists with voice disturbances. I group consists of patients with complaints of nasal breathing disturbances 60% (n=30), II group consists of vocalists not complaining of nasal breathing disturbances – 40% (n=20). As extra procedures we have carried out acoustic rhinometry (AR), cytological analysis of nasal secretion, consultations with allergologist if necessary.

Results: in the first group catarrhal laryngitis has been revealed among 8 (26,6%) patients, nodules of vocal folds among 5 (16,6%) vocalists, 1 patient suffered from haemorrhage in the vocal fold, hypotonic dysphonia has been revealed among 15 patients (50%), 1 patient suffered from phonasthenia (3,33%). All patients have had lower meanings of AR: MCA1 $0,26\pm 0,04 \text{ sm}^2$ ($p<0,001$); VOL1 $1,12\pm 0,08 \text{ sm}^3$ ($p<0,001$); MCA2 $0,22\pm 0,08 \text{ sm}^2$ ($p<0,001$), VOL2 $2,13\pm 0,14 \text{ sm}^3$ ($p<0,001$), 16 patients suffering from vasomotor rhinitis and hypotonic dysphonia have had complete recovery of nasal breathing after anemization (53,3%), 12 vocalists (40%) suffering from nasal septum deviation, 2 patients suffering from allergic rhinitis (6,66%).

In the second group 2 patients suffer from polypus of vocal fold (10%), 7 patients suffer from (35%) catarrhal laryngitis, 5 patients suffer from (25%) hypotonic dysphonia, 5 patients suffer from nodules of vocal folds (25%), 1 vocalist suffers from reflux laryngitis (5%). AR rates have been lowered in the side of deviation among 5 (25%) patients suffering from nasal septum deviation: MCA1 $0,25\pm 0,05 \text{ sm}^2$ ($p<0,001$); VOL1 $1,01\pm 0,09 \text{ sm}^3$ ($p<0,001$); MCA2 $0,23\pm 0,07 \text{ sm}^2$ ($p<0,001$), VOL2 $2,18\pm 0,18 \text{ sm}^3$ ($p<0,001$).

Conclusion: Functional larynx diseases often have been diagnosed among vocalists with nasal breathing disturbances which are caused by angiopathy of nasal mucous membrane. The absence of complaints of nasal breathing disturbances don't indicate the absence of nasal cavity pathology among patients with vocal function disturbances.

THE VOICE EVALUATION IN PATIENTS AFTER RECONSTRUCTIVE SUBTOTAL LARYNGECTOMY

Wiskirska-Woźnica B., Leszczyńska M., Czerniejewska H., Świdzinski P., Szyfter W.

Chair & Dept. of Phoniatrics & Audiology, University of Medical Sciences of Poznań, Poland,
Chair & Dept. of Otorhinolaryngology & Laryngeal Oncology, University of Medical Sciences of Poznań, Poland,

The total laryngectomy has been the standard of surgical treatment for advanced stage of laryngeal carcinoma for many years, but recently for the ENT surgeon the important is to

preserve main laryngeal functions: respiration, swallowing and phonation as much as it is possible

The aim of the study is evaluate on of the long-term results of phonation in a group of patients, who underwent partial laryngectomy : SCPL with either CHP, CHEP, m. Calero, m. Sedlacek or supraglottic laryngectomy.

Material: The voice characteristics in a group of 20 patients after partial laryngectomy at least eight years before the study were assessed using endoscopic, aerodynamic, perceptual, acoustic and self-assessment ratings.

Results: Acoustic features of the voice in this group of patients submitted are related to anatomical structures and functional abilities of the residual restored system of phonation. Hence, the “neoglottis” vibration pattern appears rather “unstable” and not-always-periodic, because of the anatomical characteristics of vibrating structures.

Conclusions: In our study the best, closed to physiological conditions phonation was found in a group of patients after partial laryngectomy m. Calero. This fact was also confirmed by acoustic analysis. After another types of reconstructive surgery the acoustic results were not so delightful, but as all patients emphasized, it was still physiological place of phonation.

EFFECTIVE COMMUNICATION AND ITS OBTAINING METHODS IN DYSPHONIA PATIENTS.

O.S. Orlova¹, E. Yu. Radtsig², P. A. Estrova³

¹FGU “NCC otorhinolaryngology FMBA Russia”

²Russia state medical university

³Moscow state humanitarian university named by M. A. Sholokhov

Introduction: Communication speech disorders is very important problem in dysphonia patients.

Objective: The study of communication disorders characteristics in patients with functional and organic dysphonia and its effective remodeling. Any voice disorders embarrassed social intercourse to a variable extent. Intercourse is not only information transfer, it include activity, perception, cognition, emotional experience.

It is well known that’s the voice not only help to pass sound signal to recipient and to express emotions to transmission information. Therefore any voice disorder to produce different communication disorders.

Methods: The aim was to study the communication features in functional and organic patients and its effective correlation technique.

We examined 200 children and teenagers (with functional and organic dysphonia) in age between 7 to 15 years, included 75 pupils with mutational dysphonia. We proposed a specific questionnaire which help us to determine the main communication problem in concrete case. Correctional phonoteacher’s work conduct particularly- differentially based on psycholinguistical communicative- activities approach taking into account the evidence degree and reason of voice disturbance and both communicative competence level and age-specific and /or psychological peculiarities of patient. The neuro- linguistic programming (NLP) and biofeedback (BFB). Biofeedback (BFB) is the method which help to do this. BFB enable to improve process of restoration of a voice.

Results: The communication bars were divided to technical, psychophysical, psychological, semantic, social and cultural. Generally all respondents indicated some reasons. The technical factor (full long intercourse impossibility, pain sensation, articulation lowering et other) was

predominant in 65% patients, psychological-in 20%, psychophysical -12%, social- in 2% and cultural in 1%. As a result- secondary personal changes, depression, fears and friends loss (in pupils).

Conclusion: The complex treatment result was evidence of developed complex system rehabilitation efficacy ($p < 0,05$). Receiving results testified about complex rehabilitation system efficiency in functional and organic dysphonia patients taking into account type of communication disorders.

SINGING AS ONE KIND OF HEALTH-SAVING TECHNOLOGIES IN ADDITIONAL EDUCATION ESTABLISHMENTS

Kashapova Lyalya Muhametdinovna, The Professor of chair of Pedagogics, The Bashkir state Pedagogical university, **Bayanova Guzel Shakiryanovna**, The post-graduate student, the director of Children's school of arts

Recently in school education practice the increase in quantity of deviations of mental development of children connected with communicative problems of pupils ascertained by experts is observed. They are deprivation, frustration, separation, infantile autism, stuttering.

Statistics shows that we need a real, well thought out system of measures, activization of search of new health-saving technologies, not only in school-wide work, but also in all additional educational institutions.

Due to the urgency of the problem **the research objective** was development of communicative abilities of children by means of singing.

Following **problems** are formulated:

1. Working out of methodical ways of development of communicative abilities in singing during music lessons;
2. Checking the effectiveness of the technique in experimental work.

The purpose of training by the proposed technique is psychoprophylaxis of violations in the sphere of communication of children by means of singing.

Basic principles:

- The principle of orientation to integrity of perception of an image of the person.
- The principle of "staging" of children's song;
- The principle of plural and concentrated influence (L.A.Mazel).
- The principle of "pedagogical trust».

Key points:

1. Between the direct expression of emotion in a mimicry and in music there is correlation (V.I. Petrushin; V.G. Razhnikov).
2. Through the development of improvisational thinking and primary modeling of creative processes to develop skills of dialogue and partnership: communicability, goodwill and mutual respect.
3. Reliance on national musical traditions
4. Synthesizing of singing, speech exercises and movement (plastic gesture) during music lessons is based on the general laws of intonation.

At the final stage of our research we have carried out diagnostics. Assessment criteria of formation and development of communication abilities have served: emotional responsiveness while singing, a high degree of activity in the creative tasks, a sense of belonging in groups, tactile and psychological support for partners in the group.

The results obtained clearly confirm the positive psychological and pedagogical effect which is diagnosed by the change of psychological characteristics - reduction of anxiety level in communication, the stabilization of the emotional sphere, the development of creative imagination of children, high sociability.

SCHOOL GRADUATES AND SEVERE LEARNING PROBLEMS – A CHALLENGE FOR FURTHER EDUCATION

Eija Pajunen MD, Mari Qvarnström MD

Department of Phoniatics, Kuopio University Hospital, Finland

Aim: In Finland juveniles graduating from comprehensive school are given guidance and information at school concerning further education. Some graduates with special needs, such as specific language impairment or learning difficulties need support, rehabilitation and special education during their intermediate school as well. Some of these juveniles are sent for further examinations to our phoniatic team in order to get a rehabilitation plan. The purpose of these examinations is to find the best support and route to adulthood, occupation and society and to prevent unemployment and social problems. This study gives further information of the learning problems of these juveniles and of the support that was recommended.

Material and methods: In 2007-2010 83 juveniles aged 14-16 years were examined in the Phoniatic Department of Kuopio University Hospital. The phoniatic team consisted of a psychologist, a phoniatician and a social worker. Information concerning the diagnoses and the rehabilitative procedures was gathered retrospectively.

Results: 29% of the juveniles had specific language impairment, 27% developmental delay and 45% specific learning difficulties. Majority of the juveniles were males (77%). The methods of support recommended were e.g. special education, small classes and learning in practise. In 96% of cases a statement from the psychologist or doctor was needed for vocational education. Only few juveniles were recommended to apply neuropsychological therapy because of poor social skills or problems in reading and writing.

Conclusions: In our modern society it is not obvious to get support for your learning problems in the intermediate school. These juveniles may be labelled as lazy or not motivated if their problems are not fully understood. The intermediate schools need accurate information of the supportive needs and methods concerning these students. In our opinion, co-operation between health care professionals and school authorities is essential to help the juveniles with special needs to graduate from intermediate schools and to prevent their shut off from the society.

LARYNGOPYOCELE: A RARE CAUSE OF DEEP NECK INFECTION. A CASE REPORT.

Rikke Haahr Iversen MD, Peter Illum MD

ENT department, Viborg Regional Hospital

Aim: Laryngocele is a rare benign lesion of the larynx resulting from an abnormal dilation of the laryngeal saccule. The majority of laryngoceles are asymptomatic, but may cause cough, hoarseness, stridor, sore throat and present as a swelling on one or both sides of the neck. In other cases it may present as a deep neck infection and be complicated by severe upper airway obstruction. The aim of this case report is to point out the variety of laryngeal symptoms associated with laryngoceles and to describe the critical complications that may occur when the laryngocele becomes infected.

Materials and Methods: A clinical case of an older woman with a large infected laryngocele (laryngopyocele) presenting as a deep neck infection with life-threatening airway obstruction is presented, along with a description of the preceding symptoms, surgical management and follow-up.

Results: Dysphonia and dysphagia had been significant symptoms for several years in a 71-year-old woman who was admitted with deterioration of these symptoms and an expanding painful process on the left side of the neck. A head and neck examination was performed and a supplementary CT-scan showed a large profound cervical abscess (a). The surgical procedure was complicated by a challenging intubation and due to life threatening desaturation a tracheotomy was carried out. External and internal incision of the abscess was performed. Three months postoperatively a large process regenerated on the same side of the neck. Dysphonia and dysphagia were still present, but this time the process was painless and did not seem infected. A fine needle aspiration and an ultrasonic evaluation showed an air-filled cavity and a second CT-scan showed a laryngocele (b). The laryngocele was removed by external excision (c).

Conclusions: Though rare, we emphasize that a laryngocele may cause dysphonia, dysphagia and even deep neck infection. The diagnosis can be approached with a thorough ENT examination including fiberoptic laryngoscopy and a CT scan.