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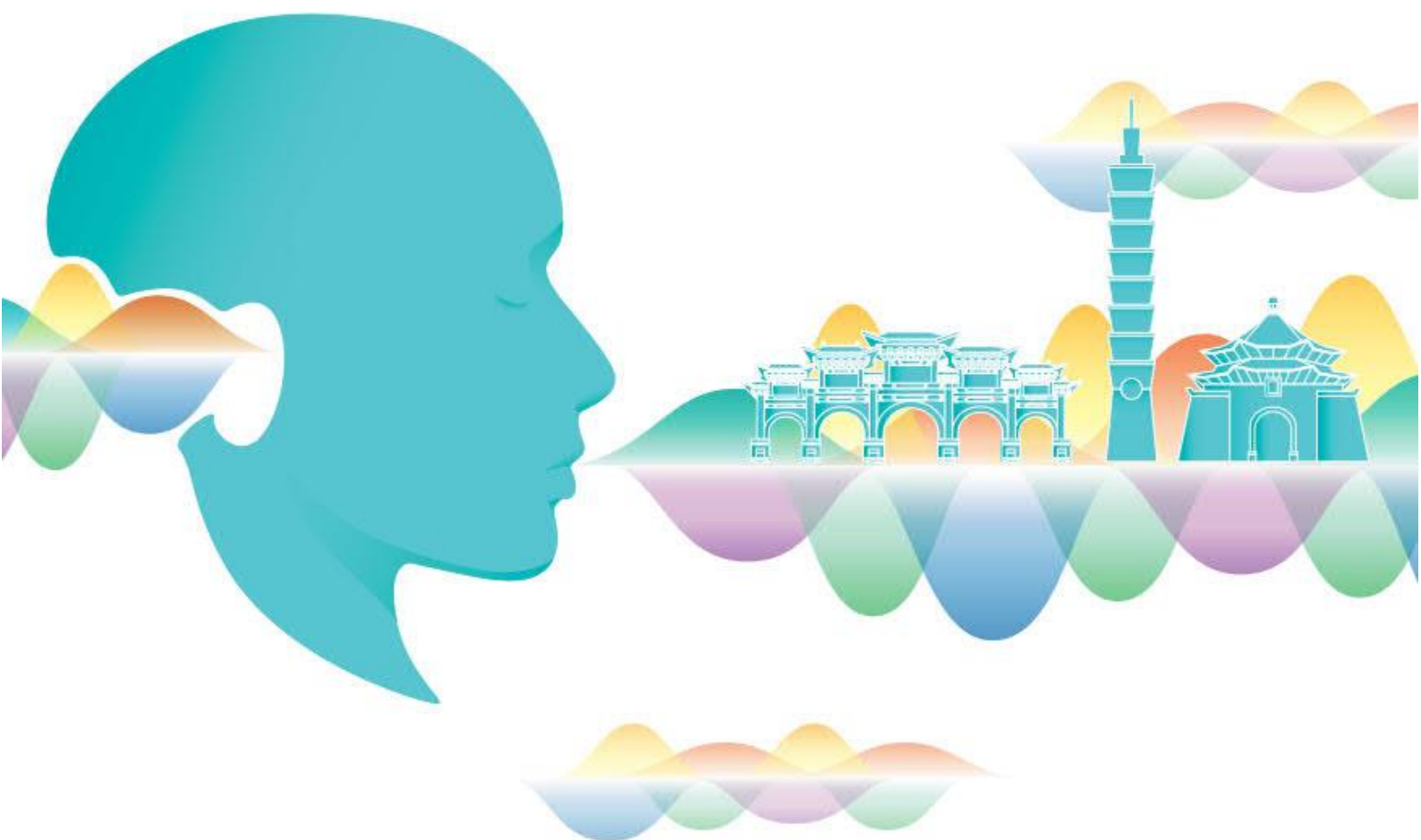
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Poster Presentation: Session MP1-1 / Aphasia, Aug. 19th (Mon.) 11:00-12:00

Abstract No: 9128

**Field survey on daily activities among aphasic persons
without physical disabilities**

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Abstract Content:

Objective : We investigated activities of daily living and social life among aphasic persons without physical disabilities, and examined from the viewpoint of disability certification. We examined the correspondence between their severity of language function and their difficulties in daily and social life.

Method : Subjects were 37 persons with chronic aphasia who participated community support services as follows; visiting speech therapy, day care with speech rehabilitation and support by communication partner. We surveyed following items. 1) Amount of support needs was evaluated on 51 items. The items concerned to physical assistance, assistance for daily activities, assistance on health control, counseling, assistance to participate social activities, assistance for training, assistance for communication activities, assistance to return society, assistance for family members. 2) Following language functions were evaluated; comprehension of words, comprehension of sentences, speech production of words, speech production of sentences. The association between support needs and language function was examined by qui-square test.

Results : 1) Language test performance : Mean percent correct of language tests among persons with chronic aphasia were 100% in auditory comprehension of words, 80% in auditory comprehension of sentences, 46.7% in speech production of words, 36.6% in speech production of sentences.

2) Difficulties in daily and social life : Over 80% of aphasic persons need much assistance on following activities; managing money, writing and operating computer, participating community activities, communication activities, negotiation to employed company. And the majority of aphasic persons need minor assistance on following activities; going out, shopping, taking public transport, independence of daily life, recreation and gardening, psychological caring for their family.

3) Relationship between language function and difficulties of daily and social life : Functional level of comprehension and speech production showed significant associations with following activities; communication activities which requires comprehension and speech production of language, social activities including employment, behaviors which requires procedural knowledge including operating wheelchair. To the contrary, the following activities were not showed significant association with the language function; ADL, behavioral problems including hyperactivity and perseveration, family support. Aphasic persons with sentence production ability showed difficulties on the activities which many aphasic persons need much assistance. Aphasic persons who could not speak sentence showed difficulties also on the activities which many aphasic persons need minor assistance.

Conclusion: Aphasic persons without physical disabilities showed good recovery on auditory comprehension, but speech production disorders continued to exist, and they need much assistance on the communication related activities. Different social support is needed according to the severity of



aphasia. Persons with mild aphasia need assistance for facilitating independence, and persons with severe aphasia need assistance for ADL.

Learning Outcome:

Aphasic person's difficulties in daily and social life were corresponded with their severity of language function.

Keywords: Field survey; daily activities; aphasic persons without physical disabilities; severity of language function



Abstract No: 9648

Progressive pure Kanji agraphia due to visuo-verbal short-term memory impairment

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Abstract Content:

Introduction and aims of the study: The Japanese writing system consists of two types of scripts: Kana and Kanji. Kanji agraphia in Japanese is often related to focal lesions. Pure Kanji agraphia is particularly related to lesions in the posterior inferior temporal cortex. While many studies have elucidated the nature of Kanji agraphia due to focal brain lesions, few have examined Kanji writing impairments due to atrophy. We report a patient with primary progressive aphasia with Kanji agraphia, but without Kana agraphia and alexia. We examined Kanji agraphia in terms of visuo-verbal short-term memory (STM) impairment, which is the ability to retain visual information until finishing writing a Kanji character.

Patient and methods: A 68-year-old, right-handed housewife noticed increasing difficulty in Kanji writing for 6 months before her first visit to our hospital. Her comprehension was good, while naming and sentence repetition scores in Japanese Standard Language Test of Aphasia (SLTA) were slightly low. Her score on writing Kanji words in SLTA was zero, while that on writing Kana words was perfect. Magnetic resonance imaging revealed atrophy in the left temporal and parietal cortices. Moreover, blood flow in ^{99m}Tc-ECD single-photon emission tomography was found to be decreased in the left temporo-parieto-posterior and right parietal cortices.

The patient's performance in copying Kanji characters was perfect. However, she could not take dictation of these characters. Most of the errors were related to the recall difficulty of the characters. Even while glancing at a Kanji character, she showed difficulty in writing it if it involved many strokes. Although she could read the Kanji character shown tachistoscopically, it was unclear if she could retain a Kanji character while writing it. We hypothesized that visuo-verbal STM is required when writing a Kanji character with many strokes. To examine the effect of visuo-verbal STM on Kanji writing, we administered three tasks: 1) to copy a Kanji character shown tachistoscopically, 2) grapheme retention span task: we divided a Kanji character into two, three, or four parts, and she was asked to name the Kanji character after being shown each part in writing order every 0.2 seconds; and 3) visuo-spatial STM task: she was asked to recall places in the exact order after being shown each place at an interval of 0.2 seconds.

Results: We found that 1) the performance in copying a shown Kanji character tachistoscopically worsened as the number of strokes increased; 2) the performance in the grapheme retention span task also worsened as the number of its parts increased; and 3) the performance in the visuo-spatial STM task was good in contrast to 1) and 2).

Conclusions: The present results suggest that this progressive pure Kanji agraphia is caused by a defective visuo-verbal STM.

Learning Outcome:

This progressive pure Japanese Kanji agraphia caused by visuo-verbal short-term memory.

Keywords: progressive aphasia; Japanese Kanji; agraphia; short-term memory; span



Abstract No: 9745

Sentence generation training using VNeST in an Indian agglutinative language

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Abstract Content:

Introduction: Agrammatism is a common feature of most non-fluent types of aphasia and is characterized by faulty sentence production. Verb Network Strengthening Treatment (VNeST: Edmonds, 2014) program is an effective therapy program in English, to deal with agrammatism. VNeST has provided appreciable therapeutic outcomes in individuals with non-fluent aphasia and can treat lexical retrieval as well as difficulties in sentence generation in English-speaking individuals. VNeST has shown good generalizability to the untrained sentence structures, which is a commendable factor for any linguistic treatment program. Yet, a comprehensive training protocol that could be used to treat agrammatism in Indian languages (e.g., Kannada) does not exist. Kannada, a Dravidian language, is the official and administrative language of the State of Karnataka in southern India. Currently, there are more than 56 million Kannada speakers across the world.

Need of the Study: Due to unavailability of a comprehensive treatment protocol for treating agrammatism in Kannada, there is a dire need for a therapy program to be developed in this language based on the framework of VNeST.

Aim: To investigate the effect of the VNeST program, when used in a translated form in Kannada.

Method: Three individuals diagnosed with Broca's aphasia secondary to hemorrhagic stroke in the left middle cerebral artery region, with a minimum post-stroke duration of 12 months were recruited. The VNeST protocol was suitably translated into Kannada and administered on all three participants. The word order in Kannada (subject-object-verb) was retained in all the subtasks. The principles of VNeST protocol remained unaltered at all stages. Progression in the clients' communicative pattern were quantitatively assessed with Kannada version of the Western Aphasia Battery (WAB-K: Shyamala & Vijayshree 2008). All three subjects attended speech-language therapy thrice a week, consistently for a minimum of 45 sessions with each therapy session lasting for 45 minutes. Post intervention, the WAB was re-administered to examine the training-related changes in the participants' communication skills.

Results & Discussion: This study reveals the potential of the VNeST program to treat agrammatism in Kannada-speaking individuals with nonfluent aphasia. VNeST does not emphasize on improving the syntactic accuracy and complexity of the sentences trained. However, the subjects demonstrated improved usage of tenses and PNG markers even without any explicit training. Thus, training in agglutinative languages with VNeST may have potential benefits on the morphosyntactic structures in such languages. However, this requires more careful and systematic investigation in the future.

Conclusion: The use of VNeST for the treatment of nonfluent aphasia in an agglutinative language revealed the potential benefits on untreated morphosyntactic structures. Thus, the VNeST may prove to be an integral approach for training agrammatism in agglutinative languages.

Learning Outcome:

1. Applicability and Usability of VNeST in treatment of sentence production when used in an Indian agglutinative language.
2. Clinical outcomes of VNeST when used in an Indian agglutinative language.



Keywords: Aphasia; Verb Network Strengthening Treatment; Agrammatism; Connected speech;

Thematic roles.



Abstract No: 9789

The Quality of Life Following Technology-Based Intervention in Persons with Stroke-Aphasia

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Abstract Content:

Background:

Aphasia is a potential detriment to the quality of life after brain damage (e.g., stroke). In the recent times, there has been a surge of technology-based intervention in persons with aphasia. While most intervention programs for aphasia (both conventional clinician-delivered and technology-based) focus on impairment-based approaches, the quality of affected persons' lives is seldom reported. We addressed this lacuna in the current study.

Aim:

This study aimed to explore the quality of life in persons with aphasia who underwent a technology-based intervention for word retrieval deficits.

Method:

Nine participants with 3-months post-stroke aphasia (5 Brocas & 4 anomic) were recruited to this study. After an initial baseline assessment of naming skills and quality of life (SAQOL-39 in Kannada), these participants were provided with an android-based, self-delivered naming therapy using the phonological component analysis. All participants underwent training for an average of 6 sessions. Following intervention, the baseline measures were repeated for all participants.

Results:

The participants showed statistically significant difference in their quality of life at the group level (the mean difference of overall SAQOL score is 0.4589 & Wilcoxon test results 0.0117) between pre- and post-intervention evaluations. That is, their overall QOL improved with the intervention. However, the individual variability in their QOL rating was notable high. Such differences were also noted in the completion of training program, training tenure, % of successfully trained items, as well as in cue usage across sessions). At the individual level, most participants showed improved overall QOL following intervention.

Discussion

The findings from this study showed that technology-based intervention for naming deficits in persons with aphasia can lead to improvements in their linguistic performance, which in turn could be reflected in their overall QOL. Despite the inter-subject variability in performance among PWA, the QOL measures at the individual level showed improvement between pre- and post-intervention, signifying the sensitivity of this measure as a potential tool in research on aphasia intervention.

Conclusion:

Technology-based intervention of word retrieval deficits in persons with aphasia could lead to improved quality of life despite the extreme inter-subject variability in intervention outcomes.



Learning Outcome:

1. To highlight QOL and its sensitivity in Post-Stroke Aphasia Rehabilitation.
2. To discuss training related and QOL variability in technological intervention domain.

Keywords: Aphasia; SAQOL; Android; Naming therapy;



Poster Presentation: Session MP1-2 / Child Language, Aug. 19th (Mon.) 11:00-12:00

Abstract No: 9709

Do internal or external demographic factors influence on early language development? A cross-linguistic study

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Abstract Content:

Do internal or external demographic factors influence on early language development? A cross-linguistic study

J. Kuvac Kraljevic, A. Blazi, A. Schults, S. Stolt & T. Tulviste

Background and aims: There are great individual differences in the early language development. These differences can be noticed in style and pace of language acquisition. Some of those differences may be caused by various internal (gender, birth order) and external factors (e.g. socioeconomic status defined as parent educational level). In literature, above mentioned factors are commonly defined as demographic factors. Most of the studies consider those factors as having a significant role in determining the trajectory of language development. However, there is no consensus regarding to the extent of influence of those factors on language development. Furthermore, there is little or no data of the impact of the above mentioned factors on language development across different languages.

The aim of this cross-linguistic study was to examine the influence of the following demographic factors: gender, birth order and mother/father education, on expressive vocabulary and ability to combine words at the age of 24 months in three languages, Croatian, Estonian and Finnish. The specific objective was: Do the demographic factors (gender, birth order, mother/father educational level) have an impact on the expressive vocabulary or the ability to combine words at two years of age, irrespective of language?

Subjects and methods: Cross-sectional data about children's expressive lexical skills and the ability to combine words were obtained using the Short form of the Communicative Development Inventories in each of three languages at two years of age. In total, 324 children (Croatian: N=86; Estonian: N=160; Finnish: N=77) at the age of 24 months (range= 23 to 25 months) were included. The impact of demographic variables (gender, birth order, mother/father educational level; ≤12 years, >12 years) on language development (number of expressive words, ability to combine words) at two years of age was analysed.

Results and conclusions: According to the analysis of variance (dependent variable: number of expressive words), the only predictive variable from the demographic factors analysed was gender ($p < 0.01$, partial $\eta^2 = 0.061$), in favour of girls. Gender was also the only predictive variable for the ability to combine words to sentences ($Z = -3.336$, $p = 0.001$). Language was not related with any of the demographic factors.

Based on the findings of this crosslinguistic study, only internal (i.e. biological), but not external, factors were associated with the language development at the age of two years.

Learning Outcome:

From the background factors analysed, gender was the only significant predictor for language development at 2;0.



Language (Croatian, Estonian, Finnish) was not related with the demographic studied in this cross-linguistic study.

Keywords: language development, lexical development, gender, birth order, parental basic education



Abstract No: 9116

An investigation into the syllable-extraction skills in Japanese hearing-impaired children by using the Kanazawa Method

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Abstract Content:

Objective

The objective of this study, conducted on children with hearing impairments who were taught according to the Kanazawa Method (written-oral method), was to identify predictors of syllable awareness, necessary for the acquisition of written language.

Background

In children with hearing impairments, rates of delayed language acquisition reportedly remains unchanged, despite increased use of cochlear implants. Since spoken language is the springboard to written language, such children are highly likely to experience delays in the acquisition of syllable awareness and written language when they are taught in the same way as children without hearing impairments. To solve this problem, we have spent over 40 years teaching written language to children with hearing impairments in parallel with spoken language, beginning at an early age. Our instructional method is called the Kanazawa Method. The Kanazawa Method differs from previous methods of language instruction in its emphasis on teaching children, beginning at an early age and language stage, to understand the structure of Japanese through multi-modal inputs including sign language and written language, in addition to spoken language. Children with hearing impairments, taught according to the Kanazawa Method, reach a reading comprehension level of the average first-semester second grade student by the time they start school.

Method

For this study, our participants were 68 children (32 boys, 36 girls) with hearing impairments, aged 4–6 years, who were diagnosed by the Kanazawa University Hospital Department of Otorhinolaryngology with congenital deafness before age 4 and were receiving outpatient language instruction there. We statistically examined the relationships between (a) syllable-extraction proficiency, considered crucial for the acquisition of spoken and written language, and (b) other linguistic aspects (word comprehension, syllabification, syllable extraction, written language words comprehension, and written language sentence comprehension).

Results

To examine predictors of syllable extraction scores, we performed a multiple-regression analysis (a stepwise regression) with syllable extraction as the dependent variable and age, hearing level, and the scores for the remaining language skills (word comprehension, syllabification, written language words comprehension, and written language sentence comprehension) as the independent variables. In the analysis, written language words comprehension score ($p < 0.001$), age ($p = 0.002$), and word recognition score ($p = 0.062$) were chosen as contributing factors to the syllable extraction score, with a contribution ratio of $R^2 = 0.607$ ($R^{*2} = 0.588$).

Discussion



Contributing factors to syllable extraction scores were the written language words comprehension score, their age, and the word recognition score. The results of this study make it clear that early-stage intervention in the areas of written language words comprehension and word comprehension is an effective method of teaching children with hearing impairments so that they acquire written language and develop syllable awareness. The vocabulary and syllable awareness acquired by exposure to a combination of spoken language, Japanese sign language, and written language can transfer easily to speechreading. Fostering an understanding of the structure of the Japanese language, using a method that is easily accessible for children with hearing impairments, can help them acquire syllable-extraction proficiency, regardless of their hearing level.

Learning Outcome:

Participants can understand the language development of children with hearing impairments.

Keywords: Hearing impairment; Language ability; Syllable extraction



Abstract No: 9721

The developmental changes of cube copying tasks in Japanese children with typical development.

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Abstract Content:

Introduction:

In recent years, the use of Necker cube and isometric perspective cube copying tasks is expanding to evaluate the ability of children with disabilities. However, the age at which it is possible to use Necker cube and isometric perspective cube copying tasks is still not clear.

Purpose:

The purpose of this study was to analyze the developmental changes of Necker cube and isometric perspective cube copying tasks in Japanese children with typical development.

Methods and Results:

[**Study-1**] A total of 37 participants, including infants, children and students, aged between 5 to 18 years were included in the study-1. The Necker cube copying task was conducted, and scores were assigned based on the method of Yorimitsu et al (2013). The results showed that the scores of the Necker cube copying task increased significantly for children in the 8- to 9-year age group ($p < .05$).

[**Study-2**] In this study, total of 30 participants were children who aged between 6 to 10 years were included. The isometric perspective cube copying task was conducted, and scores were assigned based on the method of Otomo (2009). The results showed that the scores of the isometric perspective cube copying task increased significantly for children in the 7- to 8-year age group ($p < .05$).

Conclusions:

Japanese children with typical development could carry out the Necker cube copying task from the age of approximately 9 years and the isometric perspective cube copying task from the age of approximately 8 years.

Learning Outcome:

- Participants will explain that why the cube copying tasks for children has pervaded.
- Participants will gain an understanding of the developmental changes of cube copying tasks in Japanese children with typical development.

Keywords: cube copying task ; Necker cube ; isometric perspective cube ; child ; development



Abstract No: 10061

Relationships between use of conjunctions and utterance length in children with developmental language disorder and their typically-developing peers

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Abstract Content:

Objective:

in this study, we aimed to investigate relationships between use of conjunctions and utterance length in children with developmental language disorder (DLD) and their typically-developing (TD) peers in order to understand how internal factors and external factors affect children's sentence production. To be more specific, we planned to unfold how personal abilities and task demand interacted when children produced sentences.

Background:

Children's sentence production is often affected by internal factors (such as personal abilities) and external factors (such as task demand from producing longer sentences). Thus, it is important for speech-language pathologies to be able to tease apart what factors are involved and how these factors interact. With this in mind, we would like to explore how personal abilities (i.e., DLD vs. TD) and task demand (i.e., shorter vs. longer sentences) affect children's use of conjunctions. To be more specific, we hypothesize that children with DLD would be more likely to change their use of conjunctions as utterance length increases.

Method:

We recruited 45 four- to six-year-old Mandarin-speaking children with DLD (15 in each age group), 45 age-matched children with TD, and 45 MLU-mated children with TD. All participants were administered a standardized language test was administered, and only scores in children with DLD fell 1.25 SDs or more below the mean. Language samples were collected from each participant in activities of free play, conversations, a story retell, coded for length and conjunction types in each utterance. Lengths of sentences that include conjunctions will be compared to the child's mean length of utterances (MLU), and thus values of utterance differences will be generated, with clear identification of shorter and longer sentences. We then will analyze whether conjunctions in longer sentences by children with DLD are more likely to be those conjunctions that are frequently used or early acquired as compared to their TD peers.

Results & Discussion

We predict that 1) children with DLD will use fewer conjunctions than their TD peers, and 2) children with DLD are more likely to use easier conjunctions in longer sentences than their TD peers, as a trade-off between syntactic performance and task demand. The results of this study will be able to inform speech-language pathologists that clinicians may need to extra attention to how task demand, such as utterance length, may affect complex syntax in children with DLD, above and beyond the language difficulties they have shown.

Learning Outcome:

Participants will be able to understand how internal factors and external factors interact in children's production of complex syntax.



Keywords: complex syntax; conjunctions; developmental language disorder; task demand

Poster Presentation: Session MP1-3 / Craniofacial Dysmorphias, Aug. 19th (Mon.) 11:00-12:00

Abstract No: 9815

Treacher Collins syndrome: Speech-Language Pathologists Are Vital for Treatment

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Abstract Content:

The goal of this poster session is to review for speech-language pathologists (SLPs) and audiologists the distinctive craniofacial abnormalities of individuals born with Treacher Collins syndrome (TCS), and the potential deleterious effects of these abnormalities upon communication development. The sessions objectives include: describing TCS and its prevalence in newborns; highlighting the impact of TCS's physical deficits upon early feeding-chewing-swallowing, hearing and speech-language development; and reviewing the largely unknown role that SLPs play on the habilitation team that provides vital intervention services to children, adolescents and adults with TCS.

TCS is recognized as an autosomal dominant congenital disorder with distinctive head and neck features affecting the jaw, mouth, palate, cheeks, eyes and ears. It occurs in 1 in 50,000 births. Starting in the newborn period, these physical abnormalities can result in significant problems of sucking-swallowing that impose potential nutritional challenges for the affected infant. Further, the physical differences can involve the outer and middle ears and create mild-moderate conductive hearing loss. The sum effect of these craniofacial abnormalities can negatively influence communication development in all children with TCS. SPLs are vital contributors from the very onset of care provided by the team of medical-health professionals addressing these critical life-sustaining circumstances.

Although TCS is a rare occurrence, SLPs must be cognizant of TCS' impact and the SLPs' important early intervention services needed by affected children. Using the recent literature in both audiology and speech language pathology, this session describes the SLPs' intervention that addresses oral-motor issues and communication development for children with TCS. It also reviews the SLPs' important role, in conjunction with their audiology colleagues, in monitoring-meeting the hearing care needs of children with TCS. Case illustrations will enhance the poster session's discussion of specific intervention steps by SLPs.

Learning Outcome:

After attending this poster session, participants will be able to....

1. Describe the characteristics of children with Treacher Collins syndrome
2. Discuss the effects of Treacher Collins syndrome on the child's communication development
3. Explain the SLPs roles and responsibilities for intervention with children with Treacher Collins syndrome

Keywords: Treacher Collins syndrome; speech-language pathologists; treatment; inter-disciplinary team members



Poster Presentation: Session MP1-3 / Phoniatrics, Aug. 19th (Mon.) 11:00-12:00

Abstract No: 9826

Electropalatographic Study of Japanese Lateral Misarticulation in Patients with Speech Sound Disorders

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School of Dentistry/ Japan*

Abstract Content:

Objective: Japanese Lateral Misarticulation (JLM) is often found in patients with cleft palate as well as in non-cleft patients with speech sound disorders. Previous research of JLM using electropalatography (EPG) has revealed that total tongue-palate contact and posteriorly placed tongue-palate contact were commonly seen in cleft palate patients (Yamashita et al., 1981, Michi, 1986, and Michi et al., 1986). From these studies, JLM was defined as a type of misarticulation of Japanese syllables in which the tongue dorsum makes full contact across the hard palate continuously during pronunciation of the syllable, forcing air out from the retromolar region to the buccal groove; directing the air stream laterally out of the occluded dental arch, from the spaces posterior to the molars. The definition is widely used to describe JLM, regardless of the etiology of the patient group. This study investigates the tongue-palate contact pattern of JLM in non-cleft patients with speech sound disorders.

Methods: The participants were 18 patients with JLM (mean age: 24.7 years). The EPG pattern and acoustic data were recorded with Speech Training Aid and Recording System (STARS, Asahi Roentgen), and the recorded data were analyzed by the Articulate Assistant software (Articulate Instruments). Participants were asked to repeat a sentence five times at a speaking rate of eight moras per second. Analysis was applied to 19 consecutive moras from the sentence. For each participant, the cumulative tongue-palate contact patterns of 19 moras (global pattern) and the maximum contact pattern for a consonant /*ɛ*/ were obtained and analyzed.

Results: The global patterns of 19 moras in patients with JLM showed extensive contact in the central alveolar region. Ten patients showed continuous posterior lateral contact only on one side, and three patients showed no continuous posterior lateral contact on either side. In the maximum contact pattern for /*ɛ*/, complete contact across the palate was a common trend and occurred for 17 out of 18 patients. Complete contact across the palate was seen in alveolar and post-alveolar regions, and not in palatal region. Incomplete lateral seal was evident in 17 patients, and these patients showed asymmetrical 'skewed' pattern, which was described in Gibbon et al., 1995. No patient showed total tongue-palate contact pattern.

Conclusion: The common tongue-palate contact patterns of JLM seen in cleft palate patients were not evident in the non-cleft patient group. It is necessary to reconsider the classification and definition of JLM.

Learning Outcome:

Learning outcome 1: Participants should be able to describe the tongue-palate contact pattern of Japanese Lateral Misarticulation.

Learning outcome 2: Participants should be able to compare the tongue-palate contact pattern of Japanese Lateral Misarticulation between cleft and non-cleft patients.

Keywords: Electropalatography; Speech Sound Disorder; Lateral Misarticulation



Abstract No: 9771

An attempt to objectively evaluate utterance clarity after inserting Provox® using speech recognition software

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Abstract Content:

Objective :

It has been difficult to objectively evaluate acquisition level and speech intelligibility after the insertion of Provox®, which provides patients who have had a laryngectomy with a substitute for speech. Therefore, we tried to objectively evaluate the patients' speech intelligibility after inserting Provox® using the speech recognition application (UD Talk®).

Subjects and Method :

The subjects were 2 males (57 and 49 years old) who had Provox® inserted in the second term following laryngectomies for pharyngeal cancer. I recorded a reading of the Japanese fairy tale, "North wind and sun" in a sound-proof room, after which I used UD Talk® on a PC tablet to translate the audio voice. Next, in order to score the audio translation by UD Talk®, we evaluated the listening ability of the cochlear implant developed by the Japanese Cochlear Implant Study Group on its own, using the scoring method of the CI 2004 (proposal) examination as an example. Finally, eight linguistic hearing examiners evaluated the recorded speech according to the nine levels of speech intelligibility items of the Japanese version of the "Assessment of Motor Speech for Dysarthria," and compared it with the results of UD Talk®.

Results and Discussion:

In the case of UD Talk®, the first patient was a 57-year-old, who improved from 38.8% to 49.3% immediately following the insertion of Provox®, and the second patient was a 49-year-old, who improved from 37.3% to 59.7% in the first month. The utterance clarity score evaluated by the speech hearing aid improved from 1.6 to 1.3 in the first example, and 1.9 to 1.5 in the second example. In comparison with the evaluation of speech intelligibility by the speech therapists, scoring the results of UD Talk® provided us with more detailed data regarding the improvement in speech intelligibility.

Conclusion :

The results of the present study suggested that using a speech recognition application after the insertion of Provox® would facilitate a more objective and quantitative evaluation of patients' speech intelligibility.

Learning Outcome:

UD Talk® can provide participants with a better understanding of their current speech intelligibility.

Keywords: laryngectomy, speech intelligibility, speech recognition application



Abstract No: 9692

Development of the Cantonese Version of Speech Handicap Index (S.H.I.) and Its Application to Patients after Total Laryngectomy

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Abstract Content:

Background:

Speech Handicap Index (SHI) is a psychometrically robust assessment inventory originally developed in Dutch to evaluate the speech-specific QOL in patients with oral and oropharyngeal cancer in 2008 (Rinkel et al., 2008). SHI is different from Voice Handicap Index (Jacobson et al., 1997) and Voice-Related Quality of Life questionnaire (Hogikyan & Sethuraman, 1999) which mainly focus on the aspect of voice, rather than speech. As speech reflects the interplay of the entire speech production mechanism including respiration, phonation, articulation (resonance), and the neural control, it can provide a more comprehensive picture of one's communication ability (Dwivedi et al., 2009).

SHI has been translated from Dutch into many different languages including Lithuanian, English, French, Korean, and Mandarin Chinese. Despite the Mandarin version of SHI (Li, Ma, & Mao, 2016), due to obvious cultural and language differences between Hong Kong and the mainland China, the Mandarin SHI cannot be used directly on the Cantonese-speaking population in Hong Kong. In addition, anecdotally, some of the items in the Mandarin SHI appear to be inappropriately translated and may need to be revisited.

As such, the present study aims to develop and validate the first Cantonese SHI (CanSHI) based on English SHI. Evidence on the psychometric properties of the adapted CanSHI will be obtained to confirm its validity which will be assessed using Cantonese-speaking patients of different types of alaryngeal speech after total laryngectomy.

Although total laryngectomy for removing a cancerous larynx affects one's voice the most, assessing alaryngeal speakers' speech production and speech-related quality of life apparently better depicts how the loss of one's larynx affect his/her living quality.

Methods:

The study will involve two phases: (1) translation of questionnaire items, and (2) validation of draft CanSHI with laryngectomees. All 30 items of the English SHI will be translated into Cantonese (Dwivedi et al., 2011). This will involve translation by experts and backward translation. Upon completion of the translation phase, reliability and validity of the draft CanSHI will be assessed. Internal consistency, test-retest reliability, inter-rater reliability, content validity and construct validity will be assessed. It will be evaluated with inputs from 40 local laryngectomees who will represent all types of alaryngeal speech used in Hong Kong.

Results:



While the study is on-going, preliminary findings indicated that CanSHI is feasible and can be used to reveal the speech-related QoL of laryngectomees. Strong test-retest reliability and internal consistency for both Cantonese SHI and original SHI developed by Rinkel et.al are seen, suggesting that CanSHI is cross-culturally robust.

Conclusion:

This study is significant in that it shows the Cantonese version of SHI can be a useful tool for evaluating a patient's self-perception of his or her speech, psychosocial function, and degree of speech problems.

Learning Outcome:

Development of the Cantonese Speech Handicap Index (CanSHI)

Validation of CanSHI

Evaluation of speech-related Quality of Life of laryngectomees

Keywords: laryngectomy, speech-specific quality of life, evaluation, speech handicap index (S.H.I.)



Poster Presentation: Session MP1-4 / Motor Speech Disorders, Aug. 19th (Mon.) 11:00-12:00

Abstract No: 9754

Rate and Utterance Length on Lip Pattern Variability in Parkinson's disease

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Abstract Content:

Objective: To determine how articulatory pattern variability is affected in speakers with PD across different speaking rates, syllable-sentence conditions, and medication states (ON vs. OFF), in comparison to a cohort of age-sex-matched neurotypical adults.

Method: Ten individuals with idiopathic PD (mean \pm SD = 69.80 \pm 10.38 years old, 6 males) and 10 age-and sex-matched neurotypical adults (70.18 \pm 8.93 years old) participated in this study. Speakers were instructed to produce "pa" and the Rainbow Passage at slow (2 syllables/sec), typical (3.5 syllables/sec), and fast (5 syllables/sec) speech rates dependent on a metronome rate. Upper lip and lower lip kinematics were measuring using a 4-D a motion capture system.

Linear mixed modeling was utilized to examine differences between participant groups (PD ON, PD OFF, control) and speech rates (2, 3.5, 5 syllables/sec) in the upper lip and lower lip spatiotemporal index (STI) analysis for "pa" production and the Rainbow Passage.

Results: Regardless of participant group, a high spatiotemporal index (STI) value was observed in the fast speech rate for the "pa" syllable condition, particularly for movements of the lower lip. As utterance rate increased, the control group showed the highest variability, followed by PD OFF, and PD ON conditions. Syllable "pa" showed a greater STI value compared to both the first phrase (30.15 \pm 0.44 vs. 27.71 \pm 0.44, $p < 0.0002$, $d = 0.41$) and second phrase of Rainbow Passage (30.15 \pm 0.44 vs. 23.53 \pm 0.44, $p < 0.0001$, $d = 1.12$). The control group demonstrated significantly greater values of the upper lip STI compared to the PD OFF (22.40 \pm 1.02, $p = 0.0327$, $d = 0.71$) and PD ON (22.32 \pm 1.02, $p = 0.0288$, $d = 0.72$) groups for the second phrase of the Rainbow Passage. For the overall STI modeling, a marginal difference between PD OFF and control (26.76 \pm 0.44 vs. 28.24 \pm 0.44, $p = 0.773$, $d = 0.25$), and a non-significant difference between PD OFF and PD ON groups was found (26.76 \pm 0.44 vs. 26.39 \pm 0.44, $p = 1.00$, $d = 0.06$).

Conclusions: PD manifest sufficient residual capacity to achieve near-normal motor compensation to preserve the consistency of lower lip movements during speech production. Greater STI values occurred on the fast speech rate (5Hz) regardless of participants' group, implying that motor patterns required for unaccustomed rates display a less stable articulator in controls and PD. The lack of a significant difference in lip STI values between ON-OFF medication states suggests that dopaminergic treatment does not influence stability of speech for individuals with mild-moderate stage PD.

Learning Outcome:

Learning outcomes: The reader will be able to: (a) understand the effect of speech rate and utterances length in lip kinematics of individuals with Parkinson's disease; (b) describe the process of



spatiotemporal index (STI) analysis in measuring lips kinematics; and (c) discuss the role of dopaminergic treatment in speech for individuals with Parkinson's disease.

Keywords: Spatiotemporal stability (STI); Parkinson's disease; speech rate; lip kinematics



Abstract No: 9742

The effects of dental prosthesis on articulation training for motor speech disorders of Meige syndrome – A case report

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³Dentistry/ Hualien Tzu Chi Hospital/ Taiwan

Abstract Content:

Background: Oromandibular dystonia accompanying with imprecise articulation of speech is the most common manifestation of Meige syndrome. Dental prosthesis has been used to reduce the symptom of oromandibular dystonia.

Objective: The purpose of this study was to determine the effects of articulation training in combination with dental prosthesis on speech motor control of Meige syndrome.

Method: A 46 years old female patient was diagnosed of Meige syndrome two years ago in Hualien Tzu Chi hospital. She suffered blepharospasm and dysarthria with involuntary oromandibular movements, leading to loss of confidence in communication. After an unsatisfied outcome of botulinum toxin treatment, the patient came to speech therapy for assistance to improve speech motor control. Initially, speech therapy provided articulation training. But, limited progress was noted. By clinical evaluation, application of dental prosthesis in combination with articulation training was recommended. A pair of removable dental prosthesis was applied by a dentist to provide better stability of functional occlusion and mobility of tongue. The wearing time was scheduled progressively from one hour a day to three hours a day in two weeks. 0-10 visual analogue scale (VAS) of speech intelligibility and speaking rate test of a phonetically balanced article containing 180 syllables were administered on the condition of not wearing dental prosthesis before and after 2-week treatment. VAS scores was the average of raw scores by five testers. Speaking rates were express as syllable per second (sps).

Results: Before the treatment, VAS score was 6.4 and speaking rate was 2.4sps. After 2-week treatment, VAS score was 7.8 and speaking rate was 3.0sps.

Discussion: Speech motor control of speech intelligibility and speaking rate was improved after application of dental prosthesis in articulation training. Confidence in communication was concomitantly increased. The results of this case report suggest that dental prosthesis is an effective assistance device to improve speech motor control and communication in the patients with oromandibular dystonia, especially for Meige syndrome.

Learning Outcome:

Appropriate assistance device enhances speech motor control of the patients with oromandibular dystonia.

Keywords: Oromandibular dystonia, dental prosthesis, articulation training, Meige syndrome



Abstract No: 9725

Lingual and labial coordination in tongue twister and diadochokinetic production by Cantonese adults

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Abstract Content:

Objective. The study aims to investigate the articulatory variability in different speech and non-speech tasks (e.g., tongue twisters, oral diadochokinetic (DDK) task) and explore the relationship between articulatory performance of speakers in different tasks.

Background. Tongue twisters (TT) have been used to examine speech motor control in English. Articulatory variability associated with TT has been found to be different from that with other speech tasks. However, contradictory findings have been reported and explanation has been lacking. Previous research also attempted to study stability in speech production using different stimuli including TT and fast speech. It has been suggested that articulatory variability may reflect one's speech motor control. It follows that examination of one's articulatory variability in motor speech assessment would provide valuable diagnostic information for clinical purposes. However, evidence is lacking regarding the effect of different stimuli on articulatory variability and the relationship between articulatory variability and speech motor control, leading to a need for further research in this area.

Method. Thirty healthy native Cantonese adult speakers were instructed to perform three speech tasks: (1) reading aloud TT, (2) reading aloud control sentences (CS), and (3) performing a DDK task. Acoustic signals were collected, and acoustic analysis was conducted.

Results. Rate and task were found to have an effect on voice onset time (VOT), first formant (F1), and second formant (F2) of target phonemes. A negative relationship was found between rate and VOT, whereas speaking rate could have an effect on F1 and F2 depending on the vowel context. Regarding task effects, VOT was significantly affected by task for /t^h/ (TT > CS > DDK), but not for /p^h/. The effect of task on F1 and F2 was also significant for /t^h/, with F1 being higher in TT than in CS and DDK, and with F2 being lower in TT and CS than in DDK.

In terms of articulatory variability, the effect of rate and task depended on the context. For /t^ha/, F1 and F2 variability was significantly greater under fast speech rate, while task effect was significant on the variability of VOT (TT > CS > DDK). For /p^hou/, a significant interaction between rate and task was found for VOT variability. Rate was found to be a significant factor only in DDK, while the increased variability in TT and CS as compared to DDK was only observed when the speech rate was fast. F1 variability was also found to be lower in TT than DDK. In addition, a moderate positive correlation was found between the F1 variance per rate difference in TT and that in DDK.

Learning Outcome:

1. Our understanding of task effects on articulatory variability will be enhanced, allowing exploration of the clinical use of different tasks.
2. This study will enhance our understanding of the relationship between speech motor control ability and articulatory variability.

Keywords: task effect; articulatory variability; speech motor control; tongue twisters



Abstract No: 9114

Effects of LSVT[®] LOUD on Japanese-Language Speakers with Parkinson's Disease

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Abstract Content:

Objective: The aim of this study was to evaluate the long-term effects of Lee Silverman Voice Treatment[®] LOUD (LSVT[®]) on Japanese-language speakers diagnosed with Parkinson's disease (PD).

Methods: The subjects were 22 PD patients (14 men and eight women; median age: 68 years; disease duration: 9.0 years; median Hoehn and Yahr stage: 3.0) recruited between April 2011 and February 2018. Vocal loudness and speech intelligibility were assessed three times: (1) pretreatment (PRE), (2) immediately after treatment (POST), and (3) at 12-month follow-up after treatment (12FU). For vocal loudness, the following three items were assessed using sound pressure levels (in dB SPL): (A) sustained phonation of /a/; (B) recitation of long sentences; and (C) a monologue task. For speech intelligibility, three speech-language-hearing therapists listened to speech samples of (B) and (C) and evaluated each sample using nine stages. The Friedman test of differences between groups was used to compare the vocal loudness and speech intelligibility results. In addition, the Wilcoxon signed-rank sum test was used to evaluate differences between PRE and POST scores and between PRE and 12FU scores. The critical p-value was set at <0.03 to permit multiple comparison adjustment.

Results: Among the 22 subjects, 14 (63.6%) were available for the 12FU assessment. There was significant variation in vocal loudness at each assessment time (all $p < 0.01$). Compared with PRE, sound pressure levels at POST were (A) +5.7 dB, (B) +4.8 dB, and (C) +4.1 dB (all $p < 0.01$); those at 12FU were (A) +4.0 dB, (B) +5.6 dB, and (C) +4.9 dB (all $p < 0.01$). The median scores of speech intelligibility were 1.5 at PRE, 1.5 at POST, and 1.5 at 12FU, and significant variation was observed at each assessment time ($p < 0.05$). Compared with PRE, a significant improvement was observed in speech intelligibility at POST ($p < 0.01$), but no significant improvement was observed at 12FU.

Discussion: Previous Japanese studies reported increases in vocal loudness in recitation (+6.1 dB) and in monologue tasks (+3.7 dB) after LSVT[®], both of which were significant. This study also showed significant increases in vocal loudness at POST compared with PRE. The long-term effects (12FU) of LSVT treatment on levels of vocal loudness appeared to be significantly positive, suggesting that this treatment modality may also help Japanese persons with PD maintain vocal loudness. By contrast, short-term but no long-term effects on speech intelligibility were observed.

Learning Outcome:

LSVT[®] LOUD showed a long-effect of increasing of vocal loudness on Japanese-Language Speakers with Parkinson's disease.

In the speech intelligibility, although there was a significant improvement effect in the short term, long term effect was not observed.

Keywords: LSVT[®] LOUD, Parkinson's disease



Poster Presentation: Session MP1-5 / Multilingual Affairs, Aug. 19th (Mon.) 11:00-12:00

Abstract No: 9765

Maintaining children's home languages to support communicative participation

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Abstract Content:

Authors: Van Tran, Sharynne McLeod, Sarah Verdon, and Cen (Audrey) Wang

Objective: To conduct a narrative review to consider the factors affecting children's home language maintenance

Background: Children's maintenance of home languages is of interest in multilingual societies and many studies have shown benefits of maintaining home languages. Understanding factors that affect home language maintenance not only helps to promote multilingualism but also provides parents, teachers, speech pathologists, and language policy makers insights into children's speech and language acquisition. A large quantity of research has been conducted to explore factors that impact home language maintenance, most of them, however, investigated these factors in isolation. A comprehensive understanding of the full range of factors is important in understanding children's communicative environment and planning and designing research related to home language maintenance and children's communicative participation.

Method: A systematic search of three databases (ProQuest, Scopus, and EBSCOhost) was conducted considering journal articles, book chapters and dissertations published since 1990. The screening process involved applying inclusive and exclusive criteria related to subject areas, screening titles and abstracts, and reviewing full-text papers. Combined with recommended papers from other sources, 61 publications were selected and underwent the NVivo thematic analysis.

Results: Sixty one publications documented home language maintenance for children and adults who spoke over 20 languages in 12 countries. The analysis identified four overarching themes linked to home language maintenance, namely child/personal, parent, family and community factors. Each of these factors consists of a range of sub-factors that either supported or hindered home language maintenance: children's age and birth order, starting school, parents' language input and attitude, parent and child relationships, presence of siblings, living with grandparents, access to the language community, and school and childcare with home language immersion programs, and home language schools.

Discussion: Understanding factors that support home language maintenance will enable families and professionals to support communicative participation.

Learning Outcome:

1. To understand the range of child, parent, family, and community factors that affect home language maintenance

2. To reflect on clinical practice regarding the importance of supporting children's home language maintenance and children's communication

Keywords: multilingualism, home language maintenance, children, communication, speech and language



Abstract No: 9702

Influence of Mandarin-Chinese on Speech Accuracy in English

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Abstract Content:

Introduction

A great deal of study has focused on how one's first language (L1) impacts on the intelligibility of L2. Yet, the process of learning another or second (L2) language remains challenging when it comes to attain a native-like pronunciation; specially, the impact to what extent on speech accuracy is not yet fully clear. With the globalization among countries, learning English as L2 has led to an increase in the number of individuals in Asia during the last decade. This study investigates the English pronunciations of native Mandarin learners of English by examining the accuracy of perception and production of English phonemes, including consonants and vowels. This study will begin with a comparison between familiar and unfamiliar segments in the phonetic system of Mandarin Chinese and English. A series of experimental tasks will follow. The aim of this study is to examine English production accuracy and potential phonetic factors that may influence speech accuracy. The impact of L1 on L2 speech accuracy and applications of the findings to the clinical decision-making process will also be discussed.

Method

This study is still ongoing. In this study, 20 native Mandarin-speakers who learn English as L2 and 20 native monolingual American English-speakers will be recruited. The series of experiments include phoneme perception and production tasks as well as a speech identification task. Production data will be further analyzed acoustically for the purpose of the study.

Results

Based on the language transfer theory, we expect to find no significant different productions between Mandarin and American English speakers for the familiar vowels. Native Mandarin speakers are expected to show more difficulties for unfamiliar English vowels in both perception and production tasks. Also, the phonetic context would be an important factor influencing the precision of English productions. Varied speech accuracy is expected with the different phonetic contexts in the native Mandarin speakers.

Conclusion

The aim of this study is to understand better the impact of L1 on L2 production and further to provide insight on approaches to facilitate L2 speech accuracy with a different L1 phonetic system. The acoustic data will be useful reference integrally with the source-filter theory of speech production and can be applied to English pronunciation training in the clinical setting.

Learning Outcome:

- Understand different phonetic systems between Mandarin Chinese and English
- Understand the relationship between acoustic signals and articulation accuracy
- Able to apply the findings to the clinical decision-making process for English pronunciation training therapy



Keywords: English pronunciation enhancement therapy, accent reduction, speech accuracy, second language learning



Abstract No: 9637

Receptive and expressive language skills of internationally adopted children at the age of 24 months

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Abstract Content:

Background and objective. According to previous studies, internationally adopted children may have a high risk for language difficulties. Expressive language skills have been reported to lag behind more frequently than receptive language skills. However, due to a limited number of studies and due to a fact that majority of studies have been conducted with adopted children from China or Eastern Europe, more information is required. The aim of this study is to compare the receptive and expressive language abilities of internationally adopted children to those of the control group of healthy Finnish speaking children, living with their biological families, at the age of 24 months.

Methods. Study population included 23 (boys=12) internationally adopted children (ADO) and 56 (boys=26) full-term, monolingual, Finnish speaking control children (CONT). ADO children were from the following countries: South-Africa (n=11), China (n=6), Ethiopia (n=3), Columbia (n=2) and Thailand (n=1). Children were adopted to Finland at the mean age of 9,6 months (SD=3,0, 4–14 months). Language skills of all participants were assessed at the age of 24 months (mean 24,2, SD=0,2 months) using the Finnish version of the Reynell Developmental Language Scales III. The standard scores of the method (mean 100, SD +/-15) were used in the study.

Results. ADO children had lower mean scores than CONT children in all tested variables (receptive language: ADO mean 88, SD=16, 64–119; CONT mean 106, SD=17, 73–142, expressive language: ADO mean 92, SD=14, 77–128; CONT mean 99, SD=15, 77–133, total score: ADO mean 88, SD=16, 65–124; CONT mean 103, SD=15, 71–138). The differences between the ADO and CONT groups were significant in receptive language scores (U=303, p=.000) and total scores (U=343, p=.001). In expressive language scores the difference was close to significance (U=474, p=.064). The percentages of children performing below the normal range boundaries of the RDLS III (<85 standard scores, -1 SD) were higher in the ADO group than in the CONT group in all tested values (receptive: ADO 35%, CONT 9%; expressive: ADO 39%, CONT 21%; total score: ADO 35%, CONT 9%). No significant correlations between adoption age and RDLS III test performance were found.

Discussion. The results indicated that ADO and CONT groups differed particularly in receptive language performance. This finding suggests that it is important to pay attention to receptive language skills of ADO children in addition to expressive language skills. Furthermore, even if most of the ADO children performed well, a higher percentages of ADO children scored below the typical age levels if compared to controls. Therefore, it is important to follow up the language development of ADO children already at the early age and provide support for those children and their families needing it.

Learning Outcome:

Roughly one third of the internationally adopted children had weak receptive language skills at the age of 24 months.

Adoption age was not associated to language performance at the age of 24 months.

Keywords: international adoption; language development; receptive language; expressive language



Poster Presentation: Session MP1-6 / Voice, Aug. 19th (Mon.) 11:00-12:00

Abstract No: 9636

Reliability of cepstrum analysis for Japanese short sentences and vowels in healthy young adults

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²Rehabilitation Medicine/ Kurashiki Central Hospital/ Japan

Abstract Content:

【Background】 A cepstrum analysis independent of F0 extraction accuracy could be suitable for the acoustic analysis of Japanese continuous speech (short-sentence reading) and severe hoarseness. However, its test-retest reliability has hitherto remained undetermined.

【Objective】 To verify the reproducibility of the cepstrum analysis in sustained Japanese vowel and short-sentence reading.

【Participants】 Fifty healthy Japanese native speakers adults (25 males and 25 females, mean age 22.7 years, SD 4.3 years).

【Voice samples and Analysis】 Voice samples were recorded four times in two days. Sustained vowel /a/, two easy onset sentences, two all-voiced sentences, two hard glottal attack sentences, and two voiceless plosives sentences were read in Japanese at a conversational pitch and volume and recorded twice each day in a random order. After the first day of the experiment, the two recordings were obtained sequentially. Voice samples were recorded using a head-mounted microphone (C-520, AKG, Vienna, Austria) and digitized at 22.05 kHz and a resolution of 16 bits using a CSL Model 4300 (Kay-PENTAX, Montvale, NJ). Recorded sustained vowels and sentences were analyzed with the Analysis of Dysphonia in Speech and Voice (ADSV) program (ADSV model 5109 version 3.4.2; Kay-PENTAX Montvale, NJ).

【Analysis items】 Cepstral Peak Prominence (CPP) and Cepstral Spectral Index of Dysphonia (CSID).

【Statistical Analysis】 In order to examine the intra-rater's reliability in iterative measurements of each analysis item for each task, the intra-class correlation coefficient was calculated.

【Results】 For the sustained vowel / a /, the intraclass correlation coefficients (1,4) for the CPP and CSID were 0.947 (P < 0.001) (95% CI = 0.919-0.968) and 0.841 (P < 0.001) (95% CI = 0.754-0.902), respectively, indicating high within-rater reliability. For short sentences consisting of two easy onset sentences, two all voiced sentences, two hard glottal attack sentences, and two voiceless plosives sentences, the intraclass correlation coefficients (1,4) were found to be 0.904 (P <0.001) or more, demonstrating high within-rater reliability. In addition, the number of intra-class correlations tended to be higher within a day than between days for all items in all participants.

【Conclusion】 The CPP and CSID used in the cepstrum analysis showed high test-retest reliability regardless of the type of the sentence, providing evidence for the utility of both items.

Learning Outcome:

1.The CPP and CSID used in the cepstrum analysis showed high test-retest reliability regardless of the type of the Japanese sentence.



2. The number of intra-class correlations for CPP and CSID tended to be higher within a day than between days in all participants.

Keywords: Cepstrum analysis, test-retest reliability, Cepstral Peak Prominence (CPP), Cepstral Spectral Index of Dysphonia (CSID),



Abstract No: 9109

Validation of the Acoustic Voice Quality Index version 03.01 in the French language

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Abstract Content:

Objective.

The Acoustic Voice Quality Index (AVQI) version 03.01 is a tool for quantitative assessment of the overall severity of dysphonia. Its computation includes six acoustic parameters, which are all carried out by Praat. It is based on the recordings of a sustained vowel and a part of a text read aloud. The psychometric qualities of this tool have been confirmed by numerous publications in various languages. However, its validation in French relies on a small cohort of patients, who, moreover, were not native French speakers. Furthermore, the version 03.01 of the AVQI has not yet been validated at all on French samples. Hence, the aim of this study was to assess the criterion-related concurrent validity and the diagnostic accuracy of the AVQI 03.01 on a sample of native French speakers.

Methods.

90 recordings from the ENT caseload of the University Hospital of Liège were used, as well as 30 new recordings of normophonic individuals (control group). In a preliminary study, the authors determined that the first 27 syllables of Harmegnies's text should be used for this validation study of the AVQI 03.01. This sample length allows a balance of the contribution of both the continuous speech and the sustained vowel to the score. Four judges assessed the recordings using the G parameter of the GRBAS scale. Once the intra- and inter-rater reliability of the perceptual ratings were confirmed (using Cohen's Kappa and Kendall's coefficient of concordance, respectively), the AVQI's criterion validity was assessed by measuring the Spearman rank-order correlation between the perceptual ratings and the scores computed by the AVQI 03.01 on the French sample. Eventually, the diagnostic accuracy of the AVQI 03.01 in French was measured by plotting a ROC curve and determining the cut-off score allowing for the highest diagnostic precision.

Results.

The intra-rater reliability was substantial for each of the four vocologists (κ mean= .778, $p < .0001$), the inter-rater reliability was high ($W = .895$, $p < .0001$). The Spearman correlation between the perceptual judgments and the AVQI 03.01 score was strong ($r_s = .84$, $p < .0001$). The ROC-curve parameters indicated that the ideal cut-off score allowing for the highest diagnostic accuracy of the AVQI version 03.01 applied on a French sample is 2.33, with a sensitivity of 59.8%, a specificity of 100%, $LR+ = +\infty$ and $LR- = 0.4$.

Conclusions.

This study confirms the external validity of the AVQI 03.01 applied on a French sample. The AVQI 03.01 is a robust and ecologically valid objective measure of the overall voice quality. The cut-off score to be used is 2.33. However, clinicians should be cautious when the AVQI score is smaller than 2.33. Indeed, it does not yield sufficiently low LR- to assure that the patient is indeed normophonic.

Learning Outcome:



explain how to carry out a validation study describe the need for a comprehensive vocal assessment list the pros and cons of subjective and objective vocal assessment tools

Keywords: Acoustic Voice Quality Index; Dysphonia; Acoustic Voice Analysis; Voice Assessment;

French



Abstract No: 9703

15 years of GALA - Laryngectomy Support Group: A story of success

Mauriceia Cassol¹ ; Vera Beatris Martins¹ ; Elana Rossetto¹ ; Luísa Bello Gabriel¹ ; Bárbara Luísa Simonetti¹ ; Émille Paim; Jerusa Dames; Karin Camerini,; Silvia Karps

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Brotherhood santa house of mercy of porto alegre/ Brazil

Abstract Content:

Background: The larynx cancer requires, many times, the full removal of the organ and the individual starts breathing through tracheostomy, losing the ability to produce the laryngeal voice. The total laryngectomized patients need continuous interdisciplinary care. The treatment group may be a possibility. **Objective:** to describe the activities of the Laryngectomy Support Group (GALA) at a Cancer Hospital in southern Brazil during its 15 years of experience. **Method:** Descriptive study, experience report. **Results and discussion:** GALA started the activities in October of 2003 with the goal of giving interdisciplinary support to patients submitted to total laryngectomies. It's therapeutic operative, mutual aid / somatic, open and homogeneous, coordinated by speech therapists, psychologist, physical therapist, nutritionists, physicians and music therapist. The Speech Therapy aims at a global and an effective communication, besides of production of voice itself (esophageal or electroaringeal). The Physical Therapy acts guiding bronchial hygiene and exercises to gain amplitude of movement and increase of strength and muscular resistance in the cervical region. Nutrition conducts nutritional guidelines in a preventive and therapeutic way, Psychology permeates the whole movement of the group so that this moment is of growth and learning for all and a "less painful" illness from the emotional point of view. Music therapy helps in communication training and the feeling of better safety to communicate on a daily basis. Besides that, music influences positively to its physical and emotional well-being. During these 15 years it has been performed several activities and social gatherings. It has also been performed speeches with hospital professionals with the purpose of instrumentalize the patient and the family in relation to the treatments and the subjects of interest of the Group. The work with GALA breed three undergraduate thesis. Thirty-five papers were presented at national congresses and four internationals. Also, a Coral was formed with the purpose of making the training task of the new communication model lighter and more pleasant. Since the Coral has been created, it has been invited to several external events at Universities and internal events performed at the Hospital. It's an inclusive Coral where people who can speak with larynx perform as well (professionals and relatives), forming a support basis for patients to sing. Based on what has been described, participation in group is an important instrument of rehabilitation because the patient perceives that he is not alone. The interdisciplinary support assists overcoming the challenges imposed by surgery, enabling a better communication and increase the physical, social, emotional well-being and quality of life.

Learning Outcome:

1 - Participants should be able to identify the importance of the interdisciplinary team in the rehabilitation of the functional capacity of individuals.

2- Participants should be able to identify the benefits that therapy group provides during the rehabilitation process.

Keywords: Laryngectomy, Speech Therapy, Physical Therapy, Support Group, Music Therapy



Abstract No: 8989

Risk factors and their effects on voice disorders in aerobic exercise coaches

Ku YuLin^{*1} ; Chen Sheng Hwa

¹*Rehabilitation/ Mackay memorial hospital/ Taiwan*

Abstract Content:

Aerobic exercise coach is a high-risk occupation for voice disorders. Studies on risk factors and their effects on voice disorders in aerobic exercise coaches are quite few in number. The purpose of this study was to investigate risk factors and effects on voice disorders in aerobic exercise coaches. These data could serve as the theoretical basis for developing preventive voice care program to aerobic exercise coaches and related institutions.

This study used self-designed voice questionnaires to investigate voice disorders among aerobic exercise coaches. A total of 293 questionnaires were handed out to the aerobic exercise coaches, and 141 questionnaires were returned. The response rate was 48.1%. The aerobic exercise coaches were further divided into two groups depending upon the questionnaires: (1) with voice disorders, and (2) without voice disorders. Fisher's exact probability test was used to examine the differences among variables between aerobic exercise coaches with and without voice disorders. Logistic regression was used to determine risk factors and their effects on voice disorders in aerobic exercise coaches.

The results showed that the risk factors of voice disorders in aerobic exercise coaches were "frequent muscle discomfort" and "history of voice problems." Those coaches with voice disorders often reduced their teaching time, changed teaching style, avoided talking with others, decreased teaching quality, felt upset and stressful.

Learning Outcome:

These data could serve as the theoretical basis to develop voice treatment and voice care program for aerobic exercise coaches.

Keywords: aerobic exercise coach; voice disorders; risk factors; effects on voice disorders



Poster Presentation: Session MP1-7 / Voice, Aug. 19th (Mon.) 11:00-12:00

Abstract No: 10009

Self-reported vocal hygiene practice in novice singers: A retrospective study

Jayanti Ray^{*1} ; Lydia Cameron^{*1}

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Abstract Content:

Singers often experience vocal challenges that lead to poor performance, laryngeal discomfort and emotional stress and anxiety (Moreti, de Ávila, Rocha, de Menezes Borrego, Oliveira, & Behlau, 2012). Studies indicate that education about vocal health and physiology can help singers avoid the development of vocal disorders and help establish optimal singing and speaking behaviors (e.g., Mantemach, 2014; Paoliello, Oliveira, & Behlau, 2013). The purpose of this study was to explore the use of vocal hygiene strategies by novice singers and students majoring in vocal music. The study focused on the analysis of vocal habits, symptoms, and use of vocal hygiene strategies in a sample of 26 novice singers. Results were compared to the evidence-based, vocal hygiene strategies used by trained singers. This finding warrants for enhanced collaboration among speech-language pathologists, vocal pedagogues, and medical professionals in the education of novice singers on vocal health and hygiene.

Learning Outcome:

1. Identify the nature of self-reported vocal problems in novice singers
2. List various physiology-based, vocal hygiene strategies that are used by novice singers
3. Describe various evidence-based, vocal hygiene strategies that enhance both conversational and singing voices

Keywords: singers, voice, vocal pedagogy, vocal hygiene



Abstract No: 9681

Outcome of Preventive Voice Care Program for School Teachers: Perceptual, Acoustic, Aerodynamic, and Functional Measurements

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¹Department of Audiology and Speech-Language Pathology/ Asia University / Taiwan, ²Department of Otolaryngology/ National Taiwan University/ Taiwan, ³Department of Special Education/ National Taiwan Normal University/ Taiwan, ⁴Master's Program of Speech-Language Pathology, Department of Special Education/ University of Taipei/ Taiwan, ⁵Department of Otolaryngology/ Mackay Memorial Hospital/ Taiwan, ⁶ENT/ Dr. Yang's ENT & Voice Clinic/ Taiwan

Abstract Content:

Teachers are high risk of voice problems. Eleven to eighty-nine percent of teachers have been experienced vocal fatigue, dysphonia, increased phonation effort, sore throat, etc. Voice problems have adverse effects on teaching activities, communicative ability, and student' performance. Many voice therapy programs can reduce voice problems in teachers. However, for long term effects, a prevention program is needed to decrease the impact of voice disorders on communication function, education, medical care, and society. The purposes of the study are to design an appropriate preventive voice care program and investigate its outcome in vocal function and communication function for school teachers.

Study designed is controlled study. The subjects were 41 new teachers without voice problems in primary and middle schools of Taipei County. Thirty-nine subjects were females and 2 were males with mean age of 31.14 years (26-48years). The subjects were divided into two groups depending upon their choices: 1) experimental group (VT); and 2) control group (PL). VT was consisted of 16 subjects, and PL 25. The subjects in VT received preventive voice care program which includes vocal hygiene, resonant voice therapy combined with vocal function exercise, and microteaching for 10 weeks. The subjects in PL received placebo which includes neck massage and hydration at the same time interval. Before and 2 weeks after training, auditory perceptual judgement, acoustic measurements, aerodynamic measurement, self-reported severity, VHI, and WHOQOL-BREF Taiwan were provided to all subjects. Two-way ANOVA repeated measurement was used to analysis all variables between 2 groups before and after training for significant differences.

The results showed that in auditory perceptual judgement, subjects in VT significantly decreased glottal fry and pitch severity after training. In acoustic measurements, VT significantly increased speaking mean Fo, and decreased the highest speaking intensity as well as the maximum range of speaking intensity in reading after training. In VHI, VT revealed significant interaction in physical, functional, and total scales, and significant decrease of physical and total scores after training. These significant changes in all parameters were not found in PL subjects.

Teacher' preventive voice care program was proved to have positive effects on vocal function and communication function. It may be because the program focusing on eliminating risk factors of teacher's voice problems, strengthening and balancing respiratory, laryngeal, and resonatory systems, and also modifying vocal production in teaching, which thereby enhance vocal function and communication function, which have potential to prevent occurrence of voice problems. Long-term follow up is needed to monitor its maintenance effects on prevention of voice problems for school teachers.

Learning Outcome:



1. Participants will be able to describe common voice problems in teachers.
2. Participants will be able to describe mechanism of preventive voice therapy program in teachers.
3. Participants will be able to describe measurements of the effects of preventive voice therapy program in teachers

Keywords: preventive voice care program, voice problems, school teachers, outcome, resonant voice therapy, vocal function exercise



Abstract No: 9738

The Effects of Singing on Older Female Singers: Perceptual, Acoustic, Aerodynamic, and Functional Measurements

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¹Department of Physical Medicine and Rehabilitation/ National Taiwan University Hospital Hsin-Chu Branch/ Taiwan, ²Department of Audiology and Speech-Language Pathology/ Asia University/ Taiwan, ³Department of Otolaryngology/ National Taiwan University Hospital/ Taiwan, ⁴Department of Speech Language Pathology and Audiology/ National Taipei University of Nursing Health Sciences/ Taiwan

Abstract Content:

Population aging is a global trend. Taiwan has become an aged society as more than 14% population are over 65 years old. It is estimated that the number of people with voice problems in the elderly is also increasing. This study aims to compare the voices between older female singers and nonsingers via the selected parameters in auditory perceptual, acoustic, aerodynamic, and functional measurements. The impact of singing on presbyphonia and voice-related quality of life were investigated. Forty healthy women above the age of 65 from Taipei City of Taiwan were recruited, and were divided into two groups based on participation in choir singing or not. All participants underwent the same voice assessments, including sustained vowel /a/, reading passage, saying /a/ to the highest tone and the lowest tone, aerodynamic performances, and filling in Voice Handicapped Index (VHI) questionnaires. One speech-language pathologist was recruited to conduct auditory perceptual evaluations by using GRBAS. Mann-Whitney U test and independent t-test were used to analyze the differences across all the parameters. The results showed that older female singers performed significant lower levels of jitter, shimmer and phonation threshold pressure, and significant higher levels of the highest tone and maximum phonational frequency range. However, no statistically significant differences were found in other parameters, including NHR, speaking flexibility, the lowest tone, maximum phonation time, mean airflow rate, and VHI. This study supports that singing can mitigate vocal aging, and has positive impact on periodicity of phonation, vocal capacities, and phonation effort in older women. The results can serve as a reference for clinical professionals in planning care and preventive voice program for older adults.

Learning Outcome:

1. Participants will be able to describe voice changes in older female adults.
2. Participants will be able to discuss the impact of singing training on the voices of older female adults.
3. Participants will be able to explain the physiology of voice enhancement through singing training in older female adults.

Keywords: singing;presbyphonia;auditory perception;acoustics;aerodynamics



Abstract No: 10019

Application of ultrasonography in assessing vocal fold structures and functions in children: Normative data

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Abstract Content:

BACKGROUND: The prevalence of dysphonia in children population is high, which can range from 3.9% to 28% in published reports. Visualization and imaging of the vocal folds are essential in diagnosis by identifying the cause and severity of voice problems. Among the current commonly office-based diagnostic tools, rigid laryngoscopy is commonly regarded as the gold standard to provide the best image of the vocal folds. However, implementations of rigid laryngoscopy in children encounter difficulties more frequently than the adult populations due to various factors such as poor cooperation and gag reflex triggered. Ultrasonography has been suggested as a possible alternative in examining the vocal folds as it is safe, non-invasive and non-ionizing. Previous studies found high implementation rate of ultrasound in children in assessing vocal fold palsy and vocal fold benign lesions, and achieving good correlation with the rigid laryngoscopy. However, normative ultrasonographic data of vocal fold structures and function in children are not available, which has limited its clinical application in voice assessment.

OBJECTIVE: This study aimed at establishing normative ultrasonographic data of vocal fold structures and function in young children.

METHODS: Vocally healthy children aged between 4 to 12 years were recruited at the West China Hospital in Chengdu, China. All children included in this study underwent transcutaneous laryngeal ultrasound scanning performed by the same experienced radiologist. Laryngeal ultrasound scanning was carried out under three conditions including quiet breathing, deep inspiration and phonation of the vowel /i/. Three radiologists independently rated the videos and images captured from the ultrasonography recordings. Intra-rater and inter-rater reliability in ultrasonographic measurement were evaluated.

RESULTS AND DISCUSSION: The ultrasonographic data of vocal fold structures and functions between age groups will be presented. The results obtained from this study have clinical implications and support future research on the application of ultrasonography in voice assessments.

Learning Outcome:

1. Discuss the clinical values of transcutaneous laryngeal ultrasound in assessing vocal fold structures and functions in children.
2. Discuss the future clinical / research directions of voice assessments in children.

Keywords: pediatric voice; assessment; ultrasound



Poster Presentation: Session MP2-1 / AAC, Aug. 19th (Mon.) 13:30-15:00

Abstract No: 10008

**Communication Advocacy and The National Joint Committee
(NJC): Empowering Individuals with Severe Disabilities,
Families, and Stakeholders**

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Abstract Content:

This poster will review the National Joint Committee for the Communication Needs of Persons with Severe Disabilities' (NJC) history and discuss current projects that advocate for the importance of communication rights. In 1985, a national symposium was held in Washington DC, August 19–21, 1985 and involved professionals from state and local education agencies and universities across the US—most of whom were directly involved in developing or implementing communication intervention programs for children and youth with severe disabilities. One of the symposium recommendations was that the American Speech-Language-Hearing Association (ASHA) and The Association for Persons with Severe Handicaps (TASH) “be asked to coordinate an interagency task force for the preparation and dissemination of statements setting forth the parameters of responsibility for the development and enhancement of functional communication behavior” for children and youth with severe disabilities. In 1986, then, ASHA and TASH organized the National Joint Committee for the Communicative Needs of Persons with Severe Disabilities and issued invitations to other organizations to appoint representatives. The purpose of the NJC is to advocate for individuals with significant communication support needs resulting from intellectual disability that may coexist with autism, sensory, and/or motor limitations. The committee consists of representatives from the following eight organizations: American Association on Intellectual and Developmental Disabilities, American Occupational Therapy Association, American Physical Therapy Association, ASHA, Association of Assistive Technology Act Programs, Council for Exceptional Children/Division for Communicative Disabilities and Deafness, TASH, and the United States Society for Augmentative and Alternative Communication. The interdisciplinary composition of this committee reflects the pervasive importance of communication in all spheres of human functioning and across traditional boundaries. The shared commitment to promoting effective communication services and supports provides a common ground for inter-professional collaborative efforts to improve the quality of life for individuals with severe disabilities. The poster will discuss the committee’s purpose and review major historical contributions of the group for the communication rights of individuals with severe disabilities, their families, and other stakeholders. The poster will include an overview of the following NJC services and projects: 1) Scholarship – publications and presentations including an updated Communication Bill of Rights for persons with severe disabilities (Brady, Bruce, Goldman et al., 2016 ; Sevcik & Romski, 2016); 2) Provider/Scholar Network – a new opportunity for providers and researchers interested in the communication abilities and needs of persons with severe disabilities; 3) Emerging online modules for providers – a new way to access assessment and intervention content via modules created by the NJC; 4) NJC Adult Myths project to refute myths associated with communication services for adults with severe disabilities and 5) a New NJC web presence <http://www.asha.org/njc/>.

Learning Outcome:

1. Identify historical contributions of the NJC.
2. Discuss current NJC products and services and determine ways to assist with everyday communication-based activities for individuals with severe disabilities.
3. Recognize specific ways to interact and collaborate with the NJC on current and future projects



Keywords: severe communication disabilities; advocacy; human rights; augmentative and alternative communication;

Abstract No: 10006

Explore current practice and preparation in Augmentative and Alternative Communication for speech-language pathologists in China

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²*Special Education/ National Chiayi University/ Taiwan* ¹*Speech and Hearing Science/ Shanghai University of T.C.M/ China*

Abstract Content:

Introduction: The field of Augmentative and Alternative Communication (AAC) develops technology, solutions, and strategies for people whose natural speech cannot meet their daily communication needs. AAC is in its infancy for Chinese-speaking countries and communities, but interest is emerging as a clinical specialty with the introduction to AAC resources (S.-H. K. Chen, Hill, Sun, & Zhu, 2012a, 2012b; S.-H. K. Chen et al., 2015). In order to provide effective AAC service to clients, clinicians must receive proper training to build their competence (Ratcliff et al., 2008; Ratcliff & Beukelman, 1995). However, there is very few information about the current professional AAC training in China. Therefore, the purpose of the study is to investigate the perception, attitude, and experience of AAC from current speech-language pathologists (SLPs) in China to understand how the SLPs were trained in AAC, and the future direction of AAC professional training.

Method: A focus group was used to investigate the perception, attitude, and experience of twelve SLPs with 1~13 years clinical experience from the great Shanghai area, China. Information was gathered related to (a) the current understanding of AAC, (b) the current understanding of AAC assessment, (c) the current understanding of AAC intervention (d) the difficulties in current AAC practices, and (d) the needs for successful providing AAC service.

Results and Discussion: Participants primarily chose to focus on their myths of the understanding of AAC, difficulties in providing AAC services, and the confusion of AAC intervention. The participants did describe barriers to provide AAC services. Despite barriers, all participants were open-minded to learn more about AAC. The results are discussed as they relate to themes and with reference to published literature along with clinical implications and directions for future research.

Learning Outcome:

1. Audiences will understand current AAC practice in China.
2. Audiences will identify the current barriers of AAC practice in China.

Keywords: AAC, professional training, China, Chinese



Abstract No: 9993

The effect of teaching PECS to non-verbal preschoolers in Macau

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Abstract Content:

Purpose: The Picture Exchange Communication System (PECS), also as low-tech Augmentative and Alternative Communication (AAC), is a widely used intervention strategy designed to teach communication skills to children with developmental delays (e.g., non-verbal children). The purpose of the present study is to investigate effects of PECS on acquiring communication skills to three non-verbal preschoolers with severely limited vocal repertoires. Social validity was also conducted.

Method: Three speech language therapist (SLT) students who had completed PECS Level 1 certificated training provided an intensive 16-session training to these three non-verbal preschoolers. ABA research design was designed to investigate the number of spontaneous communication behaviors by using PECS; the number of nonverbal communication behaviors, and the number of spontaneous speeches. In addition, the SLTs and the parents of these three preschoolers have been interviewed regarding their perceptions of PECS.

Results: All 3 preschoolers achieved phase 2 of PECS within a short period. They are found to spontaneously speak the vocabulary listed on PECS, and use PECS to request his or her preferences over time. The number of nonverbal communication behaviors (e.g., grabbing or crying) is also decreased. Both SLT students and parents perceive PECS as an intervention tool to initiate increasing spontaneous speech, and decrease nonverbal communication behaviors. PECS is perceived as an acceptable intervention strategy. However, a shortage of SLTs practicing in Macau might impeded the service delivery of PECS. Several implications and further research study are discussed.

Learning Outcome:

Identify six steps of PECS.

Recognize preferences identification.

Identify social validity of the intervention of PECS.



Abstract No: 9930

Effectiveness of a Communication App for People with Aphasia: Effect of Advice to Conversation Partners

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Academic Assembly/ Shimane University / Japan

Abstract Content:

Objective : People with moderate to severe aphasia tend to use augmentative and alternative communication (AAC), such as drawing and gestures. Recently mobile Applications (Apps) for people with aphasia have been developed as an AAC tool. However, there are currently no published studies that fundamentally assess the suitability and practicality of these Apps.

In this study, we sought to address this lack of research by developing a hierarchical communication App for people with aphasia and then analyzing its effectiveness.

Method : We have developed a new App that runs on a tablet. It has a hierarchical structure divided into seven top-level categories and three of them have a further subcategory level. We modified the App's system and design to suit the specific needs of people with aphasia.

The study cases consisted of eight people with aphasia and their family members as conversation partners. Each aphasic subject attempted to communicate the pre-selected words to a family member. Each word was shown on a photo card. There were sixteen words, which were tested in pre- sessions and post- sessions. The post session was conducted after a ST (the author) advised the family members on effective use of AAC including the App.

Results: Three cases had more correct responses post-advice to family members. However, two cases had fewer correct responses post-advice.

We therefore analyzed the correct response rate for the first- and second-level categories and which means of communication was more effective in achieving correct responses. The three cases with more correct responses post-advice, had a correct response rate of at least 85% for first-level categories and 57% for second-level ones.

Also, the aphasic subjects used multiple AAC such as drawing, gestures, and the App in addition to verbal communication. Moreover, family members tended to use the App to support their inferences of the words described using other means. On the other hand, the two cases which had fewer correct responses post-advice from the ST achieved correct response rates of 80% and 100% for first-level categories but only 17% and 67% for second-level ones. These family members also encouraged the use of drawing, gestures, and the App in addition to verbal communication but tended mainly to use the App.

Discussion: This study suggests that the App can be used as an effective support tool for people with aphasia. This highlights the need for their conversation partners to understand the individual's symptoms, and the need for the skills to properly use the App. Expert assistance from a speech therapist based on the communication skills of each individual with aphasia can be effective in enabling communication partners to acquire these communication skills.

Learning Outcome:

- AAC for people with aphasia



- Application for people with aphasia
- Importance of advice to conversation partners in the communication support for people with aphasia.

Keywords: AAC, Aphasia, App, Conversation partner



Abstract No: 10046

Perceptions of Picture Exchange Communication System (PECS) in Macau: Perspectives of Speech and Language Therapists and Parents

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¹*School of Health Sciences/ Macao Polytechnic Institute/ Macau, ²College of Medical Science and Technology/ Chung Shan Medical University/ Taiwan*

Abstract Content:

Purpose: PECS China, an organization providing trainings of PECS to professionals in China, Taiwan, Hong Kong and Macau, was founded in 2017. Speech and Language Therapists (SLTs) in Macau starts to provide PECS as an intervention in a very short period of time. However, research shows that PECS is an effective intervention on nonverbal children, and the increasing number of children with complex communication needs (CCN) in Macau may benefit from an intervention of PECS to promote their communication and language development. The purpose of the present study is to investigate the acceptability and popularity of PECS from both perspectives of SLTs and parents of children with CCN in Macau.

Method: Two sets of 20-item (i.e., SLTs version and parents version) questionnaires have been developed by the first three authors under supervision from a professor who work in undergraduate and graduate programs of communication disorders. The items in the SLTs questionnaire contains demographic details, practice patterns, and knowledge about PECS; while the items in the parents questionnaire includes demographic details of them and their children, communication characteristics of their children, their knowledge of PECS and their acceptability of PECS as an intervention for their children. These potential participants will be encouraged to fill the online questionnaires, and all responses will be analyzed using SPSS.

Results: The results revealed that the SLTs in Macau do not have formal trainings of PECS in their previous education. It is hard in reality to have two SLTs to provide PECS to children at the same time. The parents in Macau do not have enough understandings of PECS and mostly assume that children's speech development will deteriorate with using PECS. Furthermore, the parents sometimes have negative perspectives to PECS. The results of this study suggest spreading out the information of PECS in Macau might have parents clearly understand PECS and might increase acceptability of PECS in Macau.

Learning Outcome:

1. Identify perceptions of SLTs on PECS.
2. Identify perceptions of parents on PECS.
3. Identify benefits of PECS on nonverbal children.

Keywords: PECS, AAC, nonverbal children



Abstract No: 10023

The prognosis of successful communication acquisition on unilateral cochlear implants in prelingually hearing impaired children: A retrospective study of multi-disciplinary approach

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Abstract Content:

It has been well established that cochlear implant (CI) provides an alternative hearing channel for prelingually children with severe to profound hearing loss (Niparko, 2009). However, there is a certain percentage of prelingually hearing impaired children who was not benefitted from CI, even after they received long-term rehabilitation. Pre-operation evaluation is important on discriminating good CI candidates from the rest. It is a cross-professional team work and involves complicate decision making for each medical profession to clarify if CI will be necessary and beneficial for a patient. Speech-language pathologists (SLPs) provide critical suggestions on the best communication mode for hearing loss patients based on their assessment of patients' communication act, communication intention and/or informal/formal language test or evaluation form. However, it is still unclear what aspects of communication assessed by an experienced SLP accounts more important than the rest.

A retrospective study of prelingually hearing impaired cases received unilateral CI operation in Chang Gung Hospital in Taiwan from 1999 to 2016 were reviewed to screen out those CI patients with their pre-CI and post CI evaluation results comprehensive and complete. A sample of 18 experimental group whose communication skills were not improved was recruited. Their 18 operation-age matched control group whose communication skills improved obviously were also recruited in this study. The SLPs' evaluation of their communication skills and recommendation for CI operation as well as MRI judgement from an ENT doctor for the success of post CI communication were then analysed.

Preliminary results showed that receptive communication tasks assessed by SLPs had better discriminating effect on CI prognosis of CI than expressive communication tasks. In addition, the judgement made by SLPs was significantly correlated with ENT doctor's judgement based on MRI results. Further results and their clinical implication of the results will be presented and discussed.

Learning Outcome:

1. Participants should be able to learn the importance of pre-CI evaluation for SLPs.
2. Participants should be able to recognize the critical aspects of communication evaluation and intervention for the post CI's improvement on communication.

Keywords: cochlear implant; prognosis of communication skills; speech-language pathologist



Poster Presentation: Session MP2-2 / Aphasia, Aug. 19th (Mon.) 13:30-15:00

Abstract No: 9939

Differences in the Mechanism of Kanji(logogram) Neologistic Writing in Patients with Left or Right Cerebral Hemisphere Damage

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Abstract Content:

[Purpose] The kanji (logogram) neologistic writing appears as a result of an impaired character imaging process where the components forming characters, such as the left radical, right radical, and top radical, are combined. In the present study, we asked two patients, one with left hemisphere damage and one with right hemisphere damage, who exhibited kanji neologistic writing to perform a radical configuration task and writing task. The purpose is to investigate the impaired processes based on the results of these tasks.

[Patients] Patient 1 is a right-handed female in her 70s with left middle cerebral artery infarction, who showed moderate transcortical sensory aphasia with neologisms noted during kanji writing. Patient 2 is a right-handed male in his 70s with a right thalamic hemorrhage, who showed left spatial neglect, constructional disorder, and attention disorder with no obvious aphasia, but neologisms noted during kanji writing.

[Methods] We asked the above mentioned patients to perform a kanji radical configuration task and writing task. A kanji radical configuration task consists of a total of 38 questions where the components of kanji such as the top radical, bottom radical, left radical, and right radical are presented in front of the subject, and they are asked to combine the components of the kanji that corresponds to the word presented aurally. The components of kanji that were presented included dummy kanji radicals that were not part of the target kanji. The number of kanji and position of the radicals were not revealed to the subjects. The same target kanji as those used in the kanji radical configuration task were used in the writing task.

[Results] Patient 1 and patient 2 correctly answered 19/38 (50%) and 15/38 (39.4%) questions in the writing task, respectively. The characteristics of an error response were a lack of response and formation of characters that did not contain any radicals of the target kanji in patient 1, and formation of non-existent characters morphologically similar to the target kanji and formation of characters irrelevant to the target kanji in patient 2. With regard to the kanji radical configuration task, patient 1 and patient 2 correctly answered 34/38 (89.5%) and 24/38 (63.2%) questions.

[Discussion]The two patients in the present study exhibited qualitatively different forms of new kanji creation. Patient 1 did not respond on many occasions, and we thought there was impairment at accessing graphemic word forms. Patient 2 was able to engage in abstract overall recall, and we thought there was impairment at accessing Kanji forms.

[Conclusion] Qualitatively different responses were observed in patients with left or right cerebral damage presenting with kanji neologistic writing. It is considered that kanji is processed differently by the left and right cerebral hemispheres.



Abstract No: 9917

Differences in pragmatic task performance between patients with right and left hemisphere damage

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¹Sensory Science/ Kawasaki University of Medical Welfare/ Japan, ²Child Education/ Fukuyama City University/ Japan

Abstract Content:

Purpose: According to Myers (1999), discourse impairment associated with right hemisphere brain damage includes the reduced inference ability and qualitative deterioration of information contents. In addition, impaired cognitive function due to right hemisphere damage underlies difficulties in integrating and organizing complicated information and making appropriate interpretation choices, resulting in pragmatic problems. No standard scale for evaluating these pragmatic problems in patients with right hemisphere damage is available in Japan. In this study, we used three instruments to comparatively evaluate healthy volunteers and left-hemisphere-injured patients, and examined if our evaluation procedure can detect communication disorder due to right hemisphere damage.

Subjects: Five healthy individuals, 3 patients with left hemisphere damage, and 5 patients with right hemisphere damage.

Methods: Subjects underwent evaluation with metaphor/sarcasm scenario test (10 metaphor and 10 sarcasm tasks), discourse analysis rating scale (Bryan, 1995), and explanation of situational pictures.

Results: In healthy subjects, no interpersonal or intrapersonal differences were found in results of the metaphor/sarcasm scenario test. Large interpersonal differences in test results were noted in patients with left hemisphere damage, while they were non-aphasic or mildly aphasic. In patients with right hemisphere damage, interpersonal differences were small; however, there were two subjects with the sarcasm task result inferior to the metaphor task result by ≥ 2 points. With the discourse analysis rating scale, no obvious score decreases were found among patients with left hemisphere damage; however, a reduced score was observed for one of patients with right hemisphere damage who showed an intrapersonal difference in metaphor/sarcasm scenario test results, suggesting communication disorder. In explanation of situational pictures, no clear problems were noted among healthy subjects.

Patients with left hemisphere damage showed no problems other than explanation shortage and redundancy due to word finding difficulty. The patient with right hemisphere damage who showed problems with two evaluation instruments had a large amount of utterance and was loquacious; the patient was suspected of having communication disorder from inefficiency of information communication.

Discussion: The decreased metaphor and sarcasm performance levels in patients with left hemisphere damage are attributable to a language processing problem. The decreased scores of sarcasm tasks in patients with right hemisphere damage may reflect a pragmatic problem, and decreased scores were also observed for the discourse analysis rating scale and explanation of situational pictures. The present results suggest that our set of evaluation instruments can be used to detect pragmatic problems in patients with right hemisphere damage.

Learning Outcome:

Our set of evaluation instruments can be used to detect pragmatic problems in patients with right hemisphere damage

Keywords: right hemisphere damage, pragmatics



31st World Congress of the **IALP**





Abstract No: 9913

Can people with aphasia easily read so-called easy-to-read, everyday documents in Japanese?

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Abstract Content:

Introduction

Readability indicates the difficulty of understanding a text. A method of calculating readability scores has been reported for English. Studies of readability in relation to aphasic patients have also been reported, and guidelines that take readability scores into account have been published. In Japan, there are recently developed scoring methods for readability, but no research on aphasic patients has been conducted. This study investigated how difficult it is for aphasic patients to read sentences they encounter in everyday life.

Methods

We calculated the readability scores of passages from newspapers, magazines, and local community newsletters. Three national newspapers, three major magazines, and eight local community newsletters were chosen for our study. We used jReadability to calculate the scores. Eight mild aphasic patients participated in our original reading test, which was controlled by readability scores. The percentage of correct answers given was calculated for each readability level.

Results

Among the texts from local community newsletters, 31.6% were on the upper advanced level, 22.6% were on the lower advanced level, 9.8% were on the upper intermediate level, 0% was on the lower intermediate level, and 35.3% were not measured. Of the newspaper texts, 9.5% were on the upper advanced level, 48.4% were on the lower advanced level, 32.6% were on the upper intermediate level, and 9.5% were on the lower intermediate level. Of the magazine texts, 2.4% were on the higher advanced level, 23.0% were on the lower advanced level, 52.4% were on the upper intermediate, 21.4% were on the lower intermediate level, and 0.8% were on the upper novice level.

Among the aphasic patients, one had a score of 80% or more in the upper intermediate level, 60% or more of the two, 80% or more of the two, and 60% or more of the four. In the second half of the elementary level, all patients scored over 80%.

Discussion

The results indicate that even the mild aphasia prevents the full understanding of everyday documents.

Learning Outcome:

The mildest aphasia patients cannot fully understand everyday passages. Everyday passages in Japan are generally difficult to read.

Keywords: readability, aphasia, everyday documents



Abstract No: 9905

Distinctive Features in Discourse of Non-fluent and Fluent People with Aphasia - an investigation into their semantic accuracy and completeness -

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²Department of Speech and Hearing Sciences/ Graduate school of International University of Health and Welfare/ Japan

Abstract Content:

Objective and Background: In order to improve the ability to convey meaning in discourse of people with aphasia, it is substantial to evaluate the qualitative aspects of their discourse and to grasp factors related to their features. Main Concept Analysis (Richardson, 2015) incorporates the viewpoint of evaluating the accuracy and completeness of meaning in narrative discourse, but the characteristics due to aphasia subtypes have not yet been clarified. The aim of this research is to investigate their distinctive features through the following two perspectives: first, to examine the accuracy and completeness of propositions in their speech so as to clarify the differences in the discourse of both groups, and secondly, to analyze the relevance of these features of propositions with lexical and grammatical processing in discourse.

Method: The participants were 10 individuals with non-fluent aphasia (9 Broca's aphasia, 1 transcortical motor aphasia) and 10 individuals with fluent aphasia (7 Wernicke's aphasia, 3 transcortical sensory aphasia), both due to cerebrovascular disease. The connected speech was elicited with 10 pictures depicting story-like situations. The number of the main propositions they had conveyed was analyzed, and their semantic accuracy and completeness were closely examined. In addition, as evaluation of their lexical processing, the number of correct and incorrect usage of nouns/verbs were thoroughly checked, and furthermore the ratio of complex sentences in their utterances were inspected in order to evaluate their syntactic processing capability.

Results: The results showed as follows: first, there were no significant differences between the two groups concerning the number of main propositions. Secondly, the non-fluent people with aphasia were characterized by incomplete meaning, while the fluent people with aphasia were characterized by inaccurate meaning conveyance. Thirdly, the number of paraphasia expressed was a significant predictor of inaccurate meaning in discourse, meanwhile the ratio of complex sentences was a significant predictor of incomplete meaning in discourse.

Discussion: Differences in discourse characteristics between the two aphasic groups were recognized in terms of the qualitative aspect of the proposition, that is, accuracy and completeness of the meaning. Furthermore, lexical processing affects inaccurate meaning whereas grammatical processing affects incomplete meaning. For the purpose of improving the ability to convey meaning, to promote grammatical function can be effective for the non-fluent aphasia, and to improve word retrieval in discourse can be functionally helpful for the fluent aphasia.

Learning Outcome:

This study clarified characteristics of discourse in nonfluent and fluent people with aphasia by analyzing the quality of proposition.

Keywords: aphasia; discourse; proposition;



Abstract No: 9790

Twenty sessions of android based therapy in Person with aphasia: Behavioural outcomes from a case report

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Abstract Content:

Introduction:

Aphasia is an acquired disorder of spoken language following brain damage. There are several challenges to the rehabilitation of aphasia. Persons with aphasia around the world do not receive adequate amount of therapy due to various reasons. Technological advances such as computers and smartphones have the potential to fill the gap in the service delivery.

Aim:

This study aimed to report the quality of life of a person with aphasia following a 20-sessions-long, android-based intervention program.

Method:

Ms. P., a 43-year-old female, diagnosed with Brocas aphasia following an episode of stroke three months ago, was enrolled to this study. An android application (Mat-APP: Shenoy et al.,2017), designed to improve naming skills through phonological component analysis (Leonard et al.,2008), was installed onto her personal smartphone and was demonstrated the use of the same to her and her caregiver. The therapy (30mins/sessions) was monitored for 20 sessions remotely (through a web interface) in a prospective manner. The QOL measurements were carried out at 4 instances (pre-intervention, at 10th session, after one month of no treatment, and after the 20th session).

Results: The Android application treatment delivery was designed in various domains (Daily Treatment session and Practice session). Daily Treatment in which each day new set of training items occurs. Practice session in which the previously occurred training items can be retrained. The results will be discussed based on Daily treatment sessions only.

The tenure of training was 70 days (i.e., to complete 20sessions). Success Percentage across sessions showed variability. The QOL ratings obtained at four instances in time showed an overall improvement in Ms. P (Pre: 1.94, at 10th session: 3.05, after one month: 3.56, after 20th session: 3.79). The overall SAQOL score was highest post intervention and it showed a gradual improvement from the baseline to the post-training scores. It may be noted that the one-month gap score is after the 10th session and before the commencement of the second spell of training.

Discussion:

While there was an overall improvement in all domains of measurement of the QOL in this study, it may be noted that the scores on communication subdomain remained largely unaltered until the 10th session. This finding entails the rigorous training required to improve the communication skills of persons with aphasia and that the technology-based intervention in aphasia improves the overall QOL the affected individuals.

Conclusion:



Findings from this single case study show that intense training is required for bettering the communication skills of persons with aphasia. And more importantly, it showed that such training can be provided with android-based app that are designed to provide training programs based on the prevailing theoretical constructs.

Learning Outcome:

1. Utility and applicability of an android based aphasia rehabilitation program.
2. Clinical outcomes following rigorous treatment using an android based aphasia therapy intervention program
3. Quality of life improvement in an individual with Non-fluent aphasia following an android based intervention program.

Keywords: Aphasia;PCA;Android;SAQOL;Naming



Abstract No: 9774

The associations between the sense of well-being and QOL factors in people with chronic aphasia

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Abstract Content:

Background: The number of people with aphasia (PWA) in Japan is estimated to be between 200,000 – 500,000 (the Japan Aphasia Peer Circle). In recent years, QOL measures have been used increasingly to evaluate the effectiveness of services or interventions. The goal of social approaches for PWA is to improve of QOL. However, in Japan there have been few QOL studies for PWA.

Purpose: This study explored QOL in people with chronic aphasia. The subjects were divided into two groups according to their sense of well-being, high and low score group. We compared their attributes, attitudes, and self-concepts of people with chronic aphasia living in community between the two groups.

Methods: Subjects were 52 people with chronic aphasia. Data were gathered in a day-care center. People with chronic aphasia responded by pointing, writing, or speaking. QOL questions were adopted from 5 areas (physical status and functional abilities, psychological status and well-being, social interactions, economic and/or vocational status, religious and/or spiritual status) of health-related QOL and there were 11 response options in every items. Their average age was 66.3±11.2 years old and the gender was 37 males and 15 females. Type of aphasia was Broca 32, Wernicke 9, Global 2, Transcortical sensory 1, Conduction 1, Anomic 7. Aphasia severity was mild 14, moderate 29, severe 9. Movement ability was ambulant 22, cane 24, wheelchair 6.

Results: 14 people with chronic aphasia showed high scores (9~10/10 points) and 12 showed low scores (0~4/10 points). There were some differences between the high score group and low score group. The high score group felt their language function had better recoveries, wished for longer lives, thought that they received more support from their families, felt more joyful relationships with others and had higher motivation for speech therapy, compared to the low score group. There were no significant differences in age, gender, aphasia severity, economic and/or vocational status, religious and/or spiritual status, duration from the onset, movement ability, upper limb function and IADL between two groups.

Discussion: Sense of well-being were heavily affected by factors of activity and participation. It was shown that appraising their language function as better recovery has an influence on sense of well-being. Connecting functional improvement to life function was thought to be important for the interventions to PWA in the chronic stage.

Learning Outcome:

Connecting functional improvement to life function was thought to be important for the interventions to PWA in the chronic stage.

Keywords: aphasia, chronic, QOL, sense of well-being



Poster Presentation: Session MP2-3 / Aphasia, Aug. 19th (Mon.) 13:30-15:00

Abstract No: 9944

Non-linguistic Cognitive Abilities in Post-stroke Patients with Aphasia

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Abstract Content:

There is a growing realization that all domains of cognition are important to aphasia therapy outcome. The goal of this study was to investigate whether post-stroke patients with aphasia (PWA) was associated with impairments of non-linguistic cognitive abilities. Twenty post-stroke aphasic patients and 20 normal adults matched for age and education level participated in the study. Raven's Colored Progressive Matrices (RCPM) was conducted to obtain information about the participants' nonverbal intelligence. Two nonverbal visual tasks and two parallel nonverbal auditory tasks were designed and administered to examine performance on selective attention and alternating attention of the two groups. A visual recognition task and an auditory recognition task were also included as baseline measures of the visual and auditory tasks. We found that the aphasic group performed equally well to the control group in the visual recognition task, but more PWA showed confusion between the auditory stimuli (i.e., tones) in the auditory recognition task. In addition, the aphasic group performed significantly poorer than the control group in all visual and auditory tasks, indicating general deficits in attention. For the aphasic group, performance in the two auditory attention tasks was disproportionately poorer than that in the visual attention tasks as compared to the control group. Finally, raw scores in RCPM were negatively correlated with age for both groups, but a more negative correlation coefficient was observed for the aphasic group. Possible associations between non-linguistic cognitive impairment and severity of language impairment will be discussed in this presentation.

Learning Outcome:

Learning outcomes: audience of this presentation will be able to (a) understand how non-linguistic visual and auditory abilities were measured in the study, (b) describe patterns of performance on the non-linguistic visual and auditory tasks seen in the PWA, and (3) understand possible associations between different domains of non-linguistic abilities and language abilities in PWA.

Keywords: post-stroke aphasia, non-verbal cognitive abilities, selective attention, alternating attention, nonverbal intelligence



Poster Presentation: Session MP2-3 / Autism Spectrum Disorders, Aug. 19th (Mon.) 13:30-15:00

Abstract No: 10081

The psychometric study for language abilities in adults with intellectual disabilities

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Abstract Content:

The people with intellectual disabilities (ID) have communicative difficulty in their lives, but there is no applicable language test in Mandarin for adults with ID. The study investigated the application of Concise Chinese Aphasia Test (CCAT) in the adults with ID. Also, the author offset six supplementary tests against the shortcomings of CCAT: Peabody Picture Vocabulary Test (PPVT), Mandarin Token Test (MTT), Similarity, Information, Vocabulary, Comprehension [the four latter tests belong to Wechsler intelligence scale for children-fourth edition (WISC-IV)]. The author verified these tests had acceptable reliabilities and validities for adults with ID.

Ninety-four subjects with ID participated in the investigation. The results indicated that there was a high split-half reliability and intra-consistency in CCAT. The interrater reliability showed a strong degree of .883~.993. The analysis in discriminative validity proved that CCAT could differentiate among the severity of disabilities and from employment/nonemployment.

The results from supplemental tests also revealed that they had high reliability coefficient in all six tests. In addition, the discriminative validity was well. According to the factor analysis, the complementation between CCAT and the supplemental tests was approved.

In summary, CCAT was an applicable test for adults with ID. Furthermore, the additional tests could appropriately assess the language abilities in adults with ID. As a result, CCAT could combine with the supplemental tests to become a kit of language test, CCAT+, for adults with ID.

Keywords: Psychometric, Adult with intellectual disability, Language assessment, CCAT



Abstract No: 10050

Relations between mental terms and theory-of-mind understanding in Cantonese-speaking children with and without autism spectrum disorders

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Abstract Content:

While considerable research has shown that children with autism spectrum disorders (ASD) have deficits in understanding mental terms (Ziatas et al., 1998) and theory of mind (ToM) (Baron-Cohen, 2000), little is known about the relation between autistic children's understanding of mental terms and their ToM skills. Moreover, recent studies such as Yi et al. (2013) found that autistic children's understanding of mental terms significantly correlated with their language ability, suggesting that language ability plays an important role in understanding mental terms.

The objectives of the present study were (1) to compare the understanding of mental terms in Cantonese-speaking autistic children with TD children matched in both chronological age (CA) and language ability (LA); (2) to examine the relation between ToM skills and understanding of mental terms; and (3) to investigate the relation between language ability and understanding of mental terms.

29 Cantonese-speaking children with ASD ($M = 7.01$, $SD = 1.29$) and 30 CA- and LA-matched TD children ($M = 7.10$, $SD = 0.90$) participated. To measure understanding of mental terms, participants heard 36 stimuli, each began with an utterance containing a factive (*zi¹dou⁶* 'know') or strong nonfactive mental term (*ji⁵wai⁴* 'falsely think') followed by a clause, and another starting 'that is to say...' followed by the positive or negative counterpart of the clause. Participants indicated whether the second utterance was correct or not. ToM skills were assessed using unexpected-content false-belief and second-order false-belief tasks. Language ability and nonverbal intelligence were measured using standardized tests (Raven, 1989; T'sou et al., 2006).

Mann-Whitney *U*-tests revealed that children with ASD performed significantly worse than the TD children on strong nonfactive mental terms, but performed similarly to the TD children on factive ones. As for the relation between understanding of mental terms and ToM, significant difference was found only between no-ToM and second-order ToM autistic children for strong nonfactive mental terms, whereas significant differences were found among the no-ToM, first-order ToM, and second-order ToM autistic children for factive ones. For TD children, significant difference was found between first-order and second-order ToM groups for both factive and strong nonfactive mental terms. Spearman correlations showed that, for both autistic and TD children, their correct response rate for factive and strong nonfactive mental terms significantly correlated with their language ability.

The present study found that Cantonese-speaking children with ASD showed a deficit in understanding mental terms relative to TD children. The correlation analysis further indicated that understanding of mental terms for both autistic and TD children significantly correlated with their language ability, which is consistent with Yi et al.'s finding. Our finding also revealed that different ToM skills were needed for understanding factive and strong nonfactive mental terms in children with ASD.

Learning Outcome:

Not applicable

Keywords: autism spectrum disorders; Cantonese-speaking children; mental terms; theory of mind



31st World Congress of the **IALP**





Abstract No: 10040

There is no “Non Verbal Autism”!

Evangelos Bochatziar¹

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Greece

Abstract Content:

After 13 years working with Autistics around the globe seeing at least 15 individuals in the spectrum per day, here is a method which has been established in my clinic which turns all of the non verbal autistics to verbal. Based on many cases of children in ASD low functioning which were non verbal from 3,5 to 10 years old who had had received intensive therapy, speech – Occupational Therapy for 2 to 7 years and the final prognosis reported by their carers was that they are to be non verbal cause of after all of these years of interventions were not capable at all even to pronounce one word.

Afterwards, they referred to us and all of the cases changed from non verbal to verbal. In this presentation are going to be presented and analyzed all of the techniques in a holistic unique method STEP BY STEP which makes all of the kids irrelevantly their age to want to talk. It is including video recordings, photo documents and ways how to put parents or carers in acting with their kids giving therapy to them and get involved properly to their kid's improvement. Furthermore, there will be signals, visual contingencies, keys and more indicating how to communicate, recognize and react properly to all of the autistic behaviors as well as manners to differentiate the therapy to each kid emphasizing the importance of personalization of the intervention each time. In conclusion it is very important for this presentation to be presented as an oral cause there are many things which have to be explained and analyze.

Learning Outcome:

Undersunding the gift of the Autism when is being worked in the way it does need.



Abstract No: 10025

The relationship between vocabulary comprehensions of Sensory Processing in Autism Spectrum Disorder- Study using onomatopoeia –

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Abstract Content:

Object: In DSM - 5, the diagnostic criteria of autistic spectrum disorder (ASD) are the specificity of body sensation such as hypersensitivity or hypoesthesia. In a recent study, reported suggesting a relationship between language and body sensation (Watson et al., 2011), but it is not sufficiently examined how the sensory processing characteristics affect vocabulary comprehension of children with ASD. This study aims to examine the relationship between vocabulary comprehension and sensory processing characteristics in children with ASD by using onomatopoeia with sensation converted to linguistic.

Methods: 15 ASD children aged between 7 to 8 years old participated with no intellectual problems were targeted. The control group consisted of 16 age-matched typical development (TD) children. We conducted a comprehension of vocabulary evaluation and confirmed that there was no difference between the ASD group and the TD group. The questionnaires on the sensory profile (SP), which assesses reaction to sensory stimulation were administered to guardians of the ASD children. Onomatopoeic comprehension tasks of 30 questions for phonomimes or phenomimes and for psychomimes were administered.

Results: The average score of phonomimes or phenomimes task in the ASD group was 18.0 (range: 13.0 - 20.0). The psychomimes task average score was 13.0 points (range: 7.0 - 17.0). In the TD group, the phonomimes or phenomimes task average score was 24.0 points (20.2 - 27.0) and the psychomimes task average score was 21.5 points (19.2 - 22.0). This results showed a significant decrease in onomatopoeia tasks in the ASD group compared to the TD group. However, there is no difference between the TD group and ASD group in the recognition of nouns, the results revealed that the ASD group shows difficulty in onomatopoeia comprehension. In addition, a multiple regression analysis also revealed the relationships between understanding phonomimes or phenomimes and psychomimes and sensory processing, in ASD children. By multiple regression analysis, sensory hypersensitivity was selected as an explanatory variable of phonomimes or phenomimes, and sensory seeking was selected as an explanatory variable of psychomimes.

Discussion: In ASD children, understanding of vocabulary such as noun was similar to TD children, but showed a significant decrease in understanding of onomatopoeia. It was thought that the specificity of sensory processing of children with ASD inhibited understanding of onomatopoeia. It was shown that appropriate sensory processing is necessary as a basis for understanding onomatopoeia in children with ASD. Furthermore, it was revealed that sensory processing involved is different between phonomimes or phenomimes and psychomimes, suggesting that provides vocabulary teaching methods matching the characteristics of children with ASD are necessary.

Keywords: Autism Spectrum Disorder, onomatopoeia, Sensory Processing,



Abstract No: 9664

Autism spectrum disorder with concomitant grammatical specific language impairment: A case report

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Abstract Content:

Introduction and aims of the study: Autism spectrum disorder (ASD) and specific language impairment (SLI) have been considered separate syndromes for years; however, infrequently, patients present with both features. In recent years, there have been two different views of linking ASD and SLI. One view is the way that SLI is divided into ASD subclasses, called autism with language impairment, and the other is that ASD is associated with SLI. We report a case of a male adult with ASD with concomitant grammatical SLI (G-SLI).

Patient and methods: The patient had language delay in infancy, however, since his school age, has had no subjective language problems. At the age of 18, he was diagnosed with Asperger's disorder, and at 21, he was admitted to our hospital. He was diagnosed with ASD with attention deficit hyperactivity disorder. He scored 43 on the Autism-Spectrum Quotient (Japanese version), and 102 on the Social Responsiveness Scale for adults. Both scores exceeded their cut-off points. His Verbal Intelligence Quotient in the Wechsler Adult Intelligence Scale (3rd edition) was 97, and his Verbal Memory Index in the revised Wechsler Memory Scale was 91. Additionally, his Aphasia Quotient in the Western Aphasia Battery (Japanese version) was 96.7, though he sometimes showed communication difficulties in his conversation with a speech therapist.

He undertook a sentence syntax test, which included the production of case particles and comprehension of syntactic sentences. In the production task, he was requested to fill blanks with case particles to correctly complete a sentence describing a picture. In the comprehension task, we asked him to select, from four pictures, the picture that agreed with a written sentence.

Results: His score on the sentence syntax test was exceptionally low, especially in the production task. When the sentences were composed in a basic order, the patient's score was good. However, when scrambled, his score was rather poor. We also conducted the test on 10 adults with ASD, and none showed these same features.

Conclusions: These grammatical impairments concur with those of G-SLI and therefore, we concluded that the patient had G-SLI in addition to ASD. Thus, it is important to check for language disability in cases of communication difficulties, without a hasty judgment assuming that it is caused by ASD.

Learning Outcome:

Grammatical features in ASD with concomitant G-SLI.



Poster Presentation: Session MP2-4 / Child Speech, Aug. 19th (Mon.) 13:30-15:00

Abstract No: 11486

Profile of Hearing Loss in Down Syndrome Children with Delayed Speech in Audiology Clinic Dr. Soetomo Hospital

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Abstract Content:

Background: Down syndrome usually arises related to trisomy 21 chromosome. The evidence on Down syndrome ranges from 1/1000 births in some countries. The syndrome is commonly associated with the risks of developmental delays and difficulties including speech and hearing loss. Previous studies of delay in speech and hearing have shown various results. **Objective:** To determine the frequency of delayed speech in Down syndrome children at the Audiology Clinic Dr. Soetomo Hospital Surabaya within periods of 2013-2017.

Methods: This study is a descriptive observational with a cross-sectional design using secondary data about the development of speech and assessment of hearing loss in children with Down syndrome. Data were collected from the medical record. **Results:** There were 30 patients with a delayed speech in children with Down syndrome. Distribution of sex was 19 (63.3%) male patients and 11(36,7%) female patients. The distribution of the age was most frequent in 8 patients (26,7%) with the age of more than 1 to 2 years. The least frequent was 1 patient (3,3%) with the age of 6 months. The hearing loss found in 19 patients (63.3%) and normal hearing in 11 patients (36,7%). The degree of hearing loss was in 1 patient (3.3%) with profound hearing loss, 7 patients (23.3%) with severe hearing loss, 10 patients (33%) with moderate hearing loss, 1 patient (3.3%) with mild hearing loss. The risk factor as the problem on maternal health during the prenatal period was in 5 patients (16.7%), natal period problems in 11 patients (36.7%) and postnatal period problems in 16 (53.3%). **Conclusion:** This study showed the hearing loss was prevalent in Down Syndrome children with delayed speech. The problems found related to the risk of delayed speech during prenatal, natal and postnatal periods. The hearing loss should be considered during treatment of speech delay in Down Syndrome children.

Learning Outcome:

The hearing loss should be considered during treatment of speech delay in Down Syndrome children.

Keywords: delayed speech, hearing loss, children, down syndrome



Abstract No: 9985

Effects of Parental Interaction on Infant Volubility and Vocal Type

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Abstract Content:

This study examined 4-month-old infants' vocal responses to parents using the still face paradigm (Franklin, Warlaumont et al. 2014). 2-month-old infants can already be actively and vocally involved in proto-conversations with their parents (Oller, 2000). In Yato et al. (2008), infants aged 4 and 9 months both decreased their positive facial expressions and looked less time at their mothers when their mothers stopped interacting with them. Their study suggested that infants may already develop awareness of social contingencies at 4 months of age. However, there has not been any study so far investigating whether infants as early as 4 months will vocally react differently when their mothers turn "still-faced" as opposed to interacting with them. Our current study examined whether 4-month-olds show different vocal responses during the three episodes of the "still face paradigm" (Tronick, Als et al. 1978).

Ten infants aged 4 months and their mothers are to be included in the study. All the dyads will complete the still-face experiment. At first the infant and the mother sit face to face and interact freely for three minutes (i.e. Face to Face, FF). After the alarm rings, the mother stops interacting with the infant and goes into "still-face" immediately for two minutes (i.e. Still Face, SF). The mother maintains her eye contact with the infant, and her facial expression stays neutral throughout the time. Last is conversation reunion, where the mother reengages with the infant for three minutes (i. e. Reunion, RE). All three episodes were video and audio recorded.

Two coders, the first and second author are trained by the third author, who also acts as the master coding in the study. Infants' vocalizations will be coded as either protophones (or speech-like vocalization), vegetative sounds or cries. The protophones will be further classified as vocants, squeals and growls.

Our preliminary results included two mother-infant dyads. For the vocalizations categorized as either protophone, vegetative sound, or cry, the two coders showed an overall agreement of 86% and kappa of .59. For the protophones coded as either vocant, squeal, or growl, the coders achieved 74% of agreement and kappa of .45. Results showed that one infant increased her vocalizations when the mother ceased to interacting with her, and decreased her vocalizations when the mother re-engaged. However, another infant did not show a significant change in the amount of their vocalizations for the three episodes (volubility: FF=13/min, SF=13.5/min, RE=16.33/min). Our findings suggest that infants as early as four months may have learned that their vocalizations can mediate parents' vocal behaviors, or at least can be used as a way to attract their mothers' attention when their mothers were not engaged in conversing with them.

Learning Outcome:

- From early in the 1st year, infants have learned that their prelinguistic vocalizations elicit reactions from others.
- Infant shows flexibility of usage of vocal type across different circumstances.

Keywords: infant vocalization ; volubility ; still face paradigm



Abstract No: 9955

Children's disfluency in Japanese

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University of Teacher Education Fukuoka/ Japan

Abstract Content:

[Objective] Elucidation of fluency disorders which occur in the processes of language acquisition.

[Background] Yairi & Sheery (2015) said that stuttering like disfluency (SLD) occurred in normal speakers and the distinction between normal disfluency and stuttering sometimes blurred. This kind of disfluency is also written in ICD-10 as a popular symptom on the process of language acquisition in infancy. Ujihira (2011) showed that adult speakers stumbled over phonological markedness but grown-up stutterers mainly deadlocked over anticipation of complex articulation. Therefore, elucidation of children's disfluency could be a key to the assessment of the distinction between young stutterers and normal children.

[Method] 1) The connected speeches including 26 keywords preschool children produced were recorded with IC recorders, sampling 44.1kHz, 16bit, in 2018. It took 10~15 minutes for each examinee. Key words included marked syllable structures like CVC and CVV, marked segments that are late in language acquisition, and complex articulation like obstruents and the double articulation. The keywords were showed with pictures in a talk between the examiner and the examinee. 2) The youngest examinees were 7 male and 6 female 4-year-old children, the intermediate ones were 5 male and 7 female 5-year-old children, and the eldest ones were 6 male and 9 female 6-year-old children. They were Japanese native speakers. 3) 3 specialists transcribed the recordings and agreed with all the deviations the examinees produced. Recorded ambiguous pronunciations were checked with spectrogram by SUGI speech analyzer.

[Results] (1) Most of the examinees pronounced heavy syllables and difficult articulation fluently. (2) The youngest speeches were the most deviant and the eldest ones were the fewest. They were no sexual differences. (3) Blocking, repetition and replacement were observed in their disfluent speeches. The blocking and the repetition showed the same tendency of phonetic transition. The speeches stop or repeat in front of the marked segments. Most of the units of the repetitions were morae. Segment and syllable repetitions were rare. (4) The replacement was from marked segment to unmarked one. (5) The word initial /r/ and the middle of the word /d/ were unstable.

[Discussion] 1) The phonological unit mora and the unmarked complex articulation are acquired under 4 years old. However, the youngest haven't completed acquisition of all the markedness yet. These reflect the result (1) and (2). Result (3) suggests that the normal children's disfluency have the same tendency of the phonetic transitions and the unit of repetitions as adult non-stutterers' disfluency Ujihira (2011) showed. The exceptions are about the marked segments on the way of language acquisition. The result (4) is the typical pattern of language acquisition. The result (5) suggests that in the infants' mind the phonological features of sonorant and continuant are still under specification.

Learning Outcome:

The participants will be able to classify SLD as the cause of language acquisition or stutterer's speech disorders.

The participants will be able to predict a process of language acquisition through disfluency children produce.



Keywords: Stuttering like disfluency, Language acquisition, markedness, unmarkedness, complex articulation



Abstract No: 9940

Expediting Speech Intelligibility following Cycle Phonological Remediation Approach for Children with Hearing Impairment

Ciao-Yi Ke^{*1} ; Kai-Mei Chen^{*1} ; Chia-Hui Lin¹

¹Chung Shan Medical University/ Department of Speech Language Pathology and Audiology/ Taiwan

Abstract Content:

Objective: The purpose of this study is to investigate the efficacy of the Cycles Phonological Remediation Approach as an intervention for children with hearing impairment and moderate to severe speech sound disorders.

Background: Children with hearing impairments are common in children and adolescents. Children with hearing impaired have unintelligible speech, which seriously affect the clarity and effectiveness of overall communication as well as result in negative impact on social life, communication, cognition, learning and employment (Lieu, 2013; Theunissen, Rieffe, Netten, Briaire, Soede, Schoones & Frijns, 2014; Woodcock & Pole, 2008). Studies also have shown that hearing-impaired children are more likely to have social and emotional difficulties due to poor communication skills and poor interpersonal interactions (Theunissen et al., 2014). Therefore, to improve speech intelligibility for facilitating communication for children with hearing impairment is paramount. The Cycles Phonological Remediation Approach had been intervened for children with hearing impairment (Gordon-Brannan, Hodson, & Wynne, 1992; Hodson, 2001). For example, Gordon-Brannan et al. explored the effectiveness of the Cycles Phonological Remediation Approach in children with mild hearing impairment at 4.5 years old. The results showed that speech intelligibility increased. The Cycles Phonological Remediation Approach has been applied to children in English and Spanish, but there is no research investigated the result for Mandarin-speaking children. Therefore, there is a need to study the efficacy of the Cycles Phonological Remediation Approach as an intervention for children with hearing impairment.

Method: Three preschoolers or school-age children with hearing impairment at age 4;0 to 8;11 will participate in this study. Cycles Phonological Remediation Approach will be used as an intervention in this study. Each child will receive 18 hours sessions for two cycles of phonological remediation. Three phonological patterns will be targeted for each child. Each instructional sequence in the session was as follows: (a) review, (b) listening activity, (c) target word cards, (d) production practice, (e) stimulability probing, (f) listening activity, and (g) home program. A multiple baseline design across subjects will be conducted. Three phases will be included in this study: (1) baseline, (2) intervention, and (3) follow-up. The target single word test will be administered during baseline, intervention, and follow-up phases to assess generalization and maintenance of learned skills. Data will be analyzed by visual analysis and effect size. In addition, other dependent variables will be analyzed to compare the differences between pre- and post-intervention: (1) Percentage of Words Correct, (2) Percentage of Consonants Correct, (3) Percentage of intelligibility, (4) Numbers of Phonological Process Occurrence, and (5) Percentage of Phonological Process Occurrence.

Results: Data analyses is to be completed.

Discussion: Result from this study will provide speech-language pathologists working with Mandarin-speaking children with speech sound disorders to guide their intervention strategies.

Learning Outcome:

The learner will be gain knowledge about:

1. describe performance of phonological patterns for children with hearing impairment.



2. identify considerations of primary Mandarin cycle phonological patterns of targeting goals.
3. discuss efficiency of treatment for expediting speech intelligibility for children with highly unintelligible speech.

Keywords: Cycles Phonological Remediation Approach; speech sound disorders; hearing impairment; phonological patterns(deviations); intelligibility



Poster Presentation: Session MP2-4 / AAC, Aug. 19th (Mon.) 13:30-15:00

Abstract No: 10063

Facilitating Phonological Awareness Using a Speech-Generating Device in a Child with Autism Spectrum Disorders

Yu-Chen Huang^{*1} ; Szu-Han Kay Chen^{*2}

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Abstract Content:

Purpose: Phonological awareness is important for developing literacy skills in children. This type of intervention not only has been used in children with language and speech sound disorders, but also children with limited speech, and/no need to use Augmentative and Alternative Communication (AAC). However, current studies were mostly conducted with English-speaking children. In addition, few evidentiary AAC services were reported from children using AAC in Chinese language. People learn a phonetic symbol system such as pinyin while learning Chinese written language in Taiwan. The phonetic symbol system is commonly used as training materials and cueing in literacy training. Therefore, the purpose of the case study is aimed to investigate the effects of a phonological approach to Chinese phonetic training for phonetic symbol-sound correspondences in a child with Autism Spectrum Disorder (ASD).

Method: A 6-year-old child with ASD, and several language delays received a phonological intervention using a speech-generating device (SGD). The training approach included, letter-sound correspondences to pin-yin blending under modeling and guided practice. The therapy consisted of one 30-minute session per week making a total of 10 sessions in 10 weeks conducted in an out-patient clinic using Chinese as the instructional language. A consistent prompting hierarchy was used to provide systematic feedback and reinforcement.

Results and Discussion: The data from baseline and 10 intervention sessions were collected. The baseline data showed the clients had little or no conventional forms of communication. The preliminary data showed that the child had improved the symbol-sound matching skills from maximum prompt to moderate prompt. The complete analysis will include visual inspection, statistics, and parents' feedback as social validity to identify the overall acceptance of the intervention. These final results will be presented in 2018 IALP.

Learning Outcome:

1. Identify the characteristics of the Pin-yin system (Chinese phonetic symbol system)
2. Explain the procedures of the treatment protocol used in

Keywords: Phonological awareness, Chinese phonetic symbol, AAC,



Poster Presentation: Session MP2-5 / Educational SLP, Aug. 19th (Mon.) 13:30-15:00

Abstract No: 10035

Relationship between presbycusis and cognitive performance: A retrospective analysis

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Abstract Content:

Presbycusis, a complex degenerative hearing condition, is one of the most prevalent chronic problems in older adults worldwide. The prevalence of hearing loss increases with age: three quarters of those 70 or older have a loss in at least one ear (Goman & Lin, 2016). With a rapid increase in the incidence of hearing loss with age, older adults might experience cognitive deficits due to increased comprehension load, reduced social interactions, fatigue, and depression (e.g., Fortunato et al., 2016). The purpose of this retrospective analysis was to explore the relationship between presbycusis and cognitive performance in older adults (65 years and above). From the data set of 90 older adults, 54 participants, diagnosed with mild to moderate sensorineural hearing loss, were selected for the study. The overall cognitive scores obtained from *Rapid Geriatric Assessment* were retrieved from the data set. Other variables pertaining to social determinants of health (occupation, education, access to technology, access to healthcare, and income) were also included in the multiple regression analysis. Results indicated that a significant relationship existed between hearing loss and overall cognitive performance in older adults. Additionally, the overall WHO-QOL scores obtained by the participants indicated a reduced quality of life. While providing services to older adults, it is important for healthcare professionals to understand how hearing loss impacts cognitive performance and overall quality of life.

Learning Outcome:

1. Identify various biomarkers related to presbycusis and cognitive decline in older adults.
2. Summarize the theoretical constructs that explain the associations between presbycusis and cognitive decline in older adults.
3. Describe the nature of relationships among hearing loss, cognitive performance, and quality of life in older adults.

Keywords: cognition, presbycusis, quality if life, older adults



Abstract No: 9793

The possibilities of the work of a speech therapist with the Deaf/HH in a non profit organization in Brazil

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¹Language Therapy/ PUC-SP/ Brazil ¹Deaf/HH Department/ ADHARA/ Brazil

Abstract Content:

Introduction: The difficulties faced by Deaf/HH related to the language acquisition, social skills and education are historical and are connected to the poor quality of input language and social interaction from birth and extend throughout life. In addition, educational institutions are not prepared to deal with individuals whose way of perceiving the world (even for those who take advantage of their remaining hearing through hearing aids or cochlear implants) is through vision. There is, then, the need for an action that might enable the development of language and social skills of these individuals. The Adhara Institute (a nonprofit organization that assists children, teenagers and young people with hearing loss and their families) aims to provide a place of inclusion, information and coexistence in order to allow these individuals to develop social and language skills in an environment in which the Brazilian Sign Language (Libras) is the primary means of communication.

Objective: to show how the work of a language therapist is developed, allowing the development of these individuals in an environment full of social significance and challenges to be overcome by the users through planned activities.

Method: A. Meetings once a week with the Social Supervisors (2 hearing and 2 Deaf). The work is based on activities that can help the development of language and social abilities in their direct work with the Deaf/HH. B. With the Deaf/HH it's done a work related to speech and lip reading awareness. All activities are performed in group, in an interactive and playful way, seeking the active participation of the individuals involved. It is demonstrated how speech sounds are performed, leading them to produce them in meaningful situations. The same is done for the development of lip reading.

Results: 1. Regarding the supervision of the work, after two years of operation, there is a greater adequacy of the performance of all the supervisors, both in the area of language as in the development of social skills. The work with the teaching of SL to parents was also a focus of supervision, seeking a change in relation to the traditional form of teaching and already shows positive results. 2. Regarding speech and lipreading awareness, after 1 year and six months of work, it is perceived that children and adolescents were increasingly interested in speech and lip reading activities, even those who were, initially, inhibited and refractory to the possibility of speech development. We clearly perceive the development of a greater focus and understanding of the mechanisms involved in phonation and improvement of lipreading ability in controlled situations.

Learning Outcome:

1. To be aware of the possibility of work with the Deaf/HH that is not based in clinical work.
2. Possibility of supervising the work of language and social skills to a team that work with the Deaf/HH.

Keywords: deafness; language; social interaction; speech; lipreading



Abstract No: 9782

Application of Model Core Curriculum to an Existing School Program and Creating Assessment Forms for Evaluating Clinical Practicum in Japan

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Abstract Content:

Background: In 2018, the educational guidelines (EG) and model core curriculum (MCC), which was led not by the government but the professional organization (i.e., Japanese Association of Speech-Language-Hearing Therapists: JAS), were completed for training speech-language-hearing therapists (SLHTs) in Japan. Although the purpose of developing MCC was to nurture SLHTs with sufficient knowledge and skills as professionals, it had not been applied to any one of the existing curriculums. At the same time, any nationally standardized assessment form for evaluating clinical practicum of students was not available in Japan.

Objectives: This study aimed at 1) verifying whether the proposed MCC is appropriate and implementable in an actually existing educational institute, and 2) developing assessment forms for evaluating clinical practicum of students that can be used by clinical supervisors nationwide.

Methods: ① For the verification of the MCC, we selected the SLHT program of an educational institute that was undergoing the process of curriculum refinement, and asked them to revise their curriculum with an reference to the MCC. ② For the development of assessment forms to evaluate student's performance during clinical practicum, we gathered existing evaluation forms from multiple SLHT training programs in Japan. We also found materials pertaining assessment on clinical practicum from other countries. Based on these obtained materials, we have launched on developing new assessment forms to evaluate students' performance during their clinical placement, which may ideally become a standardized assessment forms used by clinical supervisors nationwide.

Results: ① One program underwent the revision of their curriculum. It has become the first example of an MCC-based curriculum. In this example, the entire curriculum was constructed based on the framework of the MCC: from (A) fundamentals of speech, language, and hearing disorders, (B) basis of clinical speech-language-hearing pathology, (C) understanding of speech-language-hearing pathology, (D) implementing speech-language-hearing therapy (diagnostics and treatment of speech-language-hearing disorders), (E) clinical practicum, and (F) research. This particular program placed 'research' as one of the unique emphases of this educational institute. Furthermore, the school is now applying the learning goals and objectives for specific areas of disorders indicated in the MCC to the revision of their curriculum. ② We have selected the items to assess the clinical practicum of the students, and divided them into three categories: (1) evaluation / diagnosis, (2) intervention (3) professional, interactional and personal qualities including communication ability.

Discussion: It was possible to apply MCC to existing school program in Japan, particularly at the time of their curriculum revision. It was also possible to organize subjects and contents of the courses as recommended by the MCC. At the same time, we could start creating new assessment forms to evaluate students' performance during their clinical practicum.

Learning Outcome:

1. Participants can describe how the MCC was first applied to the actual school curriculum in Japan.
2. Participants can describe the contents of assessment forms developed in Japan.



Abstract No: 9780

Serving Children with Hearing Loss in General Education Classrooms

Elizabeth Martinez^{*1} ; Carol Westby¹

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Abstract Content:

This poster describes types of social and academic difficulties that students who are DHH experience in general education classrooms and presents a framework for a multidimensional support system for students with hearing impairments, enrolled in general education classes.

Advances in technology have markedly affected the way that children with hearing loss are educated. Cochlear implants, bone-anchored hearing aids, digital hearing aids, personal-worn FM amplification systems, and classroom amplification systems have given the majority of students with hearing loss access to sound. Many students with hearing loss using these technologies develop highly intelligible speech. Their excellent speech may give educators the false belief that such children also have full access to the language and learning experiences of the general education classroom. The vast majority of students with significant hearing loss are now educated in general education classrooms.

Educational systems are based on the assumption that students in the classroom will perceive, and therefore understand, all of what the teacher is saying. When much information received in school is fragmented because of hearing loss, learning consequences are likely. Even with the latest hearing technology, normal hearing ability is not restored by hearing devices (Marschack, 2010). Even aided thresholds of 20 dB HL will cause the soft speech, the high pitch speech sounds and unemphasized words to be undetected or too quiet to process. It is not unusual for children with hearing loss to have a 20% 'listening gap' as compared to class peers who may miss only 5% of information.

Although increasing numbers of students who are DHH are being educated in general education settings, not all receive an appropriate education. This occurs for a variety of reasons. Most frequently mentioned barriers noted in the professional literature fall into three categories: (a) general education professionals' attitudes, knowledge, and skills, (b) classroom instructional patterns, and (c) the communication and academic delays that often accompany a hearing loss (e.g., Eriks-Brophy, et al., 2006; Luckner & Friend, 2008; Reed et al., 2008). Examples of possible assistance provided are the discussion of specific academic, social, or behavior problems, instructions in the use of amplification technology, the demonstration of visual instructional techniques, assessment of the student's abilities and progress, and the preteaching of specific vocabulary and concepts for upcoming lessons. For a variety of reasons (e.g., high SLP caseload, lack of time for teachers to consult), the general education teacher often does not receive the quantity or quality of collaboration or consultation needed to help the student with a hearing loss function optimally in the environment.

Learning Outcome:

- Describe the academic and social difficulties students with hearing loss experience in general education classes
- Describe a framework for the multiple types of support needed for students with hearing loss enrolled in general education programs
- Explain types of supportive interventions to promote the academic and social skills of students with hearing loss in general education

Keywords: Deaf; hearing loss; general education classrooms; speech language services; educational support



Abstract No: 9714

Speech Intelligibility, Mean Length of Utterances, and Number of Difference Words in Cochlear-implanted Children through Chinese Language-sampling Analysis

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²Educational SLP/ The Affiliated School for Students with Hearing Impairments of National University of Tainan/ Taiwan

Abstract Content:

OBJECTIVES: This study was to explore speech intelligibility, mean length of utterance (MLU), and number of difference words (NDW) of Mandarin-speaking children with cochlear implants (CIs) through language-sampling analysis and also investigated the factors of cochlear-implanted age and duration.

BACKGROUND: The previous studies showed that CIs had considerably improved the oral language of hearing-impaired children, but most studies conducted without Chinese language-sampling analysis so that available information regarding Mandarin-speaking children was few in Taiwan. Thus, there is a need to investigate speech intelligibility, lexical diversity (e.g. NDW), and syntactic complexity (e.g. MLU) in Mandarin-speaking children with CIs to understand if CIs benefit children with severe to profound hearing loss.

METHOD: This cross-sectional study included 14 Mandarin-speaking children with CIs in southern Taiwan. Those subjects were 8 girls and 6 boys, chronological ages 4 to 17 years and implanted duration 1 to 12 years, and the average implanted ages was 4 years. The language samples were recorded in a therapy room with the background noise below 35 dB. The exam process was divided into three parts: (1) the articulation testing by the self-made phoneme-balanced word list for CI users, (2) the language samples collecting via picture description for 15 minutes, and (3) the language samples collecting through natural conversation for 15 minutes. After the procedure was finished, the data were analyzed to find the measures of MLU and NDW, and to sort the speech errors out. These data were then compared with those of typical children. The correlation analyses were conducted to find the relevance of these factors (the implanted duration, the implanted age, and the duration of auditory rehabilitation) between the performances of speech and language.

RESULTS: All measures showed significant differences in children with CIs and their variants, compared with the typically developing age-matched peers. The results suggested that even though some had used CIs for longer time and their implanted age was almost the average, their performances of language and speech were not necessarily better than other children with the same implanted age but less implanted duration.

DISCUSSION: Although we carried out this study as scrupulously as possible, there were still limits on the procedures, such as speech intelligibility of some subjects were relatively low and it's hard to transcript into the IPA form, causing the decreasing number of total utterances in their language samples, or underestimating their MLUs. Moreover, it's difficult to determine whether the MLU could be the index of the grammar performance for the examinees aged over 6 years.

Learning Outcome:

1.Explain how the factors(implanted ages, implanted duration and duration of hearing rehabilitation) affect the oral language of children with Cis



2. Provide an overview of the oral language performance of CI users

3. List the common speech errors of CI users and compare with typically developing age-matched peers

Keywords: Cochlear implants; language sample analysis; Mandarin; Mean length of utterances; MLU; Speech intelligibility



Abstract No: 9892

Enhancing Interprofessional Conflict Resolution Skills of Healthcare Students

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Abstract Content:

The purpose of this study was to investigate whether brief one-time simulation training of interprofessional conflict resolution based on the TeamSTEPPS® conflict resolution protocols would strengthen pertinent self-efficacy beliefs in health sciences students. 192 undergraduate students at an institution of higher education participated in the study. 66.7% (n =128) were nursing students and 33.3% (n = 64) were speech, language, and hearing sciences students. Participants watched a brief online lecture on the TeamSTEPPS® conflict resolution protocols and formed groups of 3 to 5. One student in each group acted out a conflict with an actor who portrayed a team member from the other profession; the remaining followed the interaction on a TV monitor. Prior to watching the lecture and after the interaction, students filled out a self-efficacy survey designed for this study. Results indicated that confidence in both student cohorts improved significantly post-training. Nursing students had significantly higher scores than speech, language, and hearing sciences students both prior to and after the training; in the latter group, students who interacted with a male actor had significantly lower post-training scores than students who interacted with a female actor. Findings suggest that brief simulated conflict resolution training is an effective and efficient way of improving students' pertinent self-efficacy beliefs.

Learning Outcome:

1. Participants will learn about interprofessional conflict resolution self-efficacy.
2. Participants will learn about incorporating interprofessional conflict resolution in SLP training.

Keywords: Interprofessional conflict resolution, self-efficacy, speech-language



Poster Presentation: Session MP2-6 / Voice, Aug. 19th (Mon.) 13:30-15:00

Abstract No: 10015

The efficacy of voice therapy for pediatric voice-disordered population: A systematic review and meta-analysis

Jehanne Chevonne Hui^{*1} ; Estella P.-M. Ma¹ ; Alice K.-Y. Siu² ; Jacky Lo²

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Abstract Content:

BACKGROUND: Behavioral characteristics of children are highly associated with a phonotraumatic voice use pattern, and hence the development of dysphonia. Voice therapy is always the first-line intervention approach for dysphonia in children. Cohort studies and recent experimental studies with control groups have provided conflicting evidence on the efficacy of voice therapy compared to no intervention or other interventions. To date, there has not been any systematic review done to evaluate the evidence of voice therapy and compare treatment options for children with dysphonia secondary phonotrauma.

OBJECTIVE: This systematic review aimed to investigate on the efficacy of voice therapy for children with dysphonia secondary to phonotrauma compared to no intervention or other interventions.

METHODS: Two independent reviewers identified studies through searching on electronic databases and handsearching. They selected studies, extracted data; and evaluated methodological quality of the included studies using appraisal items adapted from Critical Appraisal of Systematic Review or Meta-Analysis (CASM). Meta-analysis was carried out for studies at low risks of bias, while a descriptive synthesis was carried out for studies at high risks of bias.

RESULTS AND DISCUSSION: The systematic review and meta-analysis will guide clinical practice in prioritising treatment options for pediatric population.

(Acknowledgements: This study was supported in part by a RGC General Research Fund, Project number: 17634416)

Learning Outcome:

1. Discuss the evidence of voice therapy for pediatric voice-disordered population.
2. Discuss the future clinical / research directions on management of pediatric voice.

Keywords: systematic review; meta-analysis; pediatric voice therapy



Abstract No: 9753

Effectiveness of Cepstrum/Spectrum analysis of dysphonia for Japanese sustained vowel and continuous speech

Chika Abe¹ ; Masanobu Mizuta² ; Tsukasa Takeue¹ ; Kana Miyamoto¹ ; Tomoyuki Haji²

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Abstract Content:

【Background】

The Cepstral Spectral Index of Dysphonia (CSID) is a one evaluation method of cepstrum/spectrum analysis, which has been described as useful for evaluating dysphonia as an acoustic measurement in the United States and Europe. However, the previous studies have focused on English and other European languages, and the utility of this assessment in Japanese speakers has not yet been studied.

【Objective】

This study aimed to investigate the correlation between the CSID values and the scales of auditory-perceptual evaluation from Japanese sustained vowel and continuous speech, according to CAPE-V (Consensus Auditory-Perceptual Evaluation of Voice) in English.

【Methods】

Thirty patients with various voice disorders produced sustained vowel and continuous speech in Japanese which were recorded. Voice samples were recorded using a head-mounted microphone (SM35, SHURE, IL, USA) and digitized at 44.1KHz and a resolution of 16 bits using a Computerized Speech Lab (Model 5109, KayPENTAX, Montvale, NJ). The CSID of the following voice types were calculated with the ADSV (Analysis of Dysphonia in Speech and Voice, Model 5109, KayPENTAX, Montvale, NJ) : sustained vowel only, continuous speech only, and sustained voice and continuous speech. Auditory-perceptual evaluation was assessed through sustained voice and continuous speech by 2 otolaryngologists and 3 speech-language pathologists, using a 100-mm visual analog scale according to CAPE-V (overall severity, roughness, breathiness, strain). Correlations between the average score of CAPE-V and the value of CSID were assessed using Pearson's correlation coefficient. Statistical analysis was undertaken with SPSS v.24 (IBM).

【Result】

Significant correlations were found between the CAPE-V score and the CSID value calculated across sustained vowel and/or sentence. Pearson's correlation coefficient (r) was 0.642 in sustained vowel, 0.782 in continuous speech, and 0.790 in sustained voice and continuous speech, respectively.

【Discussion】

A high correlation exists between auditory-perceptual evaluation and CSID of Japanese sustained vowels and continuous speech, suggesting that CSID is also useful for the acoustic analysis of Japanese. Given that our study showed a particularly high correlation between CSID of continuous speech and auditory-perceptual evaluation scale, suggesting that CSID is suitable not only for sustained vowels but also for continuous speech characteristic of Japanese.

Learning Outcome:



1. CSID is useful for evaluating dysphonia as an acoustic measurement in Japanese as well.
2. Auditory-perceptual evaluation is more likely to be higher correlated with CSID from continuous speech rather than sustained vowel.

Keywords: Cepstrum/Spectrum analysis: auditory-perceptual evaluation scale:Japanese sustained vowel and continuous speech



Abstract No: 9671

Motivational Stage of Adherence to Voice Therapy for Behavioral Dysphonia in the Brazilian Unified Health System

Kariny Zencke da Silva¹ ; Jade Zaccarias Bello¹ ; Diego De Souza Leal¹ ; Daniel Lucas Picanço

Marchand¹ ; Camila Dalbosco Gadenz¹ ; Mauriceia Cassol^{1*}

¹*Department of Speech, Language and Hearing Sciences/ UFCSPA/ Brazil*

Abstract Content:

Objective:

To identify adherence to voice therapy from the motivational stage of Behavioral Dysphonia patients after a voice therapy program.

Method:

The sample consisted of 26 participants attended by the Brazilian Unified Health System, 18 women and 8 men, with a mean age of 58.1 years. The application of the URICA-VOICE scale took place before and after 10 sessions of a voice therapy program. The URICA-VOICE scale is a clinical tool in understanding the patient's motivation and the process of adherence to treatment. Voice therapy intervention aimed at greater functional and muscular balance for vocal production and development of effective communication.

Results:

The URICA-VOICE scale provided a measure of the understanding of adherence to treatment. There was statistical significance ($p = 0.001$) in the values of the motivational stage, which were higher after the intervention compared to the first application of the scale. The highest prevalence of participants in the first application was in the pre-contemplation stage and afterwards, the action stage. Of the 32 questions that make up this scale, six showed statistically significant pre and post voice therapy results, proven by the Wilcoxon test.

Discussion:

Adherence to voice therapy is multifactorial and being motivated to attend is one of the important factors. This study shows that the use of the URICA-VOICE scale in clinical practice is essential to measure the patient's performance in the voice therapy process. It is possible to understand the motivational stage of the patient, as well as to help the Speech-Language Pathologist to create motivational strategies by customizing therapy to the patient's needs. It can also be used as a tool to aid in deciding the moment for clinical discharge.

Learning Outcome:

1. There was statistically significant improvement in the adherence to voice care considering the motivational stage after voice therapy.
2. URICA-VOICE is an important scale in monitoring patient adherence to voice therapy and deciding the moment for clinical discharge.

Keywords: Treatment Adherence and Compliance; Patient Compliance; Motivation; Voice; Dysphonia.



Abstract No: 9732

Examination about the risk of voice disorders - An analysis related to occupation, age, gender -

Kaori Matsumoto^{*1}

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Abstract Content:

Background and Objective : It is thought that there are some people who are likely to suffer from voice disorders among those who do not consult a medical institution. However, the knowledge of prevention from voice disorders is not generally widespread in the present day. The aim of this study is to reveal the risks of dysphonia related to occupation, age, and gender. I carried out objective and subjective evaluation about dysphonia in multiple occupation groups. I will suggest advice regarding dysphonia prevention.

Method : There are 70 participants in three occupation groups of the different vocalism patterns. The first group is teachers who usually use excessive loud voices. The second group is special voice users (actors and announcers) who usually require good voices. The third group is office workers who do not use their voices very often. I carried out two types of questionnaires. One is the Voice Handicap Index -10 (VHI-10), which is a standard questionnaire for voice disorders. The other type is an original questionnaire on throat and voice problems. I also measured their maximally sustained vowels and expiration. The four parameters examined are ① VHI-10 scores, ② throat problem levels, ③ auditory perceptual rating (GRBAS), ④ respiratory dissipation coefficient (that is, maximum expiration time / maximum phonation time). I performed statistical analysis by a chi-square tests about the number of defective people in the group which I classified by an occupation, age and gender.

Result : The old and middle age group of 40 years old or over showed that they had significantly higher level of respiratory dissipation coefficient, and teachers and women groups presented higher level of respiratory dissipation coefficient, although not significant. Moreover teachers, old and middle age, and women groups showed that they had significantly higher level of throat and voice problems.

Discussion: This result coincided with the past report that dysphonia tended to occur to teachers, old and middle age, and women. The study suggested that it is important to enlighten the dysphonia prevention with precedence for these groups.

Learning Outcome:

We found that dysphonia is more likely to occur to teachers, old and middle age, and women.

It is important to enlighten the dysphonia prevention with precedence for the groups which have bad voice data.

Keywords: voice disorders; prevention of dysphonia; voice disorder risks; objective evaluation for dysphonia; subjective evaluation for dysphonia



Abstract No: 9730

Effects of Intensive Vocal Training for School Teachers: A Randomized Controlled Study

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Abstract Content:

There was a high prevalence of voice problems among teachers. However, some voice disordered teachers were busy with work and could not take time off to receive vocal training or treatment. This study investigated the effects of intensive vocal training on voice problems in school teachers.

Thirty teachers with perceptually healthy voice or mild voice problems were randomly assigned to one of two groups: an experimental group (n=15) and a placebo group (n=15). The experimental group received four weeks of Vocal function exercises and a list of vocal hygiene guide, whereas the placebo group only received a list of vocal hygiene guide. Measures included pre- and post-training and follow-up acoustic characteristics and VHI-10. Repeated measures ANOVA were used to analyze the differences of all parameters across three time points.

The results showed that there were significant differences between the intensive vocal training and placebo groups. The intensive vocal training group improved their highest tone and MPFR immediately after the training and follow-up, and also improved their lowest tone

compared to the placebo group immediately after training. In addition, there were significant changes in their highest tone and MPFR immediately after the training for the intensive vocal training group, and improved highest tone and VHI-10 one month after the training for the intensive vocal training group. In contrast, the placebo group appeared to have no significant changes in none of the parameters.

This study showed that the intensive vocal training may enhance physiological functions and quality of life for teachers. Teachers and future student teachers to be may learn how to prevent potential voice problems by using the intensive vocal training program and speech therapist may use it to improve voice problems for teachers.

Learning Outcome:

Intensive vocal training program could prevent the occurrence of teachers' voice problems.

Keywords: intensive vocal training, school teachers



Abstract No: 9110

The Acoustic Voice Quality Index version 03.01 in French and the Voice Handicap Index

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Abstract Content:

Objectives.

The Acoustic Voice Quality Index (AVQI) version 03.01 is a tool for quantitative assessment of the overall severity of dysphonia. Its computation includes six acoustic parameters, which are all carried out by the freeware Praat. It is based on the recordings of a sustained vowel and a part of a text read aloud. The psychometric qualities of this tool have been confirmed by numerous publications in various languages, including French. However, studies investigating the correlation between tools for objective vocal assessment and voice-related quality of life show inconsistent results. Hence, the aim of this study was to contribute to the debate in measuring the correlations between the AVQI 03.01 score computed on French samples and the Voice Handicap Index.

Methods.

The data of 78 patients was used, collected during initial vocal assessment and stored in the ENT caseload of the University Hospital of Liège. The authors measured the Spearman rank-order correlation between the VHI total and sub-scores and the scores computed by the AVQI 03.01 on French samples. Eventually, the correlation between the diagnostic decisions ("normophonia" vs "dysphonia") of both tools was measured using Cramer's phi.

Results.

The Spearman correlation between the AVQI 03.01 score and the total VHI score, when controlling for age, is moderate ($r_s = .62, p < .0001$). The correlations between the AVQI 03.01 score and the functional, emotional and physical sub-scores of the VHI are similarly moderate ($r_s = .643, .543$ and $.514$, respectively, $p < .0001$). The correlation between the diagnostic decisions ("normophonia" vs "dysphonia") by both tools is also moderate ($\phi = .52, p = .000$).

Conclusions.

This study allows to keep things in perspective: even though AVQI 03.01 scores are moderately correlated with the VHI total and sub-scores, one has to keep in mind that they measure two different things. The AVQI 03.01 assesses the overall voice quality in terms of acoustic parameters, whereas the VHI assesses the multi-determined impact on the patient's everyday life situations. Both results should thus be equally taken into account, as part of a comprehensive vocal assessment.

Learning Outcome:

1. describe the need for a comprehensive vocal assessment
2. list the pros and cons of objective vocal assessment tools and voice-related quality of life questionnaires
3. explain why one cannot rely solely on a single one of these tools



Keywords: Acoustic Voice Quality Index; Voice Handicap Index; Acoustic Voice Analysis; Voice Assessment; Quality of Life

Poster Presentation: Session MP2-7 / Voice, Aug. 19th (Mon.) 13:30-15:00

Abstract No: 9700

The personalized approach for prevention of voice disorders in professional voice users

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Abstract Content:

Prevention of voice disorders in professional voice users remains an actual problem of contemporary phoniatrics and speech-language therapy.

Goal: To increase the efficiency of complex personalized prophylactic measures to prevent voice disorders in occupational voice users. Methods: 70 students of MSPU, 30 students of The Humboldt University and 722 attendees of "Voice's Secrets" schools were surveyed.

Results: It was found that the majority of students (65%) underestimate the importance of preventive measures in averting voice disorders; 20% of those surveyed has appropriate assessment and 15% of students overestimates it.

All students completed a lecture course on the anatomy and physiology of the vocal tract, professional voice disorders and prevention of dysphonia. High-risk groups of students as well as everyone wishing to attend were offered a voice training course.

Since 2016, a large-scale all-Russian social project called "Voice's Secrets" has been conducted in 25 cities. Its objectives are to raise the level of knowledge on the problems of preserving and developing a healthy voice in children and adults and to prevent dysphonia in professional voice users. These are major interactive educational campaigns at which leading experts advise patients, speak about voice problems and answer questions that may arise. In 2017 more than 5000 people took part in the project.

Learning Outcome:

1. Personalized preventive care to avert dysphonia among professional voice users should begin during the training of the future specialists. "Basic mechanisms of speech production", "Vocal hygiene" are topics that should be included in the curriculum.
2. It is important to continue the educational work on the preventing voice disorders via the "Voice's Secrets" schools.
3. Students and teachers belonging to a high-risk group of voice disorders, need a professional training of their voice in order to develop its natural qualities.

Keywords: dysphonia; voice disorders; personalized preventive care; professional voice users



31st World Congress of the **IALP**





Abstract No: 10003

Advanced Time-Frequency Analysis and Support Vector Machines for Pathological Voice Detection

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Abstract Content:

INTRODUCTION

Acoustic analysis of voice includes a series of measures such as fundamental frequency, jitter, shimmer, NHR as well as more recently the cepstral peaked prominence. Its appeal to be applied in voice pathology detection is due to its non-invasive nature. However, limited consensus has been reached on the utility of the various acoustic measures for discriminating between normal and pathological voice samples.

The purpose of this work is the development of an automatic pathological voice detection method based on advanced time-frequency analysis enabling the automatic categorization of a sustained phonation as either normal or pathological.

METHODS

This analysis technique consists of three stages: the advanced time-frequency analysis, the feature extraction and the classification.

The advanced time-frequency analysis technique is a positive, transformed Wigner-Ville distribution which retains accurate zero-, first-, and second-order moments. These moments are the Spectral Energy (energy per frequency), Instantaneous Power (energy per time), Group Delay (sec), Instantaneous Frequency (Hz), Delay Spread (sec²) – relates to localized duration, Frequency Spread (Hz²) – relates to instantaneous bandwidth. The spectrogram is a smoothed version of the Wigner-Ville distribution but it does not have accurate moments. Additionally, the Wigner-Ville distribution is not only positive, therefore, we have iteratively transformed it while maintaining the accuracy of the moments.

The feature extraction stage extracts 10 features which include the above zero-, first-, and second-order moments, the peak profiles of the distribution for f_0 and the formant bands, f_1 , f_2 , f_3 .

The classification is performed by a Support Vector Machine (SVM) which is a two-class classifier that maximizes the distance between nearest points of the two classes. The SVM is trained using training samples from both classes (normal and pathological).

The voice signals used were from the KAY database, developed by the Massachusetts Eye and Ear Infirmary Voice and Speech Lab which contains normal and disordered voice samples. The samples used were sustained phonation of vowel /a/.

At the classification stage the voice sample is classified as pathological or normal. 70% of the voice data were used for training and the remaining 30% for testing.

RESULTS

Results of the SVM classifier with the 10 features chosen from the advanced time-frequency analysis distribution indicated that a sustained /a/ phonation can be classified as normal or pathological with an accuracy of at least 90%.

CONCLUSIONS



A procedure is presented to detect pathological voices from sustained phonation using a positive, transformed Wigner-Ville distribution which has accurate zero-, first-, and second-order moments. Classification of normal and pathological voices is successful through feature extraction and Support Vector Machine Classification. This method can be used complementary to perceptual methods, particularly for new clinicians.

Learning Outcome:

1. An advanced positive time-frequency analysis method with accurate zero-, first- and second-order moments and its use in the analysis of voice signals.
2. Pathological Voice Detection with advanced signal processing and classification techniques,

Keywords: Time-Frequency Analysis of Voice; Pathological Voice Detection



Abstract No: 9998

Identifying, Anticipating and Avoiding Voice Risk Factors: Evidence from a Sample of Prospective Voice Professionals

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Abstract Content:

Background: There is universal agreement about the importance of preventive training programmes on vocal health for students preparing for a career that involves professional voice use. Such university programmes generally include voice education and training in technical skills to prevent vocal over- and misuse. As unfortunately many students are found frequently to exhibit voice problems prior to employment, numerous studies call for voice screenings or endoscopic examinations of the larynx to identify at an early stage students with voice disorders or with vocal risk factors that might develop into a laryngeal pathology at a later point in their careers.

Objectives: The study reported here was concerned with a voice screening programme that was integrated in a university voice training programme. The study was aimed to answer four questions: (1) Can the screening method that was applied in analysing the speaking voice of prospective voice professionals reveal the most important voice risk factors? (2) Can the screening be used for individualized learning? (3) Does preventive voice screening have a lasting effect? (4) Will the screening prove a useful tool in terms of professional relevance for students from different fields?

Method: The sample consisted of 24 students of interpreting and 95 prospective teacher students. The students were vocally untrained and participated in a regular voice training course, at the beginning of which each student underwent the voice screening. First, the participants provided a subjective judgement on the basis of the Voice Handicap Index. Next, the students' speaking voice profiles were measured during counting at four intensity levels. Furthermore, a perceptual voice sound evaluation was made while the students were performing a speaking voice profile and reading a short text. On completing the screening test, each participant received individual counselling.

Results: The voice screening tool used did reveal most of the constitutional and habitual risk factors for voice problems. The abnormal voice characteristics were found to include hoarse, breathy and/or strained phonation, juvenile resonance, tension on articulatory organs, and others. The subjective judgement showed voice-related discomforts and problems. Particularly significant differences were found between students of interpreting and prospective teacher students, which are important for their respective voice training and have to be taken into account in establishing university programmes in this field.

Conclusion: The voice screening method presented is a reliable method for identifying, at an early stage, and anticipating risk factors for speaking voice problems in active or future voice professionals. It is easy to carry out serves to provide those who undergo it with a comprehensive overview of their voice and to understand the limitations and vocal capacity of their tool of trade. Thus, the screening is a good basis for an adequate voice training to avoid professional dysphonia.

Learning Outcome:

- Participants will be familiarized with and subjected to a screening method, with special emphasis on the speaking voice.
- Participants will be able to discuss the need for a voice screening for those who will work in voice-demanding occupations.

Keywords: Speaking voice; Voice screening; Risk factors



Abstract No: 9980

Reliability and Validity of the Mandarin Version of the Voice-Related Quality of Life Measure.

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Abstract Content:

The Voice-Related Quality of Life (V-RQOL) measure has been well-established to be a valid, reliable and responsive clinical tool for use in the assessment of individuals with voice disorders and to better understand treatment outcomes. It is also known that self-report measures are especially important for patients with voice-related complaints, as treatment is often individually tailored according to how the problem affects patients' daily life. To date, several studies have investigated on the reliability and validity of V-RQOL in languages other than English, however this has not been performed in Mandarin. Therefore, this study aimed to analyze the reliability and validity of the Mandarin version of the Voice-Related Quality of Life (V-RQOL) questionnaire and to discuss the differences in the Mandarin version of V-RQOL scores between genders.

The translation and validation were performed following the guidelines of the World Health Organization. The Mandarin version of V-RQOL was completed by a total of 57 participants, 27 individuals with voice complaints and 30 healthy control subjects without voice complaints. Analyses were carried out on all of these individuals who administered the V-RQOL measure. Validation, reliability, reproducibility, and responsiveness were evaluated. Statistical analyses demonstrated high internal consistency and high test-retest reliability for the total score, physical functional and social-emotional domain. There was a statistically significant difference between the groups with and without voice complaints. The subjects in the healthy control group had higher scores compared with the subjects with voice disorders for the overall V-RQOL score and for the two domains. This indicates that this instrument can effectively identify whether the individual has voice abnormality or not. However, the scores between males and females showed no significant differences. Based on the results, the Mandarin version of the V-RQOL measures is a reliable and valid evaluation tool for the use of the Taiwanese population.

Learning Outcome:

1. Participants will gain an understanding of how to translate a questionnaire.
2. Participants will gain an understanding of how to administer Mandarin version of V-RQOL.
3. Participants will be able to use the Mandarin version of V-RQOL to better understand and interpret their patients' results.

Keywords: voice disorders; quality of life; validity; reliability



Abstract No: 9935

Perceived psychological distress in Japanese patients with voice disorders.

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Abstract Content:

[Background] Voice disorders and mental health are closely connected. Several reports have pointed out symptoms of psychological distress such as anxiety and depression in dysphonic patients. However, a few studies has focused in the correlation between dysphonia and psychological distress in Japan.

[Objective] The aim of study are to investigate the frequency of anxiety and depression in patients with benign voice disorders, and to assess differences in the extent of anxiety and depression based on gender and diagnosis.

[Method] A retrospective study has carried out using 136 adult dysphonic patients, 61 males and 75 females, aged from 20 to 83 years (mean 53.6±15.2 years) with newly diagnosed benign voice disorders who presented to the outpatient clinic of Tohoku University Hospital from 2016 to 2018. Patients were divided into three groups by clinical diagnosis; 1) Muscle tension dysphonia (MTD), 2) Benign vocal fold lesions (BVFL) and 3) Unilateral Vocal fold Paralysis (UVFP). Psychological distress in the patients of these three groups were assessed and standardized using a hospitality Anxiety and depression scale (HADS). HADS is consists of two subscales; HADS-Anxiety (A) and HADS-Depression (D) and both subscales are evaluated by the score from 0 – 21 points. Scores over 10 represent psychological distress and scores between 8 and 10 represent borderline. HADS-A and HADS-D score were statically tested gender and diagnosis grope.

[Results and discussion] 136 dysphonic patients were diagnosed to 29 patients of MTD, 34 patients of BVFL and 73 patients of UVFP. The mean HADS-A score for the pooled data set was 6.6 / 21 (SD 4.2), and the mean HADS-D scores was 6.1 / 21 (SD 3.7). The frequency of cases of the anxiety was 17.6% (27 cases) and the depression was 11.0% (15cases). The borderline of the anxiety was 16.9% (23 cases) and the depression was 22.1% (30 cases). The anxiety scores were significant higher in females (7.3±4.4) than in males (5.6±3.7). There were no statistic difference of the depression scores by gender. From the point of the diagnosis, the anxiety scores were much higher in MTD, but not significantly between three diagnosis (p=0.06). From the results of this study, approximately 30% of dysphonic patients had psychological distress and female patients had much higher anxiety scores than male.

Learning Outcome:

Relationship between gender and psychological distress in patients with voice disorders.

Keywords: Dysphonia HADS gender



Abstract No: 9898

Outcome of Resonant Voice Therapy for Female Teachers with Voice Disorders in Beijing: Perceptual, Acoustic, Aerodynamic, and Functional Measurements

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Abstract Content:

Many countries have conducted surveys on the prevalence of voice disorders on teachers. The results showed that the incidence of teachers having voice disorders was higher than that of other occupations, and the prevalence of female teachers was higher than that of male teachers. The survey was also conducted in many districts of China, and the outcome was similar. Sixteen female elementary school teachers from Fengtai District, Beijing participated in the study. All subjects received resonant voice therapy in three groups with 5-6 subjects each group, 75 minutes per session, and two sessions per week for four weeks. Speech therapists with at least five-year experience delivered the resonant voice therapy with the combination of resonant voice therapy and voice health education. Pre-and post-treatment data were obtained from aerodynamic measurements, acoustic measurements, auditory perception assessments, and functional assessments before and one-week after the treatment. The results showed that the maximum phonation time was significantly longer after the therapy. Jitter and shimmer were decreased significantly, while Harmonic to Noise Ratio was significantly increased. The acoustic perception assessment showed the grade and roughness were significantly reduced, but there is no significant change in breathiness, asthenia, and strain. The total score and functional scale in the Voice Handicap Index were reduced significantly, but no statistically significant change was found in the physical and emotional scale. Teachers are the representatives of professional voice users. Resonant voice therapy combined with voice health education for teachers indicated a very positive effect on the improvement of teachers' vocal function. It also increased their awareness of voice health and their confidence in communication in their daily life. Based on the effectiveness of integrated voice therapy, it is suggested to generalize this training model to various primary and secondary schools in China to improve the vocal function of Chinese teachers.

Learning Outcome:

1. Resonant voice therapy can improve teachers' vocal function.
2. Resonant voice therapy can be popularized and applied in primary schools all over China.

Keywords: Voice Disorder, Professional Voice, Voice Training



Poster Presentation: Session MP3-1 / Educational SLP, Aug. 19th (Mon.) 15:30-17:00

Abstract No: 10032

A Study of Public Awareness of Speech-Language Pathology Services in Guatemala

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Abstract Content:

Access to and awareness of healthcare-related services is often very limited in developing countries. According to the Central Intelligence Agency (CIA), there are only .93 physicians per 1,000 people in Guatemala. When compared to the United States, which has 2.57 physicians per 1,000 people, this is very low (CIA, 2017). This demonstrates the limited access to basic healthcare in Guatemala. The World Health Organization (WHO) hypothesizes that countries with fewer than 23 physicians per 10,000 people will be unable to provide adequate primary healthcare services (WHO, 2009). The CDC estimates that only 54% of the Guatemalan population is able to have their basic healthcare needs met (CDC, 2017). Based upon this information, the number of physicians in Guatemala is most likely too small to provide adequate support for the primary healthcare needs of the population. Furthermore, developing countries are likely to not have a well-established presence of speech-language pathologists (SLPs), especially in rural areas (Khoja and Sheeshah, 2018). There is also a lack of awareness of SLPs' services (Mahmoud, et al., 2014). Barriers to receiving services, such as a lack of trained professionals, geographical, cultural, linguistic, structural, and financial barriers as well as have also been known to affect people's ability to receive services (Wylie, et al., 2013).

Given the shortage of trained speech-language pathologists in Guatemala, the primary focus of this study was to elicit the perspectives and knowledge of parents dwelling in one of the villages, regarding their awareness of SLPs' services. An interview questionnaire with 10 items was administered to nine parents, living in the village. The primary investigators as well two interpreters, fluent in Spanish and English participated in the data collection. The primary goal of the questionnaire was to elicit information on (a) awareness of speech problems in children, (b) awareness of referrals for speech pathology services in the region, and (c) factors that create barriers to receiving speech pathology services. The questionnaire also included respondent characteristics, such as level of education, income, occupation, household members, etc. Results gleaned from the questionnaire indicated that the respondents had limited knowledge regarding speech problems in their children. The major barriers to access of SLP services were lack of financial resources and transportation. The findings from the current study may help SLPs understand the perspectives of people in rural Guatemala regarding their awareness of speech problems and available services. The findings will also help SLPs gain a better understanding of the limitations to receiving the services in rural Guatemalan villages. This may help with the planning of future service trips to the rural villages of Guatemala. Additionally, global healthcare professionals must be cognizant of the resources and barriers pertaining to the rehabilitation services in developing countries.

Learning Outcome:

Describe the level of awareness of speech problems and speech-language pathology services in Guatemala.

Describe how referrals are made for receiving speech-language pathology services.

Identify the barriers (e.g., economic, geographical, transportation) to accessing speech-language pathology services.



Keywords: speech-language pathology services, developing nations, barriers, access to healthcare

Abstract No: 10026

Perceptions of Current Practice of Speech and Language Therapy Services in Macau: A Preliminary Study

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Abstract Content:

Purpose: This study profiled the current services of speech and language therapies to children with complex communication needs (CCN) from perspectives of speech language therapists (SLTs) and parents of children with CCN in Macau.

Method: Two 20-item questionnaires (i.e., SLTs version and parents version) have been developed by the first three authors under supervision of a professor who work in undergraduate and graduate programs of communication disorders. The items in these two questionnaires have been validated by three SLTs working for at least two years in Macau. The SLTs questionnaire contains demographic details, caseload and service delivery practices, degree of inter-professional practice, engagement with professional development and support, and assessment and management of swallowing and communication difficulties; while the parents questionnaire includes demographic details, service delivery, preferred service delivery and satisfaction. Both questionnaires were filled out through websites. All of the responses will be analyzed using SPSS.

Results: The SLTs in Macau are optimistic about the development of speech and language therapy. However, peer supports and supervisions are still inadequate for the professional development of them. On the other hand, parents of children with CCN are unsatisfied with the current speech and language therapy services due to a relatively long wait of assessment, shortage of licensed SLTs practicing in Macau, low rate of availability of services, and inadequate parental trainings. Parents hoped that the Macau government can offer more consultations and online educational resources for them, along with extra in-school treatment and interdisciplinary support for their children.

Conclusion: Although the development of speech and language therapy services in Macau is just emerging, and the Macau government is proactive in provoking the growth of this profession, this finding highlight the need for an extended support to the SLTs working with children with CCN as well as their parents.

Learning Outcome:

1. Identify perceptions of current practice of speech and language therapy services from speech language therapists
2. Identify perceptions of current practice of speech and language therapy services from parents of children with CCN
3. Identify differences of perceptions of current practice of speech and language therapy services from speech language therapists and parents

Keywords: speech and language therapy; complex communication needs; parents



31st World Congress of the **IALP**





Abstract No: 9952

Language difficulties of children at school – perception of the teachers

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Abstract Content:

Introduction: It is important that a rich and welcoming environment be present at school so that the child's development can be achieved optimally. Often the professionals that work in a Daycare institution is not prepared to work with the language issues of the children. The language therapist is a professional that could help orienting the school staff about the children language issues but does this really happen?

Objective: To evaluate how teachers of preschool education perceive language difficulties.

Method: This was a descriptive/quantitative research conducted through an online questionnaire made available on the Google forms platform and shared through snowball. The questionnaire had open and closed questions. Bardin's theory was used to base the analysis of the open questions.

Results: The participants were 35 subjects, most of whom were teachers with a time of work from 1 to 30 years of public and private schools. Most schools were of regular education and have inclusion of students with special needs. Most teachers work with students with special needs and the special needs cited were: autism, intellectual disability, Down syndrome, deafness, blindness or low vision, physical disability, OCD and hyperactivity. Most professionals perceive the difficulties of the students. In their training, 60% learned to deal with students difficulties, and 40% did not. When they perceive the difficulties of the students, the majority orients the family about the difficulties. 94.3% think that the language therapist can help, and 5.7% do not, but only 8.6% have a language therapist at school. Questioned about how they felt about the students difficulties, they responded that they often felt powerless but supported by the school's coordination, by the school language therapist (when there was one) and helped by the by the readings they searched.

Conclusion: It was concluded that teachers feel a discrepancy in the initial formation and their real needs, that they are not prepared to face the difficulties in the classroom. Despite the problems in training, these teachers perceive the difficulty of their students and seek resources for perform better their work. It would be important to have a school partnership with a language therapist to assist teachers in issues related to areas covered by language therapy. The participants find it important to have a partnership with language therapists in school, but they affirm that it does not always occur.

Learning Outcome:

- Importance of Language Therapists at school
- Language disorders and perception of the teachers

Keywords: Language disorders, school, teachers, Language Therapist



Abstract No: 9938

Spelling and metacognition in speech-therapy students from 2010 till 2018. Implications for education

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Abstract Content:

(1). Background: Getting a degree as speech therapist in higher education depends on several interrelated mechanisms and skills, such as spelling and metacognitive skills. Spelling is a key skill for efficient writing. In addition metacognitive skills are needed to make persons aware of problems and to trigger control processes which can help in reaching the pursued goal.

(2). Objective: In this study we looked at the spelling and metacognitive skills of 1350 first-year bachelor students in speech therapy from 2010 till 2018.

(3). Method: A computerized dictation test was used to look at the number and type of spelling errors. Metacognitive skills were assessed by asking students to rate their own spelling, to evaluate how often they checked their own texts and to rate the problems they experienced. The instruments were validated in a previous study (Vanderswalmen, Vrijders, & Desoete, 2010).

(4). Results:

There were significant changes from 2010 to 2018 ($F(8, 1189) = 6.08; p < .001, \eta^2 = .04$), with students clearly making more spelling mistakes than in the past. Very poor and poor spellers rated their own spelling skills as significantly less correct compared to the other performance groups ($F(4, 1235) = 43.11; p < .001, \eta^2 = .12$). They also had lower study results (percentage on exams; $F(4, 462) = 9.12; p < .001, \eta^2 = .07$). Metacognitive ratings predicted significantly these study results ($F(7, 451) = 2.35; p = .023$), specifically the estimation of verb spelling difficulty was proven an important predictor ($B = 1.49, \beta = -.01, t = 3.31, p = .001$). - Very poor and poor spellers assessed themselves mistakenly to have less problems with verb spelling ($F(4, 1307) = 47.53; p < .001, \eta^2 = .13$), English words ($F(4, 1307) = 6.19; p = .001, \eta^2 = .01$) and with words to memorize ($F(4, 1307) = 6.18; p < .001, \eta^2 = .02$) in comparison to the other spellers. In addition, although the amount of spelling mistakes was in correlation with the self-assessment ($r = -.16, p < .001$), very poor and poor spellers verified significantly less often their own texts compared to their peers ($F(4, 1335) = 7.94; p < .001, \eta^2 = .02$).

(5). Discussion. Taking into account that over time there is a clear increase in spelling mistakes and that some speech-therapy students are still making a lot of mistakes, it may be useful to evaluate their metacognitive skills in order to also focus on their role in learning.

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Learning Outcome:

The relationship between spelling and metacognitive skills and study success from 2010 to 2018

The role of spelling skills and metacognitive skills in education of speech-language therapists

Keywords: spelling, metacognition, study success, students speech-language therapy



Abstract No: 9634

The Stress Level and Resilience of Speech-Language Pathology Students

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Abstract Content:

Health professionals with higher resilience had longer career longevity under intensive working stress in hospitals (Beckwith, 2016). Thus, it is important to facilitate speech-language pathology students' (SLP-S) resilience before they start their practicum which is mostly stressful. This current study investigated the resilience development of SLP-S in Taiwan during their different stages of taking practicum. Additionally, a transformative module of 'Resilience Training' was carefully designed and delivered for SLP-S via a psycho-educational group. The aim of the study includes: 1. investigating the relationships between stress level and resilience of SLP-S in practicum; 2. Training SLP-S being more aware of their innate competence of resilience and the way to strengthen it.

A longitudinal quasi-experimental design and mixed method was adopted to examine the outcome of the innovated module. A sample of SLP-S who had 1-hour practicum per week in the campus (N = 24) took part of the study. Ten of them took the resilience module from Sep. 2017 to Jun. 2018 as the experimental group (EG). The other fourteen of them did not take the module as the control group (CG). The instruments of the study included: Resilience scale in Chinese version (Chen, 2010), Positive Mental Health Scale (Chen, 2014), Inventory of Adolescent Resilience (Chan, Yeh, Pong, & Yeh, 2009) and two self-designed scales: a. the stress and satisfactory level perceived by participants; b. the stress level of SLP-S perceived by supervisors and how the cohort's supervisors felt satisfied their performance on practicum.

The results of the first year showed that the average stress level during their practicum in the campus was between median to high. In addition, after one year of 1-hour practicum per week in the campus, SLP-S's resilience significantly improved on perceiving of social resources and interaction skills for both EG and CG. More results of the second year will be ready after the cohort finished their full-time practicum in hospitals in the spring of 2019. The comparison of resilience competence between EG and CG will be described. The implications of these results will be discussed, both for understanding the development of resilience in SLP-S and for the relationships between resilience and stress level perceived by the cohort. Finally, the implications of resilience training for SLP-S in Taiwan will also be considered.

Learning Outcome:

1. Participants should be able to relate the stress perceived by SLP-S with their resilience competence.
2. Participants should be able to recognize the necessity of facilitating SLP-S's resilience to decreasing the withdraw rate of SLP-S during practicum.

Keywords: resilience training; stress level; practicum; speech-language pathology students



Abstract No: 9888

Constructing competences for speech-language intervention in undergraduate students

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Abstract Content:

Aim: To develop the skills for speech-language intervention in Speech-Language Pathology (SLP) students from the first year of graduation.

Methods: the study was conducted in an internship discipline in which first-year undergraduates observe SLP intervention and then discuss what was observed with a supervisor. The observations are discussed taking into account the skills that the clinical speech-language therapist must possess delivery therapy properly. Among them, themes such as flexibility, creativity, use of strategies / toys to reach certain goals, posture of the speech-language therapist in the face of adversities are debated intensely, considering the similarities and differences in the different speech pathologies such as autism, phonological disorder, deafness, reading impairments, and orofacial motility. Observations occurred twice a week, and each student observed, on average, three patients on each day. The discussion was conducted with groups of 12 students with a duration of 1 hour on each of the days observed, totalizing two hours of discussion per week. In addition, the students answered, every two months, a questionnaire regarding the aspects observed in the SLP intervention concerning the above-mentioned topics. The questions were theoretical and sought to investigate the apprehension of the first-year student regarding the speech-language skills required in clinical practice.

Results: We noticed that, with each round of questionnaire response, the students demonstrated to understand more and more of the contents discussed and, in addition, constructed more in-depth analyses in relation to the SLP intervention. Initially, during the discussions, the questions were restricted to the curiosity about the patients' diagnosis or why they sought speech-language therapy service. As the discussions progressed, the focus gradually became questioning the activities being conducted by the SLP, the extent to which they contributed to the appropriate therapeutic use, and how the clinical speech-language therapist's action goes beyond knowing pathologies, but also involves perception of the patient's context, thinking outside the box, and flexibility in face of the different challenges that the clinical care provides. The change in the pattern of questioning was also observed in the questionnaire responses.

Conclusion: the didactic-pedagogical approach in observations followed by discussions about the necessary skills to become a speech-language pathologist promoted the appropriation of this knowledge by Speech-Language Pathology students at the beginning of graduation. This fact gives rise to greater motivation and expectation in relation to the profession, as well as to make the SLP to-be aware, from a very early age, that the development of certain competences is as important as the appropriation of technical-vocational knowledge.

Learning Outcome:

a) understand that it is possible to teach SLP issues from the first semester of graduation; b) learning methods based on free discussions allow the development of fundamental learning skills

Keywords: education, speech-language pathology



Poster Presentation: Session MP3-2 / Fluency, Aug. 19th (Mon.) 15:30-17:00

Abstract No: 9777

Communication attitude of Polish school-age children who stutter: Normative and psychometric investigation of the Behavior Assessment Battery

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Abstract Content:

Counting dysfluent behaviors should not be the sole method of assessment for children who stutter (CWS) because of the considerable lack of inter and intra-reliability (Cordes & Ingham, 1999; Ingham & Cordes, 1992). Moreover, this model of assessment is uni-dimensional and fails to take into consideration the speech-associated attitudinal, emotional and behavioral reactions that are typically present in CWS. Clinicians might have a "tunnel vision view" (Conture, 2001, p.126) that hinders their holistic understanding of the CWS. To alleviate this shortcoming, there has been an increasing awareness and action among professionals to augment clinical observation and incorporate the viewpoint of the CWS in both assessment and treatment. The Behavior Assessment Battery (BAB) (Brutten & Vanryckeghem, 2003a,b, 2007; Vanryckeghem & Brutten, 2018a) involves a multi-dimensional, evidence-based approach to diagnostic and therapeutic decision making for adults and children who stutter. The BAB provides a set of inter-related, standardized test procedures for discriminating children and adults who stutter from those whose dysfluencies result from other disorders that disrupt fluency, or behaviors that are typical rather than clinically significant. The data gathered reveal affective, behavioral, and cognitive components related to speech and serve as clinically informing cross-checks. Given that there was no standardized Polish diagnostic tool available that implements a multi-dimensional assessment approach for the CWS, a study with the Polish version of the BAB was undertaken.

Purpose of the study:

To obtain normative and comparative data for the Polish population of CWS and children who do not stutter (CWNS) for all four BAB subtests: Speech Situation Checklist-Emotional Reaction (SSC-ER) and -Speech Disruption (SSC-SD), Communication Attitude Test (CAT), and Behavior Checklist (BCL). An item analysis will be performed in terms of internal reliability investigation and determination if all items correlated significantly with the total score and differentiated the two groups.

Method:

Participants:

The BAB tests were filled out by CWS (N= 112) and CWNS (N=115). The children ranged in age between 7 and 17. The participants in the CWS sample were recruited with support from Polish speech-language pathologists. The CWNS were gathered with support from Polish teachers. The participants in both groups came from urban and rural areas across Poland.

Materials:

The Behavior Assessment Battery-Revised (Vanryckeghem & Brutten, 2018 b) is a self-report tool that gauges how prevalent the situation-specific anxiety and speech disruption, negative thinking, and the use of coping behaviors is among CWS. The BAB consists of the SSC-ER, SSC-SD, CAT, and BCL subtests.

Procedure:



The participants were individually administered the BAB subtests, which order was randomized.

Results:

Data are already gathered on CWS and CWNS. Data analysis is scheduled to take place in January 2019 and all results will be available by the time of the IALP congress.

Learning Outcome:

1. The attendee will learn how the BAB can assist in differential diagnosis; how its items directly point to treatment targets
2. The attendee will learn about the Behavior Assessment Battery (BAB) and its subtests' psychometric and normative data

Keywords: attitude, children, diagnosis, stuttering



Abstract No: 9758

Integrated approach including direct speech treatment in Japanese and Chinese for Chinese international students in Japan learning Japanese who stutter

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Abstract Content:

[Introduction]

It is challenging to examine the treatment method for stuttering while learning another language in addition to their native language. In this research, we examined the effect of treating stuttering to 2 Chinese international students learning Japanese in Japan with their native language as Chinese in direct speech treatment.

[Method]

(1) Subject, Case 1: Onset of stuttering around 4-year-old, 26-year-old female (graduate student with JLPT 1). Case 2: Onset of stuttering around 5-year-old, 21-year-old male (a student at a Japanese language school). The stuttering severity based on the Iowa scale for rating severity of stuttering with self-evaluation in daily situation was 5 to 1 for Case 1 and 4 to 1 for Case 2. It is more severe in Japanese for both. Stuttering severity at the interview was 2 to 1 for both. Neither had history of being treated. (2) Treatment method: The following treatment was given once every 3 to 4 weeks. 1) In Japanese (treated by first author of Japanese native) and Chinese (treated by second author of Chinese native), they were treated to have easy voice onset and vocalize and utter slowly and stretch the vowels (focusing on treating reading out loud the words and sentences that has higher occurrence of stuttering, and focusing on the flexible speech rate in Chinese). 2) Having counseling (understanding stuttering and revising the recognition)

[Results]

This treatment was done for 9 times in both cases. (1) Stuttering symptom: For both cases, the frequency of stuttering was higher in Japanese before and after the treatment. The main symptom was the repetition of sound, morae, and syllable. After the treatment, they said "it was easier to talk (especially in Japanese)", "laryngeal part feels lighter". Neither had the opportunity to speak Chinese while being nervous. Stuttering reduced significantly in Japanese for both. Stuttering in Chinese was less. The severity of stuttering was improved for both to 2 to 1 in daily situation (severity was 1 in situations other than their customer service job). (2) Recognition: For both cases, we noted the revision of recognition. Case 1 got a job at a Japanese company she wanted. Case 2 applied for a university. His Japanese ability had improved.

[Discussion]

Through the treatment, both cases showed improvement (especially in Japanese) as well as in recognition so it showed that this treatment was effective. As for assignment, stuttering improved in reading out loud. The improvement in stuttering in Japanese for Case 2 can also be considered to the improvement in Japanese ability. Also, stuttering in Chinese was barely there compared to when they started so it needs to be examined with severe case of stuttering for both languages.

Learning Outcome:



1. The participants will discuss integrated approach including direct speech treatment in Japanese and Chinese for Chinese international students who stutter.
2. The participants will discuss treatment of stuttering in foreign language (in learning) and native language for international students who stutter.

Keywords: stuttering; treatment; international student; Japanese; Chinese



Abstract No: 9731

Prevalence of stuttering at the three-year-old children checkup in five community areas of Japan

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Abstract Content:

Background

A recent epidemiological study of early childhood stuttering reported an incidence rate of 8% (Yairi & Ambrose, 2013). There are a few but mostly preliminarily reports on epidemiology of stuttering in Japan (Otsuki, 1958; Ozawa, 1960; Ooki, 2005). Shimada et al. (2018) reported the prevalence in 2,247 children at 3 years as 1.41% by direct examination, which, however, is considerably smaller than those reported in other countries. This raises the question if the difference is due to the difference in culture/language or in methodology.

Objective

The purpose of this study is to present the prevalence and related factors of stuttering among 3-year-old children in Japan, employing a similar method as used in the studies in other countries.

Method

The 3-year and 3-and-a-half-year old children who participated in the nationwide health checkups were screened with a questionnaire whether they showed or had shown stuttering-like-disfluencies (SLD). We judged that the child had or had had stuttering if he or she met all of the following criteria; (1) The child's guardian answered observing or having observed SLD in the child's speech, (2) one of the speech-language therapists in our team judged that the child showed or had shown SLD based on the detailed questionnaire, direct observation and/or interview. If we could not get enough information, the child's stuttering status was labeled as "unknown". Each participant was classified as either "stuttering", "non-stuttering", "past-stuttering" or "unknown".

Results

Of the 2,055 participants from July 2016 through February 2018, 73 children were excluded from the analysis due to insufficient answers. The remaining 1,982 samples were analyzed. The prevalence of stuttering at the health checkup was 5.5 %, and the cumulative incidence was estimated as 8.8 % by adding those who had reportedly showed stuttering in the past without present symptoms. By the logistic regression analysis, only family history predicted a significantly higher risk of stuttering.

Discussion

In this study, we reported the prevalence of stuttering among three-year-old children in Japan and the predictive factor of the onset of stuttering. The cumulative incidence in our study is similar to that of a recent Australian report (Reilly, et al., 2009), which suggests that there could be a common etiology independent of linguistic or cultural differences. The lower prevalence previously reported in Japan (Shimada et al., 2018) is likely due to the difference in the method (direct examination vs. questionnaire).



Since the symptoms of stuttering are known to fluctuate, examination may miss some children that stutter in other situations. The finding that the family history of stuttering was associated with the onset risk is in line with the recent evidence for a strong genetic factor in stuttering.

Learning Outcome:

1. The prevalence of childhood stuttering at age 3 in Japan is approximately 5%, and the cumulative incidence is 8 %.
2. There might be a common stuttering etiology that does not depend on linguistic or cultural differences.

Keywords: stuttering; childhood; prevalence; cumulative incidence; predictive factor



Abstract No: 11493

Co-Morbid Psychiatric Disorders in Children and Adolescence with Stuttering

Mahmoud Youssef^{*1} ; Maha Boshnaq¹ ; Eman Abou El Ella¹ ; Nermin Shaker¹ ; Raneem Hassan¹ ; Dr
Walaa Sabry¹

¹Phoniatrics, ENT department/ Ain Shams University/ Egypt, Arab Rep.

Abstract Content:

Co-Morbid Psychiatric Disorders in Children and Adolescence with Stuttering

Mahmoud Youssef* Maha Boshnaq*, Eman Abou El Ella** Nermin Shaker**and Raneem Hassan**

Stuttering is defined as a speech event that contains intraphonemic disruption, part word repetition, monosyllabic whole word repetitions, prolongation and silent fixation (blocks). ASHA, 1999.

Stuttering often co occurs with conditions and disorders. It was discovered that as many as 44% of children who stutter have a concomitant speech or language disorders (Arndt and Healey, 2001). Additional research found that other disorders as attention deficit hyperactivity disorders (ADHD) also run concomitant with stuttering at a greater level than in general population (Healey and Reid, 2003). Stuttering is also co morbid with other Axis I psychiatric disorders such as depression, conduct disorders, anxiety related disorders including social phobia and obsessive compulsive disorders (OCD) Blood et al, 2007, Messenger et al, 2004.

The aim of this work is to study co morbid psychiatric disorders in children and adolescence with stuttering, to assess the risk factors for developing psychiatric disorders co morbidity in stuttering children, and to elaborate the impact of psychiatric disorders on the severity of stuttering.

Subjects and Methods: 69 patients with stuttering, 13 females and 56 males were included in quantitative comparative study. History taking and IQ testing were done. Assessment of the severity of stuttering by the use of stuttering severity index 3 (SSI 3). Psychiatric assessment of patients was done by using mini international neuropsychiatric interview for children (MINI-KID). Patients were asked to complete the Arabic version of junior temperament and character inventory (JTCI). The subjects with psychiatric disorders were referred to child psychiatric clinic for treatment and follow up.



Results and Conclusion: prevalence of co morbid psychiatric disorders among stuttering was 49.3%.

The most frequent psychiatric disorders was social anxiety in both age, children and adolescence, followed by ADHD in children and depression disorders in adolescence.

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Learning Outcome:

If ADHD associated with stuttering, Treatment of ADHD will improve stuttering

Keywords: ADHD - Stuttering



Abstract No: 9640

Verification of Factors Related to the Deterioration/improvement of Stuttering Based on Narratives of Adult Stuttering Patients Who Exhibited Improvement Through a Training-based Developmental Framework for Addressing Phase IV Stuttering

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Abstract Content:

Introduction:

We have been administering training to adult stuttering patients utilizing the “chronological mental rehearsal training program (M. R. Method),” based on the theoretical “Retrospective Approach to Spontaneous Speech (RASS)” indirect speech targeting approach developed by Tsuzuki. However, currently there are few published reports on this topic. Here we report the results of interviews with an adult patient who experienced improvement through this method.

Methods:

The subject of this study was an adult male in his 30s who underwent training directly targeted at speech behaviors. During the initial interview, the patient presented with stuttering symptoms corresponding to Phase IV in Bloodstein’s developmental framework for stuttering. The patient’s symptoms improved until ultimately reaching the normal range. In March 2010, we (the presenters) conducted the interview individually and recorded its content. We then prepared a summary of the factors related to deterioration and improvement of stuttering symptoms identified through the interviews.

Results:

① *Vague anxieties from early childhood*: “I don’t have many fun memories from that time, but a number of unpleasant memories persist. All my various failures, bad memories, traumatic experiences, and anxieties have been accumulating in my head since my childhood, and I believe that eventually this had an impact on my stuttering”; ② *Stopping evading behaviors*: “I would mentally prepare myself in advance even when I tried to avoid certain situations and needed to speak. One month later, when I had an interview or needed to introduce myself, I would rehearse what I wanted to say long in advance while feeling constant dread the whole time. When I stopped trying to avoid such situations and all my rehearsing, I just felt that it would all work out somehow, and the time I would spend feeling anxious would shorten”; ③ *Stopping intentional utterances*: “Intentionally uttering things to myself was temporarily effective, but caused things to get worse the more I would say them. Whenever I could no longer use the methods that were effective up to then, I could never avoid feeling as if I had been pushed off a cliff. I would quickly run out of things to say, and ultimately I would become unable to say anything. I would repeat the same lines over and over as the situation deteriorated”; ④ *Focus on speech*: “When I was doing the training activities directly targeting my speech behaviors, I was always paying attention to my utterances, and I felt like I had been pushed into a corner when my stuttering came out. If I failed 20 times a day.”

Summary:



This case involved engaging in communication with an adult patient concerning his early childhood following the “M.R. Method,” and as a result, prohibition of evading behaviors and intentional utterances was revealed as a factor related to improvement in stuttering.

Learning Outcome:

- Participants will learn a new training method for adults with stuttering who do not device how to speak

Keywords: Adult Stuttering, Indirect speech targeting, Chronological mental rehearsal training program, Bloodstein’s developmental framework for stuttering.



Abstract No: 9101

A questionnaire survey on the working experiences of speech-language-hearing therapists who stutter

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Abstract Content:

Background: Many people who stutter want to become SLHTs and treat children or adults who stutter. However, in Japan there are few SLHTs or hospitals that can treat stuttering. Thus, the actual working experiences of SLHTs who stutter are unclear. Moreover, stuttering heavily affects working life. Previous research has indicated that there is a negative impact of stuttering on working life. The job of a speech-language-hearing therapist requires high communication skills. Thus, SLHTs who stutter may encounter obstacles in their working environment.

Objective: This study aimed to investigate the working experiences of SLHTs who stutter in Japan.
Methods: We conducted a questionnaire survey of SLHTs who stutter. The questionnaire consisted of alternative forced-choice questions about their working experiences and free-response questions about their job difficulties. The ethics committee of Osaka University Graduate School of Human Sciences approved the experimental procedures in advance.

Results and Discussions: Twenty-five people, including 20 men and 5 women with a mean age of 29.8 ± 4.6 , who stutter and worked as SLHTs participated in this study. While most participants were engaged in therapy of adults (aphasia, dysarthria, dysphagia, and hearing impairment), half the participants were engaged in therapy of children. Sixty eight percent of the participants answered that their actual clinical domains were in accordance (or relatively in accordance) to their hoped domains. With regard to the therapy of stuttering, 92% of participants wanted to treat people who stutter, and 40% of participants answered that they already treated people who stutter. The findings indicate that SLHTs who stutter have relatively provided therapy at their hoped domains. However, some participants encountered a mismatch between their hoped clinical domains and their actual therapy. Next, we investigated the degree of job difficulty and specific difficult situations. While 72% of participants showed that their job difficulties were very small or small, some situations were described that were due to their speech difficulties (i.e., taking a telephone call or communication with a doctor, nurse, patient, or other therapist). These situations require strong verbal communication skills, and findings with regard to these situations were consistent with previous studies about the work experiences of people who stutter. In their SLHT education programs, only 16% of participants received reasonable accommodations at their school (such as training on communicating with their supervisor). To decrease job difficulty experienced by SLHTs who stutter and to make the best use of their clinical skills, appropriate environmental arrangements and reasonable accommodations need to be made in their workplaces and SLHT education programs.

Learning Outcome:

To gain knowledge about the actual conditions of SLHTs who stutter at their workplace.

To deepen the understanding of difficult situations and needed support for SLHTs who stutter.

To promote a stutter-friendly workplace through attentiveness to the needs of SLHTs who stutter.

Keywords: stuttering; speech-language-hearing-therapist; speech-language-hearing-therapist who stutter; actual work life



31st World Congress of the **IALP**





Abstract No: 9720

Personal Appraisals of Support from the Perspective of Polish Children Who Stutter

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Abstract Content:

For decades, speech-language pathologists have sought to educate the general public about how best to interact with people who stutter. Part of their efforts involved formulating and disseminating lists of DOs and DON'Ts for interacting with people who stutter. The rationale to create these lists was to help the nonstuttering majority be or become more educated about stuttering and more supportive when talking to people who stutter. However, the lists were primarily based off of expert opinions and suppositions, not by stuttering persons. As such, there is little empirical evidence to support the use of those existing lists.

Currently, the necessity of implementing evidence base-based practice in speech-language therapy is emphasized. This means not only scientific evidence and clinical expertise should be taken into account, but also client and family perspectives and preferences (ASHA, 2015). Little remains known about children's perspectives of their lived experiences with stuttering, and what they consider to be helpful and unhelpful supports from others (Weidner et al., 2015).

Purpose of the study:

This mixed-methods pilot study sought to address the following the research questions:

1. What are the lived experiences of children who stutter as perceived by them?
2. What do children who stutter perceive to be unhelpful and helpful supports in stuttering management?

Method:

The study participants include Polish children who stutter from urban and rural areas across Poland. Participants are individually administered the Polish version of the *Personal Appraisal of Support for Stuttering-Children (PASS-Ch)* (Weidner, St. Louis, 2015; Polish translation by Dorczak, Węsierska, 2018). The study participants are recruited with support from Polish speech-language pathologists who specialize in fluency disorders.

The *PASS-Child* is comprised of quantitative and qualitative sections. The quantitative section is a pencil-and-paper survey that consists of 26 items related to stuttering/cluttering experiences and various supports for stuttering/cluttering (e.g., how supportive would a person be if s/he told me to slow down), and 10 questions related to help received from various people or groups (e.g., the amount of help I received for my stuttering from my teachers is...). Participants rate the degree of helpfulness or support for each item on a 5-point Likert scale (1= unhelpful or no support, 5 = very helpful or a lot of support). The qualitative portion consists of 12 open ended questions, conducted one-on-one in a semi-structured interview, aimed to assess children's perceptions of supports that do and do not help with their stuttering and/or cluttering.

Results:

There are currently 15 participants ages 7 to 17, and more continue to be recruited. Data analysis is scheduled to take place in March 2019 and will be available by the time of the IALP congress.



Learning Outcome:

1. Attendees will be able to describe helpful and unhelpful supports as reported by children who stutter
2. Attendees will learn how the PASS-Ch could be used in clinical practice to improve speech-language intervention



Poster Presentation: Session MP3-3 / Motor Speech Disorders, Aug. 19th (Mon.) 15:30-17:00

Abstract No: 10036

The effect of Palatal Augmentative Prosthesis in tongue-fatigue for patients with speech sound disorders

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Abstract Content:

[Objective]

The objective of this study was to assess the influence of the palatal augmentation prosthesis on tongue fatigue in patients with speech sound disorder.

[Background]

Tongue play as the essential role in speech. The patients with tongue motor disturbance need rehabilitation to get speech intelligibility. Speech therapy using the palatal augmentation prosthesis (PAP) contribute to the articulation of sounds, thus improving the oral communication of the patients. In clinical situation, Speech-language therapists (STs) are likely to encounter patients who have compliment is fatigue on training session or conversation. But STs are often less aware of fatigability.

[Method]

Subject: Fifty patients (38 men and 12 women) aged 35 to 2482 underwent glossectomy (2 total glossectomy, 20 subtotal glossectomy, 14 partial mandibulectomy, 14 hemiglossectomy), and ten patients with Amyotrophic lateral sclerosis (ALS), all patients use of the augmentative prosthesis.

Assessment:

We assessed tongue fatigue on strength, range of motion, rhythmically, target accuracy, and coordination. The self-perceptions of fatigue were measured. All test were undergoing with and without PAP.

Tongue strength was measured by using a tongue depressor (TPS-350^R). Range of motion was measured by tongue-loading activity. Rhythmicity was measured by Voice onset time (VOT) ([t], ([k]) were measured on Win-EPG^R system. Target accuracy was measured by tongue contact pattern on Win-EPG^R system. Coordination was measured by speech intelligibility.

[Results and Discussion]

Tongue strength was improved. Tongue loading activity was getting better. Voice of Time was getting shortened. Contact total points increased. Self-perception was well-gained.

This results revealed the functional efficacy of PAP is supported.

Learning Outcome:

The use the palatal augmentative prosthesis improve not only speech intelligibility but also recovery of tongue fatigue.

Keywords: speech sound disorder, palatal augmentative prosthesis, tongue fatigue



Abstract No: 10014

Lexical tone production in Cantonese-speaking patients with Parkinson's Disease

Angel CHAN^{1 2 3}; Si CHEN^{2 3}; Caicai ZHANG^{2 3}; Roxana FUNG^{2 3}; Jing SHAO²; Iris LAM^{1 2}; Shirley PANG⁴; Vivian NGAN⁵; Jacqueline TAM⁵; Winni CHUA⁵; Alva CHAN⁵; Wenchun YANG²; Jasmin SADAT^{6 7}; Serge PINTO^{6 7}

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Abstract Content:

Objectives

To examine how dysarthria resulting from Parkinson's Disease (PD) affects lexical tone production in Cantonese-speaking patients and to evaluate the effects of medication

Background

Currently it is unclear how speech breakdown in PD dysarthria may interact with the properties of the language spoken by the patient. Cantonese offers a unique chance to test this perspective, consider it being a tonal language with six contrastive tones that signal meaning differences. Given that monopitch is a hallmark feature of dysarthria in PD, how would lexical tone production be affected in PD patients speaking Cantonese? And how would medication affect this tone production?

We report the first empirical study investigating the pathological status and medication effects from a tonal language targeting lexical tone production, incorporating both acoustic evaluations of F0 curve analyses and perceptual evaluations of intelligibility.

Methods

We used a group (patients vs. normal; 12 per group) x medication (on-medication vs. off-medication) design. Each participant read aloud 30 monosyllabic words that are tone minimal pairs contrasting in all the 6 tones, allowing us to study how lexical tone is realized and distorted at word level. *Acoustic evaluations:* Fundamental frequency (F0) was measured at 20 equidistant time points of the target syllables, to compare shapes of the pitch contours. Functional data analyses were used to examine specific locations of significant differences in pairs of F0 curves. *Perceptual evaluations:* 38 healthy native Cantonese listeners participated in a perceptual identification task generated via E-Prime 2.0, judging the audio stimuli from the PD patients (on and off med) and the healthy controls. The listeners were required to identify the target words spoken, among their 5 tone minimal pairs. The listeners' accuracy of identification, a measure of intelligibility, was analysed by generalized linear mixed effects models.

Results



Acoustic evaluations: F0 curve analyses indicated a number of significant differences registered between PD patients and healthy controls, esp in T1, T3, T5 and T6. Patients were able to start at a (higher) pitch closer to their healthy controls when they were “on-medication”, suggesting that dopaminergic medication may improve their initiation at a more appropriate pitch, and help normalize their production of certain tones regarding F0. *Perceptual evaluations on intelligibility:* PD patients’ ability to produce lexical tones is degraded to the extent that they were less intelligible than the healthy controls, but not to the extent that would severely affect their intelligibility in general. Medication does not seem to improve intelligibility.

Discussions

We discuss the findings by drawing links to and integrating perspectives from both the neurological disease-based approach and (neuro)linguistic-based approach in conceptualizing dysarthria in movement disorders, a perspective that is rarely considered in the domain of speech control in PD patients.

Learning Outcome:

1. To identify how dysarthria resulting from Parkinson's Disease (PD) affects lexical tone production in Cantonese-speaking patients, both acoustically and perceptually
2. To evaluate how dopaminergic medication affects lexical tone production in Cantonese-speaking PD patients, both acoustically and perceptually
3. To conceptualize dysarthria in PD from two principal perspectives: neurological disease-based approach and (neuro)linguistic-based approach

Keywords: Motor Speech Disorders; Dysarthria; Parkinson's Disease; Cantonese; Lexical Tone

Production



Abstract No: 10005

Effectiveness of Sound Production treatment in patients with acquired apraxia of speech: A systematic review

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Chad Nye

¹*Speech and Language Therapy/ TEI of Western Greece/ Greece*

Abstract Content:

Introduction

The present systematic review was designed in order to establish the benchmarks of the extent results of SPT treatment as resource for clinicians and researchers that provide therapy to AOS clients. Additionally, this study investigated factors which are possibly correlated with maintenance and generalization results of SPT's impact. This study postulated research questions about SPT therapy in order to investigate:(A) Correlations between the performances at the end of therapy and at the follow-up.(B) Relationships between trained target sounds and non-trained sounds, and (C) The index of effect sizes in relation with the participants' differences.

METHODS

An evaluation was performed by the four researchers of this systematic review and finally twelve studies met the inclusion criteria. The studies were published between 1996 - 2017. A total of 54 participants with acquired apraxia of speech and aphasia were included. The studies were assessed for methodological quality and effect size was calculated with the Percentage of Non-Overlapping Data (PND) statistical procedure.

RESULTS

A Pearson correlation was calculated between the number of pre-trained baseline data points and the observed PND at the conclusion of the training phase of the SPT intervention. This analysis revealed a negative r value of -0.43 ($p=.0001$) suggesting an inverse relationship between the number of pre-trained data points and the observed training effect. However, when the number of training data points was correlated with the PND values, the resulting r value was statistically non-significant ($r = .05$, $p = .059$) suggesting no systematic bias in the relationship between the number of training baseline and trained items. A similar analysis was conducted for the seven studies and 39 participants reporting data for the untrained items. Results of this analysis revealed a the non-significant relationship between the number of both the baseline ($r = -0.05$, $p = .725$) and untrained items ($r = 0.11$, $p = .527$). For the most participants of SPT, improvement to acoustic production accuracy during therapy was maintained until follow-ups. However, maintenance findings vary in and between the participants.

CONCLUSIONS:

The data suggest that the SPT approach appears to lead in moderate improvement for trained and untrained items both in the treatment environment, as well as at maintenance. As the number of reported baseline data points decrease, there is a significant increase in the measured effect size of the treatment effect. On the other hand, the treatment of trained and untrained words did not seem to be influenced by the quality of each study. Future studies that address the effects of a broad variety of treatment ingredients could lead to the development of more efficacious treatments.



Abstract No: 10004

Typical characteristic for identification and assessment of childhood apraxia of speech in Croatia

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Abstract Content:

Background and aims: Childhood apraxia of speech (CAS) is childhood speech disorder with core deficit in child's ability to convert abstract phonological codes to motor speech commands. To date there is no validated list of diagnostic features that differentiates CAS from other speech sound disorders. Since there is no unique behavioral or neurological marker of CAS, the disorder is usually recognized by general characteristics of CAS proposed by ASHA (2007). Still, consensus about typical speech characteristics of CAS has not been reached. Because of that, clinicians and researchers may use different diagnostic criteria in identification and assessment of this disorder. Several clinical studies have investigated key characteristics for CAS reported by speech-language pathologists based on English speaking (Forrest, 2003; Joffe, Pring 2008) and Swedish speaking children (Malmenholt et al., 2017). In fact, Forrest (2003) reported high degrees of clinical disagreement among practicing SLPs in their criteria for diagnosing CAS which can consequently lead to misdiagnosing false positives or false negatives. Being a controversial diagnosis, cross-linguistic studies are necessary for agreement upon standard in diagnosing and treating CAS, so the primary goal of this study was to examine which characteristics do Croatian SLPs find typical for CAS and do they agree upon diagnostic criteria for identification and assessment. Consequently, are those characteristics similar to those found in other languages. Secondly, we wanted to examine the relationship between years spent in practice and confidence in assessing children with CAS.

Subjects and methods: Simple summaries about sample and measures were given through descriptive statistics. Data about typical symptoms of CAS was obtained through anonymous web-based questionnaire, completed by Croatian SLPs (N=72). In order to identify indicative groups of behaviors of CAS and compare them with other proposed diagnostic models (Ozzane, 1995), cluster-analysis was conducted. Also, to examine the relation between years of clinical work and confidence in assessing children with CAS, Spearman's correlation was conducted.

Results and discussion: Top five characteristics reported by Croatian SLPs are motor-programming deficits (87.5%), inconsistent production (77,8%), speech errors (75%), lengthened and disrupted coarticulatory transitions (75%) and sequencing difficulties (68.1%). These results support Malmenholt et al. (2017) findings as well as behavioral domains commonly associated with CAS by ASHA (2007). According to cluster-analysis of 18 behaviors thought to reflect the underlying characteristics of CAS, three clusters have emerged which similarly to the The "Ozanne Model" reflect problems with phonetic programming, oro-motor control and phonological planning but language difficulties as well. Also, there is no significant correlation between years spent in practice and clinician's confidence in assessing children with CAS ($p>0.01$). Based on this finding, it seems that clinicians in Croatia are generally unsecure in assessing children with CAS, regardless of their work experience.

Learning Outcome:

1. From the cluster-analysis in this study, three clusters have emerged: phonetic programming, oro-motor control and phonological planning (including language difficulties).
2. Confidence in assessing children with CAS was not related with years spent in practice ($p>0.01$).



Keywords: childhood apraxia of speech; speech sound disorders; assesment; diagnostic criteria; speech-language pathologists;

Abstract No: 9992

The effects of delayed auditory feedback in dysarthric patients with Parkinson's disease and stroke

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Abstract Content:

INTRODUCTION

Dysarthria is a common occurring disorder in patients with Parkinson's disease and stroke. The purpose of the present study was to examine the effectiveness of delayed auditory feedback (DAF) intervention on speech rate control and on speech fluency/ intelligibility.

METHODS

Participants

Fourteen (14) participants (12 males and 2 females) with dysarthria were separated into four groups based on diagnosis and treatment plans as follows:

Group 1: 4 patients with Parkinson's disease who followed 8 treatment sessions with DAF and traditional therapy exercises for dysarthria.

Group 2: 3 patients with Parkinson's disease who followed 8 treatment sessions only with traditional therapy exercises for dysarthria.

Group 3: 4 patients with stroke who followed 8 treatment sessions with DAF and traditional therapy exercises for dysarthria.

Group 4: 3 patients with stroke who followed 8 treatment sessions only with traditional therapy exercises for dysarthria.

During each session patients read two (2) passages from a validated voice assessment protocol for Greek language (Papathanasiou & Protopapas, 2010). Three different delay intervals were used (150ms – sessions 1-4, 100ms – sessions 5-6, 0ms – sessions 7-8). Dependent variables were speech rate and intelligible syllables.

All participants met the following inclusion criteria

1. A neurologist's diagnosis of Parkinson's disease and stroke
2. A passing score >23/30 on MMSE (Folstein, 1985), to rule out the presence of dementia
3. Being native speakers of Greek
4. Normal or corrected vision
5. Normal hearing
6. Presenting two or more of the following symptoms: fast speech rate, poor intelligibility, imprecise articulation, poor voice-breathing coordination, disfluencies
7. Intact reading ability

Instruments



The following Pre-test measures were used:

- MMSE
- Frenchay dysarthria test to verify the presence and severity of dysarthria. The Frenchay test was also used at the end of the sessions to evaluate if there was an improvement concerning the severity.

DAF was generated using an iPad Pro 2017, using the application S4G (speech for good). Both the speaker and the experimenter wore a pair of jacks splitting the feedback signal. This allowed the experimenter to hear how precise the speaker's delayed signal was.

RESULTS

The Kruskal Wallis test showed significance between the post-treatment speech rate of the DAF treatment groups and the only traditional therapy groups ($p=0.39$). Additionally, for the DAF treatment groups, statistical significance ($p=0.12$), using the Wilcoxon signed ranks test, was found in speech intelligibility before and after treatment.

Patients with Parkinson's disease found it difficult to prolong the syllables according to the delayed signal. When they finally reached it, they were impressed especially by the improved intelligibility. For patients with stroke, it was much easier to understand and follow the treatment procedure.

CONCLUSION

Even though the number of test subjects within each group was small, the results indicated an improvement in both DAF treatment groups.

Learning Outcome:

The effectiveness of DAF in speech rate and speech intelligibility in patients with dysarthria.

Keywords: Dysarthria, Parkinson's, Stroke, DAF



Abstract No: 9968

Acoustic Characteristics of Korean Dysarthric speech sound in patient with Stroke

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Abstract Content:

Speech sound of dysarthric individuals shows decreased speech intelligibility and bizarreness of speech. This is expected as lesions at different levels of the nervous system affect the speech sound mechanism in predictable ways resulting in fairly consistent speech patterns.

The aim of this study is to find the acoustic characteristics of dysarthric speech sound in patient with stroke. These findings help to understand the speech mechanism for clinician and speech therapists in patients with dysarthric individuals. Further, these objective data support to make the standard speech assessment.

Thirty six stroke patients with dysarthria were selected by CT or MRI. Fifty control group participated to the experiments. Speech samples were composed of five simple vowels /a, i, u, e, o/, meaningless polysyllabic words and sustained vowel /e-/. Spectrographic analysis using CSL and MDVP and MSP programs for voice quality analysis were used to measure vowel formants, VOT, jitter, shimmer, HNR and tremor.

The result are as follows: (1) The second formants of round vowels /u, o/ for dysarthric speech sound in patient with stroke patients are lower than those of control groups. Lower F2 values of round vowels for dysarthric speakers were caused by weak lip muscle control. (2) VOT of three different glottalized stops for dysarthric speakers was shorter than those for normal control groups. This means that the laryngeal articulation function for dysarthric speakers decreased according to the activity of abduction of vocal folds. (3) The voice qualities were measured by jitter, shimmer, HNR and tremor. Jitter of dysarthric speakers was over 1.3%, shimmer was 0.3%, and tremor of dysarthric speakers was from three times to five times greater than those of control groups with statistic significance.

Learning Outcome:

The acoustic characteristics of dysarthric speech sound help to understand the speech mechanism for speech therapists.

The objective data support to make the standard speech assessment

Keywords: Acoustic assessment; dysarthric speakers; formant patterns; voice quality



Poster Presentation: Session MP3-4 / Multilingual Affairs, Aug. 19th (Mon.) 15:30-17:00

Abstract No: 9995

Mwen pale Kreyol: Linguistic considerations for the assessment of Haitian Creole speakers

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Abstract Content:

Haitian Creole (HC) is a language spoken by more than one million people living in North America (United States and Canada), the Caribbean (Dominican Republic, Martinique, Guadeloupe, Bahamas) and in Europe (France). According to Schulz and Batalov (2017), the United States is home to the largest Haitian migrant population, with significant numbers also living in the Dominican Republic (329,000) and, Canada (93,000), France (74,000), and the Bahamas (28,000). In the United States, Haitian Creole is among one of the top 10 language spoken by English Language Learners at the national level (Ruiz Sota, Hooker, and Batalova, 2015). Haitian children who acquire HC as their first language, become HC-L2 bilinguals as they enter school. Differences in the phonological and grammatical features of Haitian Creole influence the spoken language and production of Haitian Creole speakers when speaking in English and other languages. Haitian Creole and its influence on English and/or other language can impact speakers across the domains of articulation and language, thus having implications for the assessment process. Within the profession of Speech Language Pathology, there are presently no assessment tools that have language considerations for Haitian Creole speakers. Given that no linguistic considerations for speakers of HC who are being evaluated, the performance of HC speakers could lead the children to be diagnosed as language impaired when the "errors" made are typical aspects of the influence of their native language on their L2. The purpose of this presentation is to provide an overview of the language features of Haitian Creole and its influence on English. The session will explore the following: 1) the phonological and grammatical features of Haitian Creole 2) the influence of the Haitian Creole features on English; 3) linguistic considerations Speech-language pathologists' should make when assessing Haitian Creole speakers.

Learning Outcome:

Participants will be able to:

1. State the phonological and grammatical features of Haitian Creole.
2. State the influence of Haitian Creole on English.
3. State some considerations the Speech language pathologist should make when assessing Haitian Creole speakers.

Keywords: Haitian Creole, assessment, linguistic considerations, phonological considerations,



Abstract No: 9942

Production of the English tense-lax vowel contrast by Cantonese learners of English

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Kong ²Rangos School of Health Sciences, Department of Speech-Language Pathology / Duquesne

University/ United States

Abstract Content:

Background:

The acquisition of sounds in a second language (L2) is heavily influenced by the phonological system(s) of the first language(s) (L1). For example, in the phonemic inventory of Hong Kong English (HKE), the tense-lax vowel distinction that is present in other varieties of English is lacking. This is attributable to the influence of a different vowel system in Cantonese.

Objective:

The present study examined the tense-lax vowel contrast in HKE by obtaining two acoustic measures from the vowels produced and comparing them with those of native American English (AE) speakers' productions: (1) the first two formant frequencies (F1 & F2), which reflect articulatory information; and (2) Euclidean Distance (ED), which is calculated from F1/F2 formant frequencies. ED describes the geometric distance between two vowels and is an indicator of the separation between two vowels in the vowel space. Following previous work on the phonology of HKE, it is expected that Cantonese learners of English would show no difference between tense and lax vowels. Results should provide insight into the complex interactions within the phonological systems of multilingual speakers.

Method:

A total of 40 adult learners of English (L1=Cantonese) and 44 native AE speakers were recruited for the production study. The HKE speakers were further divided into high proficiency (HP) speakers (n=20) and low proficiency (LP) speakers (n=20) based on their scores on the English oral section of the university entrance examination in HK. Stimuli consisted of two pairs of English words "heed" – "hid" and "who'd" – "hood" (which included the tense-lax vowel pairs /i-ɪ/ and /u-ʊ/, respectively), placed in the context "Say /hVd/ again." F1, F2, and ED were compared between the AE, HP, and LP language groups.

Results and discussion:

Male speakers Between the AE-HP groups, significant differences were found for the F1 of /u/ ("who'd") and the F1 of /ʊ/ ("hood"). The EDs between the two vowel pairs were not significant between any of the speaker groups, which suggests that the tense-lax contrast between /i/ and /ɪ/ and between /u/ and /ʊ/ is distinguished similarly across the speech of male AE, HP, and LP speakers.

Female speakers Between the AE-HP groups, the F1 for /i/ ("heed") was significantly different. Between the AE-LP groups, the F2 for /ɪ/ ("hid") was significantly different. Between the HP-LP groups, the F1 for /i/ ("heed") and the F1 for /u/ ("who'd") were significantly different. The EDs between the HP-LP groups were significant for the /i-ɪ/ vowel pair, with the means suggesting that the female HP speakers of HKE distinguish between the /i-ɪ/ tense-lax vowel pair more than do LP speakers.

Learning Outcome:



1. The acquisition of non-native sound contrasts can be affected by the phonological system(s) of the previously acquired language(s).
2. Non-native language proficiency (i.e. from test scores) may be correlated to measures of foreign accent in that language.

Keywords: second language learning, tense-lax vowels, Cantonese, English, acoustics



Abstract No: 9794

A prevalence study on oral language problems in multilingual preschoolers in Suriname.

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Abstract Content:

Background: In Suriname, more than 20 languages are spoken in the home environment. As the official school language is Dutch, almost all Suriname children are multilingual language learners. Many of these children face huge challenges with respect to communication (and subsequently reading and writing) at school as a result of insufficient Dutch proficiency. To date, there have been no studies that investigated the prevalence of oral language problems in these young children.

Objectives: The aim of this study* is to estimate the prevalence of oral language problems in Suriname preschoolers.

Methods: This study will be conducted in all 10 districts of Suriname between November 2018 and March 2019. 700 preschoolers (second grade, five-year old) recruited from 175 schools in Suriname will be tested on their oral language skills. Aside from a parent questionnaire, three subtests of an adapted version of the Clinical Evaluation of Language Fundamentals® Preschool-2 will be used: sentence comprehension, word structure and expressive vocabulary. This study will be performed by trained and certified speech language pathologists.

Results: We will report the prevalence of oral language problems and compare these outcomes with facts and figures from other countries. We will also present a qualitative analysis of the challenges multilingual children face in their school language.

Discussion: Based on our outcomes, we will discuss the need of sensitization campaigns for school teachers regarding language stimulation in a multilingual context. In addition, we will explore the added value of speech language pathologists in supporting schools regarding adequate identification of children at risk for oral and written language disorders.

(*) This study is part of a financed VLIR-UOS project.

Learning Outcome:

The learner:

1. will be able to formulate the incidence and types of SLP disorders in Suriname.
2. will be able to compare the use of screening protocols in developed countries and Suriname.
3. will be able to describe gaps in current SLP health care services in Suriname.
4. will be able to discuss challenges related to intervention for stroke patients in middle-income countries.

Keywords: child language; multilingualism; language problems



Abstract No: 9891

Clinical Self-Efficacy of Pre-Professional Healthcare Students

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Abstract Content:

The primary aim of this study is to investigate clinical self-efficacy among graduate speech-language pathology students. Clinical self-efficacy is an individual's confidence in their ability to perform clinical skills successfully. In social learning theory, Bandura proposes that human behavior, cognition and the environment interact and affect each other. Specifically, this study investigates the relationship between clinical self-efficacy and clinical performance as measured by average clinical evaluations received by students. Additionally, this study provides information about clinical skills that are relatively easier or difficult to acquire from the perspective of a student clinician. The subjects of this study consist of a convenience sample of speech language pathology graduate students at a Health Sciences Center in the southwest of United States. Speech language pathology clinical self-efficacy has not been widely studied. It is critical that health professionals such as speech language pathologist periodically assess clinical self-efficacy of their students and revise their clinical curriculum based on the data collected from students. In the interest of fostering effective and productive speech language pathologist, it is important to study the development and training of these clinicians.

Learning Outcome:

1. Participants will learn about the concept of self-efficacy.
2. Participants will learn to enhance the clinical self-efficacy of speech-language pathologists.

Keywords: self-efficacy, confidence, pre-professional SLP training



Poster Presentation: Session MP3-5 / Voice, Aug. 19th (Mon.) 15:30-17:00

Abstract No: 10091

Normative nasalance scores in normal adults mandarin speakers

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Abstract Content:

Introduction:

Hypernasality and denasality may have a negative impact on speech intelligence and communication. There are many studies published to establish and evaluate stimulus materials used for measuring the nasalance across different languages. It is also known that nasalance may vary among different languages. However, there is no standardized mandarin speech material available. Therefore, the aims of the study are to establish a standardized Mandarin stimulus materials for measurement of nasalance and to provide the normative nasalance data for the Mandarin population.

Material and Method:

A total of 100 healthy Mandarin-speaking adult volunteers, who had no nasal or voice-related complaints, were enrolled in this study. Three speech stimuli, including oral stimuli, oro-nasal stimuli and nasal stimuli were designed, were designed for analyzing nasality. The Nasometer II (model 6450) was applied to obtain the nasalance scores.

Results:

The mean nasalance scores and the standard deviation of each stimulus were 14.7±6.7 (oral stimuli), 39.4±8.6 (oro-nasal stimuli), and 55.7±8.5 (nasal stimuli). There was no significant difference found between the genders.

Conclusions:

The normative nasalance scores provide essential reference information for clinicians who deal with nasalance disorders. The nasalance scores in this study were established for Mandarin-speaking population and can be applied for both genders.

Learning Outcome:

To provide a nasalance scores norm for clinical use.



Abstract No: 10039

Speech therapy in early stages of rehabilitation after removal surgeries of head and neck tumors

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Abstract Content:

There is increasing number of head and neck tumors. Modern medical technologies allow to save lives of patients, but inevitably lead to cosmetic and functional defects. Important issue is comprehensive rehabilitation, including psychological and pedagogical aspect, in particular, speech rehabilitation.

Currently, statement about independent recovery of speech function is not relevant. Weakened organism has reduced abilities to spontaneous compensation. This leads to formation of pathological stereotypes, relating to meal process, verbal communication and voice formation. Patients, who have undergone removal surgeries of head and neck tumors need psychological and pedagogical rehabilitation, otherwise there is high probability for them not to return to usual way of life. When it is necessary to start rehabilitation process? The answer is simple: the sooner – the better. Effective psychological and pedagogical rehabilitation should be started immediately after surgeries and continue until acceptable result is achieved. Based on this, we started rehabilitation activities in early period (3-5 days after surgeries), then continued it on outpatient basis. Acting within multidisciplinary approach, we developed individual rehabilitation programs for each patient, taking into account somatic condition, cognitive and personal characteristics, age and professional status. We proposed that early starting of rehabilitation increases effectiveness of speech rehabilitation. The tasks of psychological and pedagogical rehabilitation at early stages: prevention to formation of pathological stereotypes in using voice and speech; normalization of meal process; formation of the basis of speech function recovery (recovery of verbal communication) by activating compensatory forces of organism; formation of motivation and adequate assessment of new life situation. We have conducted research with 73 patients (40 men and 33 women) aged 23 to 82 years after removal surgeries of head and neck tumors of different localization.

At the end of rehabilitation course, we evaluated its effectiveness. 70 patients (96%) underwent rehabilitation; rehabilitation course with 3 patients (4%), was stopped due to tumor recurrence. 56 patients of 70 (80%) started rehabilitation in sparing mode 3-5 days after removal surgeries. 54 among them (96%) achieved recovery or significant improvement of verbal communication; 2 patients (4%) achieved its medium improvement. 14 patients of 70 (20%) for various reasons started rehabilitation 1 month after removal surgeries. Only 9 patients among them (64%) achieved recovery or significant improvement of verbal communication. We conclude: effectiveness of speech rehabilitation increases, if rehabilitation process, including speech therapy and normalization of meal process starts as soon as possible. Analysis of narrative interviews also showed need to determine rehabilitation potential, that requires persistent work of patients together with specialists and relatives to form new motivation and adequate assessment of new life situation.

Keywords: speech therapy; speech rehabilitation; early rehabilitation; recovery of verbal communication; normalization of meal process



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Abstract No: 10024

Tension Reduction Vocal Training Strategies in Adults with Bilateral Sulcus Vocalis

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Abstract Content:

Objective: The goals of this study are to develop new vocal training procedures that focus on increasing vocal intensity, reducing tension, and increasing the client's ease of vocalization.

Introduction: Due to the delicate nature of laryngeal structures, traumatic intubation often results in vocal fold injuries. Approximately 37% of patients with laryngeal injury related to intubation trauma experience chronic and long-term voice symptoms (Mota, et al., 2012). In a study of 194 patients, 5.7% presented with Type III sulcus vocalis (Selleck, et al., 2015).

Current single-subject case study investigated the effect of tension reduction vocal training strategies, utilized by classically trained singers, on dysphonia associated with bilateral structural voice disorders acquired via orotracheal intubation trauma.

Method: A 60-year-old female participant has an onset of a bilateral sulcus vocalis following intubation trauma, resulting in insufficient vocal fold adduction. Voice quality presented as breathy, hoarse, with insufficient vocal intensity, and vocal fatigue, which has a negative impact on her quality of life in personal and professional settings.

A two-hour session was implemented, including ethnographic interviewing, the CAPE-V assessment, a brief vocal training, and a laryngeal tension reduction session. Mindfulness breathing and tension reduction exercises have been incorporated in the form of "low support" breathing with gestural cues to open laryngeal muscles. Given model examples and sensory biofeedback, the participant practiced throat relaxation exercises using laryngeal manipulations (e.g., laryngeal tilt). The rainbow passage and diadochokinetic (DDK) speech samples were recorded before and after training. These speech samples were analyzed with PRAAT software (Boersma & Weenink, 2018) and rated by four listeners in terms of vocal quality and ease of vocalization on a 5-point scale.

Results: These training procedures involving "low support" breathing exercises, gestural cues to open laryngeal muscles with biofeedback, throat relaxation exercises have been effective in improving vocal quality. The participant demonstrated decreased vocal jitter in her overall speech production after training. Her DDK production also showed significant improvement before and after training. Overall pitch was perceived as unstable and disrupted before the training with frequent vocal breaks. After the training, her voice became more stable, which is consistent with acoustic evidence. The participant also reported her larynx to have slightly reduced tension after training.

Conclusions: Current research with relaxation strategies and holistic approaches emphasized on improving voice quality, decrease tension, and increase awareness of overexertion in the body. DDK data cognate comparisons demonstrated increased intensity and decreased voice breaks. The participant's voice break decreased by 4.9%. During administration of the CAPE-V, the participant was observed to have increased postural support with a 90 degree seating position, vocal quality was increased, as stated by the participant as "more open and warmed up" and overall less tension was observed.

Learning Outcome:

1. To describe the process for assessing perceptual qualities of voice before and after the proposed vocal training?



2. To describe the process for assessing voice quality using acoustic analyses to validate vocal treatment effect?
3. To apply these new voice trainings in voice therapy to reduce laryngeal tension and improve overall vocal quality?

Keywords: voice disorders; vocal training; breath and postural support; body relaxation; laryngeal tension reduction



Abstract No: 10022

Prevalence of perceived voice problems and voice-related quality of life in a non-treatment seeking elderly population in Hong Kong

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Abstract Content:

BACKGROUND: Presbyphonia is the term used to describe voice problems associated with age-related physiological changes. Presbyphonia can adversely impact on the elderly's quality of life. Aging population can be divided into three sub-groups according to their age: young-old (aged 65-74 years), old-old (aged 75-84 years) and oldest-old (aged 85 years or above). The health status and conditions between the three age groups can be very different. General physical and functional health of the oldest-old group were reported to be significantly worse than the young-old group (Smith, Borchelt, Maier, & Jopp, 2002). As for the subjective well-being, the young-old group reported significantly higher satisfaction with aging and life than the oldest-old group (Smith et al., 2002). Up to date, there is a paucity of data on the prevalence of voice problems and voice-related quality of life across the three sub-groups. Such information would be invaluable to facilitate better voice care planning and allocation of voice care resources for the elderly.

OBJECTIVE: The present study was set out to evaluate the prevalence of perceived voice disorders and voice-related quality of life in a non-treatment seeking elderly population in Hong Kong.

METHODS: One hundred elderly individuals were recruited from senior citizen community centres in Hong Kong. Each participant received a face-to-face interview with the researcher. The participants were asked to report the presence of voice problems and the voice symptoms that they experienced. They were also asked to complete the Cantonese version of Voice Handicap Index (VHI) to ascertain their voice-related quality of life. (Data collection was in progress at the time this abstract was submitted. Full set of data will be presented at the Congress.)

RESULTS AND DISCUSSION: Preliminary results suggested different patterns in the prevalence of perceived voice disorders and the voice-related quality of life between the young-old, the old-old and the oldest-old groups.

Learning Outcome:

1. Discuss the voice problems and voice-related quality of life in the elderly population.
2. Discuss the voice problems and voice-related quality of life between young-old, old-old and oldest-old groups.

Keywords: voice disorders; voice-related quality of life; elderly



Abstract No: 9656

Voice Symptom Scale (VoiSS) Pre- and Post-Therapeutic Program in Dysphonic Patients

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¹*Department of Speech, Language and Hearing Sciences/ UFCSPA/ Brazil*

Abstract Content:

Objective

Verify the vocal symptoms and voice quality of patients before and after voice therapy.

Methods

This study was an uncontrolled clinical trial with a convenience sample. The patients were all users of the Brazilian Unified Health System. Twenty-two patients answered VoiSS and had their voices recorded for the use of GRBASI participated in the study. Both evaluations were performed before and after ten voice therapy sessions that involved the following exercises: laryngeal balance, vocal resistance, vocal self-perception, respiratory control and body posture.

Results

In the VoiSS, there was significant difference in the overall degree of alteration ($p = 0.002$) and in the subscales Limitation ($p = 0.002$) and Emotional ($p = 0.006$). For the GRBASI, significant results were found in the comparison between pre and post treatment in all parameters except for asthenia.

Conclusions

The present study demonstrated an improvement in the post-therapy VoiSS scores, making it possible to evaluate the evolution of voice therapy. In the GRBASI scale it was observed that, in general, the number of patients with Severe and Moderate degrees in voice quality decreased. Also, the number of patients with Mild and Normal voice quality increased.

Learning Outcome:

Learning outcomes:

1. There was a statistically significant improvement in the VoiSS and GRBASI scales scores after voice therapy;
2. VoiSS is an effective self-perception protocol for accompanying voice therapy and deciding the moment for clinical discharge.

Keywords: voice; rehabilitation; voice therapy; voice symptom scale



Abstract No: 10092

Voice Changes After Endoscopic Modified Lothrop Procedure

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Abstract Content:

Objective: The aim of the study was to evaluate the effect of endoscopic modified Lothrop procedure (EMLP) on resonance by using objective assessment techniques via nasalance.

Methods: Twenty-five patients with 15 males and 10 females were included in this study since Dec. 2012 to Dec. 2016. All of them were diagnosed as chronic refractory frontal rhinosinusitis and /or frontal sinus neo-osteogenesis who underwent EMLP. The test materials for nasalance including nasal words, nasal sentence and non-nasal sentences. All the patients received the nasometer II Model 6400 on the morning of the operation day (the 1st day), 2-weeks and 3-months after the operation of EMLP. Nasalance scores were obtained for each patient for evaluation the changes of voice after EMLP.

Results: The nasalance scores of nasal words, nasal sentences and non-nasal sentences all increased significantly postoperative 2-weeks and 3-months later compared with the preoperative scores. There was no significant difference between 2-weeks and 3-months interval.

Conclusions: EMLP did have small but statistically significant effect on voice changes. Patients who plan to undergo EMLP should be informed that their voice may change after the operation.

Learning Outcome:

To know patient who have EMLP procedure how the voice changes.



Poster Presentation: Session TUP1-1 / Audiology, Aug. 20th (Tue.) 11:00-12:00

Abstract No: 9806

Degree of stress and mother-child relationship for mothers of hard-of-hearing infants

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Abstract Content:

Objective: Hearing loss in early childhood affects development of communication, social, and emotional abilities. Early detection and intervention are therefore important for hard-of-hearing infants. However, early diagnosis also causes confusion and anxiety among mothers. We examined, in a previous study, the degree of stress for mothers caring for hard-of-hearing infants using some questionnaires and identified the many factors that cause stress for them (Oshima and Obuchi, 2018). We considered that it was important to evaluate the relationship between mother and child among the factors. In this study, we compared the degree of stress and mother-child relationships between mothers of hard-of-hearing infants and those of infants with normal hearing.

Method: Two questionnaire surveys were conducted with 24 mothers caring for their hard-of-hearing infants. We used TK type diagnostic new parent-child relation test (Shinagawa et al, 1992) and Influence of Childhood Hearing Loss on Stress Questionnaire (Macker, 2015). The parent-child relation test is used to assess the relationship between parent and child in Japan. This test consisted of 10 categories with 8 items in each category: dissatisfaction, criticism, strictness, expectation, interference, worry, doting, obedience, contradictions, and incompatibility. The results were classified by the scores attributed to the categories. The stress questionnaire consisted of 24 questions under three categories: parental stress, communicative stress, and relationship stress with 8 questions for each category. The total number of points from items in each category was summed. We compared these results with those of mothers caring for normal hearing infants in previous study. Furthermore, we statistically analyzed the relationship between the results of the two questionnaires.

Results: The mothers of hard-of-hearing infants showed higher average scores on interference, worry, and doting than mothers of infants with normal hearing in the parent-child relationship test. The degrees of stress for mothers of hard-of-hearing infants differed individually. The responses to the two questionnaires revealed significant correlations between the total scores of the stress questionnaire particularly on the categories of dissatisfaction ($r=-0.54$, $p<0.01$), interference ($r=-0.45$, $p<0.05$), contradictions ($r=-0.57$, $p<0.01$), and incompatibility ($r=-0.56$, $p<0.01$).

Conclusion: The mothers caring for hard-of-hearing infants tended to overprotect their infants, because they have anxieties about their infants' uncertain future. They are not able to enjoy childcare. Furthermore, the parent-child relationship has a direct influence on mothers' stress levels. The mental conditions of parents who care for hard-of-hearing infants need to be considered and appropriate support should accordingly be provided.

Learning Outcome:

We can know the degree of stress and mother-child relationships in mothers of hard-of-hearing infants.

Keywords: mother-child relationship, stress for mothers caring for hard-of-hearing infants, questionnaire surveys



Abstract No: 9987

Newborn hearing screening program in Taipei : follow up survey

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Abstract Content:

Background : The children who have hearing loss might have developmental delay that compare with normal children at the same age . To ensure the babies with hearing loss could screen out and get proper management in the early stage, the Newborn Hearing Screening Program is necessary.

Objective : The purposes of this research is to compare the time of diagnosis and intervention, the usage situation of hearing aids, the experiences of early intervention, and satisfaction survey after the newborns that diagnosed with bilateral hearing loss referred from newborn hearing screening.

Method : Our study databases are acquired from Health Promotion Administration, Ministry of Health and Welfare. The databases recorded screening and diagnosis results from July 1st 2016 to June 30th 2017 among 35 hospitals/clinics in Taipei, Taiwan. A total of 31,321 newborns were screened, and 45 of them were diagnosed as bilateral hearing loss. The audiologist used a telephone survey to track and investigate 45 cases of confirmed bilateral hearing loss. Descriptive statistics were used to analyze the information.

Results : Exclude cases that cannot be contacted and refused to answer. We acquired 36 suitable questionnaires. (1) The average age of hearing loss identification is 1.7 months. (2) The average age of hearing aid fitting is 6.9 months. (3) The average age of early intervention is 10.4 months. (4) The universal newborn hearing screening service satisfaction analysis, 92% of parents are satisfied.

Conclusion : Hearing screening and follow-up procedures are more complete through case tracking survey. Ensure every child with hearing loss is diagnosed and receives appropriate intervention. We should enhance medical personnel and parents knowledge about the 1-3-6 guidelines—screening before 1 month of age, diagnosis of hearing loss before 3 months of age, and entry into early intervention services before 6 months of age.

Learning Outcome:

(1) We can know the follow up situation of newborn hearing screening program in Taipei.

(2) We can understand satisfaction of newborn hearing screening program in Taipei.

Keywords: Newborn Hearing Screening, hearing aid fitting, early intervention



Abstract No: 9756

Benefits of incorporating the self-administered hearing test and self-fitting amplification into an assistive listening device for people with mild to moderately severe hearing loss

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³*Accessory BU/ Merry Electronics, Inc./ Taiwan*

Abstract Content:

Objective: This study is aimed at accessing the benefits of self-fitting and adjustments of a neckband Bluetooth assistive listening device (ALD) using self-administered hearing test results. The ALD's target groups are people with mild to moderately severe sensorineural hearing loss.

Background: Traditional ALDs allow users to select from preset hearing programs based on their preferences. With the popularity of mobile phones and applications, the customized amplification setting of an ALD is possible through the technology of self-administered hearing test and self-fitting.

Methods: A group of Mandarin speakers, with an average hearing threshold between 30 and 70 dB HL, participated in a self-administered in-situ hearing test by using a computer and an ALD. The results are compared with those obtained by a standard pure-tone audiometry. A further study of applying self-testing results into self-fitting and adjustments of an ALD with a mobile application was examined by using Mandarin hearing in noise tests (MHINT) in quiet and noisy environments. The results are compared with those of a preset program in the same device. After simulating amplification and telephony experiences, the satisfactory ratings of the Bluetooth ALD were determined using self-developed questionnaires.

Results: A Wilcoxon signed rank test indicated no significant difference of hearing thresholds obtained between a standard audiometry and the self-administered hearing test at 1000 and 2000 Hz. For benefits of self-fitting and adjustments, the MHINT results revealed significant improvements of sentence reception thresholds in quiet and noisy environments. The satisfactory ratings show that participants were satisfied with the amplification and telephony functions of the self-fitted ALD in the simulated experiences.

Discussion: The MHINT and satisfactory results show that the ALD combined with self-administered hearing test and self-fitting technology could provide the benefit of assistive listening for people with mild to moderately severe sensorineural hearing loss.

Learning Outcome:

The difference of the thresholds measured between self-testing and standard audiometry may come from the inappropriate size of rubber ear tip, which introduced leakage and less residual volume of ear canal. Proper selection of ear tip size and adding ear fin to secure earphone may improve the accuracy of self-testing thresholds at 500 and 4000 Hz.

Keywords: Mandarin Hearing in Noise Test (MHINT); assistive listening device (ALD); self-fitting



Abstract No: 9746

Gender categorization in children with normal hearing and those with cochlear implant

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Abstract Content:

【Objective】

Previous studies on gender categorization in cochlear implant (CI) users have shown that CI users experience difficulty in categorizing gender, compared with normal hearing (NH) listeners, solely based on the speaker's voice. Gender categorization is related to the fundamental frequency (F0) and vocal tract length (VTL) of the speaker. The VTL is related to the formant frequency. As VTL increases, formant frequency decreases.

NH listeners rely on both F0 and formant frequency for gender categorization; in contrast, CI users rely exclusively on F0. It remains unclear whether the children using CI can accurately categorize a speaker's gender, and the results have been similar to those observed in studies of CI adults. The present study examined gender categorization ability and the cues used to judge a speaker's gender in a group of CI children, compared with NH children.

【Method】

Our subjects included 12 CI children (7 males and 4 females; mean age, 8.2±1.6 years) and 34 NH children (7 males and 27 females; mean age, 8.9 ±0.7 years). The average duration of CI use at the time of this study was 6.4±1.4 years. We administered the gender categorization task to subjects. The test word was the Japanese word "takaramono." The source voice was a Japanese female voice, with an average F0 of 223 Hz. Both the F0 and formant frequency of the source voice were manipulated to obtain a male voice. The F0 was decreased by -12 semitone (st) and was varied to be 0, -3, -6, -9, or -12 st below the F0 of the original female voice. The formant frequency was decreased by -30%, and was varied to be 0, -7.5, -15, -22.5, or -30%. These combinations produced 25 different voices.

Subjects were tested in a sound-attenuated chamber; the stimuli were played at 70 dB SPL. Subjects heard test words and responded that the word was spoken by a "male" or "female." The rates of female responses were calculated and compared between CI children and NH children.

【Results】

With reduction in F0, the rates of female responses significantly declined in both NH and CI children. With reduction in formant frequency, the rate of female responses declined in NH children, but CI children didn't show same tendency.

【Conclusions】

The results suggested that most of CI children relied on F0 cues and made limited use of formant frequency cues. Therefore, we conclude that most of CI children cannot judge gender solely on the basis of the speaker's voice. This was similar to findings in prior studies of CI adults. CI users need both auditory and visual information to determine a speaker's gender.

Learning Outcome:



Most of CI children cannot judge gender solely on the basis of the speaker's voice

Keywords: cochlear implant gender categorization fundamental frequency vocal tract length



Poster Presentation: Session TUP1-2 / Dysphagia, Aug. 20th (Tue.) 11:00-12:00

Abstract No: 9957

Laterality of cortical representation during solid and liquid swallowing

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Abstract Content:

Background: Cortical representations of swallow in humans were bilateral. However, several case reports showed us dysphagia with unilateral region (Horner 1988, Robbins 1993, Daniels 1997, Ohshima 2003, Hamdy 2000). Some of cases were described more severe when they were damaged in dominant lesion. Others were described different symptoms from dominant lesion. Even it is important for discussing with patients' prognosis after stroke, it is still unknown how the cortical activities are represented in humans.

Objective: We investigated the cortical activation areas and focused on laterality during swallowing in solid and liquid bolus using fMRI technique.

Methods: Twenty- one right handed healthy adult volunteers participated in this study. Each subject was asked to swallow the test materials (solid and liquid bolus) with fMRI recording. Each swallow attempt began with an 18-second rest period followed by a six-second count down as swallowing preparation, followed by a six-second window for swallowing (Tanaka, 2006). Correlation statistics and image registration were facilitated by the SPM99 software and implemented in the Matlab v.5.3. A statistical parametric map of the t statistic was generated in each voxel. The activated voxels were analyzed for uncorrected height with the threshold at a p value of 0.001 in each sequence for each subject. In order to complete a group analysis, a one sample t-test of the raw data from the subjects ($p=0.001$) was applied for the sequence of the study.

Results: Bilateral regions of precentral gyri, temporal gyri, and cingulate gyri were activated during swallowing in all bolus types ($p < 0.001$, uncorrected). Left side of brain activation increased area were significantly larger than right side of brain activation increased area in all bolus types ($p < 0.001$).

Discussion: The cortical representations for swallow are bilateral; however, the size of activation area may be variable by right and left in all bolus types. A prior report showed as same result as us (Li S, 2009). Our result may explain the variable responses in swallowing performance we see in patients who evidence oropharyngeal dysphagia.

Conclusion: Even cortical activities were bilateral, the size of cortical activation area were larger in the dominant side. Cortical activation area were vary in bolus types.

Learning Outcome:

Learning how cortical representation of swallow in humans especially laterality.

Keywords: Cortical representation; fMRI, Cortical laterality; Swallow; Bolus type



Abstract No: 10058

Maximal Isometric Pressure (MIP) of the Tongue in Typically Developing Children: Influence of Tongue Bulb Position, Age, Gender, Order, and Visual Feedback

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Abstract Content:

Introduction:

Assessing tongue strength (TS) is important both when assessing and rehabilitating pediatric dysphagia. European normative data on TS are needed since cross-cultural differences in adult TS between Europe and the USA were previously described. Our study evaluated not only the tolerance and reliability of TS testing in children but also the effect of several parameters on anterior and posterior MIP (MIPa, MIPp) that have a known role in adult TS-assessment.

Methods:

198 children (3-11 yo, equal gender distribution) were included in 9 age groups. Inclusion criteria were the absence of speech disorders or dysphagia, a normal oral motor/structure exam, and no previous or current referral for special education services. The IOPI and standard tongue bulbs were utilized; MIP was defined as the highest value of 3 verbally motivated trials. Weight and hand strength were recorded. SPSS24 with robust statistics through R-software was used for statistical analysis.

Results:

All children tolerated the tongue bulb and children ≥ 6 yo were able to perform MIPp; only 2% could not perform the full procedure, with all failures relating to MIPp. The results for the 3 trials were comparable with the greatest variability < 6 yo as assessed by Cronbach's α and ICC. MIPa was significantly lower than MIPp, in both conditions of visual feedback (VFB). TS increased significantly with age, resulting in 2 major groups (3-6 yo vs 7-11 yo). No differences were found for gender or order of testing. The use of visual feedback when possible (≥ 7 yo since number sense is required to utilize VFB) did not result in higher MIPa or MIPp. Regression analysis shows that TS is most predicted by non-dominant hand strength followed by age.

Conclusions:

This largest dataset available resolves some methodological questions on TS in children. We are the first to describe adult-like anterior-posterior MIP differences. TS increases with age, especially in children > 6 yo and cross-cultural differences in MIPa are smaller than in adults. Gender equality in TS corroborates the previous results. Order was not significant like in adults; VFB provides no additional advantage unlike in adults. These normative data provide the basis for future research and can be used to objectively diagnose weakness and guide strengthening interventions.

Learning Outcome:

The attendee will comprehend the methods and the utility of assessing pediatric tongue strength.



Keywords: Dysphagia; tongue strength; normative data



Abstract No: 9839

Dysphagia for a patient with progressive condylar resorption (PCR) of mandibular bone – Effect of tongue positioning on the symmetry of pharyngeal compression

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Abstract Content:

A 47 year-old woman was referred by a neurologist to our Hearing, Speech and Swallowing Center for the evaluation of swallowing function. She noted eating difficulty, with occasional choking and coughing. Seven years before the evaluation, she felt unusually rigid biting motion of the right-side jaw, followed by remarkable pain during meals and limited mouth-opening about one year later. A CT-scan revealed a lack of the right condyloid process of mandibular bone by 10mm, leading to the diagnosis of progressive condylar resorption (PCR).

Later, she took a biting adjustment with a dental-resin plate on the lower left-side second molar by a prosthetic dentist. For the initial evaluation, an otolaryngologist found an asymmetrical pharyngeal compression with greater left-side opening in addition to up-coming bubbles above the pharyngeal constriction at the level of velopharynx. A video-fluorographic examination of swallowing showed incomplete pharyngeal contraction and shorter duration of laryngeal elevation for liquid and semi-solid material. A small volume of pharyngeal retention was seen followed by the pharyngeal clearance with double swallow. The frontal view of oral structures revealed that the left side of mandible was slightly apart from the horizontal plane of maxilla not at rest but at the hold and pharyngeal contraction for swallowing. An endoscopic observation of the pharynx was performed to test the effect of tongue position on pharyngeal compression.

When the tongue was placed on the mid-line as used for regular swallowing attempts, asymmetric pharyngeal cross-sectional area remained. In contrast, the pharyngeal cross-sectional area was symmetric when the tongue tip was placed at the left-side upper cuspid and the first bicuspid (premolar). The pharyngeal compression for swallowing is determined by pharyngeal contraction and tongue base retraction. The patient told attending physician and speech therapists about the ease of swallowing with the altered tongue positioning, as she stated "It was just as I swallowed a long time ago." PCR of mandibular bone is a rare disease (estimated number 1000-2000 in Japan) with unknown etiology, and is characterized by the retracted mandible at affected side. The pharyngeal cavity may be wide open at an opposite side, resulted in incomplete pharyngeal constriction. The mechanism of pharyngeal compression with respect to mandibular disposition and muscles of tongue-hyoid and pharynx for swallowing will be discussed.

Learning Outcome:

To recognize dysphagia associated with progressive condylar resorption (PCR)

To understand unusual gestures of the pharynx probably in response to asymmetric oral structures

To know treatment options such as prosthetic adjustment and swallow maneuver

Keywords: dysphagia; progressive condylar resorption (PCR) , mandible, tongue positioning, pharyngeal compression



31st World Congress of the **IALP**





Abstract No: 9827

A Coaching Model for SLP Graduate Student Training

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Abstract Content:

Introduction: Texas Christian University (TCU) offers a rigorous two year M.S. degree in Speech Language Pathology which is accredited by the American Speech-Language Hearing Association (ASHA) Council on Academic Accreditation. Extensive academic and clinical learning outcomes for graduates have been delineated in ASHA's graduate curriculum on swallowing and swallowing disorders (adult and pediatric dysphagia <https://www.asha.org/policy/tr2007-00280/>). SLP degree-holders must have assessment, intervention and education competencies in the area of feeding and swallowing throughout the lifespan.

Successful student training has application internationally as the next generation of SLPs prepares to enter the workforce. Traditionally in the United States, clinical supervisors function as experts imparting knowledge through feedback after sessions are completed. This presentation describes a coaching methodology for graduate student training implemented in a pediatric feeding group. The coaching methodology was modified from the work of Salisbury et al. in 2017. Critical elements of the Coaching Model are joint planning, action, observation, debrief and feedback. Each of these elements will be discussed.

In response to ASHA standards, student feedback obtained in exit interviews, and community needs, a pediatric feeding clinic was begun. The Coaching Model was used to support students' learning and professional development while also providing skilled services to pediatric clients with feeding problems and their caregivers.

Method

In fall, 2017, the pediatric feeding group cohort began. Active participants were (to date) 10 graduate student who elected to participate in feeding group, eleven preschoolers identified as problem feeders (as defined by Rowell and McGlothlin, 2015), a caregiver of each child and 2 clinical supervisors. In addition, each semester an age-matched typically developing preschooler and caregiver were asked to participate. The coaching method was implemented in weekly feeding group sessions.

Coaching began with a half day of training for the clinicians. Required reading varied for the clinician cohort, based on the clients, and twelve group sessions were completed each semester. Joint planning as a cohort of clinicians and supervisors was a distinctive of this clinical experience since all interacted with clients and caregivers. Students had rotating responsibilities for action which included: gross motor activity, parent training, sensory play, oral play. Family-style meals targeted individual goals in a group environment. Caregivers participated to varying degrees, and homework was assigned. After group concluded, observation and debrief as a group occurred, with supervisors contributing. Specific clinician feedback was given during the session and debrief.

Results from students' surveys about the elements of the coaching model will be presented.

References:

- American Speech-Language Hearing Association Graduate Curriculum on Swallowing and Swallowing Disorders (adult and pediatric dysphagia) <https://www.asha.org/policy/tr2007-00280/>
- Salisbury, C., Woods, J., Snyder, P., Modellmog, K., Mawdsley, H., Romano, M., Windsor, K. (2017). Caregiver and Provider Experiences with Coaching and Embedded Intervention, *Topics in Early Childhood Special Education*, 38(1) 17-29.



Learning Outcome:

After completing this activity, participants will

- Compare and contrast supervision and coaching
- Describe how components of clinical coaching can be implemented in various training programs

Keywords: training, dysphagia, group, coaching, clinical



Poster Presentation: Session TUP1-3 / Fluency, Aug. 20th (Tue.) 11:00-12:00

Abstract No: 9895

A Study on Comparing the Speech Rate, Intelligibility and Disfluency between Preschool Cluttering and Non-Cluttering Children.

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Abstract Content:

Objective: There were two objectives of this study. One was to determine whether significant differences exist in the speech rate, intelligibility and disfluency in three speech tasks between preschool children with cluttering and without cluttering. The other was to determine whether correlations exist among the speech rate, intelligibility, stuttering-like disfluency (SLD) and other disfluency (OD) in the three speech tasks of all the children and of the cluttering preschool children, respectively.

Method: The 31 cluttering and 31 non-cluttering preschool children (CC and NCC, respectively) who were all older than 5 years old were recruited. The average scores in the speech-rate subtest of the Cluttering severity Instrument (Mandarin Edition) of CC were more than or equal to 3, while those of the NCC were less than 3. The 3 speech samples of conversation, picture story-telling and story-telling of all the children were recorded and translated verbatim. Their speech errors and disfluencies were manually identified, and their speech rate was calculated using Praat software. Two-way mixed ANOVAs and Pearson's product-moment correlations were then employed to analyze the above speech measures.

Results: Significant differences exist in speech rate, intelligibility, and disfluency in the three speech tasks between preschool CC and NCC. In terms of speech rate, preschool CC spoke faster than NCC did. The speech rate in the conversations of the CC was faster than those in picture story-telling and story-telling. In terms of intelligibility, the interaction effect was significant. The preschool CC had significantly poor intelligibility compared to the NCC. For the CC, their intelligibility in conversation and in picture story-telling was better than in story-telling. In terms of disfluency, SLD, OD and total disfluencies (TD) of the CC were all higher than those of the NCC. For the 3 speech tasks, there were no significant differences in SLD and TD of the preschool CC. The OD in story-telling of the CC was higher than in conversation and picture story-telling. Besides, for all the preschool children, a significant positive correlation between speech rate and OD was found; the intelligibility was significantly negatively correlated with two types of disfluency: SLD and OD. However, for the CC, only a significant positive correlation between speech rate and OD, and a significant negative correlation between speech intelligibility and OD were found.

Discussion: According to the results obtained, the speech features of the preschool CC are rapid, disfluent and poorly intelligible and the conversation and story-telling tasks are appropriate for diagnosing preschool cluttering children. In terms of the correlations among speech rate, intelligibility, SLD and OD, the differences between the results derived from the CC and all the children may be because the SLD durations weren't reduced when calculating the speech rate of the cluttering children

Learning Outcome:

(a) The preschool CC's speech features include high speech rate, poor intelligibility, and more other disfluency; (b) a significant positive correlation between speech rate and OD, and a significant negative correlation between speech intelligibility and OD exist in preschool CC.

Keywords: cluttering, preschool children, speech rate, intelligibility, disfluency.



31st World Congress of the **IALP**





Abstract No: 9870

The integrated therapy approach: Assessment and perceptions of therapy outcomes from an IWS and his communication partners

Tasneem Fareed Karanj^{*}; Dr Anniah Mupawose

Abstract Content:

Introduction: Stuttering can be considered a disabling condition to some individuals who stutter (IWS) especially when it stands in the way of social participation in one's life roles. In the majority of cases Speech language Pathologists (SLPs) focus therapy with IWS on the IWS' dysfluencies and how it impacts their social activities. Very rarely do SLPs include the environmental context and his interpersonal social interactions. The purpose of this study was to determine the effect of using an integrated approach to address the IWS dysfluencies'; and explore the IWS and his communication partners' perceptions on quality of life.

Method: This research study employed a single-subject research design. Data was collected quantitatively using standardised measures such as the OASES and SSI-4, and qualitatively using semi-structured interview schedules. Recruited participants included the individual with stutters and his communication partners came from three different environmental contexts his home, social and workplace settings. The three communication partners included his wife, very good friend and employer. Descriptive statistics were used in the analysis of the OASES and SSI-4, and interview schedules were analysed using thematic analysis.

Results: Descriptive analysis revealed a decrease in the severity of the stutter and a decrease in the IWS' the overall quality of life, based on the SSI-4 and OASES scores respectively. Thematic content analysis results for the IWS fell into three main themes: cognition, affect and behaviour before and after therapy. Whereas the themes generated from analyzing IWS' communication partners included knowledge, influence of therapy, interactional behaviour.

Conclusion and implications: Results indicated that before therapy, stuttering was having a negative impact on his social participation and environmental context. However after therapy his quality of life improved and that had a positive influence on how he participated in his life roles and engaged with his environment. This positive influence of therapy did not go unnoticed by communication partners. It is important that in the management of stuttering, Speech-Language Pathologists consider the individual holistically, and be inclusive of communication partners.

Learning Outcome:

1. Provide an opinion on the use of ICF as a guideline for developing therapy outcomes.

Keywords: Integrated approach; stuttering; IWS; communication partners



Abstract No: 9866

Self-cognition of children who stutter coexistent with developmental disorders and significance of therapeutic intervention

Naoshi Maebara^{*}; Shiho Ishigami; Yasuhiko Azegami

Abstract Content:

[Purpose]

Developmental disorders such as learning disorders, Asperger's syndrome, and attention deficit hyperactivity disorder coexist with stuttering. The most important key to provide individuals with these disorders with effective therapy is awareness of their own stuttering. When planning an approach based on this viewpoint, it is essential to pay attention to low self-monitoring skill, which is one of characteristics of developmental disorders. This study aimed to investigate the susceptibility to stuttering and consciousness of one's stuttering in duplicated cases of developmental disorders and to obtain clues toward an intervention.

[Method]

Thirty-eight children who stuttered and had Asperger's syndrome aged 5~10 years old (boys 29/girls 9) participated. All children received diagnosis and intelligence examination by a pediatric neurologist. Based on the viewpoint of self-monitoring skills to increase the sensitivity of speech fluency, several tasks were provided. (1) children worked on the auditory discrimination task of fluency speech and stuttering using 8 word cards (picture cards) (Task A). Next, (2) we confirmed which of the fluent speech and stuttering was preferred (Task B) by the children who could distinguish between them sufficiently. Finally, (3) Task C was related to awareness of stuttering. Can the participants turn attention/cognition to their own stuttering based on the experiences of Tasks A and B (Task C-1), and how do they want to treat their own stuttering (Task C-2). Analysis is the ratio of each task was verified by goodness-of-fit test.

[Result]

Differentiation between fluency and stuttering: Thirty-two children (84.2%) significantly ($\chi^2 = 17.8, p < .001$) distinguished the difference in speech performance. In addition, the number of children who chose "fluent speech" (22, 68.8%) was significantly higher than for those who chose "undeterminable" (10, 31.3%) ($\chi^2 = 4.50, p < .05$). In addition, 23 children (71.9%) were able to become conscious of their own stuttering; 22 (68.8%) found that they wanted "to improve" the current stuttering symptoms ($\chi^2 = 4.50, p < .05$).

[Discussion]

Children who stutter coexistent with developmental disorders have been considered to be less conscious of self-monitoring skills and treatment. However, the results of this study are somewhat different in their interpretation. Participants were able to detect stimulated stuttering and disfluent speech while at the same time being able to deal with their own stuttering. They also showed that they have a consciousness to change their current stuttering to a better state without denying their own stuttering. In this study, we could find important clinical significance for therapeutic intervention in children who stutter coexistent with developmental disorders.

Learning Outcome:

Children who stutter coexistent with developmental disorders recognize their own stuttering, but they want to reduce their stuttering without blaming themselves.

Keywords: stuttering;coextent;developmental disorders;treatment



Abstract No: 9788

Stuttering and Typical Disfluencies in Bilingual Polish-English Adults Who Stutter

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Peixin Xu¹

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Abstract Content:

Background:

To date, few studies have examined the relationship between bilingualism and stuttering in adults. Given that at least 50% of the world's population is raised in a bilingual or multilingual environment and there are fewer native English speakers compared to English-as-a-second-language (ESL) speakers (Shenker & Lim, 2015), it is imperative that speech-language pathologists and researchers collaborate to establish best practices regarding assessment and intervention for bilingual individuals who stutter (BWS). This study specifically analyzes the frequencies and types of stuttering and typical disfluencies present in Polish-English BWS across various speech tasks, as well as the correlation between English proficiency and stuttering frequency. Because Polish and English differ with respect to their phonetical, morphosyntactical, and suprasegmental features (Sadowska, 2012), their linguistic differences allow for cross-linguistic comparison.

Methodology:

Seven participants took part in the study. All were native Polish (L1) speakers who spoke English (L2) as a second language at an intermediate level or higher, were diagnosed with a developmental stutter, and were 18+ years old. Participants from stuttering support groups throughout Poland were invited to participate. The study took place via Skype and was recorded for later review. An English language proficiency cloze test (Taylor, 1953) was given to ensure that participation criteria (at least 50%) were met for intermediate English language proficiency. Participants engaged in monologue, dialogue, and oral reading tasks in order to collect 200-word speech samples in both languages. All tasks were randomized for each participant for language, task order, monologue images and dialogue topics to minimize the possibility of an order effect.

Results:

Between languages, the frequency of stuttering and typical disfluencies did not differ significantly. There was no significant difference between tasks, within languages. However, within each language, there were significantly more typical disfluencies present during monologue compared to oral reading. The types of stuttering did not differ between L1 and L2. In both languages, it was observed that, during dialogue, significantly more repetitions than broken words occurred and, during monologue, significantly more prolongations than broken words were uttered. In oral reading tasks, significantly more repetitions than prolongations and significantly more prolongations than broken words were seen in both languages. The typical disfluency types between language differed significantly within monologue and oral reading, with significantly more interjections occurring in L2. Dialogue revealed significantly more interjections than multi-syllabic word repetitions in both languages. During monologue, significantly more interjections occurred than multi-syllabic word repetitions across languages; and, in English, significantly more interjections than revisions were also observed. No significant difference exists in the types of typical disfluencies within Polish or English during oral reading. Cloze test scores did not correlate with stuttering frequency. However, a negative correlation was found between cloze test scores and typical disfluency frequency.



Learning Outcome:

1. Recognize cross-linguistic correlates that may contribute to increased stuttering and typical disfluencies
2. Synthesize information regarding assessment and treatment considerations in bilingual individuals who stutter

Keywords: bilingualism, diagnosis, stuttering



Poster Presentation: Session TUP1-4 / Voice, Aug. 20th (Tue.) 11:00-12:00

Abstract No: 10017

Effectiveness of vocal hygiene education with resonant voice therapy on school-aged children with vocal nodules: A randomized controlled trial

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Abstract Content:

BACKGROUND: Voice disorders are prevalent among school-aged children. The majority of voice problems in children are phonotraumatic in nature. Previous studies reported that resonant voice therapy, with the aim of reducing phonotraumatic behaviors, is effective in improving children's voice quality. However, there was a paucity of randomized controlled trial evidence for long-term efficacy of resonant voice therapy in children.

OBJECTIVE: The aim of this study was to investigate the effectiveness of resonant voice therapy on school-aged children with vocal nodules, compared to placebo control group and no treatment control group.

METHODS: 39 children aged between 6 to 12 years old were recruited. All participants were diagnosed by otolaryngologists as having phonotrauma associated with vocal nodules. They were randomly assigned into resonant voice therapy group, placebo group, or no treatment control group. Participants in the resonant voice therapy group received six one-hour sessions on vocal hygiene and resonant voice therapy. Participants in the placebo group received six one-hour therapy on reading exercise to enhance their presentation skills. Participants in the control group did not receive any treatment. The outcome of resonant voice therapy was assessed by quality of life measures (Pediatric Voice Handicap Index and Children's Voice Handicap Index), acoustic and perceptual voice evaluations. Voice assessments were performed before treatment, immediately after treatment and two-months after treatment.

RESULTS AND DISCUSSION: This RCT study would provide evidence on the effectiveness of resonant voice therapy for school-aged children with vocal nodules.

(Acknowledgements: This study was supported in part by a RGC General Research Fund, Project number: 17634416)

Learning Outcome:

1. Discuss the effectiveness of resonant voice therapy on treating phonotrauma associated with vocal nodules.
2. Discuss the importance of providing early treatment to children with vocal nodules.

Keywords: school-aged children; voice therapy; randomised controlled trial



Abstract No: 9840

Effect of a Short-Term Vocal Hygiene and Relaxation Program on Female Patients with Functional Dysphonia

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Abstract Content:

Purpose: Functional dysphonia refers to a voice disorder in the absence of a physical/organic condition. It makes up of as many as 40% of all voice disorders. Voice therapy is considered a treatment of choice for functional dysphonia. Different techniques were documented to be useful in voice therapy, vocal hygiene and relaxation being two of them. Many patients with functional dysphonia were young adult females who hold full-time jobs. It is difficult for them to take time off from work to receive the needed voice therapy. The purpose of this study is to investigate the effect of a short-term vocal hygiene and relaxation program on female patients with functional dysphonia, as compared to the regular six-session program under the National Health Insurance Administration policy in Taiwan.

Methods: 30 female patients with functional dysphonia were recruited as the experimental group. The experimental group received pre-therapy voice assessment, vocal hygiene counseling, relaxation interventions, and post-therapy voice assessment in two or three sessions. 30 voice samples of female patients with functional dysphonia from our database were used as the control group. Patients from the control group had received six therapy sessions including techniques such as, vocal hygiene, relaxation, breathing, and resonant voice therapy; they had also received pre- and post-therapy assessment. Inclusion criteria for the experimental and control groups were the same: females between 20 and 55 years, without any organic voice disorders. A computerized acoustic analysis program (MDVP, CSL 4500) was used to record and analyze the voice samples. Collected data of the acoustic analyses from both groups were then compared using a statistical analysis software (SPSS).

Results: Two-sampled t-tests were utilized to examine the difference between pre- and post-therapy voice samples in each group. Jitter (Jitt, PPQ), Shimmer (Shim, APQ), and noise parameters (NHR, VTI) were compared. The difference between the experimental and control groups of all the parameters showed no statistical difference, with *p-value* ranging from 0.071 to 0.743, meaning that the effect of short-term therapy is not significantly different from that of a regular therapy. Moreover, Jitt, PPQ, NHR, and VTI showed improvements post therapy in both groups.

Discussion: The results of this study show that the outcome of a short-term voice therapy is as effective as a six-session therapy with noticeable improvement of the patients' voice. There is a twofold advantage in shortening voice therapy duration. First, patients may be more likely to attend and comply with voice therapy. Their quality of life will be enhanced with improved vocal functions and voice quality. Second, with a decrease in voice therapy duration, medical expenses will also be reduced. Nonetheless, a longitudinal follow-up study may be necessary to investigate the effect of voice improvement in the long run.

Learning Outcome:

1. Short-term voice therapy is as effective as regular voice therapy in treating functional dysphonia.
2. Short-term voice therapy may be used as a first-line treatment for young females with functional dysphonia.



Keywords: Voice Disorders; Functional Dysphonia; Voice Therapy; Vocal Hygiene; Relaxation; Short-term



Abstract No: 9784

Effects of semi-occluded vocal tract techniques on elderly chorus singers: A randomized clinical trial

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¹Department of Speech, Language and Hearing Sciences/ UFCSPA/ Brazil ¹Department of Medicine/ Pontifical Catholic University of Rio Grande do Sul / Brazil

Abstract Content:

Objective: evaluate the effects of the high resistance tube and the resonance tube – the Finnish method – on the voice of elderly chorus singers.

Background: The positive influence of choral singing can be observed on the effects of presbyphonia. However, for this to occur, the use of semi-occluded vocal tract techniques could be inserted into this context to promote greater health and vocal support for elderly singers.

Methods: Two choirs from the city of Porto Alegre- Brazil, were randomized into two groups: 10 in the straw group and 9 in the tube group. Four weekly drills were held before the rehearsal began. Individuals were assessed prior to and immediately after performing the techniques. Both were performed concomitantly and in a group. The following sequence of exercises was used: emission of the vowel [u:] at the usual pitch, varying the pitch and the melody to “Happy Birthday to You”. The first emissions were performed for two minutes and the melody was repeated twice. Between each sequence, the choralists were recommended to take a vocal rest. The vocal quality evaluation was performed using the CAPE-V Protocol and aerodynamic measures by means of the maximum phonation time of the vowels /a/, /i/ and /u/ and of the consonants /s/ and /z/.

Results: In the pre and post exercise intergroup comparison there was no significant difference ($p > 0.05$) for both the CAPE-V Protocol parameters and the maximum phonation times. There was also no significant difference in the CAPE-V and MFT parameters when subjects were compared intragroup pre and post exercise, except for a tendency to reduce tension in the straw group ($p = 0.059$) and an increase in maximum phonation time of the vowel /i/ in the latter group ($p = 0.017$).

Discussion: Semi-occluded vocal tract techniques, such as the tube and the straw, seem to be beneficial in promoting a better balance of phonation, although the limitation of sample size may have impaired the significance of the results. Studies suggest that therapeutic techniques that use the semi-occluded vocal tract exercises (SOVT) can improve vocal quality, favor glottic coaptation and balance between aerodynamic and myoelastic forces of the larynx. Further studies are needed with larger sample sizes to confirm these findings.

Learning Outcome:

1. The high-resistance straw presented a tendency to reduce the vocal tension present in choralists.
2. The exercise with the straw made it possible to increase the maximum phonation time of the vowel /i/, which may be related to the resonance effects of the technique.

Keywords: Voice; Voice Quality; Singing; Aged



Poster Presentation: Session TUP2-1 / Audiology, Aug. 20th (Tue.) 13:30-15:00

Abstract No: 9932

Clinical Audiological Characteristics of Cochlear Nerve Deficiency in Children

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¹Otolaryngology/ National Taiwan University Hospital/ Taiwan

Abstract Content:

Research Topic :

The purpose of this retrospective study was to analyze the clinical audiological characteristics of children with cochlear nerve deficiency (CND) through electrophysiological audiological tests, magnetic resonance imaging (MRI) and genetic testing.

Methods and Materials :

From 2011 to 2017, a total of 25 patients were diagnosed and classified as CND by magnetic resonance imaging in National Taiwan University Hospital. There were 13 males and 12 females; 5 unilateral and 20 bilateral cases. Audiological examinations including tympanogram, acoustic reflex, distortion-product otoacoustic emission (DPOAE), cochlear microphonics (CM), auditory brainstem response (ABR) and auditory steady-state response (ASSR) were employed to assess the residual neurological function of all 25 patients with CND. Furthermore, genetic testing has also performed.

Results :

A total of 45 ears in 25 patients with CND (excluding 5 ears with normal hearing) were analyzed. The results are as follows: 100% (n=45) of the tympanogram were type A, 100% (n=45) of acoustic reflex responses were absent; 87% (n=39) of the DPOAE were failed and 13% (n=6) were passed. Cochlear microphonics were present in 53% (n=24) of the patients, absent in 13% (n=6), and the rest 33% (n=15) did not receive the test. In ABR testing, 73% (n=33) showed some but abnormal responses. As for ASSR testing, 60% (n=27) of the patients' hearing threshold can be estimated. Genetic testing showed that 8% (n=2) of CND patients were syndromic hearing loss, and 15% (n=3) were non- syndromic.

Learning Outcome:

The clinical audiological findings of children with CND demonstrated the following characteristics: (1) The pass rate of DPOAE is low; (2) CM can be identified in most cases; (3) Abnormal synchronous waveforms in ABR. Therefore, we recommended that, for CND patients, (1) Even when DPOAEs are absent, CM can be helpful in differential diagnosis; (2) Patients with abnormal ABR synchronous waveforms should receive MRI scan to confirm the possibility of CND.

Keywords: cochlear nerve deficiency, audiological characteristics, electrophysiology.



Abstract No: 9931

Sequential bilateral cochlear implantaion in Waardenburg syndrome (Case Report)

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Abstract Content:

OBJECTIVE: Waardenburg syndrom is an autosomal-dominant syndrome, and sensorineural hearing loss in 20% to 55% of patients. This patient population accounts for approximately 2% of congenitally deaf children. This case report will present a client who got his first cochlear implant (CI 1) at 3 yrs. After 20 years, he accepted his second cochlear implant (CI 2). Because of his CI 1 has partial insertion (about 10-11 electrode), so his speech performance is not very well. We will investigate how his CI 2 progresses.

STUDY DESIGN: We will follow up this case after initial mapping 1 month, 3 months, 6 months, 1 yr, 2 yrs and 3 yrs. The assessment tools include (1) speech perception test (2) MMH articulation evaluation (3) everyday listening performance.

Learning Outcome:

Learning Outcome :

Keywords: Sequential bilateral cochlear implant



Abstract No: 9915

Assessing the abilities of deaf/hard-of-hearing children to understand the behavioral intention of other children

Akira Nohara^{*1} ; Hirota Eiko²

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Abstract Content:

Objective: This study assessed the language development abilities of deaf/hard-of-hearing children (D/HH) to understand the behavioral intention of other children independent of subsequent events.

Method: The experimental group consisted of 21 children who attended an elementary school for the deaf (mean pure-tone average=99.4dB, mean age=8.03 years), and the control group consisted of 60 children who were developing typically. The basic language ability of the D/HH children was evaluated using achievement tests for reading comprehension. All of the subjects were shown drawings with sentences and asked about the intent of the behavior of the children shown in the drawings. They were asked to write responses after each drawing and sentence had been presented. There were two types of conditions: model and non-model. The type of condition was defined by the actions of the other children and the reactions of the recipients. Employing the concept of the social act, we classified the actions of the other children into two types: positive (P; "sharing a piece of candy") and negative (N; "taking toy blocks"). The reactions of the recipients were classified into two types: positive (P; "smile") and negative (N; "troubled"). The model conditions were PP and NN. In a model condition, meaning and action matched, and it was easy to empirically infer behavioral intention. The non-model conditions were PN and NP, and it was presumed that in these conditions, meaning and action did not coincide.

Results: The results were as follows: (1) D/HH children had little difficulty explaining the behavioral intentions of other children in situations where the meaning and action matched. Furthermore, D/HH children had delays in non-model conditions, and presented problems in explaining the intentions of actions in situations where the meaning and action did not match. (2) The correlation between the correct presentation of tasks and reading ability was statistically meaningful. (3) Communication therapy was needed for D/HH children to imagine "what the other kid will do" and to understand when "it is anybody's guess."

Discussion: Our study suggests that for D/HH children, the ability to understand the behavioral intention of others is based on respecting the diversity of ideas in school life, taking into consideration relationships with other children.

Learning Outcome:

- (1) Describe the abilities of deaf/hard-of-hearing children to understand the behavioral intention of others.
- (2) Explain how the language ability of deaf/hard-of-hearing children is related to their ability to understand the behavioral intention of others.

Keywords: deaf/hard-of-hearing children ; development ; understand the behavioral intention of others



Abstract No: 9914

Post Cochlear Implantation Recovery of Otitis Media Effusion

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Taiwan

Abstract Content:

Objective: Evaluating recovery time of otitis media effusion (OME) after cochlear implantations.

Background: Cochlear implants are surgically-implanted prosthetic devices that electrically stimulate the cochlear nerve to provide hearing which can be used to treat severe to profound bilateral sensorineural hearing loss. The device consists of a battery-powered external processor, a receiver coil implanted below the scalp, and an electrode inserted directly into the cochlea through a surgical opening. Since the functions of cochlear implant are operated through electric signals, OME wouldn't have effects on its function. Hence patient with OME can still have improved hearing with implants. However, persistent OME may increase the risk of implant infection therefore future re-implantation or prolonged prophylaxis antibiotics may be required.

Method: Participants were 15 children (17 ears) who underwent cochlear implantation from April to August, 2018 with ages ranged from two to 12 years old (Ave: 6.9±3.02 years old). Participants were divided into OME group (N=2) and non-OME group (N=13) before implantations. The average age of non-OME group and OME group were 7.31 and 4.50 respectively. The condition of their middle ears was followed approximately every two weeks after the implantation.

Results: The average duration of post-operation recovery was 6.77 weeks in non-OME group, and in OME group, while the condition of OME did not subside. There was no significant recovery time difference between the age and gender among all participants. **Conclusions:** Patients with OME would recover to the condition as was pre-operation two weeks after the implantation however the OME didn't show improvement in the next eight weeks. Hence they may need further treatments if OME continues. Patients without OME pre-operation would recover to their previous condition in averagely 6.77 weeks. If OME didn't improve after the certain time, intensive follow ups are needed.



Abstract No: 9900

Factors in Understanding of Facial Emotions by Hearing Impaired Children with Borderline intellectual disabilities or Autism

Yuiko Hirashima*; Masae Shiroma

Abstract Content:

<Objectives> Hard of hearing children frequently have trouble understanding other people's emotions. Some of them have Mental retardation or Autism. They have difficulties understanding other people's emotions. We don't know main cause of their misinterpretation of other people's emotion. This study is aimed at understanding factors in interpretation of facial emotions among hearing impaired children with borderline intellectual disabilities, Autistic children or hearing impaired children. The findings could be applied in rehabilitation programs.

<Methods> Seven Borderline Intellectual Disabilities Hearing Children(BIDHIC), seven Autistic Hearing Impaired Children(AHIC), twenty Hearing Impaired Children(HIC), twelve Autistic Children(AC) and thirty Normal Children (NC) participated in this study. The mean values among the BIDHIC were as follows:age,9:06;hearing level,90.1dBHL;speech recognition score,87.6 % ; PIQ,69.4 ; VIQ,76.8,the AHIC : age, 10:06; hearing level, 77.9dBHL; speech recognition score,83.0% ; PIQ,106.2 ; VIQ,93.1, ,the HIC: age,10:05; hearing level,68.6dBHL; speech recognition score,89.2.% ; PIQ,105.1 ; VIQ,99.0,the AC: age10:08:FIQ,96,the NC:age9:11. Each child carried out two tasks.(1)Face-emotional word Matching task(FM task) and (2)Emotional face Free Labeling Task (FL Task). (1)FM task: Every child looked at 32 basic emotional facial pictures and matched emotional words and obtained percentile. The percentile was compared using the Mann-Whitney test.(2)FL task : Every child looked at 5 emotional facial pictures and imagined emotional words. Compound emotional facial pictures were used in this task. Their answers were classified in emotional words were counted. The number of emotional words were compared using the Mann-Whitney test.

< Results > (1)FM task:The average percentile among BIFHIC was 45.71(24.9-54.7),AHIC was 45.0(30.1-60.5),HIC was 47.31(30.3-65.3),AC was 40.53(24.1-54.7),NC was 51.93(37.0-63.8). Percentile of AC was significantly lower than in NC($U=0.0004$, $P<0.05$). Percentile of AHIC was lower than other groups. It was noted that Some AHIC concentrated on certain parts of the face. They got high score using different methods from other children. (2)FL task : The average number of emotional word among BIFHIC was 6.71(5-11), AHIC was 8.57(4-15), HIC was 11.15(5-23), AC was 8.30(4-15), NC was 11.56(6-17). BIDHIC was lower than in other groups,NH($U=0.0009$, $P<0.01$),HIC($U=32.0$, $P<0.05$). BIDHIC imagined only simple emotional words. AHIC was lower than in NH ($U=0.0424$, $P<0.05$), HIC ($U=32.0$, $P<0.05$) . AC was lower than in NH ($U=0.0057$, $P<0.01$). AC and AHIC imagined incorrect words .

< Construction > BIFHIC know simple facial emotions, however they have limited emotional words. Autism condition contributes more to the difficulties of facial emotion.

Learning Outcome: (minimum of 2, maximum of 20 words each)

Children should adapt some emotional words to a compound emotional face in the context to understand their friend's emotions. BIFHIC know simple facial emotions. Due to their low intelligence level, they have limited emotional words when they looked at compound emotional faces. We should infer that the Autism condition contributes more to the difficulties of facial emotion interpretation among the AHIC and AC. We should therefore teach emotional words to BIFHIC whenever possible. As for the AHIC, we should help them be able to match a face with circumstance.

Keywords: Hard of hearing children, Autism , Borderline intellectual disabilities, Facial emotion, Emotional words



Abstract No: 9808

Management strategies to reduce listening difficulties in adults with auditory processing disorder

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Abstract Content:

Objective: People with auditory processing disorder (APD) have normal hearing, but find it difficult to understand spoken messages that are either complex or spoken under noisy conditions. The assessment and diagnostic system for APD is developed in each country, and many management strategies have been devised, including environmental modification, auditory training, and compensatory strategies. However, some previous studies have reported that some people do not show obvious improvement of their listening abilities, although some management strategies are useful for people with APD. Thus, an effective strategy is needed to reduce their listening problems. This study aimed to investigate the effect of management strategies to improve listening abilities of people with APD.

Method: Three adults who had a diagnosis of APD participated in the study. All had normal hearing, but experienced difficulty in listening under noisy conditions, as well as in understand long speeches. Two listening tasks, the hearing in noise task and short story recall task, were conducted with the subjects. In the hearing in noise task, we presented three different listening conditions using the Japanese hearing in noise test (HINT-J). The first condition involved no intervention, and the second condition involved increasing the subject's attention each time before listening to the test sentences. The third condition involved presenting the initial word before responding to the sentence that they could hear. We analyzed the differences among results of these listening conditions. In the short story recall task, we examined the effect of reading confirmation. After presentation of a short story, subjects recalled as much as possible of what they had heard. Then they read the story by themselves and reported it again. We compared the recall results before and after reading.

Result: Our results showed that signal-to-noise ratio subjects can repeat test sentences correctly 50% of the time; each condition was improved by increasing attention and presenting the initial word condition, compared with the "no intervention" condition in the HINT-J. In particular, a stronger tendency to improve listening was observed in the "increasing attention" condition. Furthermore, subjects showed similar effects in the short story recall task.

Discussion: In conclusion, management strategies, including increasing attention to speaking people, presenting the theme of speech, and confirming contents using written message, is useful to improve listening abilities in people with APD. We suggest that continuing to use these strategies for a longer span will be connected with an increasing effect of these strategies, thus it is necessary to determine this effect in future studies.

Learning Outcome:

We could know one of the appropriate management strategies to improve listening abilities of people with APD.

Keywords: Auditory processing disorder, management strategy, listening difficulty



Poster Presentation: Session TUP2-2 / Audiology, Aug. 20th (Tue.) 13:30-15:00

Abstract No: 10020

The Normative data of Wideband Reflectance Tympanometry in Chinese young and older adults

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Abstract Content:

Objective:

The purpose of this study is to establish the normative data of wideband reflectance tympanometry in Chinese young and older adults and investigate the age and gender effect of absorbance in Chinese population.

Background:

The age effects and race effects of middle ear have been documented by standard and multiple-frequency tympanometry. One previous study with small number of participants showed that the decrease reflectance from 800 to 2000 Hz in older adults has been found in Caucasian population (Feeney & Sanford, 2004). However, none of the study has investigated the wideband reflectance in Chinese older adults and none of the normative data for this population. Because the interpretation of Wideband reflectance tympanometry depends on the normative range of reflectance or absorbance, this current study established the normative range of wideband reflectance for Chinese young and older adults. In addition, this study investigated the aging process of middle ear and examined the gender effect on the wideband reflectance.

Method:

This study recorded the wideband reflectance from 226 Hz to 8000 Hz at ambient and peak pressures in a group of 40 young adults and a group of 80 older adults with age ≥ 55 years. All of the participants had no significant abnormal findings of otoscopy, and also had single-peak tympanogram. Normal-hearing young adults had air conduction threshold ≤ 25 dB HL at 0.5, 1, 2, 4 kHz. Older adults have age-related hearing loss with no air-bone gap >10 dB at any of the frequencies.

Results & Discussion:

The statistical significant decreased reflectance was found at lower frequencies in older group than in young group. The similar findings were reported in western study, which indicated that the older auditory system tends to be more mass dominated than in young system. Gender difference of wideband reflectance was found in older group, which indicated that the gender dependent norms in older population should be needed for clinical use.

Learning Outcome:

1. To understand the aging process of middle ear in wideband reflectance.
2. The establishment of normative data of older adults in Chinese population.

Keywords: wideband reflectance, older adults, , norm, aging



Abstract No: 9770

Effects of FM system fitted into normal hearing ear on speech-in-noise recognition in Japanese children with unilateral aural atresia.

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Abstract Content:

Objective: We examined speech recognition ability of elementary school-aged Japanese children with unilateral conductive loss due to aural atresia under noisy environments and then examined the effects of the FM system fitted into their normal hearing ear on their speech recognition ability.

Methods: Seven children with unilateral moderate conductive hearing loss due to aural atresia and twelve age-matched children with bilateral normal hearing were enrolled in the present study. The children with unilateral conductive hearing loss received speech recognition test with or without the FM receiver fitted to the normal hearing ear in quiet and noisy environments.

Results: In noisy environment of -5 dB signal-to-noise ratio (SNR) similar to working classrooms of Japanese elementary schools, the correct rates of speech recognition test in children with unilateral conductive hearing loss were significantly lower, compared with those in children with bilateral normal hearing. In the noisy environment, the correct rates in the children aided by the FM system fitted to the normal hearing ear were significantly better, compared with unaided ones.

Conclusion: The results suggested that the FM system is recommended as an audiological management for improvement of speech recognition of children with unilateral conductive hearing loss due to aural atresia in noisy classrooms.

Learning Outcome:

1. Unilateral conductive loss due to aural atresia causes poor speech recognition in noise in children.
2. FM system fitted to the normal hearing ear in children with unilateral aural atresia improves poor speech recognition in noise.

Keywords: *unilateral aural atresia; speech recognition; noisy environment; classroom; FM system*



Abstract No: 9983

The Audiologic Management and Considerations of Children Aged from 0 to 3 Years Old : The Taiwan Experience

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Abstract Content:

Objective:

The purpose of the study was to provide practical references for the assessment and the management of hearing loss children in Taiwan.

Background:

Regarding to early audiologic diagnosis and intervention, the “2014 Manual of Newborn Hearing Screening and Diagnosis” provides precise guidelines to standardize the newborn hearing screening indicator and quality monitoring. With the promotion and development of Taiwan’s newborn hearing screening program, the age of early diagnosed and referral has been decreasing; however, it would be a critical stage after the diagnosis. There are fewer descriptions for follow-up in terms of early audiologic diagnosis within the guidelines in 2014. Currently in Taiwan, these are some deficiencies for practical assessments and management of auditory function in clinical practice guidelines.

If no appropriate audiologic management is provided in the critical period for children (age from 0-3), there would be significant influences on cognitive, linguistic, educational, and social potentialities in terms of hearing loss children. Therefore, appropriate clinical practice guidelines will ensure the efficiency and accuracy for clinical audiologists.

Method:

The investigation of our study based on the management service provided by clinical audiologists and on hearing performance from several cases with long-term follow-up, compared with the guidelines of Australia and America.

Results:

Appropriate audiologic management service provided by clinical audiologists should work closely with parents (provide daily listening checks) and speech-language pathologists (provide rehabilitation service). After integrating the three-party information, audiologists will give parents the follow-up guidance and aural rehabilitation programs. It seems that each stage was dominated by different people. In fact, audiologists need to play the central role of the conductor and the connector whole process.

Discussion:

Clinical audiologists are supposed to be well understanding and prepared for possible hearing threshold shift according to various situations of congenital hearing loss. Due to the medical system in Taiwan, there might be less possible to comply with the guidelines of Australia and America completely. However, clinical audiologists could follow some main principles based on developmental and other relevant factors of the individual case and choose appropriate assessments for evaluation to reach the effective hearing management.

Learning Outcome:



1. Participants should be able to accomplish the appropriate assessment methods in the follow-up course of hearing loss children.
2. Participants should be able to organize the effective audiologic management of childhood hearing impairment.

Keywords: Clinical practice guidelines; Follow-up; Childhood hearing loss



Abstract No: 9965

Cortical Auditory Evoked Potentials and Sound Audibility in Experienced Cochlear Implant Listeners

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Abstract Content:

This study aimed to examine the presence of cortical auditory evoked potentials (CAEPs) in relation to the sound detection ability in a group of experienced cochlear implants listeners. CAEPs were recorded to speech sounds delivered at 65 dB SPL in the sound-field. The participants' detection ability to soundfield narrowband tones for five audiometric frequencies 250 Hz to 4000 Hz were also measured. The study sample was 26 individuals ranging in age from 5 to 73 years who have been cochlear implant users for 5 years in average. The results of CAEP recordings showed that more than 75% of the participants have developed cortical waveforms in response to at least one speech sound presented at normal conversational level. However, the CAEPs were not present in about one quarter of the participants listening with their cochlear implants. Among all the participants, only half of them exhibited well-developed CAEP responses, but more than 80% of the participants demonstrated good detection ability in the soundfield. The results of the present study indicate that a stable psychophysical map of adequate sound detection thresholds does not necessarily ensure appropriate auditory cortex development in individuals with cochlear implants. CAEPs can serve as an objective measure of post-op progress monitoring to optimize the cochlear implant fitting.

Learning Outcome:

1. Describe the developmental differences in the cortical auditory evoked potentials recorded in individuals with cochlear implants
2. Interpret the results of behavioral and neural assessments in individuals with cochlear implants

Keywords: cochlear implants ; cortical auditory evoked potentials(CAEP) ; sound-field



Abstract No: 9960

Examining factors affecting daily hearing aid use in 0- to 1-year-old infants using device-based time-data logging

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Abstract Content:

Objective: This study examined factors affecting the consistency of early hearing aid (HA) use in infancy.

Background: Identification and intervention in infants with hearing loss could be started in their early infancy with the widespread practice of Newborn Hearing Screening in recent years (Nelson et al., 2008). However, there is only minimal information on the consistency of HA use in early infancy and the guideline for wearing HAs is unclear.

Method: The participants were 27 children from 0- to 1-year-old with bilateral sensorineural hearing loss (≥ 40 dB). Their four-frequency pure-tone average (PTA) was 73.7 dB (1SD 24, range 40-110), and the PTA with HAs was 48.1 dB (1SD 22.2, range 22.5-107.5). The daily HA use time was calculated by means of the device's built-in data-logging capability at first month after their first HA use. These data were confirmed by the number of times that the infants removed their own HAs from their parents' self-reports. The development of auditory behaviors was assessed by Early Auditory Behavior Scale (EABS: maximum score 5). The parents' efforts to have their children wear HAs consistently were evaluated by Family Involvement for Consistency of HA use Scale (FICHS: maximum score 8). The results of HA use time, EABS, and FICHS were compared between 13 children with mild-to-moderate hearing loss (MMHL) and 14 children with severe-to-profound hearing loss (SPHL). Stepwise multiple linear regression analysis was used to determine the predictive role of unaided or aided PTA, age at first HA use, EABS, and FICHS on HA use time.

Result: The study found that the 0- to 1-year-old children with MMHL wore their HAs significantly ($p < 0.01$) less consistently (4.8 hr/day) than those with SPHL (9.0 hr/day). Children with MMHL had significantly ($p < 0.01$) higher mean score of EABS (2.6, 1SD 1.1) than those with SPHL (1.5, 1SD 0.6), and their parents had significantly ($p < 0.05$) lower mean score of FICHS (2, 1SD 2.2) than those with SPHL (4.1, 1SD 3.1). The regression analysis showed that unaided PTA ($\beta = 0.43$), age at first HA use ($\beta = 0.35$) and FICHS ($\beta = 0.52$) each contributed to the model predicting HA use time, with FICHS contributing the most. The regression model was a significant predictor of HA use time (adjusted $R^2 = 0.55$, $F(3,23) = 9.66$, $p < 0.01$).

Discussion: The result of this study suggested the importance of offering consistent support to the parents who provide home training and education for their children with MMLH. The study found that this is due to both lower parental motivation regarding hearing aid use and stronger natural proclivity to remove hearing aid devices among children with MMLH in comparison to those with SPHL.

Learning Outcome:

Participants should be able to assess parental motivation to have HAs be consistently used.

Keywords: Hearing Aids/statistics & numerical data; Hearing Loss; Infant; Parents/education; Early

Medical Intervention



Abstract No: 9958

Unexplained air-bone gap caused by ANSI standard in normal-hearing and SNHL Taiwanese adults

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Abstract Content:

Objective:

The purpose of this study is to investigate if the clinical evidence of anomalous air-bone gap presented in Taiwanese adults with normal hearing and SNHL when the ANSI standard was used to calibrate pure tone audiometry.

Background:

The evidence of unexplained air-bone gap has been found in normal-hearing adults in a few studies, even the pure-tone audiometer was calibrated by ANSI standard (Margolis et al., 2013; Nondahl et al., 2012). Similar circumstances were also reported by the audiometer agent in Taiwan. However, there is no systematic study to investigate this clinical issue that might lead to making mistakes of diagnosis.

Method:

The participants of this research include 25 normal-hearing adults aged from 18 to 30; and 6 adults with sensorineural hearing loss aged from 50 to 85. All of the participants had no significant abnormal findings of otoscopy, and also had single-peak tympanogram. Normal-hearing adults had air conduction threshold ≤ 20 dB HL at 0.5, 1, 2, 4 kHz. Adults with high-frequency hearing loss had air-conduction thresholds at 0.5, 1, 2, 4 kHz ≥ 30 dB HL.

The audiometry had been calibrated according to ANSI S3.6-2010 standard. The pure tones were presented via ER-3A Insert earphones and the bone vibrator (B81) at mastoid of the ear with better air conduction threshold. Both air and bone conduction thresholds were conducted by adaptive procedure with 2 dB step at the frequencies of 0.5, 1, 2, 3, 4 kHz.

Results:

When the audiometry calibrated by ANSI standard, the anomalous air-bone gaps were also found in the participants in Taiwan.

Both normal-hearing and SNHL groups show clinical significant abnormal air-bone gap range from -11 to -13 dB at 2 kHz and almost 87.5 % adults of the normal-hearing group present at least -6 dB air-bone gap at 2 kHz.

Discussion:

The unexplained air-bone gap at 2 kHz indicated that reference equivalent force threshold level (RETFL) may be inadequate for Taiwanese people, either in normal-hearing or SNHL participants. Instead of 2 kHz, some western studies showed that about abnormal positive 14 dB air-bone gap at 4 kHz. The air-bone gaps presented differently between the frequencies may result from the distinct physiological characteristics of the auditory system between Western and Asian.

Since the recent ANSI standard for the RETFL may not adequate at 2 kHz, the result of audiogram can cause the misinterpretation of the type of hearing loss. Hence, the RETFL could be considered to be



adjusted about +11 dB to avoid the unexplained air-bone gaps in the adults with normal hearing or with no significant middle ear pathology.

Learning Outcome:

1. The air-bone gaps occurred at 2 kHz which is different from the gaps at 4 kHz in some western studies.
2. To avoid the anomalous air-bone gaps presented in normal-hearing adults, the RETFL of ANSI S3.6-2010 should be considered to adjust.

Keywords: ANSI; RETFL; calibration; air-bone gap



Poster Presentation: Session TUP2-3 / Child Language, Aug. 20th (Tue.) 13:30-15:00

Abstract No: 9811

Early expressive lexicon measured using the Finnish short form version of the CDI at 2;0 and language development at 5;0

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Abstract Content:

Early expressive lexicon measured using the Finnish short form version of the CDI at 2;0 and language development at 5;0

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Background and aims. Previous results have suggested that early expressive lexical development has significant association to later language skills at least in late talking children (i.e. <50 expressive words and/or no word combinations at the beginning of the 3rd year). There is less knowledge on the possible association between early lexicon and later language outcome in typically developing children. More research is also needed on what kind of information new early screening methods (e.g. the short form versions of the Communicative Development Inventory, CDI; Finnish version: FinCDI-SF, Stolt & Vehkavuori, 2018) provide in terms of the later language ability.

The research questions of the present study were: 1. Is there an association between the expressive lexical development assessed using the FinCDI-SF at 2;0, and the lexical and/or morphological skills at 5;0? 2. How much does the lexical development measured using the FinCDI-SF at 2;0 explain lexical/morphological development at 5;0?

Subjects and methods. The subjects were 66 full-term Finnish children whose language development was followed longitudinally between 2 and 5 years of age. Lexical development was examined using the FinCDI at 2;0. At 5;0, lexical development was measured using the Boston Naming Test (BNT) and morphological development using the Finnish Morphology Test (FinMT). The Pearson's correlation coefficients were used to analyze the correlation between early and later language skills. Linear regression was used to analyze the relationship between children's performance in FinCDI-SF, parent's education and later language skills.

Results. A statistically significant positive correlation between early and later lexical skills ($r=.36$ $p=.003$) was found. In addition, the total number of closed class words measured using the FinCDI-SF correlated significantly and positively with the result of FinMT at 5;0 ($r=.34$, $p<.001$). When parental education level was taken into consideration, the total number of words measured using the FinCDI-SF at 2;0 explained 16% of results of BNT three years later.

Conclusions. This study provided information on the association between early expressive lexical development at 2;0 and language skills at 5;0 in typically developing children. Findings suggest that the FinCDI-SF provides representative information on early lexical development at two years of age. Results provide support for the continuity view in language development between 2 and 5 years of age in typically developing children.



Learning Outcome:

Performance in FinCDI-SF at 2;0, and lexical and morphological development at 5;0 were significantly and positively associated.

Early lexicon measured using the FinCDI-SF explained 16% of variance in lexical skills three years later.

Keywords: lexical development, predictive value of lexical development, the short form version of the MacArthur Communicative Development Inventories



Abstract No: 9801

Trajectories of children with language disorders: various outcomes in connection with learning disabilities

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Abstract Content:

Purpose: Many studies have reported that there is some possibility of causing to underachieve in reading in language disorders at school. Schatschneider et al.(2004) investigated about kindergarten prediction of reading outcomes at their lower grades and related that measure of naming speed and phonological awareness with reference to language, and letter name and letter sound knowledge were good predictors of reading outcomes. Satz et al.(1978) suggested the child's word recognition skills, vocabulary level, the ability to recite the alphabet, and socioeconomic status as the components of measures to predict the reading disabilities. The purpose of this study was to result from the follow-up trajectories of children with language disorders who had language therapy from preschool to school age.

Methods: Twenty-two children with language disorders participated in this study. They were under treatment in our rehabilitation center. They composed of age 2:05-5:09 who contained 10 children under three-year old and 12 children over four-year old at the first examination, and they were finished at 5:05 to 12:08. Their period of language therapy was from two months one year over seven years. Six children of all participants continued training to school age. Wechsler intelligence scale for children, Picture Vocabulary Test -Revised in Japanese (PVT-R), picture naming of 80 words, ITPA and reading tests were given all participants continuously. These participants' results of each examination were made a comparison to their progresses between participants. In school age, they were investigated their academic skill in their each grade.

Results: It was difficult to compare all participants because the starting timing of our intervention was various between all participants. Their differences in each examination were variability in individual and between participants. As the age increased they acquired many lexicons. When children with language disabilities enter their school, many of them were able to learn the Japanese cursive syllabary knowledge and writing a hiragana character. Six children who continued training after school age could not read each letter. They were difficult to learn the letter sound knowledge and phonological awareness.

Discussion : Children with language disabilities had many problems in reading and/or writing at school in various levels. It was too difficult to learn the Japanese characters in our participants of 30 percentage. They were making excellent grade for their oral language as acquisition of words in their course. But there were some possibility to unsatisfactory language acquisition that could not measure in standard examinations. There were various factors in relation to language acquisition and/or learning subjects at school age. There were some learning fields that were based on language abilities for the reading and writing at school, for example acquisition of symbol or mark, processing of information, semantic area and inferences et cetera.

Learning Outcome:

We want to get understanding risk for reading and writing difficulties in children with language disorders

Keywords: language disorder, risk for learning disabilities, preschool, school age



Abstract No: 9799

How Early Intervention Influences Mastery of Communication Goals in Children with Developmental Disabilities

Elise Davis-McFarland^{*1}

¹ASHA/ Elise Davis-McFarland/ United States

Abstract Content:

Objective: This presentation will discuss the issues attendant to early intervention for children with developmental disabilities who are at risk for poor speech and language development. There will be an overview of family-centered in-home early intervention that is responsive to the parents' wishes for their child's development. The role of the speech-language pathologist as an early interventionist will be discussed. The focus of the presentation will be the process which allows parents and the speech-language pathologist to develop an intervention program to support the child's mastery of age-appropriate prelinguistic and speech and language goals.

Background: Children with developmental disabilities are at risk for poor speech and language development as well as poor educational outcomes. Research on brain development indicates the critical years for brain development is from birth to 5 years of age. For children whose development is compromised by poor intellectual or emotional development, the first years of life are especially important for developing the knowledge and skills to support social and intellectual development required for successful education and life experiences.

Speech and language development are the precursors for literacy development, school success and social progress. Children who are at risk for poor communication development require intervention in order to have the experiences necessary for life success. In order to increase the child's opportunities for mastery of specific speech and language development goals parents and speech-language pathologists must begin working with the child at the first sign the child's developmental trajectory is compromised.

Method: This presentation will review the evidence for brain development during the early years of a child's life and the effects of early intervention for establishing prelinguistic and later developing speech and language skills. There will be a discussion of the role of parent education and parents' roles in developing the goals of the intervention work with the speech-language pathologist who provides the in-home sessions. **The focus of the presentation will be a comprehensive discussion of the importance of the child's skills mastery, and how to optimize the child's opportunities to achieve mastery through the establishment of interest-based learning opportunities that support the child's learning and skill acquisition and reflect the parents' communication goals for their child.**

Discussion: A child's responsiveness to a well-planned intervention program is, in part, related to the type of intervention provided, and is influenced by the family's support of the child's learning and skill mastery. Determining the optimal length and intensity of the intervention, providing high-interest natural learning opportunities and structuring activities to support the child's engagement in activities that foster skill development and mastery of communication goals leads to successful intervention outcomes.

Learning Outcome:

At the conclusion of this presentation attendees will be able to:

1. articulate parents' roles in development of communication goals for their child's early intervention program.



2. discuss the speech-language pathologist's role in helping a child achieve skill mastery.
3. articulate the 4 precursors of communication skills mastery in children with developmental disabilities.

Keywords: Communication goals; skill mastery; developmental disabilities



Abstract No: 9768

A Method of Language Training for Infants with Hearing Loss Based on Their Behavioral Development

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Abstract Content:

Background: The Kanazawa method aims to promote language learning for children with hearing loss, combining reading and phonation, encouraging hearing aid/cochlear implant use from infancy, and making the most of sign language, written characters, and auditory modalities. It is based on guidance for mothers to learn how to communicate with their children daily, what to talk about and how much (quality and quantity), and how to create developmental records. In the Kanazawa method, all daily life events are regarded as opportunities for language learning. To help mothers appropriately teach language to their children in daily life, examples of communication are given, according to each child's development.

Objective: With the final goal of systematizing steps of language training for infants with hearing loss based on their behavioral development, this paper reports some cases of maternal guidance, retrospectively analyzes its outcomes, and discusses the feasibility of such systematization.

Methods: We examined the mothers of 3 children with severe hearing loss, who had started language training by the age of 1 year. They began to use a single-unit cochlear implant at the age of 2-3. Their mean hearing level was 105 to 110 dB, and hearing threshold when using a cochlear implant was 25 to 30 dB.

We analyzed auditory, language, and behavioral developmental records created by the mothers, in addition to records of guidance provided by a speech-language-hearing therapist. Behavioral developmental records were classified into intention-, relevance-, and similarity-related records, each of which were further organized into sub-categories.

We attempted to systematize training steps based on the children's behavioral development by matching records of expressive language use and guidance provided by the speech-language-hearing therapist whenever the development was confirmed.

Results and Discussion: Intention-, relevance-, and similarity-related records consisted of the following sub-categories: intention: imitation, collaboration, collective attention, and symbolic play; relevance: object manipulation, prediction/inference, and causal relationships; and similarity: comparison and category.

In one case of, The therapist, having noted the following description in his behavioral records at the age of 2 to 3: "He pointed at his friend's snack, saying to me that he wanted to eat it", advised the mother to present an example statement ("Please give me a little bit of that snack") to the child, encourage him to speak to the friend's mother, and subsequently help him expand his language use and communication by sharing the pleasure of obtaining the snack with the child, saying: "XX's mom gave you the snack!", and asking him: "Who gave you the snack?" and "Did you give your snacks to anyone?"

This case indicates that daily life events, such as "desiring to eat a friend's snack", provide opportunities to adopt benefactive expressions, use new sentence structures, and expand them.

Learning Outcome:



The results support the feasibility of systematizing language training by classifying it into sub-categories, consisting of small steps.



Abstract No: 9740

Effects of unilateral hearing loss on the development of understanding ability of Japanese vocabulary in children

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¹Department of Otolaryngology/ University of Tokushima School of Medicine/ Japan, ²Training Division/ Udaka ENT Clinic/ Japan

Abstract Content:

【Objective】

Children with unilateral hearing loss (UHL) have been found to have lower language scores and increased rate of academic failures. In the present study, effects of UHL on the development of understanding ability of Japanese vocabulary in children were examined.

【Participants and Methods】

Seventeen children (8 males and 9 females) with UHL defined as a pure-tone averaged hearing level of more than 70 dB in one ear and normal hearing defined as a pure tone-averaged hearing level of less than 25 dB in the opposite ear without intellectual disability were enrolled in the present study. The understanding ability of Japanese vocabulary was evaluated with Picture Vocabulary Test-Revised (PVT-R) using Scaled Score (SS) as an index.

【Results and Discussion】

In the Japanese children with UHL, the mean of SS of PVT-R was 7.5 ± 3.7 at the first assessment at the mean age of 68.6 ± 12.8 months old (5.72 years old) was significantly increased 9.3 ± 3.6 at the second assessment at the mean age of 91.7 ± 14.4 months old (7.64 years old). SS 10 is defined as the standard development of understanding ability of Japanese vocabulary in children regardless of age. Although the understanding ability of vocabulary in the children with UHL was still below the standard development of SS 10, the ability was developing after school attendance. Among them, the mean of SS of PVT-R of 10 children with UHL who showed SS of less than 10 at the second assessment was significantly increased, compared with that at the first assessment. But, the mean of SS of PVT-R of 7 children with UHL who showed SS of 10 or more at the second assessment was not increased. These findings suggested that a substantial number of preschool-aged children with UHL showed delayed understanding ability of vocabulary and that they were catching up to the standard development after school attendance. Universal newborn hearing screening have been implemented across Japan, and babies with UHL become to be identified. The present findings suggest that early appropriate intervention to facilitate the language development is desirable in Japanese children with UHL.

Learning Outcome:

1. Understanding ability of vocabulary is delayed in some preschool-aged children with unilateral hearing loss.
2. The children with unilateral hearing loss seem to catch up to the standard development after school attendance.

Keywords: children with unilateral hearing loss ; development of understanding of vocabulary ; Picture Vocabulary Test-Revised ; Scaled Score



31st World Congress of the **IALP**





Abstract No: 9729

The role of word segmentation in reading for understanding: A study on Mandarin-speaking children with hearing loss

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Abstract Content:

Objectives

This study aims to explore the relationship between word segmentation and reading comprehension in Mandarin-speaking children with hearing loss (HL).

Background

Children with HL have been shown to lag heavily behind their hearing peers in reading comprehension. Regardless of languages, reading comprehension in children with and without HL is universally influenced by such factors as phonological and morphological awareness, vocabulary knowledge, etc. Unlike English, words are not marked by spaces in the Mandarin script; therefore, segmenting words is an essential task for readers of Mandarin to comprehend a text. Studies on children with typical hearing have revealed that word segmentation paves the way for developing good reading skills in Mandarin; however, very few studies, if any, have investigated a similar issue in children with HL. Such a type of study on Mandarin-speaking children with HL is of great importance because it could assist education professionals in identifying other possible causes for their poor reading comprehension and accordingly designing a customized intervention program.

Method

A total of 13 Mandarin-speaking children with HL in Taiwan (mean age = 8.89 years old) participated in this study. They were administered a *Mandarin Oral Reading Assessment*, which required them to read aloud a short narrative passage. The passage contained several proper nouns, noun–noun compounds or *chengyu* (i.e., Chinese four-word idioms) that were to be segmented by the children. The examiner evaluated the children's word-segmenting performance based on the prosodic cues employing both a subjective and an objective rating measures. In addition, the children received *Elementary School in 2nd Grade to 6th Grade Reading Comprehension Screening Test*, a standardized test with a national norm in Taiwan.

Results

Children's performance was analyzed by correlating their word segmentation scores with reading comprehension scores adopting Spearman's Rho coefficients. It was found that their word segmentation ability was significantly and positively related to their reading comprehension from both rating measures (subjective rating: $r=.63, p < .05$; objective rating: $r=.62, p < .05$).

Discussion

The present study showed that word segmentation, like phonological and morphological awareness, served as a reliable index for assessing reading comprehension in Mandarin-speaking children with HL. It has been suggested that word segmentation skills are affected by one's mental lexicon because the retrieval of a lexical entry should correspond to a string of characters. In other words, vocabulary knowledge may play a nontrivial role in facilitating word segmentation skills in Mandarin-speaking children with HL; besides, there are other routes to identifying a word in a text, such as morphological productivity and character co-occurrence frequency. In this sense, it is recommended that education professionals



consider enhancing children's awareness of the two aforementioned routes in addition to vocabulary knowledge for the purpose of reading comprehension while developing intervention programs.

Learning Outcome:

1. The audience will learn word segmentation as a critical factor of reading comprehension in Mandarin-speaking children with HL.
2. The audience will learn ways to hone word segmentation skills in Mandarin-speaking children with HL.

Keywords: hearing loss, word segmentation, reading comprehension



Poster Presentation: Session TUP2-4 / Child Language, Aug. 20th (Tue.) 13:30-15:00

Abstract No: 9041

Boys and Girls Learning from Digital Story Books

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Abstract Content:

Kindergarten aged children's learning from shared reading was examined, specifically comparing the performance of boys and girls with lower and higher language abilities. The study was conducted in the context of a volunteer shared reading program implemented in a French-language school situated in a middle-class suburb of Montreal but with a high number of children from immigrant families. The study protocol involved three procedures: in the first week children received a pre-treatment screening of their oral language skills using an iPad app (PHOPHLO: speech perception, speech production accuracy, phonological awareness and past tense morpheme production) yielding a pass/fail result for each child.

Subsequently, in same sex pairs, the children received a shared reading intervention, 3 times in one week. At the end of the week, post-tests probed their ability to retell the story, answer questions about the story, identify rhyming words from pictures, and identify printed sight words that were presented in the story. The children's performance on these post-treatment tasks was combined to form a single aggregate score by summing z-scores across all tasks. In year 1 of the project the children experienced two books assigned in random order (an equivalent paper book and ebook with story and book format counterbalanced across weeks). In years 2 and 3 of the project only the ebook was presented to the children. The final sample across the 3 years of the study was 82 children. Results were analyzed with a 2 x 2 ANOVA in which gender and PHOPHLOpass were fixed variables and child age and parental education were entered as covariates. This analysis revealed significant effects of age [$F(1,76) = 57.11, p = .001$], gender [$F(1,76) = 21.11, p = .037$], and PHOPHLOpass [$F(1,76) = 28.479, p = .016$].

The post-treatment aggregate test scores for boys and girls who passed the PHOPHLO were 0.48 and 0.83 respectively compared to -1.57 and -0.17 for the boys and girls who failed the PHOPHLO prior to shared reading. This difference in performance between boys and girls is not specifically associated with ebook sharing because a similar result was obtained in the first year in the paperbook and ebook conditions. Rather, examination of transcripts of the reading exchanges in years 2 and 3 revealed that boys heard significantly more adult comments related to their behavior ($M = 38$ per read) compared to girls ($M = 26$ per read), that is, comments that serve to regulate their turn-taking behavior, prompt responses, acknowledge responses or correct responses without providing information about story elements or print concepts. We conclude with strategies for supporting boys' learning in this context.

Learning Outcome:

Learning objectives: 1. Describe the benefits of shared reading on language and emergent literacy skills.
2. Understand how language skills, executive skills and interactions with teachers combine to influence boys' learning from shared reading.

Keywords: gender, child language, emergent literacy



Abstract No: 9896

Auditory Performance and Language Development in Prelingual Deaf Children after Cochlear Implantation

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Abstract Content:

Objectives: Language acquisition rely on adequate hearing input and life learning experience. The lack of environmental sound stimuli often cause language development delay in deaf children. Cochlear implant(CI) can help those children with severe to profound hearing loss to improve their auditory performance, language expression, skills. However, the language outcome in many CI children are different. It is worth to probe the factors affecting their language development results. The aims of this study about Mandarin-speaking prelingual deaf children are to examine when to reach stable auditory performance & language development after CI, and to compare these CI children recipients with normal hearing peers, and finally to evaluate the affecting factors of CI children language development when in pre-school age 5 Y/O and school age 9 Y/O.

Material & Methods: This retrospective cohort study examined 65 prelingual deaf CI children at Mackay Memorial Hospital, Taipei implanted between 1998 and 2014 and was approved by the hospital's IRB (12MMHIS194).

These recruited 65 subjects were tracked back to the hospital between 2004 and 2017to assess their auditory performance, speech intelligibility and language development before 12 Y/O. Their CI outcome assessment tools included Preschool Language Scale (PLS), School Language Scale (SLS), Categories of Auditory Performance (CAP), Speech Intelligibility Rating (SIR). Several statically analysis were done to probe the possible factors affecting the different post-CI auditory & language performances.

Results: These CI children average perceptive language ability and expressive language ability were quite the same in 3-5 Y/O pre-school age. However their average perceptive language ability were quite lower than expressive language ability in 6-12 Y/O primary school age. Their average percentage of total language ability were between 20% and 40% from 3Y/O to 12 Y/O comparing with normal hearing peers. The language scale mean score for CI children in pre-school 5 Y/O and school age 9 Y/O were modest positive correlation with higher family involvement. CI Children with a contralateral ear hearing aid and higher family involvement tended to have a better School Language Scale (SLS) score in 9 years of school age. Better PTA thresholds in aided CI ear can have better consonant recognition and children with a longer duration of CI use have better tone perception in our auditory perception test . The Categories of Auditory Performance (CAP) and the Speech Intelligibility Rating (SIR) reached highest level about post-CI 2 or 3 years.

Conclusions: pre-lingual deaf CI children can have better language development in pre-school and school age in those with higher family involvement. CI Children with a contralateral H/A can also mild improve their language assessment in 9 Y/O school age. Our study showed their CI children language development were not related with gender, which ear implanted, CI implanted age, duration of CI use. In addition, the auditory performance and the speech intelligibility will reach plateau around two or three years after implantation. And the tone perception will become better with longer duration of CI use.

Learning Outcome:

prelingual deaf children language development after CI



Keywords: cochlear implant, deaf children, language development, auditory performance



Abstract No: 9860

Promoting Early Detection and Intervention for Hearing and Language Needs in Children in Macao – A Proactive and Community Based Model

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¹Macao Deaf Association/ Macao Deaf Association/ Macau

Abstract Content:

Objective:

The purpose of this presentation is to share an early detection and intervention model for serving the hearing and language needs in Macao. Further, it will present how this proactive program was conducted throughout the entire Macao community.

Background:

Prior to 2012, the concept of early detection and intervention was not widely known in Macao. Some children with developmental communication needs had stayed unidentified until significant academic deficiencies were shown after they went to school. Two strategies were introduced to provide better services: 1) early detection and intervention was implemented proactively to reach the target population; and 2) community based outreach was performed to raise public awareness.

Method:

Two strategies of early detection and intervention for hearing and language needs were adopted. Public seminars and workshops in related topics were held, aiming at popularizing the concept of early detection and intervention. Procedures to perform a proactive screening on children related to communication were designed and implemented in the community. The number of children screened was expanded incrementally, and the existing intervention services were reviewed and improved. Pilot programs on family-based services were implemented.

Results:

There have been significant changes in the early detection and intervention system in Macao as a result of this initiative. 8 % of the children screened had developmental language delay and 2% with hearing impairment and related health issues. The results corresponded with the approximated worldwide prevalence of developmental language delay and hearing impairment. As the level of public awareness increases, the community is putting more attention and resources on early detection and intervention.

Discussion:

Early intervention is now being implemented in Macao. More research is needed to provide improved services.

Learning Outcome:

- 1) Participants will describe steps to promote early detection and intervention through a proactive community program.
- 2) Participants will be able to compare and contrast a proactive early detection and intervention program to a passive one.



- 3) Participants will be able to understand the importance of a community based program.
- 4) Participants will be able to adapt, adopt and design their respective methodology in promoting early detection and intervention based on the Macao model.

Keywords: early detection; early intervention; community based; proactive; Macao



Abstract No: 9859

The role of playing at the Language Therapy Clinic

Maria Cecilia de Moura¹ ; Nathalia Ferreira de Brito¹

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Abstract Content:

Introduction: Admitting that changes can be observed when playing comes in scene in the therapeutic management of Language Therapy work, it is undeniable to say that, both in the evaluation as in the therapy, the play has great importance, but greater than this importance, would be the value assumed by the Language Therapist who, within the clinical scene, uses the play with value of communicative behavior. It is necessary in the child therapy that the Language Therapist understands how to play and why to play. These are essential elements for this professional, so he can do his work in order to contemplate the needs of his actuation, according to his objectives and for this, it should be understood how the Language Therapist understands the "play" within his clinic.

Objective: to describe the role of playing from the viewpoint of Language Therapists who work with children.

Method: A survey was prepared using a Google Forms search tool with alternatives and dissertatives questions directed to Language Therapists who works in clinics with children and who use playing as a guiding instrument of their work. The selection criterion to participate in the research was only trained Language Therapists who work with children. The responses of 100 subjects were evaluated.

Results: The results show that most of the Language Therapists (85%) who participated in the research works in the language area. They work with children aged 0 to 5 years (88%) and from 6 to 12 years (85%). Of the total responses, 98% use some criterion for the choice of play or toy and they refer to obtain more effective results with the application of playing in their activities.

Conclusion: most of the sample of this research shows that playing is seen as a therapeutic device that has several functions. The subjects declare that playing is the natural language of the child, thus becoming a means of communication, representation of the world and expression. All these functions point to the therapeutic objective aimed to the child development and evolution that values subjectivity, because, by sensitizing the child to listen to his/her own speech, he/she can constitute a subject of language. It could be seen that what is common in these functions is the effectiveness of the results by the dialogue with child through the use of playing. In this way, playing is evaluated as a facilitating and satisfactory device in the therapeutic process.

Learning Outcome:

1. To understand the importance of playing at the Language Therapy clinic
2. To know what Language Therapists think about playing at the language therapy scenario

Keywords: Games and toys; Language Therapy, Language



Abstract No: 9975

Infant Volubility in Different Circumstances

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Abstract Content:

This study investigated the volubility of four-month-old infants under different circumstances: "talk", "no talk" and "interview". There have been some previous studies examining infant volubility in different circumstances. Delack(1976) studied infant speech development and found that infants produced higher volubility when being alone, followed by interacting with mothers, and vocalized least when interacting with strangers. Iyer, Denson, Lazar, and Oller (2016), on the contrary, used a modified paradigm and found that infants vocalized more frequently either in the mother-infant interaction or alone than in the interview session which simulated Delack's "stranger" session. Such an effect of circumstance was most noticeable with infants aged between two to five months old. Because the result of Iyer et al. (2016) was inconsistent with that of Delack(1976), the present study aims to replicate the experiment design of Iyer et al. (2016) and examine the effect of circumstance in detail.

Our study plans to recruit 5 four-month-old infants and examines the number of infant vocalizations in three 10-minute circumstances: "talk", "no talk" and "interview" (Iyer et al., 2016). In the "talk" circumstance, one parent played verbally with the infant. In the "no talk" session, the parent sat beside the infant, but there was no interaction between them. Finally, in the "interview" session, an experimenter interviewed the parent while the infant was in the same room, and no adult interacted with the infant. The infant's audio recording was later analyzed in Praat (Boersma, 2002). The first author and a reliability coder received an hour of training by the third author prior to the coding work. The percentage of agreement based on the current sample between the coders was 80%. Infant's vocalizations were categorized as either protophones, vegetative sounds, or cries and laughs. Only protophones were included when calculating infant volubility.

Our preliminary result showed the infant produced the highest number of vocalizations in the "no talk" session, followed by the "interview" session, and least number of vocalizations during the "talk" session. Our findings were inconsistent with those of Iyer et al. (2016) and Delack (1976). We speculated that one of the reasons the two not-interacting circumstances elicited more vocalizations than the interacting one could be that the infant vocalized more to attract the caregiver's attention when no interaction occurs (Oller, 2000). Another reason might be that the infant's primary focus was to listen to the mother's voice and learned the prosodic and other acoustic features of the mother's language (Fernald, 1985). The last reason might be that the infant was not given many conversational turns by the mother when the mother talked to the infant constantly. Our findings suggest that future studies on infant vocalizations are important and necessary for our understanding of infants' social cognition.

Learning Outcome:

The effect of circumstance is noticeable in four-month-old infants and provides more information about the development of infants' social cognition.

Keywords: infant vocalization, volubility, circumstance



Poster Presentation: Session TUP2-5 / Child Language, Aug. 20th (Tue.) 13:30-15:00

Abstract No: 11483

Maternal Mind-mindedness and Its Association with Attachment: The case of Arab infants and mothers in Israel

Gubair Tarabeh^{*1 2} ; Ghadir Zreik³ ; David Oppenheim² ; Avi Sagi-Schwartz² ; Nina Koren-Karie²

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Abstract Content:

Introduction

Mind-Mindedness (MM) focuses on mothers' attunement to their infant's mental states as reflected in their speech to the infant (Meins, 2013). Previous studies in Individualistic Western societies found that appropriate MM comments are associated with attachment security, but few if any such studies were conducted in collectivistic societies such as the Arab population in Israel.

Aims of the study

The goal of the study was to examine whether the associations between MM and attachment in the Arab culture in Israel are the same as in Western samples. An additional goal was to examine whether appropriate and non-attuned MM comments could, together, distinguish among mothers of children in the different attachment classifications.

Material and Methods

76 Arab mothers and their infants between the ages of 12 and 18 months were observed in the Strange Situation Procedure (49 secure (B), 11 ambivalent (C), 14 disorganized (D), and 2 avoidant (A) infants). MM was coded from an 8-minute free-play sequence.

Results

Mothers of B infants used more appropriate and less non-attuned MM comments than mothers of D infants, with no significant differences with mothers of C infants. Also, mothers of B infants used less non-attuned MM comments than both mothers of D infants and mothers of C infants. Also, (1) Mothers of B infants were most likely to show the combination of high appropriate and low non-attuned MM comments; (2) Mothers of D infants were most likely to show the combination of high non-attuned and low appropriate MM comments; and (3) A non-significant trend indicated that mothers of C infants were most likely to show a combination of high appropriate and high non-attuned MM comments.

Conclusion

Maternal MM was associated with attachment in the Arab culture in Israel. In addition, the combinations of appropriate and non-attuned MM comments distinguished in a theoretically coherent way between mothers of secure infants and those with disorganized infants, with a non significant trend for mothers of ambivalent infants

Learning Outcome:

1. Mind Mindedness was associated with attachment in the Arab collective culture in Israel, as it is in Western Individualistic cultures



2. The combinations of appropriate and non-attuned MM comments can distinguish between different attachment classifications.



Abstract No: 11434

Efficacy of Auditory and language therapy in bimodal fitting versus unilateral cochlear implant in hearing impaired children

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Abstract Content:

Introduction: There is an increasing number of people with unilateral cochlear implants have residual hearing in the non-implanted ear that is usable with acoustic amplification. Nevertheless, many children who receive a unilateral cochlear implant do not continue to wear a hearing aid in the non-implanted ear. With monaural hearing, it is more difficult to understand a person talking in competing background noise and to locate sounds in the environment than it will be with binaural hearing. Auditory-perceptual skills represent a cornerstone for language development in children. These are essential for auditory feedback, proper voice self-monitoring and the subsequent acquisition of verbal language.

Aim of the work: To evaluate efficacy of auditory rehabilitation and language therapy in bimodal-fitted children (with hearing aid and cochlear implant) versus those with unilateral cochlear implant only in order to management of those children with the best way for language acquisition and learning.

Patients and Methods: This study was case control study conducted on a series of 30 hearing impaired children, mean age was 4.6 ± 1.1 . All were implanted with the MED-El sonata. they classified into two groups, 15 children each. Group I used monaural hearing with cochlear implant (CI) and group II used binaural bimodal stimulation by hearing aid (HA) and CI. All children were recruited and received post-implant auditory training and language therapy at phoniatrics outpatient clinics in Sohag university hospital, Egypt. Both groups were evaluated before and 3Months, 6 months, 9 months after rehabilitation. the development of phonology, semantics, syntax, speech intelligibility and resonance were measured by Arabic language test. sound localization and speech comprehension in noise were evaluated

Results: The bimodal-fitted children showed significant differences in language and auditory outcomes than monaural CI only children in the following items: the receptive and expressive semantics, the vocabulary size, the Word class, the speech intelligibility, sound localization, and Speech comprehension.

Conclusion: Children underwent unilateral CI is preferred to use hearing aid in the un-implanted ear with residual hearing for better language and speech outcomes till the time of second cochlear implant being available. This to get benefit from binaural stimulation in early childhood and to avoid risk of auditory deprivation and aural preference syndrome.

Learning Outcome:

1. Raising the awareness of the importance of binaural hearing to the child's language acquisition and learning.
2. The benefit of binaural hearing auditory skills development in early childhood is very important to avoid risk of auditory deprivation and aural preference syndrome.
3. continue using both HA until the operation of CI. Then continue using HA in the contralateral ear (non-implanted ear) all the time until a second CI becomes available. Therefore, clinicians should advice their patients not to put off their HA in the non-implanted ear



Abstract No: 10075

Using Dynamic Assessment to Understand Word-Learning in Two-Year-Old Late Talkers

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Abstract Content:

Objective: To investigate the efficacy of a new dynamic assessment (DA) of word-learning in predicting language outcomes for 24-month-old Late Talkers over a 12-month period.

Background: Up to 20% of 2-year-olds can be classified as Late Talkers (LT) with fewer than 50 words and/or no word combinations by 24-months (Zubrick et al., 2007; Reilly et al., 2010). The majority of LTs 'catch-up' within the pre-school years, as many as 50% by 36-months, and can be reclassified as Late Bloomers (LB). Approximately 25% however, have persisting problems and are at risk for a clinical diagnosis of Developmental Language Disorder (DLD; Paul & Ellis-Weismer, 2013). As yet, there is no definitive list of risk factors or single clinical tool which can be used to reliably predict either outcome for individual LTs (Thomas & Knowland, 2014). This creates a clinical conundrum for SLTs who must balance the benefits of Early Intervention against optimal and essential use of scant resources.

Method: A newly devised DA of single word-learning was administered to 30 LT and 30 typically developing (TD) toddlers, aged 24-months. Four novel non-words were taught using a range of perceptual, socio-pragmatic and linguistic cues previously shown to enable word-learning in toddlers aged 24-months and younger. Cues were provided incrementally using the principles of graduated prompting (Patterson et al., 2013). Toddlers received a quantitative word-learning score based on the amount and type of support required. Data from the TD children was used to create a set of preliminary DA norms, against which the performance of the LTs could be compared. Late Talkers were tracked until 36-months. Re-administration of the DA at 4-monthly intervals allowed for profiling of changes in LT cue uptake over time and exploration of the concurrent and predictive relationships between DA scores and performance on two static tools; the Communicative Development (Word) Inventory (CDI; Fenson et al., 2007) updated at the same 4-monthly intervals, and the Preschool Language Scale (PLS-5; Zimmerman et al., 2014) administered at 24- and 36-months.

Results: Time 1 and 2 results will be available in August 2019. It is anticipated that LT and TD groups will be clearly differentiated on DA performance at time 1. Greater variation within the LT group is anticipated at time 2 as some LTs on a resolving trajectory begin to obtain higher scores.

Discussion: Overall, it is anticipated that LTs' whose DA scores progress to approximate those of the TD children will show greater gains on static assessment either concurrently or at the next successive time point. These findings will add to our knowledge of word-learning mechanisms in 2-year-old LTs and assist clinicians in predicting likely trajectory; resolving or persisting problems.

Learning Outcome:

1. Enhanced understanding of the differences between TD and LT toddlers and how these differences might change over time.
2. Enhanced understanding of the principles of Dynamic Assessment and how it might be applied clinically with 2-year-old LTs.

Keywords: language acquisition; late talking; DLD; word-learning; dynamic assessment



Abstract No: 9674

Efficacy of verbalisation of characters' structuring components in kanji learning for children with developmental dyslexia who have poor vocabulary skills

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Abstract Content:

Introduction: Compared to learning kana, acquiring kanji is very difficult for Japanese-speaking children with developmental dyslexia. The *copy writing method* (CWM) is a popular learning strategy in which students copy letters from a written source onto a piece of paper, whereas the *verbalising method* (VLM) involves breaking kanji characters down into components that have the same appearance in both katakana and simple figure kanji and then verbalising these components aloud.

Purpose: The purpose of this study was to clarify if the VLM is effective for children with developmental dyslexia whose vocabulary skills are not so good.

Methods: A total of 24 elementary school-aged children with developmental dyslexia were included. Twelve of them had good vocabulary skills, while the others did not. All participants in both conditions (CWM, VLM) practiced their assigned training method for the same duration over five consecutive days.

Results and conclusions: Even for the children with developmental dyslexia who displayed poor vocabulary skills, we found a significant improvement in performance in VLM compared to CWM performance. The results suggest that the VLM is useful for children with developmental dyslexia, even if their vocabulary skills are not very good.

Learning Outcome:

The verbalising method is useful for children with developmental dyslexia to learn Kanji.

It was also true for children with developmental dyslexia whose vocabulary skills are not very good .

Keywords: efficacy, kanji learning, developmental dyslexia, verbalizing method



Abstract No: 9962

The Reading and Writing Performance of School-Age Children Identified with Specific Language Impairment at Preschool-Age

Hsiang-Chun Cheng*; Rong-Ju Cherng; Jenn-Yeu Chen

Abstract Content:

Purposes: Specific language impairment (SLI) refers to a delay or deficit in language development and such delay or deficit can't be explained by any mental, perceptual, emotional, behavioral, or obvious neurological impairment. Furthermore, children with SLI are reported to have high risk of reading and learning deficit in school age. However, such information is obtained from studies done in the western countries but not yet at Taiwan. Learning English and learning Chinese are very different. English is characterized with spelling but Chinese is orthographic. Therefore, the relationship of SLI and learning difficulties may not be the same in Chinese society as in English ones. The purpose of the study was to examine the reading and writing performance in children with SLI when they get into primary school.

Method: Participants were 43 children with SLI and 323 children with typical development (TD) who were recruited from preschools at Taichung cities. Children were identified with SLI based on the diagnostic criteria of DSM-5 after receiving a physical examination, an IQ test, a language test and attention-deficit/hyperactivity disorder screening examination when they were at preschool age. All of these participants were then received the Chinese Reading Achievement Test (CRAT) and the Basic Reading and Writing Test Battery (BRWTB) when they were at the first grade of elementary year. A Mann-Whitney's U-test was used to compare the scores from the CRAT subtests and from the reading and the writing subtests of the BRWCT in the children with SLI and the TD children. An independent t-test was used to compare the total scores and the total percentile rank scores from the CRAT and the reading composite scores and the writing composite scores from the BRWCT between the two groups of children.

Results: The scores of the subtests of morphology, vocabulary and syntax in the Chinese Reading Achievement Test in children with SLI were significant lower than TD children. The reading composite score and the writing composite score of the BRWTB were also lower in the children with SLI than in the TD children. The incidence of dyslexia in children with SLI and TD children is 48.6% and 12.9%.

Conclusions: Children with SLI have poorer reading and writing abilities in the Chinese Reading Achievement Test and the Basic Reading and Writing Battery Test than TD children. About half of the children with SLI have dyslexia when they enter the primary school. Early assessment of the language development in children at the preschool may predict their reading and writing ability at the early year of primary school.

Learning Outcome:

Early assessment of the language development in children at the preschool may predict their reading and writing ability at the early year of primary school.

Keywords: Specific language impairment, Reading disability, Writing disability



Poster Presentation: Session TUP2-6 / Audiology, Aug. 20th (Tue.) 13:30-15:00

Abstract No: 9631

Development of Mandarin Tone Recognition Test and Its Application to Adults with Sensorineural Hearing Loss

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Abstract Content:

The purposes of this study were to develop the Mandarin Tone Recognition Test (MTRT) for clinical audiological assessment, and to explore the performance of adults with sensorineural hearing loss (SNHL) in Mandarin lexical tones, which was compared with that of listeners with normal hearing (NH) as the discriminant validity of MTRT.

Sixteen subjects with NH and 21 subjects with SNHL were tested on four wordlists of MTRT and the Mandarin Tone Auditory Test Battery (MTATB), respectively. The SNHL group was also subdivided into two groups, including SNHL adults without hearing aids or cochlear implants (CI) named as HLI, and those with hearing aids or CI named as HLII. There were 10 listeners in NH and SNHL groups for the pretest (5 NH and 5 SNHL). There were 27 listeners for the formal test (11 NH, 11 HLI and 5 HLII), and 9 listeners for the retest (3 in each group). The main results were the followings:

The development of the MTRT showed that (1) the results had good content validity (based on expert rating of the spoken familiarity results), criterion validity [$\rho(27) = .88$ to $.92$, $p < .001$], and discriminant validity (NH listeners and HLI listeners were significantly different); (2) the results had high alternate-forms reliability [$\rho(27) = .94$ to $.99$, $p < .001$], split-half reliability [$\rho(27) = .98$ to $.99$, $p < .001$], and test-retest reliability [$\rho(6) = .88$ to $.98$, $p < .05$]. In addition, the performances of Mandarin lexical tones in both groups of HLI and HLII were significantly worse than that in the NH group.

Based on the above mentioned findings, the researchers provide suggestions for the clinical application of MTRT. We can understand the subject's tone performance by MTRT. This four wordlists is convenience and fast for audiological test.

Learning Outcome:

1. To describe the Mandarin Tone Recognition Test (MTRT) developed as a lexical-tone material to assess hearing for speech recognition.
2. To identify the four MTRT-word lists with high reliability and good content validity.
3. To apply the MTRT-word lists in speech audiometry for tone recognition test.



Abstract No: 10062

Communicative performance of Mandarin pediatric cochlear implant users in their daily lives: A preliminary study

Jia-Shin Fan^{*1} ; Chu-Hsiu Teng¹

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Abstract Content:

Objective: This study was to investigate the communicative performance of pediatric cochlear implant users in their daily lives by using the Functioning after Pediatric Cochlear Implantation instrument-Mandarin version (FAPCI-M).

Background: Taiwan Health Promotion Administration provided cochlear implantation subsidy to children under 18 years old since 2017. Many children with severe and profound hearing loss have benefited from this policy. However, how they perform after implantation becomes a concern. FAPCI-M was developed on the basis of International Classification of Functioning, Disability, and Health (ICF), and was used to conduct a more comprehensive and objective assessment of the communicative performance of those pediatric cochlear implant users in the real-world situations.

Method: The study has recruited eleven parents of 2 to 5 years old. Cochlear implant users were from the Hearing Speech Center and the cochlear implant center. The FAPCI-M instrument was utilized to collect the responses of participants.

Results: The FAPCI-M percentage scores of the eleven participants ranged from 15% to 85% (Mean=57%, SD=26). These 11 children were 3.73 years old on average (SD=1.3) with implant age from 1 to 5.33 years (Mean=2.58, SD=1.46) and implant duration from 0.17 to 4.25 years (Mean=1.19, SD=1.19). The FAPCI-M scores were positively associated with increasing age, and were negatively associated with implant age. The performances of items under different environmental factors (e.g., in car, another room, and noisy environment, etc.) were distributed from understanding his/her name to responding complex questions and commands. On the other hand, the performances of items on personal factors (e.g., initiation of a spoken conversation, response to conversation or greeting, etc.) were ranged from never shown to frequently observed. The preliminary results depicted the daily communicative performance (using the phone, humming or singing, communication way, etc.) of the pediatric cochlear implant users, and vary among different individuals.

Discussion/Conclusion: The preliminary results of this study suggest that the communicative performance of the pediatric implant users differ from each other and from one situation to another. The effect of two factors, environmental factors and personal factors, on the communicative performance has been observed in these Mandarin pediatric cochlear implant users.

Learning Outcome:

1. Describe the two categories of factors which may influence the communicative performance of pediatric implant users.
2. Explain how the pediatric cochlear implant users may perform on communication in their daily lives.
3. Identify that the frame work of ICF can make the measurement more comprehensive.

Keywords: Communicative performance, Pediatric cochlear implantation, FAPCI, ICF



Abstract No: 10057

The role of endoscope and microscope in cochlear implant surgeries

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Abstract Content:

Objective: The present study is to clarify using the endoscope and microscope in cochlear implant surgery

Background: Cochlear implant has been the main solution of hearing restoration in patients with heavy or profound hearing loss. The electric array was usually inserted into the scala tympani through post-tympanotomy under the microscope and alternative techniques needed due to anatomic varieties. The endoscope was adopted more and more by otologists in recent years. The new technique in cochlear implant surgery is still debated between otologists and developing.

Results and discussion:

The patients with profound hearing loss accept cochlear implant surgeries were enrolled in the study. Both microscope and endoscope were applied to approach the patient in the operation room. According to the procedures of cochlear implant, both techniques were considered in parts of wound incision, receiver placing, mastoidectomy, post-tympanotomy, cochleotomy and insertion of the electrode array. In our experience, the microscope takes advantages with both hands and straightforward working. The endoscope has its advantages in seeing the round window and serves as an alternative method of CI surgery in anatomic variants. As the smaller or wireless CI device develops, the endoscope will have its unique role in the future.

Learning Outcome:

Learning Outcomes: We clarify the role of both endoscope and microscope in CI surgeries

Keywords: *Cochlear implant, endoscope, microscope*



Abstract No: 10055

Correlation between Asymmetry Hearing Loss and Brain Atrophy in the Elderly

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²Department of Speech Language Pathology and Audiology/ Chung Shan Medical University/ Taiwan

Abstract Content:

- Introduction

Investigate whether age-related brain atrophy and asymmetric hearing loss were correlated by an interactive assessment of magnetic resonance imaging (MRI), auditory brainstem evoked response (ABR) and behavioral hearing assessment.

It is hoped that the prophylaxis and treatment of physical or mental illness which cause elderly lose connection with the society can be improved as soon as possible, or mitigate the deterioration.

- Purpose

According to analysis of the subject's(1) binaural 500, 1000, 2000, 4000Hz pure tone hearing threshold (2) auditory brainstem evoked response (ABR) analysis (3) MRI (4) audiogram pattern (5) age, we investigate the correlation between(1) age (2)vertigo and tinnitus (3) gender(4)better ear (5)ABR report and audiogram pattern (6) asymmetry hearing loss in the elderly and brain atrophy.

- Method

Retrospective study; Participants (n = 274) aged 18 or older who are diagnosed with asymmetric hearing loss with average hearing threshold of less than 70dB HL for 500, 1000, 2000, 4000Hz in worse ear. People with external and middle ear diseases have been excluded from this study. The statistical method was based on the Prasson analysis of the statistical software SPSS22.0 version chi-square test.

- Result

1. Participants over 65 years old accounted for 28.1% of all participants with asymmetric hearing loss
2. ABR abnormality account for 29.8% of participants over 65 years old with asymmetric hearing loss.
3. ABR abnormal referral for MRI accounted for 78.2% of participants over 65 years old with asymmetric hearing loss.
4. Brain atrophy which found in MRI imaging account for 77.7% of participants over 65 years old with asymmetric hearing loss.
5. Participants over 65 years old with cerebral cortical atrophy who suffer from vertigo at 7.1%;
6. Participants over 65 years old with cerebral cortical atrophy who suffer from tinnitus at 14.2%;
7. Participants over 65 years old with cerebral cortical atrophy who suffer from vertigo and tinnitus at 50%.

- Conclusions

The results showed that cerebral cortical atrophy was not significantly correlated with gender, vertigo and tinnitus .Audiogram was no significantly correlated with ABR report too. But we found that participants with asymmetric hearing loss who suffer from cerebral cortical atrophy over 65 years of age was more common than patients under 65 years of age. We confirmed that age was significantly



correlation with MRI results. Additionally, the audiogram pattern was also significantly correlation with ABR report.

Learning Outcome:

The importance of audiology for the elderly

Keywords: Asymmetric hearing loss · presbycusis · brain atrophy



Abstract No: 10051

Perception and Production of Mandarin Consonants in Adult Cochlear-implant Users

Pei Yi Wang*

Abstract Content:

Purpose: This study aimed to examine the relationship between consonant perception and production in Mandarin-speaking cochlear implant (CI) users, and to investigate the influence of previous acoustic hearing experience on CI users' consonant perception and production.

Method: 30 CI users who are native speakers of Mandarin Chinese were included in the study. 15 of them were prelingually deafened. The remaining 15 CI users were postlingually deafened. Mandarin consonant perception and production tasks were conducted to all subjects. Tasks of consonant identification involved a protocol of 30 words containing the targeted consonants in either monosyllabic or disyllabic words. As for the consonant production task, the 21 Mandarin syllable-initial consonants were elicited using a set of disyllabic words.

Results: Consonant perception was 73.33% correct on average, and there was no significant difference between subject groups. Consonant production was significantly better for postlingual (mean = 92.22% correct) than for prelingual CI participants (75.56% correct). There was no significant correlation between consonant perception and production performance for post-lingual CI participants. As for the prelingual CI participants, a strong correlation was found between consonant perception and production performance.

Conclusion: In prelingual CI users, consonant perception and production performance are highly correlated. This result is consistent with the hypothesis that consonant perception is the prerequisite for good consonant production. Due to previous acoustic hearing experience, most post-lingual CI participants have no difficulty on consonant production. However, the performance of consonant perception was no significant difference between subject groups. The mandarin consonants that were incorrectly perceived were typically confused with other consonants with similar acoustic properties.

Learning Outcome:

Inform readers about the relationship between consonant perception and production in Mandarin-speaking cochlear implant users

Keywords: cochlear implant; consonant perception; consonant production



Abstract No: 10034

Sound Resonance of The External Auditory Canal after Tympanoplasty

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*¹Department of Communication Enhancement Center and Otolaryngology-Head and Neck Surgery/
Chang Gung Memorial Hospital and Chang Gung University/ Taiwan*

Abstract Content:

Objective: The present study is to investigate the sound resonance after tympanoplasty

Background: Eardrum perforation can change the resonance of the canal. Tympanoplasty was to repair the eardrum with graft. The sound gain maybe influenced by the geographic change of the external auditory canal. However, there was still no or rare reference about the sound resonance after tympanoplasty.

Method: 50 patients with chronic otitis media and repaired by tympanoplasty. Real ear measurement was used to analysis the sound resonance in the external auditory canal.

Results and discussion:

50 perforated ears and 50 intact ears were included, with different perforated sizes, gender and age groups. External acoustic canal resonance frequency showed no statistical significance in different age groups or gender as previous studies performed. However, the real-ear unaided response of the subjects increased gain after tympanoplasty. The discussion and final data well present on the conference.

Learning Outcome:

This study offers a reference about sound sonance after tympanoplasty and maybe benefit of fitting hearing aids in the future.



Poster Presentation: Session TUP2-7 / Dysphagia, Aug. 20th (Tue.) 13:30-15:00

Abstract No: 10060

Maximal Isometric Pressures (MIP) of the Tongue in Healthy Belgian Teenagers: Influence of Age, Sex, Location, Visual Feedback, and Order.

Jan Vanderwegen^{*1} ; Gwen Van Nuffelen²

¹Speech-Pathology/ Thomas More University College of Applied Sciences/ Belgium ²Rehabilitation Centre for Communication Disorders/ Antwerp University Hospital/ Belgium

Abstract Content:

Purpose:

Knowledge of normative MIP data and influencing methodological factors is essential when evaluating and treating oropharyngeal swallowing disorders. An extensive database of these data in teenagers is however missing. We aimed to collect initial normative data for this population and also study several conditions already known to be important when assessing tongue strength in children and/or adults.

Method(s):

80 healthy teenagers were studied with ages ranging from 12 to 19 years old. Exclusion criteria were a history of dysphagia or dysarthria, evidence of oral motor impairment, the use of 'special needs' (including Speech-Language-therapy) and major oral cavity surgery (beyond routine dental surgery) or active orthodontics. The IOPI device with standard tongue bulbs was used to collect all measurements. The MIP was defined as the highest of 3 motivated trials, and was determined both anterior (MIPa; base of the bulb in contact with the lingual side of the upper incisors) as posterior (MIPp; tip of the bulb positioned at the transition between hard and soft palate). Several conditions were studied: age group, sex, anterior or posterior position, visual feedback from the LCD and order of testing (anterior versus posterior start). SPSS 25 was used for analysis.

Result(s):

Feasibility was excellent with no missed trials due to bulb or procedure intolerance. MIPa and MIPp revealed no difference in the age groups according to ANOVA and post-hoc Tukey tests. Sex differences were not significant using independent T-tests at both locations and during both feedback conditions. Paired T-test showed MIPa to be similar to MIPp, both with and without visual feedback. There was no significant order effect.

Conclusions (including clinical relevance):

These data show no significant differences in MIP within the adolescent lifespan and throughout several conditions, unlike similar data in children and adults. No sex effect was noted in contrast with sparse international data.

Learning Outcome:

The attendee will be aware of the lack of sufficient quality data on tongue strength in adolescents and gain insight in some methodological issues when assessing tongue strength in adolescents.

Keywords: Dysphagia; tongue strength; normative data



Abstract No: 9910

Validity and Reliability of the Instrument for Head and Neck Lymphedema Assessment in Patients with Head and Neck Cancer

Yu-Rong Lin^{*1 2} ; Yu-Chun Chih¹

¹*Department of Audiology and Speech-Language Pathology/ Chung-Shan Medical University/ Taiwan,*

²*Department of Physical Medicine and Rehabilitation / Wan Fang Hospital, Taipei Medical University/
Taiwan*

Abstract Content:

Background: Radiotherapy and surgery are common treatment procedures for patients with head and neck cancer. These therapy approaches may damage patient's lymphatic system, and lead to lymphedema. Lymphedema that occurs in head and neck region may affect patient's swallowing, speech, and voice. The prevalence of head and neck cancer in Taiwan is high. For instance, there are more than 7000 newly-diagnosed patients of oral cancer per year in Taiwan. But there is little research in Taiwan that is related to lymphedema measurement, not to mention the validity and reliability of the lymphedema assessment instruments. Therefore, the purpose of current study is to compare the validity and reliability of the instruments for head and neck lymphedema assessment.

method: Thirty patients with head and neck cancer participate in the current study. Patients will be evaluated before and after surgery and radiotherapy. Tape measurement, MD Anderson Cancer Center Head and Neck Lymphedema [MDACC HNL] Rating Scale and the Head and Neck Lymphedema Questionnaire (designed by the authors) are utilized to measure their head and neck lymphedema. The validity, reliability and results of these instruments will be compared among three measurements.

results : The study is currently in the data collection phase. All results will be shared in the conference.

discussion: The study is currently in the data collection phase. All results will be shared in the conference.

Learning Outcome:

The audience will learn the assessment instruments of head and neck lymphedema.

The audience will learn the validity and reliability of head and neck lymphedema instruments.

Keywords: Head and Neck Lymphedema; Lymphedema Assessment; Head and Neck Cancer



Abstract No: 9682

A Clinical Study of Dysphagia Patients Aged 65 Years and Over

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¹*Department of Otolaryngology Head and Neck Surgery/ Ehime University School of Medicine/ Japan*

Abstract Content:

Introduction: Swallowing disorders among elderly people are complicated because they are intertwined with various factors, such as the chronic disease and the aging. This sometimes leads to ineffective and/or incomplete implementation of swallowing rehabilitation for elderly people. Therefore, we explored factors that are related to the effectiveness of rehabilitation to fully understand the characteristics and variety of swallowing disorders among elderly people.

Target and method: We studied 80 hospitalized patients aged ≥ 65 years. The age ranged from 65 to 91, with the mean age of 76.6 years old. The ratio of female patients was 0.482. The primary diseases include neuromuscular diseases (16), head and neck tumors (14), cerebrovascular disorders (12), among others. The duration of swallowing rehabilitation ranged from 10 to 113 days, with the average of 28.1 days.

We examined whether age, gender, concomitant disease, pneumonia, cognitive decline, engagement in activities of daily living (ADLs), and summed Hyodo scores upon (fiberoptic) endoscopic evaluation of swallowing before treatment affected recovery from dysphagia. The ability to eat after treatment served as the dependent variable.

Result and discussion: Rehabilitation allowed 38 (47.5%) of the 80 patients to regain the capacity to eat. In terms of Hyodo scores, good pharyngeal clearance and pharyngeal sensation after swallowing were associated with the effectiveness of rehabilitation, but a significant number of patients with good pharyngeal performance did not regain the capacity to eat.

Multiple regression analyses revealed that pneumonia and a lower level of participation in ADLs significantly reduced the effectiveness of rehabilitation for dysphagia. Such rehabilitation among the elderly must consider overall patient needs, and their prognoses.

Learning Outcome:

Participants can learn about the clinical characteristics of elderly people with swallowing disorders.

Keywords: Dysphagia; Aging; Rehabilitation; Aspiration; Pneumonia



Abstract No: 10047

Oral Defensiveness Related to Dysphagia in Extremely Low Gestational Age Children: A Case Study

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²Department of Rehabilitation Therapy/ Chung Shan Medical University Hospital/ Taiwan

Abstract Content:

Oral Defensiveness Related to Dysphagia in Extremely Low Gestational Age Children: A Case Study

Mei-Chun Chen^{1*} , Yu-Chen Huang²

1 Department of Speech-Language Pathology and Audiology, Chung Shan Medical University

2 Department of Rehabilitation Therapy, Chung Shan Medical University Hospital, Taichung City, Taiwan

Abstract

Background: Oral defensiveness is one of the common oral feeding problems in children born extremely prematurely. The children may have an aversion to touch around the mouth, gums, in the oral cavity; dislike of mixed textures, or reject uneven food.

Aim: The purpose of this study is to apply the oral desensitization intervention in order to increase the amount of oral intake, and to prevent the risk of malnutrition, dehydration, or aspiration pneumonia.

Methods: The case-control study is a 29-month-old premature infant, very low birth weight, and with dysphagia, which is currently characterized by feeding difficulty due to oral defensiveness who underwent an eight-week oral desensitization intervention. Before and after the intervention, the preterm infants' sensory processing functions were evaluated using non-standardized checklists and interview with parents.

Results: There was a significant improvement in preterm infants' the degree of oral hypersensitivity after the oral desensitization intervention. Concretely, according to the parents, the premature infant shows some improvements in her eating and care habits.

Conclusion: The Oral desensitization intervention brought about a decrease in the levels of oral hypersensitivity, and the oral intake problem has also improved.

Keywords: Oral Defensiveness; Hypersensitivity; Feeding Difficulty; Dysphagia; Very Low Birth Weight;

Premature Infant

Learning Outcome:

Learning Outcome: While above methods can be helpful in treating individuals with oral defensiveness, but requires a multidisciplinary team approach.

Keywords: Oral Defensiveness; Hypersensitivity; Feeding Difficulty; Dysphagia; Very Low Birth Weight; Premature Infan



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Abstract No: 8994

Disfluencies and Agrammatical Utterances in The Speech Of Preadolescents Afflicted with ASD

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Abstract Content:

The aim of this paper was to analyse disfluencies and agrammatical utterances in the speech of 11–13-year-old Finnish-speaking boys with highly functioning autism spectrum disorder, ASD (N = 5). All the informants were diagnosed with Asperger Syndrome. The data were from authentic group therapy sessions. Our analyses were quantitative and qualitative: we first measured the durations of all extracts of speech including disfluencies, and then analysed them qualitatively using conversation analytic methods. The results show that the proportion of disfluencies and agrammatical utterances is greater in the ASD boys' speech (26.4 %) than in the control group (15.5%). Furthermore, a qualitative difference was noted: the ASD group produced word searches, self-repairs, false starts, fillers, prolongations, inconsistent syntactic structures and grammatical errors, whereas in the control group the disfluencies were mainly fillers and sound prolongations. The grammatical errors made by the ASD subjects included wrong case endings, inconsistent syntactic structures, inaccurate tenses, unclear pronominal references and erroneous lexical choices.

Our qualitative analysis showed that the disfluencies and the agrammatical utterances occurring in the ASD participants' interactions caused comprehension problems, whereas in the control group data comprehension problems related to these features did not occur. However, the preadolescents with ASD showed interactional skilfulness in requesting for clarification when faced with comprehension problems, although not as actively as the therapists who were moderating the group discussions. The therapists typically reacted to the comprehension problems with requests for clarification, or used discourse particles that invited the speaker to continue. If the disfluencies led to a persisting problem of comprehension, the therapists sometimes intervened and resolved the problem. However, therapists' direct interventions were not very frequent because the participants with ASD were mostly able to resolve the comprehension problems with their own actions.

This study confirms the findings by Scaler Scott *et al.* (2014) and Shriberg *et al.* (2001) that there are many disfluencies in the speech of individuals with ASD. However, the disfluencies were mostly not mere repetitions but seemed to arise from more profound linguistic problems in planning speech and therefore constructing coherent and grammatical utterances. When producing speech, the preadolescents with ASD displayed difficulty in finding and choosing the right lexical items, both words and case endings. This is in line with the study of Norbury *et al.* (2010) that the learning of meanings is compromised in autism due to the reduced sensitivity in following gaze cues and sharing objects of attention with caregivers. In our data especially the meanings of inflectional morphemes, *i.e.*, case endings typical of Finnish language, as well as the descriptive meanings of words were difficult for the participants with ASD.

Learning Outcome:

- The proportion of disfluencies and agrammatical utterances is greater in the ASD boys' speech (26.4 %) than in the control group (15.5%).
- A qualitative difference was noted.
- The disfluencies and the agrammatical utterances occurring in the ASD participants' interactions caused comprehension problems.



- The preadolescents with ASD showed interactional skilfulness in requesting for clarification when faced with comprehension problems.

Keywords: autism spectrum disorder; disfluency; conversation analysis; comprehension problems; agrammatical utterances



Abstract No: 10007

Auditory and Reading processing in Children with Asperger's syndrome and Autism Spectrum Disorders

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¹*Communication Disorders and Science/ State University of New York at Fredonia/ United States,*

²*Special Education/ National Chiayi University/ Taiwan*

Abstract Content:

Introduction: Although the DSM-V (2013) excludes language impairment in autism spectrum disorder (ASD), there is some evidence that suggested children with ASD whose language performance is within normal limits, may still have difficulties in language components such as semantics, morphonology, and syntax (Speirs, Yelland, Rinehart, & Tonge, 2011; Zane, Lancaster, Mertens, & Grossman, 2017). Concurrently, researchers suggested that children with Asperger's Syndrome (AS), or high-function autism (HFA) had similar language development compare to their typical-developed peers (Tager-Flusberg, Paul, & Lord, 2005). The mixed results of language performance of children with AS and/or HFA indicate the unmet needs of understanding of language performance in these populations for both basic and applied research. The aim of the study is to use the Computerized Revised Token Test-Mandarin (CRTT-M; Chen, McNeil, Hill, & Pratt, 2013), investigate the auditory and reading processing of children with AS compare to their typical-developed peers.

Method: Fifteen school-aged children with AS/ASD, and fifteen type-developed peers were recruited in the study. Based on parents' reports, all children's language performance was within normal limits, and no hearing and vision impairments. All children were asked to complete the auditory and reading tasks of the CRTT-M. CRTT-M was translated from CRTT (Eberwein et al., 2007; McNeil et al., 2015). CRTT includes 10 sub-tests. It was used for assessing participants' auditory and reading processing performance. In the auditory task, the children were asked to listen to a set of standardized auditory stimuli, then follow stimuli, and complete the task on a computer screen. Same stimuli were presented to the children in written text, and the children followed the same procedures to complete the reading processing task.

Results and Discussion: AS/ASD group had a significantly lower overall score of the auditory task ($M=12.98$; $SD=.94$) than the typical-developed group ($M=13.62$; $SD=.6$), $p=.04$. AS/ASD group also had a significant lower efficient score of the auditory task ($M=10.49$; $SD=1.43$) than the typical-developed group ($M=11.74$; $SD=.9$), $p=.008$. These results suggest that AS/ASD group had slower auditory processing than the typical-developed group. In reading processing task, there was not a significant difference in the overall score of AS/ASD group ($M=12.94$, $SD=.85$) and the typical-developed group ($M=13.31$, $SD=.95$), $p=.27$. There was not a significant difference in the overall score of AS/ASD group ($M=9.69$, $SD=1.84$) and the typical-developed group ($M=10.92$, $SD=1.68$), $p=.06$. The primary results suggest the children with AS/ASD who participated in the study may have a certain level of the weakness in auditory processing compare to their peers even when they were considered without language impairment. Clinical application and future research direction are discussed.

Learning Outcome:

1. Participants will understand the features of the Computerized Revised Token Test.
2. Participants will become aware of the different performance in auditory and reading processing of children with AS/ASD.
3. Participants will become aware of the different performance in language comprehension between children with AS/ASD and the typical-developed peers.

Keywords: ASD, Asperger's syndrome, CRTT, language comprehension, Chinese



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Abstract No: 9695

Pragmatic comprehension in high-functioning autism spectrum disorder: non-verbal communicative acts

Aija Kotila¹ ; Jussi Tohka² ; Jukka-Pekka Kauppi³ ; Ilaria Gabbatore⁴ ; Leena Mäkinen¹ ; Tuula Hurtig⁵ ;
Hanna Ebeling⁵ ; Vesa Korhonen⁶ ; Vesa Kiviniemi⁶ ; Soile Loukusa¹

¹Faculty of Humanities, Logopedics/ University of Oulu/ Finland, ²A. I. Virtanen Institute for Molecular Sciences/ University of Eastern Finland/ Finland, ³Faculty of Information Technology/ University of Jyväskylä/ Finland, ⁴Department of Psychology/ University of Turin/ Italy, ⁵Department of Child Psychiatry/ University and University Hospital of Oulu/ Finland, ⁶Department of Diagnostic Radiology/ University and University Hospital of Oulu/ Finland

Abstract Content:

Objective

The objective of this study was to examine non-verbal pragmatic comprehension at behavioral and neural level in a sample of young adults with autism spectrum disorder (ASD).

Background

Pragmatic communication refers to how verbal and non-verbal expressive means are understood and used in specific communication contexts. Individuals with ASD are known to have difficulties in pragmatic comprehension and in making pragmatic inferences, which can lead to problems in social relationships, often causing marginalization. However, little is known about the processing of non-verbal communicative acts among young adults with ASD.

Method

Nineteen young adults (mean 23.6 years), who received a diagnosis of ASD during their childhood and 19 neurotypical (NT) controls (mean 22.7 years) were drawn from two longitudinal studies (www oulu.fi/autismresearch). Participants had no intellectual disabilities. Assessment of pragmatic comprehension skills was done using a selection of extralinguistic items from the Assessment Battery for Communication, form A, Finnish adaptation. In 6 language-free video-based items, the focus was on the comprehension of simple communicative acts (i.e. statement, request, question, order) expressed through gestures and facial expressions only. Functional brain imaging (fMRI) data were acquired during participants' viewing of the same video clips. BOLD image series were preprocessed using a FSL toolset pipeline. The analysis of the fMRI data was done using the inter-subject correlation (ISC) toolbox (<https://www.nitrc.org/projects/isc-toolbox/>) which is an effective method for identifying synchronized areas of neural activation within a group of video stimulus viewers, allowing also finding differences between groups.

Results

ASD and NT groups performed differently at the proposed pragmatic comprehension tasks, almost reaching statistical significance (Mann-Whitney $U= 120.5$, $p= 0.060$, $r= 0.31$) for ratio of correct answers (ASD: median= 0.83, range= 0.33–1.00; NT: median= 1.00, range= 0.67–1.00). The NT group but not the ASD group performed at ceiling. Moses extreme reaction test revealed that scores were more dispersed ($p= 0.003$) in the ASD than NT group. When comparing synchrony of neural activity between the groups, the ISC difference map showed several brain areas where correlation of activity within a group was greater in the NT than ASD group ($p < 0.05$, voxel-wise FDR corrected threshold at $p= 0.000026$, $z= 4.20$). Regions where NT>ASD included the right dorso-central and left posterior insula and also the left superior frontal gyrus.



Discussion

The results suggest that young adults diagnosed with ASD in their childhood may have some deficits in non-verbal pragmatic comprehension due to neural-level reasons. The variability in pragmatic comprehensions skills in ASD group could be explained by compensatory strategies used among some individuals. NT group was more synchronized in insula activation patterns, which might indicate a better mental resonance to pragmatic situations. Atypical insula activation has been linked to ASD symptoms.

Learning Outcome:

- Readers should be able to relate to possible deficits in non-verbal pragmatic comprehension in young adults with ASD
- Readers should be able to discuss the neural basis of pragmatic difficulties in ASD

Keywords: ASD, pragmatic, non-verbal, extralinguistic, fMRI



Abstract No: 9865

Performance in Theory of Mind and Comprehension of Idioms in Normal Developing Children.

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Faculty of Medicine of the University of São Paulo (FMUSP) / Brazil*

Abstract Content:

The comprehension of idioms involves more than just the ability of language decoding it demands a good transit within the culture as well as meta-representation abilities. The aim of this study was to verify the association between the performance on a Theory of Mind (ToM) task and the comprehension of 10 idioms used in everyday contexts by Portuguese-speaking children attending regular schools in Sao Paulo, Brazil. Participants were 25 children, ages 7 to 15 years, with no history of language or learning disabilities and their parents signed a consent form approved by the institution's ethics committee board.

The participants were tested individually on a library, on a silent and controlled environment. They were asked to answer the Sally -Ann task of ToM (Baron-Cohen, Leslie and Frith, 1983) and then to tell the meaning of ten idioms frequently used in everyday language of the southeast region of Brazil. The results indicate that younger children apparently answer with more accuracy to the meaning of the idioms, but just one of the participants answered correctly to all ten tasks. However, the older children performed better on the ToM test. Even so, more children presented a wrong answer to the ToM task.

This way, despite different performances regarding both tests in association with age, it's shown that boys performed better than girls. The study of ToM and comprehension of idioms in normal children is relevant to show the differences in children with typical development regarding the association of culture and language. Although there are no standardized signs on the development of Theory of Mind, some authors suggest that precursor signals could be the eye contact in infants, shared attention (Baron-Cohen, 1991), use of verbs (Bretherton, 1991), make-believe plays (Leslie, 1987) and different levels of mental representation (Leslie, 1987). All authors agree that the child will have full mastery of ToM when they are able to understand the mind as a representational system. In general, children with typical development normal acquire Theory of Mind around the 7th year. (Carvalho, Mecca and Lichtig, 2008). Despite the small number of participants, this study is relevant to the discussion regarding the cultural implications of ToM tasks.

Learning Outcome:

After reading this project, people will be able to

- Analyze and understand children's development of idiom's comprehension;
- Analyze the development of Theory of Mind in normal children;
- Analyze if there were similarity between results found in ToM and idiom's comprehension.

Keywords: Autism Spectrum Disorders; Theory of Mind; Idioms.



Poster Presentation: Session WP1-2 / Child Speech, Aug. 21st (Wed.) 08:30-09:30

Abstract No: 9690

Investigation of how well nursery school teachers can identify erroneous speech sounds.

Hitomi Kihara^{*1}

¹Graduate School of Science and Technology/ Sophia University / Japan

Abstract Content:

Some nursery school teachers can recognize erroneous sounds produced by young children without technical training. This study investigates the relationships between nursery school teachers' ability to identify incorrectly produced speech sound and what they think were the causes for such mistake in terms of language development and oral motor functions.

Forty Japanese nursery school teachers listened to speech samples of four common types of speech disorders produced by preschool children and normal speech sound and were asked to answer whether the speech samples sounded natural or not. After they completed the speech perception test, they were asked via a questionnaire what they thought were the causes for the speech disorders in terms of language development and oral motor functions. The relationship between their ability to identify speech sound and what they thought were the causes for the errors were then analyzed.

The results obtained are as follows:

1. Perception test showed that among each of the erroneous sound in the speech sample, Palatalized Articulation (PA: 82%) and Lateralized Articulation (LA: 70%) were regarded as more natural than Glottal Stop (GS:0%) and Nasopharyngeal Articulation (NA: 25%).
2. The result of questionnaire for language development and oral motor function shows that high number of nursery school teachers thought short tongue, control of tongue movement and language delay were related to speech sound errors.
3. No significant effect for age, gender or job tenure were found in the speech perception test results.

Previous studies have shown nursery school teachers to be able to guess the meaning of words from its context even if the word has been distorted (Kihara, 2009). Detecting a GS error, where the consonant is cut off from the word, was the easiest. Since Japanese mora usually consists of a consonant and a vowel (CV), it is relatively easier to identify as being unnatural. On the other hand, a palatalized /s/ sounds similar to Japanese baby talk (e.g. s sounds become ʃ sounds), making it more difficult to recognize the speech sound as unnatural. From the questionnaire, nursery school teachers were able to identify that short tongue, control of tongue movement and language delay were related to speech sound errors. However, while they may understand child speech and language development to a certain extent, they still lack knowledge in well-known speech errors in terms of speech pathology.

Learning Outcome:

1. Understanding characteristic of speech sound disorders allows teachers to recognize speech sounds by preschool children.
2. Nursery school teachers do not have technical knowledge on speech disorders.
3. It is necessary for teachers to not only understand development, but also speech disorders to give appropriate advice and support.



Keywords: speech sound disorders(SSD), perception test,



Abstract No: 9752

Consonant Cluster Complexity in Spanish

Philip Combitbs^{1 2} ; Sonja Pruitt-Lord¹ ; Jessica Barlow¹

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Abstract Content:

Objective

The goal of this research is to provide empirical evidence for a typological description of Spanish consonant cluster complexity that will support selection of complex treatment stimuli for young Spanish-speaking children with speech sound disorder.

Background

Introducing complex linguistic structures into an impaired system is an effective approach for treatment of speech sound disorder, with the primary advantage being generalization learning to simpler, untreated components of the language. Optimal targets for this type of generalization learning are complex sound structures, such as consonant clusters (e.g., /fl-/). Cluster targets appear to result in the greatest amount of generalization learning, improving accuracy of other consonant clusters *and* singleton consonants (e.g., Gierut, 1999). However, the overwhelming majority of clinical evidence in support of complex treatment targets has been offered only for English, despite theoretical support for the extension of complexity principles to the acquisition of other languages, such as Spanish.

Although we expect complexity principles to apply to treatment in Spanish, differences in Spanish and English phonology will result in different optimal treatment targets. A typological description of consonant clusters during acquisition has been offered for English, but no equivalent description exists for Spanish. We must address gaps in our understanding of consonant clusters in Spanish to better determine optimal Spanish treatment stimuli based on cluster complexity.

Method

Participants are 10 typically developing young (3;0-6;0) emerging bilinguals from Spanish-dominant households. Participants completed a 155-word elicitation probe sampling all Spanish consonant clusters and consonant singletons in initial, medial, and final position ≥ 5 times each to allow thorough phonological (using Phon) and acoustic analyses (using Praat). Mixed statistical modeling is used to determine the relationship between consonant clusters according to acoustic intensity (i.e., sonority) and error patterns to determine the relative complexity of Spanish consonant clusters in child speech.

Results

Data collection is complete, and analyses are ongoing; however, we expect acoustic and phonological patterns to reveal a relationship of cluster complexity related to the relative intensity (i.e., sonority distance) within clusters, with clusters of high sonority distance being simpler and those of low sonority distance being more complex. Because cluster reductions are predicted to maintain ideal (i.e., large) sonority distances, we expect this finding to also be reflected in the type and frequency of cluster reduction patterns.

Discussion

These results will provide quantitative evidence for the complexity of some Spanish clusters over others, which would directly support optimal treatment target selection for Spanish-speaking children. Findings will be discussed as they relate to treatment target selection for Spanish-speaking children with speech sound disorder.



Learning Outcome:

1. Attendees will understand the utility of freely available phonological and acoustic analysis software to assess consonant cluster complexity.
2. Attendees will be able to identify a hierarchy of complex consonant clusters in Spanish to inform complexity-based treatment target selection.

Keywords: Spanish; phonology; consonant clusters; acquisition; treatment targets



Abstract No: 9908

Prosodic performance of children with hearing loss: What matters?

Yu-Chen Hung¹ ; Yi-Chih Chan^{*1}

¹Speech and Hearing Science Research Institute/ Children's Hearing Foundation/ Taiwan

Abstract Content:

Objectives

The purpose of the present study was to explore hearing-related demographic factors that might affect prosodic performance in Mandarin-speaking children with hearing loss.

Background

The speech of children with hearing loss is often described as “flat” and “monotonous”. Previous studies have shown that although speakers with hearing loss exhibited pitch variations while speaking, the average range was more reduced in comparison to those with typical hearing. The atypical prosodic expressions may be caused by insufficient gain at lower frequencies of the hearing devices, which should be improved through gain adjustment. However, it remains unexplored whether there are other demographic or reading-related factors which might possibly link to prosodic production in children with hearing loss. Identifying these factors should facilitate the delivery of appropriate interventions or treatments to the patients.

Method

Thirteen children wearing bilateral hearing instruments aged from 7.7 to 10.1 were recruited. Their mean aided audiologic threshold was 22.3 dB HL with an average hearing age of 8.9 years. All of them were enrolled in an auditory–verbal intervention program, with an average duration of 6.8 years. A *Mandarin Oral Reading Assessment*, where each child was instructed to read a short story aloud, was used to examine his/her prosodic expression, reading speed and vocabulary

Results

Spearman's rho correlation was performed to examine the relationships among the demographic factors (i.e., hearing age, intervention duration, aided hearing thresholds), reading speed, vocabulary and prosodic performance. The statistic analyses revealed that prosodic performance was significantly and positively correlated with intervention duration, hearing age, and reading speed.

Discussion

Although the deprivation of hearing sense can lead to substantial deficiencies in prosodic production, the present findings showed that the longer a child is fitted with appropriate hearing instruments and obtains intervention services, the more accurately she/he can produce prosodic features while reading. Furthermore, the significant correlation between reading speed and prosodic production indicates that reading competence may play a role in successful phrasing and expression while reading a text, because oral reading speed, a measure of automaticity in word recognition, is a predictor of reading comprehension. Taken together, the current study sheds light on possible ways to improve the prosodic outcomes in children with hearing loss.

Learning Outcome:



1. Participants will be able to explain what factors may be associated with better prosodic production.
2. Participants will be able to identify the importance of early intervention in children with hearing loss.

Keywords: Prosody; Hearing Loss, Oral Reading, Mandarin Chinese



Abstract No: 9926

An Optimality Analysis of Disordered Phonology: a Case Study

Hsienlan Wu¹

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Abstract Content:

This study provides an optimality-theoretical (OT) account of a Mandarin-speaking child's disordered phonology, focusing on the following phonological phenomena: syllable reduction, atypical sound substitutions, and consonant harmony.

The analysis reveals that an OT assumption on phonological disorders is highly predictable of the syllable types in relation to language typology. The markedness constraint NOCODA is highly ranked that CV becomes the predominant syllable type. Pervasive use of atypical segments can be accounted for through constraint ranking using the device for analyzing absolute ill-formedness. A language-specific constraint ranking is proposed to explain the pervasive use of bilabial fricatives, which may not be adequately accounted for by rules or processes. Typological variations of consonant harmony partially predict the child's primary place assimilation. Child-specific markedness constraints in terms of manner and voicing need to be taken account of.

It is argued that 1) markedness constraints are language-specific; 2) markedness constraints may be attributed to performance factors, especially for phonological disorders in children; 3) for the particular case in this study, the markedness constraints may involve better control of lip articulations or more visually perceptible of lip movement.

On the clinical sides, the constraint rankings directly reveal what the child is avoiding rather than what specific avoidance strategies are used. This OT characterization stands apart from other conventional descriptions of errors associated with listings of rules or phonological processes, and thus help to guide target selection.

Learning Outcome:

Learning outcomes:

1. To recognize the symbiotic relationship between phonological theories and speech-language pathology;
2. To learn about how the constrained-based framework of optimality theory is adopted to the analysis of children with phonological disorders;
3. To learn about how identifying the source of a child's phonological error patterns help in the selection of treatment targets.

Keywords: Optimality theory; Phonological disorders



Poster Presentation: Session WP1-3 / Dysphagia, Aug. 21st (Wed.) 08:30-09:30

Abstract No: 10089

EFFECTS OF VISUAL FEEDBACK DURING CHEWING IN A PATIENT WITH FACIAL ONSET SENSORY AND MOTOR NEURONOPATHY (FOSMN)

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Abstract Content:

Purpose: Facial onset sensory and motor neuronopathy (FOSMN) deficits both sensory and motor control in orofacial area (Vucic 2006, Fluchere 2011, Sonoda 2013, Barca 2013). These deficits might be caused some problems with mastication and food transports. However, there are no therapeutic techniques in FOSMN. This study examined whether the visual feedback might improve jaw movement and food transport during chewing.

Method(s): The FOSMN patient, 50yo, female, 2yo after diagnosis, were examined. Parameters scored were range of motion and time course in jaw movement while chewing with and without visual feedback. We used Dipp-Motion V/2D (DITECT, Inc. Co.) for detecting motion analysis of parameters. Food transports were observed using FEES in both conditions.

Result(s): Using visual feedback, range of jaw movement showed significantly shorter in Y axis ($p < .05$), but greater in X axis ($p < .05$). Time course were not differed significantly between visual feedback and no feedback condition. Food transports before swallowing reflex were observed in both conditions.

Conclusion: Visual feedback might be affected jaw movement during chewing. This result showed jaw movement was not only Y axis but also X axis which same as normal subjects' jaw movement pattern in visual feedback condition. Food transports were no change in both conditions and further investigation might be needed.

Learning Outcome:

Learning how cortical representation of swallow in humans especially laterality.



Abstract No: 9710

Coordination of swallowing and phases of respiration during cup and straw drinking

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Abstract Content:

【Purpose】

We observed tongue and palate contact during cup and straw drinking using electropalatography and reported that a tongue and palate were easily opened when drinking from a cup with a small amount of water in it (Hirata, 2018).

We hypothesized that there might be a difference between the tongue's contact with the palate and the coordination of swallowing and phases of respiration during cup and straw drinking. In this study, we focused on the coordination of swallowing and phases of respiration during cup and straw drinking of a single swallow in healthy adults.

【Methods】

Twenty healthy adults (10 men, 10 women, age 21.7 ± 2.1 years) participated in this study. To measure breathing, we used a chest expansion measurement device (BREATH, TAKEI). All participants were asked to set the thoracic belt and were measured during liquid swallow. The amount of liquid was 10ml for both cup drinking and straw drinking. All participants swallowed five times, under three swallowing conditions: 1) Thin liquid with a straw (Straw condition), 2) Thickened liquid with a straw (Thickened condition), 3) Thin liquid with a cup (Cup condition).

We analyzed 300 swallows, and categorized them into the four respiratory phase patterns (expiration-expiration: EX/EX, inspiration-expiration: IN/EX, expiration-inspiration: EX/IN, inspiration-inspiration: IN/IN) that Martin-Harris (2005) classified; we then calculated the incidence of the deglutition breathing pattern in each swallowing condition. Furthermore, we compared the respiratory phases before and after the swallowing. Statistical analysis used a Friedman test and a Wilcoxon signed-rank test.

【Results】

The respiratory phase patterns before and after the swallowing were as follows: Straw condition (EX/EX 30%, IN/EX 50%, EX/IN 15%, IN/IN 5%), Thickened condition (EX/EX 25%, IN/EX 55%, EX/IN 15%, IN/IN 5%), and Cup condition (EX/EX 30%, IN/EX 50%, EX/IN 20%, IN/IN 0%). There were no significant differences based on swallowing conditions.

Regarding breathing before swallowing, once again, no significant difference was found between the three conditions. After swallowing, there were significant differences in expiration between the three conditions (Straw condition $p=0.036$, Thickened condition $p=0.002$, Cup condition $p=0.02$).

【Conclusion】

In healthy young adults, the respiratory phase patterns were shown to be similar between a straw and a cup, with liquid viscosity. It is suggested that choosing a straw or a cup with liquid viscosity does not influence the pattern of swallowing and respiration.

In this study, unlike in previous research (LJ Hirst, 2002), there was a high amount of the IN/EX pattern. This could be explained by the fact that we measured respiratory patterns when participants took in a



liquid in the oral cavity, so there was more IN/EX than EX/EX. This study suggests the possibility that liquid is taken into the oral cavity with inspiration.

Learning Outcome:

Doctor of Philosophy in Health and welfare Science

Keywords: straw, cup, swallowing ,phases of respiration



Abstract No: 10054

Evaluation of Different Fatigue-Inducing Paradigms on Maximum Isometric Pressures (MIP) of The Anterior Tongue in Healthy Adults and Elderly

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Abstract Content:

Purpose:

Tongue strength is critical for bolus propulsion and can be easily and reliably measured. The MIP is commonly defined as the highest of 3 repetitions. Meal consumption, however, requires many more swallows and failure to repeatedly produce adequate pressures can result in dysphagia (with problematic residue), prolonged mealtimes and/or premature ending of meals (thereby increasing the risk for protein and energy malnutrition). We aimed to study how to assess tongue fatigability and consider some potential influencing parameters.

Method(s):

40 healthy people with MIP within normative data were included: 20 adults (20-60 yo) and 20 elderly (70+). All testing and measurements used the IOPI.

6 fatigue paradigms (FP)(2x at 60, 80, or 100% of baseline (BL) MIP) were performed in a randomized order with intervals of 48-72 hours. A single repetition (rep) was defined as achieving and maintaining 3 sec of specified tongue pressure production for the FP (confirmed by visual feedback), followed by 3 sec of rest; MIP measurements were repeated every 5 reps. The FP was aborted at discomfort, a session duration exceeding 60 min (equaling a max of 470 reps and 94 MIPs), or when MIPs during FP were <30% of BL MIP. Recovery (R) MIPs were performed 5 and 15 min after ending the FP.

Result(s):

1. median/maximum MIPs across all FP were 65 and 80 respectively
2. no significant decay in MIP was noted between BL and R for any FP
3. increased BL MIP over 6 subsequent FP indicated a training effect
4. Kaplan-Meier (KM) analysis between similar FP showed no significant differences
5. KM showed no significant difference in performance between adults and elderly
6. KM indicated no significant difference in performance in function of % BL MIP.

Conclusions (including clinical relevance):

Different FP failed to induce significant fatigue within the time constraints. These data can serve to develop a potential assessment of tongue fatigue in dysphagic patients.

Learning Outcome:

The attendee will develop insight in tongue-strength measurement and will be able to apply this to the study of fatigue.

Keywords: Dysphagia; tongue strength



Abstract No: 9108

Traditional Chinese translation of the Preterm Oral Feeding Readiness Assessment Scale

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An

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Abstract Content:

Background

The aim of the study is to translate contents of the "Preterm Oral Feeding Readiness Assessment Scale" from English to Traditional Chinese and validate the accuracy. The preterm infants have different to initiate oral feeding than the full term infants. Feeding issues prolong length of stay and increase the cost of care. There is a need for validated preterm feeding assessment instrument and address needs in resource constrained developing settings in Taiwan. After a literature review, "Preterm Oral Feeding Readiness Assessment Scale" (POFRAS) has been chosen to translate validation process in Traditional Chinese and approved by the author.

Methods

The process of translation and adaptation of this instrument in our study included forward translation, expert panel, back-translation, pre-testing and cognitive interviewing, and final version, which following the guidelines of World Health Organization. The content validity index (CVI) were used Likert scale and measured by five-point scale from five experts. The TC-POFRAS is used to assess 30 healthy preterm infants in the neonatal intensive care unit (NICU) in Chung Shan Medical University Hospital from December 2017 to March 2018. The infants with facial deformities, congenital or genetic abnormalities and unstable vital index were ineligible. The Human Research Ethics Committees of the Chung Shan Medical University Hospital, approved the study. Informed consent was obtained from parents of every participating neonate.

Results

Of 30 preterm infants, the mean birth weight was 2103.5 ± 587.2 g with mean gestational age of 34.0 ± 0.5 weeks, and 56.7% (n=17) were boy. The mean Apgar score at 1st minute and 5th minute were 7.9 and 9.1, respectively. On the day of data collection, the mean gestational age was 35.0 ± 0.6 weeks with a mean weight of 2150.1 ± 511.2 g. The average score of the scale was 28.8 ± 5.8 (range: 15-36). Using the receiver-operating-characteristic (ROC) curve analysis, the AUROC for assessing preterm infants' readiness to start oral feeding using the TC-POFRAS was 0.87 ($P < 0.05$) with the optimal cut-off value of 29. At a cutoff of ≥ 29 , the model had a sensitivity of 65.4 % and a specificity of 100%. An average of the CVI for five experts is 1.00 (CVI/Ave:1.00, and 1.00, respectively).

Learning Outcome:

Our results showed that the TC-POFRAS is considered as a valid, safe and objective instrument to assist clinical professionals' judgment in Taiwan. A locally developed instrument may contribute to standardized evaluation procedures of preterm infants. Future researchers can use TC-PORAS to assess preterm infants' oral feeding readiness.

Keywords: Traditional Chinese, Preterm, NICU, Back-Translation, Apgar score



Poster Presentation: Session WP1-4 / Audiology, Aug. 21st (Wed.) 08:30-09:30

Abstract No: 11551

**Program for Audiological/Psychological Follow Up for
Children with Hearing Aids and Cochlear Implants**

Wafaa Shehata-Dieler^{*1} ; Heike Kuehn¹ ; Rudolf Hagen¹ ; Tina Borst¹ ; Sonja Steigerwald¹ ; Sabine Mark¹ ; Bettina Roessler¹ ; Peipei Fei^{*1}

¹*Otolaryngology, Head and Neck and Plastic Surgery/ University clinic Wuerzburg/ Germany*

Abstract Content:

Introduction: Hearing rehabilitation programs aim at reaching the diagnosis of a hearing loss and begin of the therapy as early as possible. Since new born hearing screening has been established, it became possible to reach these aims very early in life. During the last few years the average age of hearing aid fitting ranged within 3 to 8 months of life. The number of children receiving a cochlear implant at/under the age of one year has been continuously increasing.

Goals of therapy extend beyond just improving the hearing abilities. The final goal of the therapy is to reach an optimal speech and language development. The latter will be affected by other factors such as the general development, presence of other handicaps and psycho-social factors. Parents counselling and support is an important issue that has to be maintained throughout the therapy. In order to achieve these goals we started an interdisciplinary follow up program for hearing impaired children

Methods: We started the follow up program for hearing impaired children in 2010. Every child is included in this program as soon as the diagnosis of hearing loss is established. The program includes information material for the parents as well as multi-disciplinary evaluation of the children and counselling of the parents at regular intervals. Evaluation intervals include: pre-therapy/ 0 /3 / 6 / 9 / 12 / 18 / 24 / 36 / 48 / 60 / 72 months following therapy. Specialists from following disciplines are involved in the evaluation and therapy of the children: Otolaryngology, Audiology, Speech & language pathology, Rehabilitation-pedagogic, Psychology and Technical support

Results: from 2010 till 2018, 233 hearing impaired children (132 with hearing aids und 101 with cochlear implants) were included in the program. The results of evaluation are documented in a child booklet. Thus, allowing an easy flow of information among the different care takers (Paediatricians, education specialists etc). Moreover, analysis the data collected help to detect and evaluate factors influencing the development of the children. The program allowed the specialists to adjust the rehabilitation and educational plan according to the child needs and abilities. Thus helping the children get the maximum possible benefit from the therapy. First results of the long term data analysis of our hearing impaired children, supported with examples will be presented.

Learning Outcome:

Early identification, diagnosis and treatment of hearing loss in infants and young children.

Interdisciplinary approach for optimal diagnosis and rehabilitation



Abstract No: 11490

Correlation of Hearing Handicap Inventory for Adult (HHIA) Total Score and Number of Hemodialysis in Chronic Kidney Disease who undergo Haemodialysis in Haji General Hospital Surabaya

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¹Otorhinolaryngology Head and Neck Surgery/ Universitas Airlangga/ Indonesia

Abstract Content:

Background: Sensorineural hearing loss can occur in chronic kidney patients (CKD) who undergo hemodialysis. Haemodialysis sessions influence sensorineural hearing loss significantly. Hearing loss in CKD and hemodialysis patients need an assessment tool for early detection. HHIA questionnaire seems has the potential to be used as early detection of hearing loss in CKD patients with hemodialysis. The correlations of HHIA total scores and number of hemodialysis in this population remain unknown.

Objective: To analyze the correlation between HHIA (Hearing Handicap Inventory for Adult) total scores and number of hemodialysis in stage 5 chronic kidney disease patients in Haji general hospital Surabaya.

Methods: This study is an analytical, observational, and cross-sectional study. There were 43 patients included in this study. HHIA scores and number of hemodialysis were obtained by an interview the patients based on the HHIA questionnaire and patients status form. Patients Age, sex, history of hypertension and diabetes, and audiogram was conducted from the medical record. All of the data were analyzed by using SPSS Statistic 22 software. **Results:** 43 patients have responded to the HHIA questionnaire. 42 (95,3%) patients had no handicap and only 2 (4,7%) patients had a mild handicap. The correlation between HHIA total scores and number hemodialysis found not significant ($r= 0,063$; $p= 0.688$). Only 16 patients have PTA audiometry result, 10 patients (62,5%) had mild hearing loss and 6 patients (32,5%) were normal.

Conclusions: The questioner assessment to assess the hearing loss in CKD patients with hemodialysis may apply practically and tolerable to the patients. There was no correlation between HHIA and number of hemodialysis of Chronic Kidney Diseases patients

Learning Outcome:

The questioner assessment to assess the hearing loss in Chronic Kidney Diseases patients who undergo hemodialysis may apply practically and tolerable to the patients

Keywords: hearing loss, hearing handyicap inventory for adults, hemodialysis, chronic kidney disease



Abstract No: 11485

The Correlation of Noise Intensity Level with Hearing Impairment at Vocational School Students working in Machine Laboratory in Indonesia

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Abstract Content:

Background: Learning process at machine department of Vocational Secondary School (VSS) students produced noise. The level of noise intensity and duration exposure of noise can impact to hearing loss. There is still limited study about the impact of machine laboratory noise on Vocational Secondary School. This is a benefit for the advocacy of noise control in society.

Objective: To know the evidence of impact on noise exposure generated by machine laboratory on hearing impairment in Vocational School students of engineering that majority using machine in Indonesia.

Methods: This study is analytic observational which assess the correlation between noise intensity of machine laboratory and its impact of hearing disorder. Statistical analyses using cross-sectional study.

Results: this study found the significance of the correlation between noise intensity with hearing impairment in VSS students which using the machine in Indonesia, which p-value: 0,000; OR: 1,84 and 95% CI:1,653-1,968.

Conclusion: Level of noise intensity on machine laboratory may have an impact on hearing impairment in VSS students in Indonesia.

Learning Outcome:

this study shows the evidence of the noise intensity level in machine laboratory, may impact on the hearing impairment in Vocational Secondary School students

Keywords: noise intensity, vocational school, machine laboratory, hearing impairment



Poster Presentation: Session WP1-5 / Child Language, Aug. 20th (Tue.) 08:30-09:30

Abstract No: 9704

Frequent combinations of verbs with aspect markers in 4- to 6-year-old Mandarin-speaking children with developmental language disorder

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¹*Department fo Speech-Language Pathology and Audiology/ Chung Shan Medical University/ Taiwan*

Abstract Content:

OBJECTIVE:

We aimed to examine how 4- to 6-year-old children with developmental language disorder (DLD) and their typically-developing (TD) peers used verbs and aspect markers in a naturalistic setting. In particular, we were interested in understanding whether children with DLD differed from their TD peers in their rates of aspect markers and what verbs would co-occur with aspect markers.

BACKGROUND:

Individuals with DLD (also known as specific language impairment) have difficulties in speaking and/or understanding language, i.e. below age-expected levels, despite the absence of clinically significant cognitive, peripheral hearing, psychosocial, or neurological impairments (Leonard, 1998, 2004). Previous research has shown that Compared to TD peers, Mandarin-speaking children with DLD are more likely to omit aspect markers, which express how an action, event, or state, denoted by a verb, extends over time (Cheung, 2009; Fletcher, Leonard, Stokes & Wong, 2005). However, less is known whether such omission errors would resolve as they get older. Also, it is of our interest to investigate whether the use of aspect markers in children with DLD would be limited by their verb use, which has been documented as one of their major difficulties in language.

METHOD:

We recruited 45 four- to six-year-old Mandarin-speaking children with DLD (15 in each age group), 45 age-matched children with TD, and 45 MLU-mated children with TD. A standardized language test was administered to all participants, and only scores in children with DLD fell 1.25 SDs or more below the mean. Language samples were collected from all of the children as they individually interacted with an examiner in free play, conversations, and story retell. All language samples were transcribed and coded for verb use and aspect marker use, respectively, and co-occurrences of verb and aspect markers. We plan to analyze how use rate of aspect markers in children with DLD differ by age and what verbs often co-occur with these aspect markers.

RESULTS & DISCUSSION:

We predict that even though tokens of aspect markers may increase with age in children with DLD, their use rate of aspect markers will be lower than that by their TD peers, Also, we expect to exploit the verb and aspect marker cooccurrence data in order to sort out what verbs will be and will not be used with aspect markers in children with DLD. The results of this study will inform speech-language pathologists of how lexicon and grammar interact in learning in preschool children with DLD.

Learning Outcome:

Participants will be able to understand lexical and grammatical development in children with developmental language disorder.



Keywords: verb use; developmental language disorder; aspect markers; Mandarin



Abstract No: 9705

Frequent combinations of verbs and aspect markers in 3- to 6-year-old Mandarin-speaking children

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Abstract Content:

Objective

We aimed to explore frequent combinations of verbs with aspect markers in 3- to 6-year-old Mandarin-speaking children in order to further understand how verb and aspect markers are used. It was of our interest to develop reference data of what verbs co-occur with what aspect markers in each age as references for clinicians to select age-appropriate targets when setting goals for grammar learning.

Background

Aspect markers express how an action, event, or state, denoted by a verb, extends over time, but they are not always obligatory in Mandarin and thus very challenging to learn. There are four grammatical aspect markers in Mandarin: *le5* (for accomplished), *guo4* (experienced), *zhe5* (durative) and *zai4* (progressive). In addition to the grammatical aspect, lexical aspect of verbs is difficult to learn, as children may not be able to immediately detect the aspects denoted by a verb. For example, in Mandarin, 'sit' denotes the aspect of 'durative' but not the aspect of 'progressive.' Given that both the grammatical aspect and lexical aspect are challenging in Mandarin, more research is needed to unfold how these two aspects develop in Mandarin-speaking children. More importantly, the developmental data will further serve as references as clinicians plan for assessment and intervention.

Method

We recruited 100 three- to six-year-old children with typical development and collected their language as they individually interacted with an examiner in free play, conversations, and story retell. All language samples were transcribed and coded for the lexical aspect of verbs and grammatical aspect markers. We plan to analyze the frequency of verbs and their co-occurrences of aspect markers in order to understand 1) what verbs co-occur with grammatical aspect markers most frequently in each age, and 2) how verbs that denote more difficult lexical aspects, along with grammatical aspect markers, develop with age.

Results & Discussion

We predict that older children will use more verbs and aspect markers to express their thoughts or describe details than younger children. The frequency of verbs and the co-occurrences of verbs and aspect markers should be different for each age group. Also, based on our data, for each age group we will be able to list 1) a number of specific verbs that frequently co-occur with aspect markers that, and 2) what verbs are used for denoting each lexical aspect and these verbs' co-occurrence with grammatical aspect markers. The results of this current study will provide speech-language pathologies with useful reference data for assessing and intervening lexical and grammatical aspects for preschool children.

Learning Outcome:

Participants will be able to understand lexical and grammatical development in preschool children with typical development.

Keywords: verbs; aspect markers; preschool children; Mandarin



Abstract No: 9696

Word recognition processing characteristics in children with Down syndrome: Ability to discriminate minimal pairs according to differences in accent patterns

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Abstract Content:

Objective: The objective is to elucidate auditory word recognition processing characteristics in children with Down syndrome.

Background: Although it is known that in children with Down syndrome, language development is greatly delayed and is accompanied by unclear utterances, their understanding of everyday instructions is often evaluated as good. To investigate the level of association between word recognition and processing of information other than phonemes in children with Down syndrome, the respective scores of word discrimination tests on minimal pairs with same and different accent patterns were analyzed for associations with language comprehension and expressive ability.

Method: Word discrimination tests on minimal pairs with same accent patterns (e.g., *nómu/yómu*) and different accent patterns (e.g., *kéru/nerú*) were conducted with 24 children (aged from 4 years and 10 months to 15 years and 1 month) with Down syndrome. In addition, to confirm how minimal pair discrimination ability is associated with other language abilities, the Picture Vocabulary Test - Revised (PVT-R), Syntactic Processing Test for Children - Revised (STC), Vocabulary Expression Test, Auditory Memory Span Test, and Syllable Repetition Test were administered, and the presence/absence of corresponding associations were analyzed.

Results and Discussion: Scores for ability to discriminate minimal pairs with different accent patterns were significantly higher ($p < 0.05$) than those for ability to discriminate minimal pairs with same accent patterns. Moreover, scores for ability to discriminate minimal pairs with same accent patterns, which was dependent on phonological information, were found to be associated with age, and with test items other than those from the Syllable Repetition test. In particular, word recognition ability based on phonological information, which does not depend on accent patterns, was associated with development of language comprehension.

Learning Outcome:

Many children with DS perform accent pattern information-dependent processing in auditory word recognition.

Keywords: Down Syndrome, minimal pair discrimination, Word recognition processing, accent pattern



Abstract No: 9658

Differential performance in language comprehension of Mandarin-speaking children with and without hearing loss

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Abstract Content:

Hearing loss (HL) adversely affects speech perception and leads to the comprehensive delay in language development. Early intervention (EI) has been identified as a key factor to facilitate the language abilities of children with HL. However, studies on whether there are specific linguistic domains that children with HL benefit from the EI programs are limited. The current study aimed to examine the difference on language comprehension between Mandarin-speaking children with and without HL. Particularly, whether EI facilitates language development outcomes among children with HL, and in what aspect did children with HL benefit from EI.

A total of 253 Mandarin-speaking children aged 3 to 6 years old were recruited, including 140 normal hearing (NH) children without any other disabilities, and 113 children with HL, who received auditory-verbal therapy and fitted with either HAs or CIs. All children took Revised Preschooler Language Assessment (RPLA) to assess their language ability.

Items in RPLA that measured children's language comprehension were categorized into the three linguistic aspects, including syntax, semantics and semantics/pragmatics. Differential item functioning analysis was then conducted to explore the different performances between children with and without HL in RPLA.

The results revealed that five items that favored NH group covered all three linguistic aspects, whereas four items that favored HL group only includes semantics and syntax. Among the four items that favored HL group, there are three, including items measuring directional words and number comparatives, might be due to the EI. First, the testing book's layout that measured directional words has a potential flaw; yet children with HL were trained to answer this type of questions in EI program; thus, they were able to answer correctly. Regarding number comparatives which are suggested not to develop until seven years old, and considering that it is one of the teaching goals in EI program, the reason why this particular item favored HL group could only be due to the benefit from EI program. Among five items that favored NH group, there are two items required children to pay attention to the functional words in the sentence, including connectives and negations, in order to answer correctly. However, children with HL seemed to ignore functional words, as children tended to use nouns in the sentences to answer questions in the study. For example, in item 6, "Please do not point to apple and cup. You only need to point to the milk", children would point to apple, cup and milk. This could be due to the ignorance of functional words or the delayed development of Executive Function.

Taken all together, children with HL might benefit from the EI, particularly in some semantic and syntactic aspects. However, further experimental studies are needed to attest this finding.

Learning Outcome:

Understand the potential benefit on language comprehension from EI on children with hearing loss

Keywords: Language comprehension; Children with hearing loss; Differential item functioning analysis



Poster Presentation: Session WP2-1 / Audiology, Aug. 21st (Wed.) 11:10-12:10

Abstract No: 9736

Correlations between F0-Slope-Pitch Recognition and Mandarin Lexical Tone Recognition in Cochlear-Implant and Normal-Hearing Listeners

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Abstract Content:

Objective: The purposes of this study were to investigate the correlations between frequency slope pitch recognition in F0 region and Mandarin lexical tone recognition for cochlear-implant (CI) and normal-hearing (NH) listeners, as well as to compare the differences between these two groups.

Background: The major acoustic attribute of auditory pitch perception is the fundamental frequency (F0) contour concentrated in low frequency region for recognizing Mandarin lexical tone. In addition to frequency height, the frequency slop is also known as one of critical features on F0 contour recognition.

Method: Two groups, CI listeners and age-matched NH listeners, 78 subjects (39 in each group, aged 8-21 years), participated in this study. All subjects were tested individually through standard testing procedures held in a sound-treated booth. Two closed-set computerized tests, *F0 Slope Recognition* (F0SR) Test and *Mandarin Lexical Tone Recognition* (MLTR) Test, were used for this study. F0SR test included 150 stimuli with 8 frequency-slop-patterns, i.e., level pitch, rising pitch, falling-rising pitch, and falling pitch varied in two sets of low/high F0 region. MLTR test included 132 stimuli with 4 tones, i.e., Tone 1 to Tone 4 in 132 randomized monosyllabic words. The auditory perception performance of CI group was compared with that of NH group. The t test, two-way repeated-measures ANOVA and Pearson correlation were adopted for statistical analyses.

Results: The study found that the scores of F0SR test and MLTR test were 41.47% (SD=12.69) and 65.85% (SD=15.39) in CI group, and 85.40% (SD=10.22) and 97.46% (SD= 3.21) in NH group, respectively. There were statistically significant differences between two groups in both test scores (F0HR: $t=-16.84$, $p<.001$; MLTR: $t=-12.56$, $p<.001$). A statistically significant correlation between these two tests was found in CI group ($r=.398$, $p<.05$) and in NH group ($r=.600$, $p<.001$). Moreover, the correlations within 8 frequency-slop-patterns in each subject group were analyzed. Significant correlations were observed in 4 items only ($r=.322-.583$, $p<.05$) for CI group, comparing to 21 items ($r=.371-.721$, $p<.05$) in NH group.

Discussion/Conclusion: Compared with NH listeners, CI listeners have lower auditory perception performance in both tests, and a lower correlation of frequency slop pitch recognition in fundamental frequency region with Mandarin tone recognition as well. CI listeners have shown the similar level of difficulty on recognizing both slop pitches and lexical tones. The results of this study suggest that the poor performance of F0-slop-pitch recognition as another factor, in addition to the factor of poor F0-height-pitch recognition shown in the previous research result, may partly lead to the poor tone recognition in CI listeners.

Learning Outcome:

1. Describe two computerized tests, F0 Slope Recognition (F0SR) Test and Mandarin Lexical Tone Recognition (MLTR) Test.



2. Explain the correlations between auditory perception performances of F0SR and MLTR in CI listeners and NH listeners, respectively.
3. Identify two critical features on F0 contour leading to the performance of Mandarin lexical tone recognition in CI listeners.

Keywords: cochlear implant; F0 slope pitch; Mandarin lexical tone; auditory recognition



Abstract No: 9735

Comparison of music perceptions of pure and complex harmonic tones in cochlear implant recipients

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Abstract Content:

【Objective】 Most post-lingual cochlear implant (CI) recipients achieve good speech recognition, but not in music appreciation, particularly melody recognition. Singh (2009) compared melody recognition between pure and complex harmonic tones, and reported that pure tone melodies produced significantly better performance. However, previous studies did not investigate basic discrimination abilities such as pitch discrimination and pitch pattern identification. In this study, we examined the perception of melody, including pitch discrimination and melodic contour identification (MCI), using pure and complex harmonic tones of CI recipients.

【Methods】 Twenty-eight adult CI recipients participated this experiment. They were all postlingually deafened adults aged 28 to 87 years, and their mean speech perception was 54.9%±21.2%. In this study, we used two different tones, namely pure tones, which were adjusted to the loudness of sounds, and complex harmonic tone (organ). These sounds were made with MIDI (Musical Instrument Digital Interface). We conducted three tests, a pitch discrimination test, MCI test, and melody discrimination test. **【Test 1 : Pitch discrimination test】** A difference in limen between the two heights were found using the adaptive method. **【Test 2: MCI test】** Four contour patterns (rise, rise-flat, fall-rise, and fall) were presented using adaptive methods, and the subjects were asked to identify the contour pattern. The difference in limen of the contours were measured. **【Test 3: Melody discrimination test】** The subjects were asked to identify 10 melodies familiar to most Japanese people, presented in a closed set (list of 10 pieces, music title, with lyrics). Stimuli were presented via speakers connected to a PC at comfortable levels of each individual.

【Results and Conclusion】 As for the discrimination test, the difference in limens of pure and complex harmonic tones were 7.9±4.9 and 9.6±6.8 semitone, respectively, with no significant difference. In the melodic contour pattern test, a significant difference in limen was found between the pure tone (9.5±4.2 semitone) and complex tone (12.6±2.2 semitone). For melody identification, the mean correct number was 3.4±2.0 in pure tone and 2.4±2.0 in complex tone, with a significant difference. In all the tasks, many subjects reported that it was easier to discriminate in pure tone than complex harmonic tone. The result of this study suggested that this difference between two tones is caused by the lack of coding of complex pitch in cochlear implants as previous studies reported. However, it was difficult for CI users to perceive the change in pitch even if the stimulus was pure tone. We conclude that CI users must use not only pitch information but also other information such as rhythm to perceive music.

Learning Outcome:

To clarify the possibility of musical perception of the cochlear implant

Keywords: Cochlear Implant ; Music



Abstract No: 9635

The Effect of Background Noise on Speech Perception in Monolingual and Bilingual Adults with Normal Hearing

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Abstract Content:

Background: Speech perception abilities are adversely affected in the presence of noise. Previous studies have highlighted that bilingual listeners have a deficit in speech perception in their second language compared with monolingual listeners in noisy listening environments. This deficit may give rise to educational and occupational implications for bilingual speakers who are studying or working in non-native language environments in poor acoustic conditions.

Objectives: The aims of this study were to compare the speech perception performance of monolingual English speakers and English as a second language (ESL) bilinguals within environments with various levels of background noise and to examine whether bilinguals with an early age of second language acquisition would perform better than those with a late age of acquisition.

Design: Quasi-experimental, non-randomized intervention study.

Study sample: Two groups of adult listeners participated: monolingual British English listeners with normal hearing (N=15) and bilingual Arabic listeners with normal hearing for whom English was their second language and who were proficient in English (N=15). The quick speech-in-noise (QuickSIN) test was used to assess signal-to-noise ratio (SNR) loss and SNR-50 for both groups.

Results: Although the bilinguals had normal hearing and were proficient in English, the QuickSIN test results indicated that Arabic listeners had poorer SNR loss scores and higher than normal SNR-50s compared to monolingual English listeners. The results also showed that even early English acquisition bilingual listeners showed significant difficulty compared to monolinguals in background noise. On average, monolingual listeners achieved better QuickSIN better than the bilingual groups. The results replicate previous findings, namely that in adverse conditions (i.e. noise) bilingual listeners perform more poorly than monolingual listeners, requiring an improved SNR ratio to attain comparable thresholds to monolingual listeners.

Conclusion: Bilingual Arabic listeners with normal hearing displayed a mild SNR loss comparable to that observed for a person with hearing loss, indicating a higher SNR needed for this population to achieve a comparable level of comprehension to their monolingual English peers. As adult speech perception is affected by noise, it should be expected that bilingual children's perception will be worse in background noise.

Learning Outcome:

The importance of measuring SNR loss to obtain accurate diagnosis and potential rehabilitative information that not available from audiogram studies.

Findings may also be used to improve access to spoken language for ESL children by providing optimal classroom listening environments.

Keywords: Perception of speech in noise, English as a second language, signal-to-noise ratio, SNR loss, age of acquisition



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Abstract No: 11484

Profile of Detection and Intervention in Children with Congenital Deafness in Audiology Clinic Dr. Soetomo Hospital

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Abstract Content:

Background: The evidence on congenital deafness ranges from 1-3/1000 births in some countries. Data collected from Department of the Ministry of Health in Indonesia (2017), there were 9 provinces in Indonesia with the prevalence of hearing loss in the age of more than 5 years old children exceeded from the national level (2.6%). It was found in Yogyakarta, West Sulawesi, East Java, North Sumatra, South Sulawesi, Central Java, Lampung and Nusa Tenggara Timur province.

Objective: To determine the detection and intervention profile in children with congenital deafness in the Audiology Clinic Department of Otorhinolaryngology Head and Neck Surgery Dr. Soetomo Hospital in 2015-2017.

Methods: This study is a descriptive method with a cross-sectional design to determine the pattern of detection and intervention in children with congenital deafness. Data were collected from the medical record.

Result: There were 44 patients detected with congenital deafness. The most frequent were 12 patients (27.3%) with the age of ≥ 60 months (5 years). The least frequent were 2 patients (4.5%) with ≤ 12 months (1 year). The type of intervention were 22 patients (50%) with speech therapy only, 20 patient (45.5%) with hearing aid and 2 patient (4.5%) with a cochlear implant. Related with the onset of the intervention of speech therapy was found 16 patients (36.4%) with age ≥ 60 months (5 years). The lowest group were 4 patients (9.1%) with the age of 12-24 months (1-2 years) and 48-60 months (4-5 years).

Conclusion: There was a delay in hearing assessment and intervention in congenital deafness. The delay of referral to a hospital might be related to the lack of awareness on early detection and intervention program. There was a challenge on intervention with hearing aids or cochlear implants related to the high cost

Learning Outcome:

Information about the early detection and intervention program of hearing impairment in children in Dr. Soetomo Hospital Surabaya. Indonesia

Keywords: detection, intervention, congenital deafness, speech therapy



Poster Presentation: Session WP2-2 / Dysphagia, Aug. 21st (Wed.) 11:10-12:10

Abstract No: 9804

Internal shape of Luer Slip and Luer Lok syringe and IDDSI Flow Test using them

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Abstract Content:

Introduction:

As a simple viscosity measurement of thickened liquids, International Dysphagia Diet Standardisation Initiative (IDDSI) has proposed the Flow Test (FT). Although IDDSI specifies to use Luer Slip Tip (Becton Dickinson, #301604) (BD-Slip) syringe in FT, but it is difficult to obtain it in Japan. In this study, we examined differences in internal shape of syringe and measurements of FT using BD-Slip and two syringes available in Japan.

Methods:

BD Luer Slip Tip syringe (BD-Slip), Terumo syringe (TERUMO), and Nipro syringe (NIPRO) were adopted in this study. The three-dimensional internal shape of the syringes were scanned using a industrial computed tomography. Parameters of internal shape were CA: angle of conical portion, BD: diameter of barrel, TD: diameter of the syringe tip at three points (Upper, UTD; Middle, MTD; Lower, LTD), TH: tip height and CH: conical height, and MTD-LTD: value subtracted from MTD-LTD. The parameters obtained by measuring the CT slice of the syringe were compared on average \pm 95% confidence intervals. FT was performed with water and nine different levels of thickened liquids in two syringe types. The relationship of the FT measurements between BD-Slip and the other two syringes was analyzed by Pearson's correlation coefficient.

Results:

Regarding the internal shape, CA, UTD, MTD and MTD-LTD of TERUMO was close to BD-Slip. BD, TH, CH and LTD of NIPRO was close to BD-Slip. FT measurements of BD-Slip and TERUMO ($r = .999$, $p < .001$), BD-Slip and NIPRO ($r = .994$, $p < .001$) were showed significant positive correlation and the coefficient of determination of TERUMO ($r^2 = .999$) was higher than NIPRO ($r^2 = .989$).

Conclusion:

The internal shape of TERUMO and NIPRO was different from BD-Slip in all parameters, however it was suggested that FT measurement value using TERUMO is close to value using BD-Slip.

Learning Outcome:

TERUMO syringe could be used in Flow Test instead of BD-Slip.

Keywords: IDDSI, Flow Test, viscosity measurement



Abstract No: 10056

Swallowing Problems of Patients with Chronic Schizophrenia

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Abstract Content:

The psychiatric patients have high risk of swallowing or choking problems, which were suspected side effects of antipsychotic medicines or progressive of symptom relating. Most of the time, the problem have been ignored until severe dysphasia happened. The chronic schizophrenia patients have taken long-term antipsychotic agents could lead extrapyramidal symptoms (EPS) related movement disorders. In those, tardive dyskinesia (TD) is the most severe and irreversible side effect, which could accompany some symptoms, for example disability of chewing by lips, cheek, and tongue.

This random sampling study explored the relationship among TD and dysphasia in 93 patients with schizophrenia at chronic psychiatric ward in middle of Taiwan. Instruments included Northwestern Dysphagia Patient Check Sheet (NDPCS) and Abnormal Involuntary Movement Scale (AIMS). The study revealed 30.10% dysphasia in chronic schizophrenia patient, and the swallowing problems were oral residue (96.4%), multiple swallows per bolus (71.7%), and reduced laryngeal elevation (60.7%). The most important result is the more severity of TD, the higher risk of swallowing problem; multiple logistic regression analysis showed that, oral area and lips TD (OR=2.75, p=0.001) could predict the swallowing problems.

Learning Outcome:

According to the study findings, early evaluation and intervention should be announced and performed for prevention of deteriorative dysphasia in the chronic psychiatric facility, and Speech Language Pathologist should be consulted for complement health care for the patient.

Keywords: schizophrenia, dysphasia, antipsychotic, tardive dyskinesia, movement disorders



Abstract No: 10049

Investigation of risk factors affecting suffocation accidents in an acute hospital

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Abstract Content:

[Background and Objective] The incidence of suffocation accident among the elderly has increased year by year at their homes, nursing homes, and hospitals. The aim of this study is to clarify the risk factors that affect suffocation accidents in an acute care hospital.

[Methods] Five suffocation accidents were reported to the medical safety committee in the acute hospital from April 2016 to March 2017. We collected the patients' data as to age, gender, diagnosis, medical history, hospitalization period until suffocation, dietary form, choking body, medications, cognitive function (Mini-mental state examination, MMSE), swallowing function (Food intake level scale, FILS), chewing function, activity of daily living level (Bathel Index, BI), residential location, level of required care, nutritional status (albumin in blood, Alb), oxygen inhalation and urethral catheter therefore we studied them retrospectively.

[Results] Their ages were from 80 year-old to 92 year-old five, including 2 male patients. All of them were at home until these hospitalizations. They did not experience either assessment or rehabilitation by a Speech-Language-Hearing Therapist. The causes of their hospitalization were fracture of femur, thoracic compression fracture, hemorrhoidectomy, operation for obstructive arteriosclerosis, and pneumonia with streptococcus pneumoniae. Four patients of them were stroke survivors or suspected so. Four of them got choked two to five days after hospitalization. Three of them have eaten regular, one soft, and another chopped diet. Their choking bodies were dentures in two patients, vegetables in two patients, and cooked rice on one patient. All of them were prescribed 9 to 19 kinds of medication containing various painkillers, antidepressants, or sleep inducing agents. Their MMSE scores were from 18 to 23, and their FILS were from 8 to 9. Their BI's score were 5 in two patients, 30, 55, and 100 points in each one though only one patient was assisted for feeding. The level of required care was 2nd in one patient, 3rd and 4th in each one, and naught in two patients. The average of Alb score was 3.4 ± 0.2 g/dl. Three patients were administered O₂ inhalation and four were furnishing with the urethral catheter. [Conclusion] Such an elderly patient must be supervised closely around meal time to prevent suffocation accidents as with moderate cognitive impairment, partial dependent ADL, ill-fitting denture, or excessive medication even though his/her dysphagia or malnutrition is mild. It is also necessary for them to be assessed precisely by a Speech-Language-Hearing Therapist.

Learning Outcome:

You may learn about risk factors affecting suffocation accidents and necessity of precise assessments in an acute hospital.

Keywords: suffocation, dysphagia, cognitive impairment, excessive medication



Abstract No: 10053

Development of a Tongue-Strength Fatigue-Test: Proof of Concept of a Fatigue Paradigm in Post-Stroke Oropharyngeal Dysphagia (PSOD) Versus Healthy Controls.

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Abstract Content:

Purpose:

Insufficient tongue strength increases risks of dysphagia, prolonged mealtimes and/or premature ending of meals (with ultimately protein and energy malnutrition). Healthy controls (HC) in previous research showed no tongue fatigue using a specific fatigue paradigm (FP). We aimed to compare different aspects of tongue fatigability in PSOD with HC.

Method(s):

6 recent PSOD patients (50-75 yo, 4 males) were recruited in a rehabilitation center. Presence of dysphagia was based on EAT-10-score >3 and FOIS-level of 35. All patients indicated subjective fatigue when consuming a standard main meal.

Baseline assessment (BL) comprised of maximum isometric tongue pressure (MIP) - both anterior (MIPA) and posterior (MIPP) - defined as the highest value of 3 motivated trials.

Each patient performed in random order 3 FP with target-levels of resistance (TLR) of 60, 80 or 100% of BL MIPA, with 48 hours between FPs to avoid residual fatigue. A single set of exercises was defined as 5 repetitions (reps) of the TLR followed by 1 MIPA; a successful rep required achieving and maintaining 3 s of TLR. Sets were repeated until task failure operationalized as 1) MIPA during FP <50% of BL MIPA, 2) outspoken tongue discomfort, pain or cramping, or 3) FP-completion meaning 40 sets.

Recovery measures mirrored BL and were assessed directly after FP (Post0), 5 (Post5) and 15 min (Post15). All testing and measurements used the IOPI.

Results were analyzed using RM-ANOVA and Kaplan-Meier survival analysis.

Result(s):

1: no MIPA decrease occurred during any FP with POST15 MIPA values higher than BL. MIPP was similar but showed a trend of lower Post0 measures to BL.

2: at no timepoint across FPs, significant differences between MIPAs were noted but a large effect size was found between the 1st and 3rd FP for MIPA BL and Post0 (+10 and +6 kPa). Similar MIPP-results were obtained for BL versus Post0 (+8 and +5 kPa).

3: a significant difference in successful reps per LR for MIPA at 60 and 100% TLR ($p=.02$). Means and SD are for 60%: 118±72, for 80%: 92±68, for 100%: 19±27.

4: significant different numbers of MIPArepeats between PSOD (median = 16, 95%CI = 1-31) and 40 HC (median = 66, 95%CI = 63-67) at different timepoints of the FP ($p<.000$ for chi2 Log Rank, Breslow and Tarone-Ware).



Conclusions (including clinical relevance):

This FP discriminates between PSOD and HC when assessing the number of MIP-repeats. This finding indicates preliminary cutoff values that can serve as a future screening tool to indicate abnormal fatigability, but further validation is needed in more patients and different dysphagia etiologies.

Learning Outcome:

The attendee will gain basic knowledge of tongue strength and its role in dysphagia and initial measurements of tongue strength fatigue.