Summerfest 2014

cum

Annual Presentation of B.Sc. (Speech & Hearing Sciences)
Fourth Year Dissertations

30th May 2014

Rayson Huang Theatre, Main Campus
University of Hong Kong

Co-organizers
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Abstracts

Plenary 1
Specific Learning Difficulties

Dr. Leung Man Tak
Associate professor
Department of Chinese and Bilingual Studies
Hong Kong Polytechnic University

In this presentation, the Shenzhen Test of Reading and Writing Abilities for Primary School Children, which we constructed and normed last year in collaboration with the Shenzhen University will be introduced. The test consists of seven subtests including Chinese character naming, Chinese bisyllabic word naming, Chinese character dictation, syllable awareness, onset-rhyme awareness, orthographic awareness and morphological awareness. While we obtain the norm data, we also tested the Pinyin knowledge [in terms of naming onset and rhyme Pinyin symbols in isolations (PY_Iso) and naming real (PY_Real) and pseudo syllables (PY_Pseudo) written in Pinyin] of the participants so as to investigate the relations of Pinyin knowledge and its role in facilitating phonological awareness which is believed to be facilitating Chinese reading development.

Results of the data collected from 300 Grade 2 subjects review of similarities as well as differences between the SpLD test in Hong Kong. Regarding Pinyin knowledge issue, multiple regression results show that both PY_Iso and PY_real, but not PY_Pseudo, significantly predict Chinese character naming after age, non-verbal IQ and RAN are controlled. Results suggest that PY_Pseudo does not facilitate Chinese reading and writing abilities in children. The belief that the introduction of Pinyin knowledge equips children with a self-teaching strategy which in turn foster literacy development is questioned. It makes more sense to suggest that the strong correlations between the abilities to name Chinese characters and PY_Iso and PY_Real as a reflection of the significance of pair-associate learning - a common skill required in learning to read and write Chinese characters and Pinyin symbols. Educational implications will be discussed.

About the speaker:
Dr. Leung is the Associate professor of the Department of Chinese and Bilingual Studies, Faculty of Humanities, Hong Kong Polytechnic University. He received his Speech Pathologist qualification from Lincoln Institute of Health Sciences, Australia and his Ph. D. degree from The University of Hong Kong.
Dr. Leung specializes in research and teaching on language processing, acquired language disorders and children reading development. He has developed several treatment approaches for dyslexic students and has gained substantial experiences in conducting school-based treatment in Hong Kong. He has published articles, books, book chapters on corpus linguistics, reading and its relationship with cognitive, psychological and linguistic development, standardized assessment and treatment for dyslexia.
Development of Mandarin tones in children

Dr. Puisan Wong
Assistant Professor
Division of Speech & Hearing Sciences
The University of Hong Kong

Previous studies indicated that lexical tones are acquired by children by two years of age and before the mastery of segmental productions. This talk presents a study that adopted a different approach to examine children’s development of Mandarin tones. The results showed that children as old as five years of age do not produce the four Mandarin tones with adult-like accuracy.

About the speaker:
Puisan Wong is an Assistant Professor and the director of the Speech Research Lab in the Division of Speech and Hearing Sciences at the University of Hong Kong. She was an Assistant Professor in the Department of Speech Communication Arts and Sciences at Brooklyn College of the City University of New York the year after receiving her doctoral degree from the City University of New York. Before joining the University of Hong Kong, she was a Research Scientist in the Department of Otolaryngology—Head and Neck Surgery at the Ohio State University. She holds the Certificate of Clinical Competence from the American Speech-Language-Hearing Association.

Research Interests
Puisan Wong’s research interests include speech perception and production in normal and clinical populations and effective training and intervention approaches for speech acquisition in second language learners and individuals with speech disorders and hearing loss.
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Plenary 2 - Student Presentation I

Oral Abstracts

10:15 - 10:25
The Development of Noun Phrase in Cantonese-speaking Preschool Children
Chan Tze Wing Karen

This study investigated the development of noun phrase production in Cantonese speaking preschool children. Seventy normally developing children, aged between 3;0 and 6;2, participated. Language samples were elicited using a picture description task in the form of a barrier game. Results revealed age-related improvement in the children's noun phrase production, with the adjectival noun phrase being the first to be mastered, followed by the possessive noun phrase and the noun phrase with subject relative clause. The noun phrase with object relative clause and the prepositional noun phrase were mastered last. The children’s developmental and error patterns were discussed with reference to their cognitive, syntactic and semantic development.

10:25 - 10:35
Character encoding strategies by non-native Mandarin speakers
Cheung Sau Ping Jasmine

This study examines the Chinese pseudo-character encoding process among two groups of Cantonese-speaking participants under a Mandarin context, attempting to find out their differences in sensitivity towards phonological and semantic information within a character. Twenty-four Cantonese-speaking adults and twenty Cantonese-speaking children participated in a picture – symbol mapping task under the no cue, semantic cue (description on the feature given) and phonetic cue (pronunciation given in Mandarin) condition. Results showed that both Cantonese groups achieved similar scores and used more phonetic than semantic strategy under no cue condition. The adults showed more phonetic strategy use under phonetic cue condition while the children used more semantic strategy under the semantic condition. The result supports that the development of semantic radical awareness precedes the development of phonetic radical awareness. While children as young as primary 3 already possess knowledge of phonetic radical, the use of such knowledge in guiding character encoding is still under development.

Keywords: character encoding, radical sensitivity, Mandarin proficiency
10:35 - 10:45
Suprasegmental Speech Perception, Working Memory and Reading Comprehension in Cantonese-English Bilingual Children
Choi Tsun Man William

This study set out to examine (a) lexical tone and stress perception by bilingual and monolingual children, (b) interrelationships between lexical pitches perception, general acoustic mechanism and working memory, and (c) the association between lexical tone awareness and Chinese text reading comprehension. Experiment 1 tested and compared the perception of Cantonese lexical tones, English lexical stress and nonlinguistic pitch between Cantonese-English bilingual and English monolingual children. The relationships between linguistic pitch perception, non-linguistic pitch perception and working memory were also examined among Cantonese-English bilingual children. Experiment 2 explored the relationship between Cantonese tone awareness and Chinese text reading comprehension skills. Results of this study illustrate differential performances in tone perception but similar performances in stress perception between bilinguals and monolinguals. In addition, inter-correlations were found between linguistic pitches perception, general acoustic mechanism, working memory and reading comprehension. These findings provide new insight to native and non-native perception of lexical pitches, and demonstrate an important link that exists between lexical tone awareness and reading comprehension.

Keywords: Bilingualism, suprasegmental speech perception, lexical tone, lexical stress, nonlinguistic pitch, working memory, reading comprehension, prosody

10:45 - 10:55
Can Speech Sound Ability Predict Literacy Skills in Cantonese-speaking Preschoolers?
Man Hiu Tung Connie

The present study examined the association of early speech sound ability of Cantonese-speaking preschoolers on their later literacy outcomes. Nineteen children who participated in a previous study on validation of a parent questionnaire of speech were assessed on their literacy skills one year later (Time 2). Thirteen of them had a history of speech sound disorder (SSD) and 6 did not. All of them showed age-appropriate language skills at the second time point and they received no prior speech therapy. Speech sound abilities at both time points were measured in terms of the percentage of initial consonants correct (PICC) using a standardized speech assessment. Literacy skills were measured in terms of word reading scores using a standardized literacy screening for preschoolers. PICC in the first time point (Time 1) was significantly correlated with word reading. However, the contribution of PICC at Time 1 became nonsignificant when PICC at Time 2 was taken into account. The findings appeared to support Multiple Deficit View which claimed that the reading outcome depended on the interplay between phonological deficit and other factors such as language ability. Future study directions were discussed.
10:55 - 11:05

Quality of Life of Hong Kong Children with Hearing Loss
Ng Long Yee Kelly

The study investigated the effects of hearing loss on the children's health-related quality of life in Hong Kong. Twenty-five hearing-impaired (HI) mainstream schools’ students, aged from 7 to 12 years old, and their caregivers as well as 40 normal hearing peers participated in the study. Participating students and caregivers were instructed to complete questionnaires of a generic quality of life measuring tool, the Chinese Kid version of KINDLR. Results showed that the overall health-related quality of life ratings of HI children were not significantly different from those of their normal hearing peers. However, HI children had a significantly lower mean score in emotional well-being than their normal hearing peers. Besides the self-reported ratings were similar to the proxy ratings provided by caregivers. The findings contradicted with the hypothesis that HI children should have poorer quality of life than their normal hearing peers. Findings also suggested that caregivers had good understanding of their HI children’s quality of life. Management in improving the HI children’s emotional wellbeing in Hong Kong is suggested.

11:05 - 11:15

Prevalence of repeated dysphonia among school-age children in Hong Kong
Ng Sai Pui Bruce

There have been few reports on the prevalence of voice disorders in children, with figures from previous studies varying widely from 0.12% to 23.4%. However, no local data is yet available in Hong Kong. This study examined the prevalence of dysphonia and repeated dysphonia among school-age children in Hong Kong. Voice samples were collected from 185 students of Grade One, Grade Three, and Grade Five in two local primary schools and two voice screenings of eight weeks apart were held. Gender effect and grade level effect on the prevalence of dysphonia were explored. Results showed that the prevalence of dysphonia in the first screening was 48.1%, and more than half of them were considered dysphonic in the second screening. The prevalence of repeated dysphonia was at least 24.3%. There was no significant gender difference in the prevalence of dysphonia. However, a significant small to medium association was found between grade level and presence of dysphonia. The prevalence of dysphonia was the highest in Grade Five students, while that of repeated dysphonia was the highest in Grade Three students.
**Plenary 3 - Student Presentation II**

*Oral Abstracts*

**11:50 - 12:00**

**A Kinematic Study of the Labial and Mandibular Movements during Production of Cantonese Bilabial Plosives**

Lai Tsz Ying Lianne

This study examined the possible effects of aspiration and vowel context on labial and mandibular gestures during production of Cantonese bilabial plosives /p/ and /ph/. Thirty adult native Cantonese speakers were recruited in the study. Participants were asked to read aloud VCV sequences upon spoken examples presented in random fashion. Kinematic data describing the movements of upper and lower lips, and lower jaw were obtained using Electromagnetic Articulography (EMA).

Results revealed a significant aspiration effect on the vertical velocities of lower lip and jaw movements, and such effect was consistent across all vowel contexts. However, results did not reveal any significant aspiration effect, except some effects for vowel context in the anteroposterior displacements and velocities during upper and lower lips movements. The findings appear to confirm the hypothesis of muscular force as the main driving force in facilitating the production of unaspirated bilabial plosive /p/. Yet, the mechanism governing the lip opening for aspirated cognate /ph/ may require further examination.

**12:00 - 12:10**

**Kinematic and correlational analysis on labial and lingual functions during syllable repetitions in Cantonese dysarthric speakers with Parkinson’s disease of varying severity using electromagnetic articulography (EMA)**

Wong Lok Ting Calvin

Articulatory imprecision in Parkinson patients with hypokinetic dysarthria has been attributed to articulatory undershooting. However, contradictory results in terms of acoustics and instrumental investigation has been reported in the literature throughout the years. The present study aimed to investigate labial and lingual kinematics in dysarthric Cantonese speakers with Parkinson’s disease (PD) of different severity (in terms of dysarthria) during rapid syllable repetitions and compared the measures with that of healthy age-matched controls using a 3-dimensional Electromagnetic Articulography (EMA). Dysarthria severity was also correlated with labial and lingual kinematics. Tongue tip, tongue back, upper and lower lips and jaw motion in five PD and six normal participants during repetitions of /pa/, /ta/ and /ka/ were recorded. Participants were also rated perceptually on their dysarthria severity. When compared to the normal group, the PD group showed reduced velocity in lingual movement and reduced distance travelled and velocity in labial movements. Correlational analysis between dysarthria severity and kinematic data revealed positive correlation for duration of lingual movement. Negative correlation was identified for the velocity and rate of lingual movement, and for distance travelled and velocity of labial movement. The present results supported the hypothesis of articulatory undershooting as a contributing factor of articulatory imprecision in hypokinetic dysarthria, while tongue and lip tremor might also cause such consonant imprecision. Possible differential effect of dopamine deficiency on the different cranial nerves has been hypothesized.
12:10 - 12:20

**Effect of Radiation on the Vocal Functions in Post-radiation Nasopharyngeal Cancer (NPC) Patients**
Leung Sze Wing Winnie

Being the top 7th cancer in Hong Kong, treatment of nasopharyngeal carcinoma (NPC) is mainly with radiotherapy (RT), or chemoradiotherapy (CRT). Chronic RT-associated damage at larynx may lead to vocal dysfunction. This study retrospectively evaluated the vocal functions and voice-related quality of life on 16 RT (7 males 9 females) participants, 12 CRT (4 males 8 females) participants and 16 age-matched healthy control (7 males 9 females). Maximum phonation frequency in female NPC participants was significantly lower than the normal healthy controls. All NPC participants showed certain degree of supraglottic compression at habitual pitch and loudness. Four female NPC participants developed vocal fold nodules. Majority of the NPC participants rated themselves having voice-related difficulty in daily experience higher than the cut-off score. VAPP scores were positively correlated with post-radiation duration in female CRT participants. These findings suggested that post-RT NPC females may be more prone to developing vocal dysfunction.

*Key words: Vocal function, nasopharyngeal cancer, radiotherapy, chemotherapy*

12:20 - 12:30

**Chronic Swallowing Outcomes in Nasopharyngeal Cancer (NPC) Survivors after Radiotherapy with or without Chemotherapy**
So Kwok Ho Kevin

In light of the lack of multidimensional data of long-term swallowing functions in nasopharyngeal cancer (NPC) survivors, the current study investigated NPC survivors’ long-term swallowing dysfunctions after radiotherapy or chemoradiation by a multidimensional protocol and explored their relationships with demographic and treatment-related variables. Twenty-seven participants were recruited and assessed through oromotor assessment, fiberoptic endoscopic evaluation of swallowing and quality-of-life questionnaires. Nearly half of the participants had oromotor deficits (47.6%) and penetration in at least one of the swallowing trials (45.8%). All participants had pharyngeal residue in valleculae and most participants have residue in pyriform sinuses (81.8%) in at least one of the swallowing trials. Limitations in the activity and participation domains were prevalent though large variation in functioning was noted. Comparison between groups indicated that participants treated with concurrent chemotherapy have significantly less degree of penetration or aspiration and less residue in valleculae on oral trials for extra thick liquid than those treated with radiotherapy alone. Correlation analysis indicated that degree of penetration in thin liquid, mildly thick liquid and amount of residue residing on valleculae in extra thick liquid increase with the number of years since completion of radiotherapy. Functioning in the activity and participation domains also decreased with time since completion of radiotherapy. Regression analysis indicated that number of years since completion of radiotherapy was a significant predictor for pharyngeal residue. The deteriorating trend identified provided evidence to the need of continuous monitoring in swallowing functions in nasopharyngeal cancer survivors. Further research to identify risk factors for long-term swallowing problems and ways to minimize long-term swallowing are needed for early identification and maximising swallowing functions for nasopharyngeal cancer survivors.

*Keywords: Chronic swallowing functions, radiotherapy, nasopharyngeal cancer, chemotherapy*
12:30 – 12:40
Measuring the coherence of normal and aphasic discourse production in Chinese using Rhetorical Structure Theory (RST)
Shum Wai Man Waisa

The study investigated the difference in discourse coherence between healthy speakers and speakers with anomic aphasia using Rhetorical Structure Theory (RST). The effect of genre types on coherence and potential factors contributing to the differences were also examined. Fifteen native Cantonese participants of anomic aphasia and their control matched in age, education and gender participated. Sixty language samples were obtained using the storytelling and sequential description tasks of the Cantonese AphasiaBank protocol. Twenty naïve listeners provided subjective ratings on the coherence, completeness, correctness of order, and clarity of each speech sample. Results demonstrated that the control group showed significantly higher production fluency, total number of discourse units, and fewer errors than the aphasia group. Controls used a richer set of relations than the aphasic group, particularly those to describe settings, to express causality, and to elaborate. The aphasic group tended to omit more essential information content and was rated with significantly lower coherence and clarity than controls. The findings suggested that speakers with anomic aphasia had reduced proportion of essential information content, lower degree of elaboration, and more structural disruptions than the controls, which may have contributed to the reduced overall discourse coherence.


**Plenary 4**

Annual presentation of B.Sc. (Speech & Hearing Sciences)

Fourth-year dissertations: Poster presentation

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Poster Abstracts

01
Serial verb construction in Cantonese-speaking preschool children with and without language impairment
Chan Ka Yee Yuki

Serial verb construction (SVC) is very productive in Cantonese and it develops actively in the preschool years. Little is known about the development of SVC of children with language impairment (LI). Forty-four kindergarten children with and without LI, aged between 4 to 6 years, participated in the study. This study made use of a video description task to examine the developmental and error patterns of 5 subtypes of SVC, which were directional, instrumental, benefactive, purpose and dative SVC. The performance of the typically developing 5-year-old group was significantly better than the typically developing 4-year-old group. Over 94% of children at 4 years of age showed emergence of all subtypes of SVC. However, the orders of mastery of the subtypes between the two age groups were not the same. Children with LI produced fewer accurate SVC than their typically developing age-matched peers. The quantitative and qualitative analyses of the error patterns were also reported.

Keywords: Cantonese, serial verb construction, language impairment, preschool

02
Development of an ICF-based Swallowing-related Quality of Life Questionnaire: Head-and-Neck cancer Survivor Assessment of Mealtimes
Chan Kwun Wang Herman

This study developed and validated a swallowing-related quality of life (QoL) questionnaire based on the International Classification of Functioning, Disability and Health (ICF) framework, Head-and-Neck cancer Survivor Assessment of Mealtimes (HNSAM). HNSAM was developed according to qualitative studies involved in-depth interviews with head-and-neck cancer (HNC) survivors that explored the impacts of swallowing difficulties. Forty seven participants with HNC treated were recruited for the validation of the psychometric properties of HNSAM. They completed HNSAM and M. D. Anderson Dysphagia Inventory independently. A speech therapist rated Functional Oral Intake Scale and conducted bedside swallowing examination to assess their swallowing impairment severity. HNSAM subscales were demonstrated to have strong internal consistency and test-retest reliability. Good content, criterion, construct and clinical validity was also established, revealing that HNSAM was able to measure the impacts of dysphagia on activities and participation, and QoL of HNC survivors.
03
**Pitch Perception in Individuals of Cantonese-speaking adults with Autism Spectrum Disorders**
Cheng Tsz Ting Stella

Studies showed that individuals with Autism Spectrum Disorders (ASD) demonstrated enhanced pitch perception ability when compared to typical individuals. This study compared pitch perception of 20 adults with ASD and 20 matched neurotypical (NT) controls who spoke Cantonese as their native language. The matching parameters included gender, age, education background, and experience of formal musical training. Real word, nonsense word, and non-speech stimulus pairs with different levels of pitch differences were synthesized. In an auditory discrimination task, participants had to determine whether the stimuli in a pair were the same or different. Results revealed no significant difference between the ASD and the control groups in the three stimulus types implying that individuals with ASD did not have superior pitch perception ability when compared to NT controls. Instead, people with musical training, regardless of group membership, showed better performance in detecting small differences in pairs in all three stimulus types.

04
**Otoacoustic emissions in young adults: Effects of blood group**
Chow Kin Tsun

Previous research findings suggested that individuals with different blood groups have varied haematological risk factors for noise-induced hearing loss. The present study investigated the effects of blood group on otoacoustic emissions (OAEs) as OAEs are indicative of cochlear function. A total of 60 normal hearing females aged between 18 to 26 years were included in the study. Measurements of spontaneous otoacoustic emissions (SOAEs), transient-evoked emissions (TEOAEs) and distortion-product otoacoustic emissions (DPOAEs) of both ears were taken for all of the participants belonging to different blood groups. Participants with blood group O had significantly fewer occurrences of SOAEs and lower DPOAE amplitudes at certain frequencies compared to participants with blood group B. These findings were partially consistent with the hypothesis that individuals with different blood groups may have different OAE amplitude values. The results highlight the need for further investigation on the effects of blood group on OAEs in future studies that involve larger participant sample sizes.
05

**Verbal Short-term memory deficit and its relation to language impairment in Cantonese speakers with aphasia**

Koon Nim Ting Koon

Co-occurring verbal short-term memory (STM) and language impairments are often observed in patients with left hemisphere stroke. The aim of this study is to investigate the relationship between performance in verbal STM and auditory linguistic tasks in Cantonese speakers with aphasia. Twenty five stroke participants and the same number of matched controls were assessed with a series of immediate serial recall (ISR) tasks and auditory linguistic tasks. Cantonese version of the Western Aphasia Battery (CAB) was also administered to stroke participants. The results suggested that Cantonese speakers demonstrated more difficulties with non-words and lexical decision tasks, potentially due to the additional linguistic factor of lexical tone. The clinical assessment and rehabilitation of language impairment should take into account of lexical tone processing in tonal languages.

06

**Validation of a Cantonese version of the Oxford Cognitive Screen (HK-OCS) for stroke survivors in Hong Kong**

Lam Hiu Ping Pinky

The current study reports on the validation of the Cantonese version of the Oxford Cognitive Screen (HK-OCS). Seventy native Cantonese-speaking neurologically healthy individuals were recruited to establish the normative data. Forty six native Cantonese-speaking stroke survivors were assessed on the Cantonese version of the HK-OCS, the Cantonese version of the Western Aphasia Battery, the Cantonese version of Mini-Mental State Examination, the Hong Kong Montreal Cognitive Assessment, the short test of gestural production, the Albert’s Test of Visual Neglect, the Chinese version of the Modified Barthel Index and the Hong Kong Chinese version of Lawton Instrumental Activities of Daily Living scale. Validity of the HK-OCS was appraised by the difference between the two groups and relationship of these tasks. Paired-sample t-tests showed that neurologically healthy individuals performed significantly better than stroke survivors on the HK-OCS. Positive and significant correlations across related cognitive subtests in other tests were found, suggesting good concurrent validity. Excellent intra-rater and inter-rater reliabilities, fair test-retest reliability, and acceptable internal consistency indicated that the HK-OCS had good reliability. Regarding the predictive values of the HK-OCS, semantics, episodic memory, number writing and orientation best predicted survivors’ functional outcomes. The present study suggested that the HK-OCS is a valid, reliable and comprehensive cognitive screening tool for assessing cognitive impairments in Cantonese-speaking stroke survivors in Hong Kong.
07
Test of Adolescent Semantic Knowledge - A Pilot Study
Law Pui Yin Chloe

The present study investigated the feasibility of a beta version of Test of Adolescent Semantic Knowledge (TASK) in assessing lexical-semantic development of Cantonese-speaking adolescents with or without specific language impairment in Hong Kong. Sixty typically developing Cantonese-speaking adolescents (TD group) and 17 language-impaired Cantonese-speaking adolescents (LI group), aged between 12;01 and 17;06 studying Secondary 1 (S.1), Secondary 3 (S.3) and Secondary 5 (S.5), were recruited. A list of 300 vocabulary was located from local textbooks and dictionaries. The list was reduced to 91 vocabulary according to secondary school teachers’ judgement and feedback from a pre-pilot try-out. Three receptive vocabulary task, two expressive vocabulary tasks and a lexical inferencing task were devised to examine 5 domains: (1) literate words, (2) idioms, (3) slangs, (4) homophones, and (5) lexical inferencing strategies. The composite scores demonstrated a significant growth with grade level in the TD group. The LI group performed significantly weaker than the TD group in all five domains and the composite scores. At an individual level, with -1.5 SD as the cutoff, TASK showed 85.3% overall accuracy with 76.5% and 94.1% sensitivity and specificity respectively. The results concluded that there is a continual growth of semantic knowledge during adolescence and TASK could be a feasible test for evaluating semantic knowledge of Cantonese-speaking adolescents in Hong Kong.

08
How are attentional control and serial order memory related to English expert words learning by native Cantonese speakers?
Lee Chak Kwan Kevin

Recent studies study have reported contradictory results on the role of serial order STM in Cantonese-speaking students learning English vocabulary as a second language in their area of expertise (henceforth, L2 expert word learning). This study aims to further examine the role of serial order STM in L2 expert word learning among Cantonese-English bilinguals. Another goal is to examine the role of attentional control in L2 vocabulary learning. Twenty-three university students were tested on tasks assessing English expert word learning, serial order STM, verbal and nonverbal attentional control, and other cognitive measures including nonverbal fluid intelligence. Expert word learning was measured longitudinally across two phases. The results showed that (1) serial order STM did not correlate significantly with expert word learning, (2) a measure of verbal attentional control but not a nonverbal measure significantly correlated with expert word learning, and (3) there was a strong relationship between fluid intelligence and expert word learning. The significant relationship between L2 expert word learning and verbal control, but not with nonverbal control, suggest that the control mechanism involved in L2 vocabulary learning may be domain specific.

Keywords: Serial order short term memory, attentional control, fluid intelligence, expert word learning, Cantonese-English bilinguals
09  
**Chinese Dyslexic's Statistical Learning and Orthographic Regularity Learning**  
Leung Wing Si Wincy

The current study investigated the link between statistical learning and orthographic regularity learning in Chinese children with dyslexia. Tasks testing statistical learning and orthographic regularity learning were administered to 17 clinically diagnosed dyslexics (mean age: 7 years and 6 months) and 24 age-matched controls (mean age: 7 years and 7 months). Visual statistical learning was tested using a triplet learning paradigm in which participants had to detect and extract the temporal order of stimuli. Orthographic regularity learning was tested with an orthographic regularity pattern elicitation paradigm, in which participants were asked to invent orthographically legal pseudo-characters with pairs of stroke patterns. A t-test comparison revealed that Chinese dyslexics had significantly poorer performance than controls in both orthographic regularity learning task and statistical learning task. Moreover, there was a significant correlation between performances in orthographic regularity task and statistical learning task. For the first time, these results provided evidence that in a similar way to alphabetic dyslexics, Chinese dyslexics have statistical learning difficulties, and such statistical learning deficit may be associated with their difficulties in orthographic regularity learning.

10  
**Delineating the processing of Chinese characters and pictures: An ERP approach**  
Lui Hiu Lam Helen

The neural processing of reading Chinese scripts has previously sparked a fierce debate, particularly in questioning the uniqueness in processing the logographic Chinese characters compared with pictures. This study was designed to ascertain at which exact time frame, as well as to what extent, the visual, orthographic, and semantic processing of the two domains (Chinese characters and line drawing pictures) resemble and differ, by examining their well-formedness (real, pseudo, and non). By employing an event-related potential (ERP) repetition detection task, 29 participants identified when a stimulus was repeated (fillers) amongst a series of randomly presented target characters or line drawings and varied in well-formedness. ERP results revealed a significantly greater activation in pictures than Chinese characters in early visual P100 component, and across the subsequent P200-N200 and N400 components, while a greater activation was observed at the orthographic sensitive N170 component. Furthermore, it was observed that the well-formedness of Chinese characters and pictures was distinguished at only the N170 and P200-N200 components respectively. Later at the semantic N400 component, it was observed that only nonitems were distinguished from real and pseudoitems in both characters and pictures at a frontocentral region. Taken together, the results suggest that Chinese characters differ from pictures at early visual and orthographic processing, as well as their well-formedness, but start to resemble at later semantic processing.

**Keywords:** Chinese character, line-drawings, P100, N170, N200-P200, N400
11
Effect of Tone on Vocal Attack Time in Cantonese-speaking children
Lui Pui Ching Rita

Cantonese tones were shown to have significant effect on vocal attack time (VAT) in adult Cantonese speakers, with males produced greater VAT values than females (Ma et al., 2012). The present study aims to investigate the effect of tone on VAT in Cantonese-speaking children. Sound pressure (SP) and electroglottographic (EGG) recordings were collected from 55 native Cantonese-speaking children. 26 six-year-old and 29 nine-year-old children were asked to read aloud six monosyllabic or disyllabic words which contained all the Cantonese tones. One word was presented at the same time and children were asked to read the word immediately after the presentation. Results revealed significant differences between some contour tone (tone 2 and tone 4) and level tone (tone 1) pairs. Age and gender showed no significant effect on VAT values. Children demonstrated a clear different VAT profile compared with Cantonese adult speakers. The results support the idea that contour tones require more complicated prephonatory laryngeal settings. Different VAT patterns between children and adults suggest that they adopt different laryngeal adjustment strategies during phonation onset.

12
Reliability of professional and naive listeners on perceptual evaluation of different types of voice samples in children
Ma Kam Wa Jessica

This study investigated the effects of speech contexts and professional background on reliability of perceptual voice evaluation in children. Two groups of listener were recruited. The first group comprised of 10 speech therapists with 1 to 13 years of experience (Professional Group). The second group comprised of 20 naive listeners (Naïve Group). Both groups of listeners were asked to rate perceptually the severity levels of voice samples of 40 children speakers (16 normal, 9 mildly dysphonic, 9 moderately dysphonic and 6 severely dysphonic) on three vocal parameters (roughness, breathiness and overall severity). For each child, there were three types of voice samples (sustained /a/ prolongation, sentence and short passage). Intraclass correlation (ICC) was calculated to estimate intra- and inter-rater reliability of perceptual voice evaluation by the two groups of listener. Higher rater reliabilities were obtained 1) from passage reading, and 2) by professional listeners. Further investigation on the rater reliabilities from passage reading and from conversational speech is recommended.

Keywords: reliability, children, speech context, vocal parameter, severity, professional listeners, naive listeners
13
Phonological Short-term Memory Capacity and Non-Adjacent Dependency-Learning
Mo Wing Yi Yoyo

This study investigated the relationship between phonological short-term memory capacity and non-adjacent dependency-learning. Forty university students were exposed to four-element strings in which the first element was dependent to the last element. Participants were then tested with a discrimination task in which they were required to discriminate the trained dependencies from the untrained ones. Participants were also tested on their phonological short-term memory capacity and nonverbal intelligence. Results demonstrated that the performance of the discrimination task was positively correlated with the phonological short-term memory capacity. The study suggested that the non-adjacent dependency-learning performance increased with the phonological short-term memory capacity providing implication on typical and atypical language acquisition.

14
Perception of English Vowels as a Foreign Language of Hong Kong Cantonese Secondary School Speakers
Ng Shuk Ki Suki

This dissertation reports on the results of a research study that investigated the perception of English vowels by native Cantonese speakers who are learning English as a foreign language (EFL) as well as the applicability of the predictions of the Perception Assimilation Model (PAM) to foreign language perception by Hong Kong Cantonese EFL learners. Thirty-one local secondary school students participated in a perception test to discriminate and identify English minimal pairs. The results affirm the hypothesis of the PAM on the perceptual identification of different types of minimal pairs. The results also call for the usage of explicit English phonological training in Hong Kong Education to facilitate English acquisition.
15
The perception of English vowels by native Cantonese English as a foreign language primary school students
Pang Hiu Wa Bibi

This study investigated the perception of English vowels in Cantonese speakers who are beginning learners of English as a foreign language (EFL) in reference to the Perceptual Assimilation Model (PAM). Thirty-one primary school students participated in a perception study that required them to discriminate and identify English minimal vowel pairs. It was founded that Cantonese EFL learner’s vowel perception can be predicted by the similarity of spatial proximity of constriction locations between English vowels and Cantonese vowels. The study also provides support for the PAM. Further research is needed to include EFL learners from different age groups and at different English proficiency levels.

16
Perception of Cantonese Initial Consonants in Single Words in Noise
Tse Yun Yi Cathy

This study investigated the effect of real-life noises (i.e., traffic noises and restaurant noise) and synthetic noises (i.e., speech-shaped noise and ten-talker babble) on the perception of Cantonese initial consonant with varying manner and place of articulation. Sixteen native Cantonese participants identified the 19 initial consonants under quiet condition and the four noise types with 0 dB and -6dB signal-to-noise ratios. Results showed that Cantonese consonant perception difficulty in real-life noises could be predicted from synthetic noises. Ten-talker babble had the greatest masking effect on Cantonese consonants. Among the different manner and place of articulation, nasals and the consonants with more anterior place of articulation were the most difficult to perceive in noise.
17
Relative contributions of vowels and consonants in recognizing isolated Mandarin words
Wong Lok Yi Michelle

This study investigated the relative contributions of vowels and consonants in recognizing isolated Mandarin words. Nineteen normal-hearing native speakers of Mandarin were recruited and were asked to recognize isolated Mandarin words with different proportions of consonant or vowel segment preserved. The accuracy in recognizing the isolated Mandarin words, phonemes, and tones were scored. It is found that there is a greater contribution of vowels than consonants to isolated word recognition in Mandarin, which is different from previous outcomes in English. Possible reasons for this language difference in isolated word recognition were discussed. Contribution of consonant-vowel transitional boundary to isolated word recognition in Mandarin was also examined. It is found that the word recognition performance improves with increased amount of consonant-vowel boundary information presented.

18
Perceptual contribution of vowels to Mandarin sentence intelligibility under conditions of spectral degradation
Wong Wai Kwan Sharon

A recent study showed a vowel advantage over consonant to sentence intelligibility in Mandarin. Considering the fact that many important acoustic cues for sentence intelligibility are contained in the vowel segment, the present study investigated the effect of spectral degradation and its interaction effect with vowel duration on Mandarin vowel-only sentence intelligibility. Three types of spectrally degraded stimuli, including fundamental frequency flattened ($F_0F$), sine-wave synthesized (SWS) and noise-vocoded (NV) vowel-only sentences, were generated. Different proportions of vowel centers were preserved by using a noise-replacement paradigm. Listening experiments showed that fundamental frequency contour only had a minimal effect to vowel-only sentence intelligibility, while harmonic cues had a more notable effect. Intelligibility of NV sentences was significantly lower than that of SWS sentences, suggesting other acoustic cues such as formant frequency information contribute to the vowel advantage when harmonic cues are discarded. Discarding vowel edges had a significantly negative effect on vowel-only sentence intelligibility under conditions of spectral degradation. The present study supports emphasis on the preservation of harmonic cues and vowel duration in speech processing strategies.
The Effect of Whole-body Vibration on Phonation
Yeung Sze Ki Sharon

This study investigated the effect of whole body vibration (WBV), set at 30% intensity at 5 Hz and 15 Hz, on phonation with vocal fatigue. Thirty vocally healthy participants were recruited and randomly divided into three groups: received 5 Hz vibration (low frequency group-LFG), received 15 Hz vibration (high frequency group-HFG) and no vibration (control group-CON). All participants were first asked to sing for at least 95 minutes so that vocal fatigue was induced. Participants in the LFG and HFG were then exposed to WBV for 20 times, which each lasted for 30 seconds and, with 30 seconds of rest in between vibrations. Participants in the CON were asked to have vocal rest for 20 minutes. All subjects were required to measure their maximum phonation time (MPT), maximum frequency in a voice range profile and recording a speech task for measuring their vocal attack time (VAT) before and after the vibration. Results demonstrated that MPT in LFG had significant increased following the vibration. This finding suggested that WBV could bring improvements to phonation and respiration coordination.
Plenary 5 - Student Presentation III

Oral Abstracts

14:30 - 14:40
Effects of Energetic and Informational Masking on the Perception of Cantonese Tones in Monosyllabic Words
Chan Sik Conroy

This study aimed to examine the effects of energetic masking and informational masking on Cantonese tone perception, the differential pattern that noise affects perception of the six Cantonese lexical tones, and the factors determining the effectiveness of masking on pitch perception. Four types of noise, including ten-talker babble, two-male-talker babble, two-female-talker babble, and speech-shaped noise, were used to represent conditions involving various amounts of energetic masking and informational masking. Two signal-to-noise ratios were employed for each type of noise. A quiet condition served as control. Twenty university students (8 male and 12 female) participated in the study. Each participant listened to and repeated Cantonese monosyllabic words in quiet and noise conditions respectively and the experimenter recorded the tones. The result showed that (1) Cantonese tone perception was largely prone to the combined effect of energetic masking and informational masking and it was more adversely affected by energetic masking than informational masking; (2) the effect of noise was more significant on contour tones than level tones, suggesting that, in noisy environment, noise exerted a larger effect on perception of pitch change than that of pitch level; (3) the masking effect of babble noise on pitch perception increased with the number of masker talkers.

14:40 – 14:50
Perceptual evaluation of voice quality change using paired comparison method
Cheung Yik San Sam

This study investigated the inter-rater and intra-rater reliability of ratings in evaluating voice quality change of a patient using a paired comparison method with a seven-point equal appearing interval scale. Thirty-one naïve listeners, who had no prior perceptual training, and three expert listeners, who had at least five years experience in perceptual voice evaluation, completed a perceptual rating task using the paired comparison method. Results showed that expert listeners achieved a moderate inter-rater reliability (ICC = 0.529) and naïve listeners achieved a fair inter-rater reliability (ICC = 0.347). Intra-rater reliability for expert listeners was significantly higher than naïve listeners (U = 10.0, z = -2.22, p < .05, r = −0.380). The findings indicated that paired comparison method could be a reliable method for expert listeners in detecting perceptual voice quality change. However, naïve listeners who had no previous perceptual training, may not give as reliable ratings using paired comparison method.

Keywords: perceptual voice evaluation, paired comparison, naïve listeners, expert listeners
14:50 – 15:00
Effect of logographeme length on reading in Chinese: evidence for logographeme representation using event-related potentials
Sar Hiu Ching Venus

In the investigation of writing errors of children and Chinese patients with dysgraphia, logographemes have been argued to be one of the core units of representation within a character (e.g., Han & Bi, 2009; Law & Leung, 2004). To verify whether the existence of logographeme representation occurs in reading, character frequency (high vs. low) and logographeme number (3 vs. 6) were manipulated, whilst controlling for visual complexity (i.e., stroke number), in an event-related potential (ERP) lexical decision task. Results indicated that latency for characters with 3 logographemes was shorter than ones with 6 logographemes. ERP findings revealed sensitivity to the number of logographemes present in a character at the P100 component whereby characters with fewer logographemes evoked a smaller P100 component particularly in the right hemisphere. The logographeme number effect was also found at the N170 component with greater negativity elicited for characters with 3 logographemes, but this was only constrained to low-frequency characters. No effects were found at P200 or N400 components. This study demonstrates neural sensitivity to logographeme representations at the early stages of character recognition, and proposes including logographeme representation between stroke and radical units in models of Chinese character recognition (Perfetti, Liu, & Tan, 2005; Taft & Zhu, 1997).

Key words: Logographemes, Character recognition, P100, N170, ERP

15:00 – 15:10
Type and token frequency effects of logographeme in Chinese character recognition: An event-related potential study
Chua Lok Lam

This study aims to provide evidence supporting the existence of logographeme as a unit of representation during Chinese character recognition. Radicals have long been considered a basic unit in Chinese character recognition. However, in studies of dysgraphic patients, writing errors in characters could not be regarded as radical level errors but were considered logographeme level substitution errors (Law & Leung, 2000; Han, Zhang, Shu & Bi, 2007). To assess whether logographeme also affect the recognition process as found in writing studies, logographeme type frequency (high versus low) and logographeme token frequency (high versus low) were investigated using an event-related potential (ERP) lexical decision task. An interaction between logographeme type and token frequency was found at the occipital N170 component with greater negativity in high type-low token frequency and low type-high token frequency logographemes. Low logographeme type frequency also showed greater negativity at the N400 component. No logographeme effects or interactions were found in the P100 and P200 components. This study provides evidence supporting the existence of logographeme as a unit in Chinese character recognition and that logographemes are activated during orthographic processing stage and perhaps during lexical-semantic retrieval.
15:10 – 15:20
The effects of lexicality, regularity and consistency in L2 Chinese learners in delayed naming and lexicality judgment: An ERP study
Mo Kwan Nok Jacky
This study predominantly examined the regularity and consistency effects during word recognition with second language (L2) Chinese adult readers using event-related potentials (ERPs). Sixteen native alphabetic script readers learning Chinese as a late-acquired L2 with reading proficiency of Chinese reaching local Primary 4 level completed a lexical decision (LD) task and a delayed naming (DN) task. ERP results showed that effects of regularity occurred at P200 in LD and on right hemisphere only where irregular characters elicited greater positivity than regular characters. Null effects of consistency were noted in both LD and DN. This suggests that, in Chinese, regularity and consistency construct distinctly and operate under different mechanisms with different neural correlates. In addition, null phonological effects were observed in DN. The study also suggests that the access to phonological information from print is subject to task demands as well as reading proficiency. Besides, L2 Chinese readers followed a similar developmental ERP trajectory of native Chinese-speaking Grade 4 children and adopted an accommodation pattern in developing orthography-to-phonology knowledge in Chinese reading.

Key words: Phonological regularity, phonological consistency, Chinese, delayed naming (DN), lexical decision (LD), event-related potential (ERP), second language (L2) learning

15:20 – 15:30
Relationship between tone perception and cognitive functions of attention and working memory among normal native speakers of Cantonese
Ho Lok Yee Sabrina

This study investigated the relationship between tone perception and cognitive capabilities of attention and working memory in the auditory and visual domains among normal speakers of Cantonese. Fifteen near-mergers (i.e. poor perception of T4/T6 but good production of all lexical tones in Cantonese), and 20 controls (i.e. good perception and production of tones) participated in this study. The Test of Everyday Attention (TEA), the Attention Network Test (ANT), the test of attentional shifting, the digit span backward test and WAIS-IV visual working memory subtests were implemented. Results showed that Near-mergers performed significantly poorer than Controls in divided attention of both auditory and visual domains. Furthermore, the discrimination latency was found to relate to auditory attention and visual working memory. This suggested a modality independent relationship between tone perception and cognitive abilities. It is hypothesized that attention and working memory play a role in modulating the processing speed of tone perception.
Plenary 6

How Can Destabilized Birdsong Inform Us about Language Loss in Aphasia

Leonard L. LaPointe, Ph.D.
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Francis Eppes Distinguished Professor of Communication Science & Disorders
Adjunct Faculty, College of Medicine
Associate Faculty, Program in Neuroscience
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Co-Director, TMH-FSU Neurolinguistic-Neurocognitive Research Center
Tallahassee Memorial HealthCare

Abstract
What do birds and humans have in common other than we both lay eggs and produce learned vocal utterances and fly around the globe in flocks. Some would say not much relative to the speech and songs we generate. However, the Australian Zebra finch has been the subject of our research at the Florida State University's Program in Neuroscience and Birdsong laboratory for several years. This presentation will be in American English, accompanied by colorful slides, and will entertain the possibility that we may learn something about the dissolution of language in humans by observing the destabilization and recovery of vocal utterances in the Zebra Finch. Perhaps this will inform us about a possible animal model for studying the recovery of vocal utterances in these cute and unique birds.

About the speaker:
Leonard L. (Chick) LaPointe, Ph.D. was raised in the railroad village of Channing, in Michigan’s Upper Peninsula, and received his Bachelor’s degree from Michigan State University and his Masters and Doctoral degrees from the University of Colorado. He chaired the Department of Speech and Hearing Science at Arizona State University for 9 years. He currently occupies an endowed distinguished professor chair, the Francis Eppes Professor of Communication Science & Disorders at Florida State University in Tallahassee. He is on the faculty in the College of Medicine and in the Program in Neuroscience at Florida State University. He served as Annual Visiting Professor in the School of Health Rehabilitation Sciences at the University of Queensland, Brisbane, Australia for 10 years and has served as a Visiting Research Professor at the University of Hong Kong and as an Erskine Fellow at the University of Canterbury in Christchurch, New Zealand, and at Mahidol University Medical School in Bangkok, Thailand. His research focus is in the area of neurological disorders of communication and cognition. He is the founding and current Editor-in-Chief of the Journal of Medical Speech-Language Pathology.
Dr. LaPointe has authored or co-authored 10 books, 40 book chapters, over 100 journal articles, and presented more than 400 papers, lectures, or invited workshops in the United States, the former Soviet Union, several countries in Europe, Japan, Hong Kong, Korea, Australia, New Zealand, Singapore, Thailand, Taiwan, The People’s Republic of China, and the South American countries of Colombia, Argentina, and Brazil. He was recently named as a Distinguished Alumnus from both Michigan State University and the University of Colorado.

He enjoys salt water, music, wine and the culinary arts, reading, writing, humor, and the cultivation of optimism and the absurd.

He is the author of Blood Ice, a novel published by AuthorHouse.com. Recent book publications include a collection of essays entitled Voices: Collected essays on language, laughter, and life (Search Leonard LaPointe at Amazon.com and click on Voices) and undergraduate and graduate textbooks on neurological communication and cognitive disorders.