

4th MSc (Speech & Language Pathology)
Student Research Seminar
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4th MSc (Speech-Language Pathology) Student Research Seminar

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Abstract 1

Impact of Inspiratory Muscle Strength Training on Respiration and Voice Outcomes: A Pilot Study

Anabella Seah Xin Yi

Background: Reduced loudness adversely affects communication in people with Parkinson's Disease (PD). The Lee Silverman Voice Treatment (LSVT) is effective for improving loudness in people with PD. However, LSVT's intensity and participants' reduced respiratory strength, stimulability, cognition and motivation may pose challenges for successful implementation of LSVT. Recently, alternative treatments have been developed to help improve loudness and overall quality of life in people with PD.

Objective: This study investigates the efficacy of Inspiratory Muscle Strength Training (IMST) for improving respiration, voice and speech outcomes in people with PD.

Method: A multiple-baseline case-series design was used to explore the impact of IMST on respiratory muscle strength, voice outcomes, and speech intelligibility in 2 male participants aged 71 (P1) and 77 (P2) years old presenting with stage 2.5 PD (Modified Hoehn & Yahr). Before IMST, both participants were assessed to have reduced loudness, dysphonia (P1 - mild: P2 - moderate-severe) and speech intelligibility. Outcome measures were then assessed immediately after IMST and after a 4-week maintenance period.

Results: P1's pitch range and loudness in sustained phonation improved post-IMST. P2's inspiratory muscle strength, pitch range in sustained phonation and passage reading and voice quality in passage reading improved post-IMST. Gains in P1's loudness (sustained phonation) and P2's overall voice quality (passage) were maintained four weeks post-IMST. EBP Implications: Findings suggest that loudness, pitch range and voice quality may improve post- IMST, but treatment outcomes may vary across patients and tasks. Thorough assessment to determine the locus of impairment and suitability of treatment approaches is crucial in ensuring optimal outcomes.

Key words: Inspiratory Muscle Strength Training, Parkinson's Disease, Voice, Speech

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Abstract 2

Mandarin Cognitive-communication Screener for Mandarin-Dominant Bilingual Adults in Singapore

Shirlyn Hor Yi Wen

Background: The proportion of adults aged more than 65 years are expected to increase in Singapore. Correspondingly, there is also an expected increase in prevalence of age-associated neurodegenerative diseases amongst the older adults. Distinguishing abnormal cognitive decline from age-related cognitive decline remains challenging. The purpose of this study is to establish norms for the Mandarin-cognitive Communication Screener so that it can be used to identify any cognitive-communication deficits in the Mandarin-speaking adults.

Method: 30 neurologically-intact Mandarin-dominant participants, aged 60-80 years with different levels of educational qualifications were assessed with the Singapore Orientation Questionnaire and the Mandarin Cognitive-communication Screener. The Mandarin Cognitive-communication screener comprised 11 subtests assessing attention, memory, executive function, and language. Participants' responses were analysed on parameters such as qualitative and quantitative performance, including accuracy and response time.

Results: The normative data collected for the Mandarin Cognitive Communication Screener from these Mandarin-speaking participants were presented. Significant correlation was found between age and performance in picture description and story recall task. There was also significant correlation between education and both digit span task and digit cancellation task.

Discussion: The Cognitive-communication Screener provides as a useful tool for identifying Mandarin-dominant bilingual adults who may be at risk of cognitive deficits, thereby facilitating effective intervention.

Key words: cognitive-communication, Mandarin-dominant, cognitive decline

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Abstract 3

Social Emotional Processing using 4Ws and 1H questions on PiSCES for Children with Autism

Sellam D/O Rajandran

Background: Children with autism spectrum disorders (ASD) tend to have social communication difficulties. This is often attributed to difficulties processing relevant social and emotional information which underlies appropriate response generation in social situations. However, recent studies suggest that when explicitly cued, children with ASD can process relevant social and emotional information. The current study evaluated the effectiveness of using "Who", "Where", "What", "How" and "Why" questions (4Ws and 1H) as cues to facilitate social and emotional processing for the identification of emotions and causal attributions from pictures with social contexts and emotional scenes (PiSCES).

Method: A case series design (n=2) was employed for two boys diagnosed with ASD, aged 7;2 and 9;0, attending mainstream primary school. The sessions, comprising baseline, intervention, and post-intervention phases, were conducted weekly for up to 10 sessions. Outcomes measured were the number of accurate emotional terms ("how") and causal attributions ("why") post-intervention.

Results & Discussion: Post-Intervention, participants produced a higher number of accurate emotional terms and causal attributions. This suggests that the 4Ws and 1H tool could facilitate social and emotional information processing. This could help clinicians work towards better social skills in children with ASD. Further studies could explore the effectiveness of the tool with a larger set of participants and picture stimuli. Implications for weak central coherence theory of ASD are discussed.

Keywords: autism; social emotional processing; weak central coherence

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Abstract 4

Lupus and Literacy: Profiling Literacy in Adolescents with Systemic Lupus Erythematosus

Ashley Tong Pei Yong

Background: Systemic Lupus Erythematosus (SLE) is a chronic, multisystem autoimmune disease in which the body mistakenly attacks healthy tissue. Researchers have estimated that neurocognitive impairment (NCI) is prevalent in 30-78% of childhood-onset SLE patients, but surprisingly few have measured language ability, and none have assessed literacy skills. Given that critical cognitive and language development occurs in adolescence, NCI is likely to have significant long-term cumulative effects on literacy and academic outcomes.

Objective: To investigate reading, spelling and writing abilities of adolescents with childhood-onset SLE (cSLE).

Method: 10 pairs of adolescents with cSLE and healthy controls were recruited for the study. Using a matched-pairs design, subtests from a formal assessment of literacy, the Woodcock-Johnson IV Test of Achievement (WJ-ACH), measuring decoding skills reading comprehension, reading fluency spelling and sentence formulation were administered.

Results: Adolescents with cSLE demonstrated lower reading ability than healthy controls as measured by the Reading cluster score on the WJ-ACH. Differences in the Word Identification subtest was also approaching significance. For both these differences, small to medium effect sizes were obtained.

Discussion: The hypothesis that adolescents with cSLE will present with literacy difficulties when compared to matched controls was supported with between-group differences on reading ability. Directions for future research and a discussion of this study's limitations are considered.

Keywords: Lupus; Neurocognitive; Neuropsychology; Children; Adolescents; Language; Literacy; Reading; Writing; Cognition

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Abstract 5

Using Sentence Repetition to Assess Language Skills of Bilingual Singaporean Children

Chan Sim Mun

Abstract

Background: Previous research has demonstrated the value of sentence repetition (SRep) tasks as a diagnostic tool in identifying developmental language disorder (DLD) in bilinguals (Armon-lotem & Meir, 2016; Conti-Ramsden et al., 2001). However, only one study has addressed the use of SRep with English-Mandarin bilinguals in Singapore (Lee, 2014). The diagnostic accuracy of DLD in Singapore is complicated by children's exposure to multiple languages as well as the influence of Singapore Colloquial English (SCE).

Objective: To develop an English SRep test and collect preliminary normative data that could facilitate the diagnosis of DLD in bilingual children in Singapore.

Method: 14 English-Mandarin bilinguals who are dominant in English, aged 7 to 8 years, were recruited from local primary schools and assessed on nonverbal intelligence memory, language and the newly developed SRep-E test. A within subject design was used to evaluate the utility of the new assessment tool and a correlation analysis was employed for validation. Results: SRep-E is a valid and reliable measure of multiple cognitive and language skills, including short-term memory and morphosyntax. Quantitative and qualitative analyses provided insight into morphosyntactic development and highlighted typical errors made by children within this age group.

EBP Implications: The locally developed and normed SRep-E, and quick screener can be used by local speech therapists as an effective assessment tool to identify bilingual children with DLD. Pronoun, regular past tense, and the omission of preposition and auxiliary have been identified as potential markers of DLD in Singapore.

Key Words: Sentence repetition, English-dominant, bilingual, primary school children, Singapore, language disorder, morphology, syntax

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Abstract 6

Speech Outcomes in 4-to-6-Year-Old Children with Clefts

Chen Yu Hui

Background: Researchers have suggested significant differences in speech outcomes for different cleft types (Ha, Koh, Moon, Jung, & Oh, 2015; Hardin-Jones & Jones, 2005); however, findings on which cleft types lead to poorer speech outcomes remain inconclusive.

Objective: To investigate the effect of cleft type on speech outcomes (speech severity and intelligibility scores) in 4-to-6-year-old children with non-syndromic cleft palate (with and without cleft lip).

Method: A total of 22 children with clefts aged 4 to 6 years and their respective parent were recruited (N=44). A matched-pairs design was employed to compare speech outcomes between children with cleft lip and palate (n= 11) and children with cleft palate only (n= 11). Speech severity was operationalised as Percentage Consonants Correct (PCC) scores derived from the DEAP Articulation assessment (Dodd, Hua, Crosbie, Homme & Ozanne, 2002). Speech intelligibility was evaluated with (1) clinician rating of a conversational sample, and (2) parent rating on the Intelligibility-in-Context Scale (ICS; McLeod, Harrison, & McCormack, 2012).

Results: Children with cleft lip and palate had significantly poorer PCC scores than children with cleft palate only but no significant differences were observed for parent- and clinician-reported speech intelligibility ratings. Overall ICS and PCC were significantly associated with clinician-reported speech intelligibility. Listener familiarity influenced parents' judgement of their child's speech intelligibility on the ICS.

EBP Implications: Differences in speech outcomes between children of different cleft types may allow for more targeted intervention planning, by informing clinicians which group of children will likely require more intensive speech therapy.

Keywords: cleft type, speech severity, speech intelligibility, children

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Abstract 7

Voice Care Workshops for Teachers: Video and Group Voice Workshops

Sim Miao Fang Cheryl

Background: Teachers have increased risk of developing voice disorders, which can cause serious consequences including occupational absenteeism and occupation changes (Roy et al., 2004). Educating teachers on voice care can help prevent vocal abuse and voice disorders, yet few studies have evaluated the effectiveness of different voice care service delivery models. Objective: To evaluate the relative effectiveness of two preventive voice care workshops compared to a control group for improving preschool teachers' vocal quality: Group VI (content delivered via prepared video), Group GR (content delivered via group workshop) and Group CON (no content delivered during the duration of study).

Method: 54 preschool teachers were recruited and allocated into 1 of 3 groups (VI, GR or CON). Each 1-hour experimental workshop (VI and GR) provided information about indirect (general information about vocal hygiene information) and direct (vocal warm-up exercises and vocal modifications) preventive voice care approaches, and they were conducted within the participants' own preschool settings. Baseline and outcome measures included objective acoustic measures of vocal quality (jitter, shimmer, noise-to-harmonic ratio, maximum phonation time, s/z ratio) and the Voice Handicap Index (VHI), a subjective self-rating scale.

Results: Group GR's functional subscale scores on the VHI showed improvement when compared to their baseline measures, but there were no other significant post-workshop gains in the acoustic measures or in the VHI self-ratings within the 3 groups. No significant differences were observed between the 3 groups when their post-workshop changes were compared against each other.

Conclusion: The effectiveness of both voice workshops was not established in this study, but it may be worth pursuing this line of research with larger sample sizes and with longer duration.

Keywords: Teachers Preventive Voice Care Service Delivery Model, Voice Disorder

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Abstract 8

Utility of an AAC Workshop for Special Education Teachers

Chin Kei Yu Irene

Background: Beukelman and Mirenda's (2013) Participation Model suggest the lack of facilitator skill, limited knowledge and attitude affects the use of augmentative and alternative communication (AAC) amongst people with complex communication needs. As key facilitators, teachers in special education (SPED) settings play a central role in following through the implementation and use of AAC for students with complex communication needs.

Objectives: To evaluate the efficacy of an AAC Workshop aimed at (i) educating SPED teachers on the AAC assessment process, and (ii) positively changing their skills, knowledge and attitude regarding AAC.

Method: A total of 17 teachers with different levels of experience in SPED were recruited to attend a workshop which included an overview of AAC and a walkthrough on how to use an adapted version of an AAC Assessment Form. Pre- and Post-workshop Questionnaires were administered to obtain information regarding teachers' attitudes, knowledge and skills towards AAC. Post-workshop, the teachers each assessed two students using the adapted AAC form, and ratings were then compared to those of Speech Language Therapists (SLTs).

Results and Discussion: SPED teacher's observations agreed to a moderate level with those made by SLTs in general, and there was a positive change in their knowledge regarding AAC, but no significant change in terms of their skills and attitude.

EBP Implications: The AAC Workshop addressed the SPED teachers' lack of facilitator knowledge regarding AAC. The workshop also adds value to the role-release of SLTs to SPED teachers as possible AAC team leader and provide a common language for the team when following through the assessment process and implementation of AAC in a timely manner.

Keywords: SPED, teachers, AAC, assessment

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Abstract 9

Language, Literacy and Communication of Children with Hearing Loss: Case Studies

Chua Jia Yi

Background: Childhood hearing loss presents challenge to the development of language, literacy, social communication and socio-emotional well-being. Thus far relatively little is known about how local deaf signing children acquire these skills as they undergo bilingual-bicultural education within an inclusive education system.

Method: Four children with profound hearing loss (one boy and three girls, aged 6 - 8 years) were assessed on their expressive and receptive language using locally developed assessments tools. A multimodal approach (oral, sign written) was adopted to examine their skills in both sign language and English. Spelling errors were analysed to find out the spelling strategies used by these children. Social communication skills and social-emotional behaviours were also evaluated through school observations and questionnaires completed by their teachers.

Results and Discussion: Despite the heterogeneity in their hearing status, sign experience and home language background, all the participants performed better in Singapore Sign Language (SgSL) than English language. Considerable variability was found in the distribution of their conceptual vocabulary. English vocabulary and grammar were found to lag behind hearing children, while a reliance on visual memorization was noted in their spellings. Overall, language performance and social communication skills appeared to have a positive relationship with their socio-emotional well-being as perceived by their teachers.

EBP Implications: Findings support the use of sign language as the more effective medium for teaching and communication with deaf children in this study. Overall support is needed to develop adequate language and literacy skills to help these children cope with the academic demands in the mainstream school.

Key words: Deaf, Sign Language, Bilingualism, Language, Communication

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Abstract 10

Effect of Singing Therapy on the Voices of People with Parkinson's Disease: A Preliminary Study

Clare Isabel Ee Rui Ying

Background: People with Parkinson's disease (PwPD) typically experience worsening changes to voice, affecting their ability to communicate and decreasing their quality-of-life (QoL; Duffy, 2000). Studies have found improvements in voice and QoL from singing therapy (Elefant, Baker, Lotan, Lagesen & Skeie, 2012). The aim of this study was to investigate the effects of group singing on vocal intensity and respirator support, QoL and self-ratings of mood and voice loudness in PwPD in Singapore.

Method: Seven PwPD were recruited from a local PD community setting and participated in eight weekly group singing sessions. Participants were assessed pre- and post-therapy on maximum phonation time (MPT), dB SPL of sustained phonation and passage reading, Voice Handicap Index (VHI)-30 scores and pre- and post-session self-ratings of mood and voice loudness.

Results: Self-ratings of mood and voice loudness improved significantly after the sessions. Group medians improved on MPT post-therapy for those with milder PD symptoms. No improvements were found for dB SPL and VHI-30 measures.

EBP Implications: Singing therapy may encourage PwPD to attend sessions due to its effect on mood, and help them to feel more confident about communicating due to its effect on their perception of their voice loudness. Group singing sessions also have the potential to improve sustained phonation duration for those with milder PD symptoms.

Keywords: Parkinson's Disease, Singing, Voice, Quality of life

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Abstract 11

Service Delivery for Preventive Voice Care in the Preschool Teacher Population: Video vs. Blended Workshops

Faith Yang

Background: Research has shown an increased prevalence of voice disorders in teachers (Roy et al., 2004). Paying attention to voice care can prevent voice disorders (Bovo et al., 2007) but few studies have evaluated the effectiveness of voice care service delivery models.

Objective: To evaluate the effectiveness of 2 preventive voice care workshops (i.e., video workshop with content delivered via a video, and blended workshop with content delivered via a video and a group workshop) compared to a waitlist control group, for improving preschool teachers' vocal quality.

Method: A total of 59 volunteer preschool teachers were allocated into 3 workshop groups (i.e., video workshop or 'Group-VI', blended workshop or 'Group-BL, and control group or 'Group-CON'). Both experimental workshops lasted about an hour and were conducted within the participants' preschool settings. Each workshop provided information about indirect and direct preventive approaches. Baseline and outcome measures included objective measures (i.e., jitter, shimmer, noise-to-harmonic ratio, s/z ratio, and maximum phonation time) and self-perceptual measures (i.e., Voice Handicap Index scores) of vocal quality.

Results: Statistically significant pre-post improvement was observed on the objective measure of maximum phonation time in the experimental group (i.e., Group-VI + Group-BL), compared to the control group (i.e. Group-CON). Between-group analysis also revealed statistically significant improvement on objective measures of noise-to-harmonic ratio and maximum phonation time with Group-BL's degree of improvement exceeding that of Group-VI and Group-CON.

EBP Implication: Preventive voice care is effective in improving some aspects of vocal quality and the degree of improvement is related to service delivery model.

Keywords: teachers' voice disorder preventive voice care service delivery model

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Abstract 12

Singapore Mandarin Assessments of Language Processing (SMALP): Four Case Studies of Singaporean Adults with Communication Difficulties

Francesca Ooi

Background: Communication difficulties are a common consequence of stroke injury to the brain (Bohra et al., 2015). The Psycholinguistic Assessment of Language Processing in Aphasia (PALPA, Kay, Lesser, & Coltheart, 1992), has proved a useful resource for Speech and Language Pathologists (SLPs) when identifying strengths and weaknesses in the communication profiles of English-speaking adults with acquired communication deficits.

Objective: The aim of this study was to assemble a battery of locally developed and locally normed assessments in Mandarin that are based on a PALPA-type cognitive neuropsychological model in order to gauge clinical utility for older adults with communication difficulties.

Method: Using a series of case studies, four Mandarin-dominant adults (aged between 69 and 85 years) with communication difficulties were assessed using the newly assembled Singapore Mandarin Assessments of Language Processing (SMALP) battery. The subtests covered all four modalities: speech, language, listening, and central auditor processing.

Results: Profiles of four participants were completed based on their performance on the SMALP. The SMALP appears useful for identifying the loci of processing deficits and the different patterns of breakdown that vary across participants.

Conclusion: The SMALP will enhance assessment and intervention planning for adults in Singapore who speak Mandarin and have sustained communication difficulties

Keywords: Communication deficits, Language assessment

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Abstract 13

Malay Cognitive-Communication Screener (MCCS) for adults with Acquired Brain Injury (ABI) - A Normative Study and an ABI Case Study

Grace Lai En Yi

Background: Cognitive-communication screeners are used to identify deficits in patients with ABI to facilitate rehabilitation. A cognitive-communication screener (Low, 2016) with normative data is available for English-speaking adults, but there are no normative data for the Malay version.

Objectives: To (1) establish normative data for Malay-speaking adults in Singapore, taking into account the possible effects of age and education (2) evaluate whether the Malay version of the screener is sufficiently sensitive for detecting cognitive deficits in Malay-speaking ABI patients.

Method: Norms: Two cohorts (aged 40-60, 61-80) of neurologically-intact Malay-speaking Singaporean participants were recruited and assessed on the Malay Cognitive-Communication Screener Malay (MCCS). Case Study: The progress of Mdm. E (female, aged 63), an ABI patient with cognitive deficits following stroke was tracked using the MCCS from the acute to post-acute stage (12 weeks after first assessment).

Results: The normative data was split into two cohorts. Significant differences were revealed on the MCCS performance for neuro-typical adults for Education but not Age. For Mdm. E's case changes in cognitive status were observed over time, and were broadly consistent with the severity of ABI.

EBP Implications: The MCCS appears to be a sensitive tool for detecting cognitive deficits and tracking cognitive changes in ABI patients.

Keywords: cognitive, communication, Malay, Singapore

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Abstract 14

Lee Silverman Voice Therapy for Individuals with Multiple System Atrophy: Case Series Study of the Treatment Effects on Speech and Voice Functions

Ian Shen Chuanfa

Background: Multiple System Atrophy (MSA) patients often have severe and debilitating speech and voice impairments but treatment options are limited. Lee Silverman Voice Treatment (LSVT) is an effective treatment for dysarthria in many neurodegenerative diseases. In this study, its treatment efficacy on speech and voice impairments in MSA patients was evaluated.

Method: A multiple-baseline single-case design was used to evaluate the efficacy of LSVT on the speech and voice functions of two male participants who presented with severe dysarthria secondary to MSA. Loudness, fundamental frequency variability, maximum phonation time, speech intelligibility and functional communication outcome measures were assessed pre-, post-LSVT and 4 weeks after LSVT to determine treatment efficacy.

Results & Discussion: P01 showed significant improvements in loudness in sustained phonation and speech tasks up to the sentence level, while P02 showed mainly improvements in maximum phonation time and respiratory-phonatory control post-LSVT. However, both participants did not show improvement in speech intelligibility and functional communication, likely secondary to the baseline severe dysarthria.

EBP Implications: Findings suggest that LSVT is effective for improving the acoustic performances of MSA patients with severe speech and voice impairments. However, generalisation of the gains to intelligibility and functional communication may be difficult.

Keywords: Multiple System Atrophy, Lee Silverman Voice Treatment, Communication deficits, Dysarthria

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Abstract 15

Morphosyntax Development in English of Bilingual Preschoolers in Singapore

Kerensa Chew Maine

Background: Assessing bilingual children in Singapore is a challenge with the presence of SCE (Gupta, 1999), limited locally-developed assessments and limited normative data (Brebner, 2002; Lee et al., 2013). Identification of language features and norms for the local population is important for assessing and diagnosing language impairment accurately. Language sampling has shown usefulness in identifying morphosyntax of young children (Horton-Ikard, 2010) and as a tool to holistically assess a bilingual child's languages in a complex linguistic environment.

Objective: To establish normative data on English morphosyntax development for English-dominant bilingual children through conversational language sampling.

Method: 20 typically-developing 5-year-old L1-English L2-Mandarin bilingual preschoolers were recruited and screened for non-verbal IQ using WPPSI™-IV (Wechsler 2012) and single-word proficiency (Rickard Liow & Sze, 2009; Lee et al., 2013). Expressive language samples were elicited using a picture description task showing a familiar local scene.

Results & Discussion: 10-minute language samples found morphosyntactic markers obligatory in both SSdE and SCE were acquired by participants. Optional structures in SCE, i.e., s plurals, s possessive, copula, were used with fair accuracy, but not third person singular, auxiliaries, irregular and regular past tense.

EBP Implications: Language sampling is a useful tool that clinicians can include in a comprehensive assessment of a bilingual child's language abilities. Norms for morphosyntax development can provide better understanding of typically-developing language and develop markers sensitive to detect language impairment.

Key words: bilingual, morphosyntax, language development, English, SCE

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Abstract 16

Singapore Normative Data for the Test of Masticating and Swallowing Solids (TOMASS) to Support Clinical Management of Dysphagia

Laavanya Paramasilvam

Background: Objective measures of swallowing are valuable clinically because they increase the diagnostic accuracy provided normative data are available. The Test of Masticating and Swallowing Solids (TOMASS), which was developed in New Zealand for a swallowing impairment study to assess the efficiency of solid bolus ingestion, has the potential to identify impairments in swallowing (Huckabee et al., 2018). The objective of this study was to establish two sets of TOMASS norms when eating (speeded and normal paced) a local biscuit (cracker) by age and gender for Singaporean adults.

Method: Participants were 80 healthy Singaporeans, aged 21-60 years, stratified by age and gender. In counterbalanced order, each participant was instructed to ingest a readily available local biscuit twice under two different instruction conditions: (1) Eat as quickly as is comfortable; (2) Eat as you normally would.

Results: Information on the number of bites, swallows and masticatory cycles, as well as total time taken to eat each cracker, were recorded for each participant. Age and gender were found to influence the TOMASS measures within the Singapore population such that older adults, especially females, tended to take more bites, swallows, masticatory cycles, as well as time to ingest the two biscuits under both conditions.

Conclusion: The TOMASS test will provide local clinicians with a simple but objective method to assess solid bolus ingestion, and thereby aid their management of dysphagia.

Keywords: TOMASS, Singapore normative data dysphagia management

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Abstract 17

AAC Workshop: Its Utility for Parents of Children in Special Education

Lai Weijean

Background: Parents are important in a child's augmentative and alternative communication (AAC) process; however often there are barriers to their participation. These barriers relate to opportunity barriers in the Participation Model (Beukelman & Mirenda, 2013) such as attitude, facilitator knowledge, and facilitator skill.

Objective: To evaluate the utility of an AAC workshop in addressing opportunity barriers in, and providing support for parents of AAC users

Method: Five parents of children in Special Education (SPED) attended a 3-hour AAC workshop comprising of an AAC overview and a walkthrough on using an adapted AAC Assessment Form. The Assessment Form was used by parents to provide information regarding their children. Parent Questionnaires and interview questions were used to obtain parents' perceptions regarding AAC.

Results: The AAC workshop was found to elicit positive changes overall, as well as in parents' attitude and perceived skills, but not in perceived knowledge. Qualitatively parents reported gains in knowledge. The Assessment Form provided parents with a framework for thinking about their children's communication. Information from the Assessment Form revealed fair to moderate agreement between parents, SPED teachers, and speech and language pathologists.

EBP Implications: The AAC workshop was useful in addressing potential opportunity barriers, and demonstrated the importance of providing support to parents.

Keywords: AAC, parents

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Abstract 18

Verbal Abilities in Adolescents with Systemic Lupus Erythematosus

Lam Yi Wei Yvette

Background: Systemic lupus erythematosus (SLE) is a chronic multi-system autoimmune disease associated with cognitive and language deficits (Hanly et al. 2007; Musca! & Brey 2010). Childhood-onset SLE (cSLE) is typically diagnosed during mid-adolescence when academic demands are high, yet its effects on language are largely unexplored.

Objective: To compare the verbal abilities of adolescents with cSLE with those of their healthy peer group.

Method: Using a matched-pairs design, ten adolescents aged between 11 to 18 years with cSLE and ten healthy control participants matched on age, gender and languages spoken were assessed on cognition and language. Results were compared between groups. Non-verbal cognitive abilities were assessed using the Rey-Osterrieth Complex Figure drawing (ROCF) while language abilities were assessed using the Comprehensive Assessment of Spoken Language (CASL) and Bilingual Language Assessment Batter (BLAB). Potential confounding emotional and behavioural factors were measured by parent and child questionnaires.

Results: Adolescents with cSLE presented with relative deficits in higher-order language skills as compared to healthy peers.

Discussion: This study contributes to the current understanding of how cSLE affects language. Results suggest earlier and regular language screening and therapy provision for children with cSLE may be indicated.

Keywords: language, lupus, systemic lupus erythematosus, adolescents, children

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Abstract 19

Mandarin Sentence Repetition for Assessing Language in Bilingual Children

Lim Yu Jia

Background: There is a lack of Mandarin language assessments for Singapore bilingual children, especially for sentence-level productions. Sentence repetition (SR) involves multiple language processes (semantics, morphosyntax, and phonological short-term memory) and so SR tests are potential clinical markers for the diagnosis of language disorders (Conti-Ramsden et al., 2001). To date, there is one study of SR in Mandarin on bilingual children in Malaysia (Woon et al. 2014) and none in Singapore.

Objective: To develop a Mandarin SRep test (SRep-M) for language assessment and collect preliminary normative data from Mandarin-dominant bilingual children living in Singapore.

Method: 12 Mandarin-dominant bilingual children (aged 6;6 - 7;5) were recruited for the collection of preliminary normative data. The 42-item SRep-M was developed with reference to work on Mandarin morphosyntax development (e.g., Cheung, 2008). Sentence length and grammatical complexity were manipulated.

Results & Discussion: SRep-M has internal reliability and external validity as measure of Mandarin-dominant children's language abilities. Error analysis on the SRep-M also provides useful information about the phonological short-term, memory, receptive and expressive language abilities in bilingual children.

EBP Implications: SRep-M will be a useful clinical tool as it measures several components of language and is easy and quick to administer. A shortened test can also be used as a screening tool by teachers to facilitate referrals to speech-language pathologists.

Key words: Mandarin language assessment, sentence repetition, bilingual

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Abstract 20

Written Language in Mandarin-dominant Older Adults with Hearing Loss

Low Mei Yun, Liyana

Background: Recent research suggests a relationship between age-related hearing loss and cognitive impairment in older adults (Loughrey, Kelly, Kelley, Brennan & Lawlor 2017). However, the impact of such a relationship on written language abilities in older adults has yet to be explored. The need to examine written language skills becomes evident when considering the increase in internet and social media usage among older adults.

Objective: To investigate the relationship between hearing loss cognitive abilities and written language skills in Mandarin-L1 older adults in Singapore using a cognitive neuropsychological model of language processing.

Method: Twenty-three literate Mandarin-dominant participants with normal hearing and hearing loss were recruited. Participants, aged 60 to 80, were assessed using a locally developed Chinese Reading and Spelling Assessment comprising three subtests: word naming, lexical decision task and spelling. Semantic picture matching, written word to picture matching and written picture naming tests were administered to determine possible semantic impairment. Hearing loss was measured by pure-tone audiometry while cognitive abilities was measured using the Montreal Cognitive Assessment.

Results: There is a significant negative correlation between hearing loss and written picture naming accuracy. A borderline significant positive association between cognition and spelling was also found.

Discussion: When assessing communication abilities, speech and language therapists need to be cognizant of the impact of hearing loss and cognition on written language in older adults.

Key Words: Adults with Hearing Loss, Presbycusis, Cognitive Impairment, Reading, Spelling, Mandarin, Chinese, Written Word Processing

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Abstract 21

Assertiveness of School-Age Children with Cleft Lip and/or Palate in Conversations

Ng Hui Jing Carol

Background: Studies that examined pragmatics of children with Cleft Lip and/or Palate

(CL/P) suggested less assertive profiles in conversational participation when compared with peers. They proposed that it could be a result of an unwillingness to communicate, which indicates negative speech-related attitudes. Statistically significant positive relationship was found between articulation and conversational assertiveness. Statistically significant positive relationship was also found between articulation and speech-related attitudes. The present study investigated the relationships between (a) articulation, (b) conversational assertiveness and (c) speech-related attitudes.

Method: Twenty-one school-age children with CL/P were evaluated on measures of articulation, assertiveness in conversational participation and speech-related attitudes. Correlations were performed between measures of the three variables. Preliminary normative guidelines were provided as reference for clinicians.

Results: Significant positive associations were found between speech intelligibility and conversational assertiveness as well as between speech-related attitudes and single word articulation performance. No statistically significant associations were found between speech-related attitudes and conversational assertiveness.

Discussion: Methods and importance of examining conversational participation in school-age children and adolescents with cleft was discussed. Future research could investigate the direction of relationships and possible factors influencing conversational assertiveness to guide clinicians in the management of school-age children and adolescent with CL/P.

Keywords: cleft lip and/or palate, conversational assertiveness, school-age children

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Abstract 22

Malay Morphosyntactic Development of Malay-L1 Pre-schoolers in Singapore

Nuraidah Mariko Binte Pathorr Rahman

Background: Language sample analysis (LSA) is one of the requisites of a comprehensive language assessment. To date, there are no norms for Malay language development in Malay-L1 English-L2 Singaporean children, and there is a lack of available standardized Speech and Language Pathology assessment tools to aid in the identification of language difficulties.

Objective: To establish norms that will accurately reflect the Malay morphosyntactic development of typically-developing Singaporean Malay-L1 English-L2 pre-schoolers, using detailed LSA.

Method: 10 Kindergarten 1 and 7 Kindergarten 2 typically-developing Malay-L1 English-L2 bilinguals (aged 4;3 to 6;8 years) were recruited. Language samples in Malay were collected from each child by eliciting descriptions of pictures and a short informal conversation. Responses were audio-taped, transcribed, and collated using pre-determined categories in a Microsoft Excel spreadsheet.

Results & Discussion: The preliminary normative data suggested that Malay-L1 English-L2 pre-schoolers were developing verbal structures using negation and producing longer and more complex utterances using possessive markers and cause-and-effect conjunctions. No significant differences were found between the K1 and K2 children in the production of morphosyntactic features and performance on semantic and syntactic measures. No significant associations were found between the semantic and syntactic measures and the vocabulary assessments. Two atypical language samples were analyzed and discussed. Theoretical and Clinical Implications: The normative data represents a step forward in addressing the gap in the literature for Malay morphosyntactic developmental milestones that could be used to support clinicians in the early identification of language difficulties.

Key Words: Malay, Bilingual, Morphosyntax Language Sample

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Abstract 23

Assessing Language in Bilingual Children with Dyslexia

Seet Xian Hui

Background: There have been inconsistencies in the literature on whether children with Developmental Dyslexia (DD) have grammatical deficits on top of their written language impairments (Altmann, Lombardino, & Puranik, 2008; Ramus, Marshall, Rosen, Lely, & Hall, 2013). In Singapore, the bilingual environment and influence of Singapore Colloquial English (SCE) have made it especially challenging to identify language difficulties.

Objective: To obtain the morphosyntactic profile of children with DD, using a newly developed English sentence repetition (SRep-E) test and to compare them to typically developing (TD) age peers.

Method: 10 Primary 1 - 2 children (aged 6;9 - 8;5 years) with DD who are English-Mandarin bilingual and English-dominant, were matched on their age and non-verbal intelligence to a control group of 10 TD peers. The children were assessed on their non-verbal intelligence (Ravens Colored Progressive Matrices), verbal short-term (Digit Forward) and working memory (Digit Backward), as well as oral (CELF-4 UK Core Language subtests, BLAB English receptive vocabulary, SRep-E test) and written language abilities (WRAT-4 reading and spelling subtests).

Results & Discussion: When compared to TD children quantitative and qualitative analyses of performance on the SRep-E test revealed group differences in the overall score as well as number and type of errors, providing support for the view that there are underlying morphosyntactic deficits common in children with DD. A model reflecting the non-phonological deficits of children with DD is proposed.

EBP Implications: This study identifies areas for intervention with children who have DD in Singapore, and provides evidence for the SRep-E test as a potentially useful oral language screener.

Keywords: dyslexia, developmental language disorder bilingual, sentence repetition

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Abstract 24

Use of Autobiographical Sentence Generation to Treat Anomia: Case Studies of Two Mandarin-Speaking Bilinguals with Primary Progressive Aphasia (PPA)

Tan Li-Wun Kathleen

Background: Naming treatments can improve confrontational naming performance in patients with Primary Progressive Aphasia (PPA), but generalisation to functional communication remains a challenge. There is also limited evidence for transfer of gains to an untreated language for bilinguals. Sohn Chaird, Rickard Liow and Jalil (2016) reported promising results for generalisation to conversation in two English-speaking patients with mild PPA, following treatment involving autobiographical sentence generation (i.e., production of sentences related to one's personal life).

Objective: To evaluate the effectiveness of autobiographical sentence generation in facilitating improvements beyond picture-naming to discourse for bilinguals in the treated and the untreated language.

Method: Two English (L1)-Mandarin (L2) bilingual PPA patients who had moderate to severe language impairments were recruited: AB, a 51-year-old female and DC, a 54-year-old male. Both underwent 12 treatment sessions in Mandarin over six weeks, with homework provided after each session. Each session lasted about two hours for AB and 45 to 60 minutes for DC. Participants were assessed in English and Mandarin across three baselines, immediately post-treatment and three weeks post-treatment. Outcome measures included scores for picture-naming as well as performance on a picture description task and in conversation.

Results and Discussion: AB and DC both showed post-treatment improvements for picture-naming of Mandarin treated words, but generalisation to conversation was limited. AB showed improved speaking informativeness and efficiency during picture description. Neither participant showed cross-language transfer of treatment effects.

Implications: Results suggest that for bilingual participants with PPA with moderate to severe language impairments, autobiographical sentence generation may have limited potential to bring about improvements in functional communication in the treated language. The transfer of naming gains to the untreated language could likewise be constrained by the severity of patients' language deficits and also the degree of linguistic similarity between the treated and untreated language.

Keywords: Primary Progressive Aphasia, Language Rehabilitation, Anomia, Bilingualism

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Abstract 25

Expiratory Muscle Strength Training for Speech in Parkinson's Disease: A Pilot Study

Tan Liu Yan Claire

Background: Parkinson's disease (PD) is a progressive neurological disorder that results in significant speech deficits. While expiratory muscle strength training (EMST) has been shown to enhance speech function at the physiological level (e.g., Darling-White & Huber, 2017), improvements at the activity and participation levels have not been well-established in existing literature. The aim of the study was to evaluate the effectiveness of EMST on functional speech outcomes in individuals with PD.

Method: Two male participants with PD-related speech deficits, aged 61 and 70, were recruited. A multiple-baseline single-case experimental design was employed, with measures taken over three baselines, as well as post-treatment and post-maintenance assessments. Participants underwent four weeks of EMST, followed by a maintenance phase of four weeks. They were assessed on measures of respiration (peak expiratory flow, maximum inspiratory pressure, and perceptual ratings) phonation (maximum phonation time and sound pressure level), speech intelligibility at word, sentence and conversation levels, as well as responses on a communicative effectiveness and quality of life questionnaire.

Results: Improvements were seen on some measures of respiration, but no substantial gains were observed in terms of phonation and speech intelligibility. However, self-perceptions of communicative effectiveness and quality of life improved over the course of the study.

Conclusion: Using EMST as a stand-alone speech intervention technique for four weeks may have limited effects on functional speech. More research is needed to determine the factors that influence treatment outcomes in EMST, in order to determine if it has clinical utility as an intervention approach for speech deficits in individuals with PD.

Keywords: Expiratory muscle strength training, Speech, Parkinson's disease

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Abstract 26

Norms for the Picture Description Test (PDT) in Malay

Tey Jo Ching

Abstract

Background: Picture description tasks (PDT) used to elicit narrative production for discourse analysis have proved to be useful for detecting cognitive-communication impairment in people with acquired brain injury (ABI). However, without norms on the specific language and population to aid in the diagnostic distinction, clinical utility is reduced.

Aims: To (1) identify which of the four coloured pictures depicting familiar scenes is the most efficient in eliciting the best narrative production in PDT (2) identify which of these four pictures is the most neutral to age and education level, (3) establish norms in Malay on microlinguistic and macrolinguistic measures elicited from the four pictures, and (4) review the clinical utility of the four pictures using a single case study of a Malay-speaking adult with ABI

Method: 43 neurologically-intact Malay-speaking adults aged between 41-60 (younger group) and 61-80 (older group), with no history of cognitive and/or communication deficits were recruited via convenience sampling and asked to describe four coloured pictures depicting local scenes (bus stop, market, kitchen and hall) and answer three questions that require inference and/or problem solving. A patient with ABI were recruited to test the clinical utility of the four pictures.

Results & Discussion: (1) The 'market' picture was the most efficient picture in eliciting narrative production. (2) There were age-group differences in the microlinguistic measures but both age and educational level differences were found in the macrolinguistic measures. For the younger group, norms were developed for five microlinguistic measures and three macrolinguistic measures. For the older group, the sample size was insufficient for quantitative analyses so a description of findings was provided. (3) Case study on Mdm E suggested PDT can be used to assess and detect changes in cognitive-communication impairment.

EBP Implications: This PDT depicting familiar local scenes has potential as a quick and efficient tool for detecting cognitive-communication impairments in Malay-speaking patients with ABI.

Key Words: Cognitive-communication impairment, acquired brain injury, picture description, Malay language

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Abstract 27

Singapore Assessment of Phonological Awareness: English-Mandarin Bilingual Norms

Wanda Wijaya

Background: Phonological awareness (PA) is the knowledge of the sound structures in words (Treiman & Zukowski, 1991). The link between PA and learning to read and write is well-established (Castles & Coltheart, 2004), so assessment of PA development is crucial for early identification of children at risk for later literacy difficulties. Thus far, the majority of existing PA assessments have been developed in English-speaking countries for use with relatively homogenous group of English-monolingual children, so they may have limited reliability and validity for the bilingual population in Singapore. The aim of this study is to develop a locally-appropriate PA assessment tool with accompanying bilingual norms for Singaporean kindergarteners.

Method: 24 Kindergarten 1 children ($M=62.6$, $SD=3.00$) and 30 Kindergarten 2 children ($M=72.9$, $SD=4.30$) were recruited. All participants were English-Mandarin bilinguals. Over 2 sessions, they completed a non-verbal cognitive assessment using the WPPSI-IV block design subtest, a vocabulary assessment using BLAB, and the Singapore Assessment of Phonological Awareness, which includes subtests of word, part-word, or phoneme discrimination, blending, segmenting, deleting, and reading and spelling.

Results: Norms were computed for subgroups based on their performance on the respective subtests of the PA assessment. Significant differences between age groups were found for overall performance and scores for each subtest.

Conclusion: The findings will provide useful preliminary normative data for the development of PA in English-Mandarin bilingual children, which can be used to identify children at risk for later literacy difficulties.

Keywords: Phonological awareness, kindergarten, literacy, bilingual, assessment

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Abstract 28

Perspective-Taking with Thought-Bubbles & PiSCES for Children with ASD

Wong Ci Xin

Background: Children with Autism Spectrum Disorders (ASD) often have deficits in perspective-taking which limit their ability to evaluate emotions and interpret social situations accurately. Thought-bubble training has been shown to improve performance on false-belief tasks (Wellman et al., 2002).

Objective: To investigate the effectiveness of a perspective-taking intervention programme for preschoolers with ASD using 'thought-bubbles' with contextualized pictures.

Method: A small *n* case-series experimental design was developed for 2 girls with ASD aged 5;4 and 5;9. They were guided using thought-bubbles to verbalize the thoughts and feelings of people in the intervention stimuli. The stimuli were drawn from the Pictures with Social Context and Emotional Scenes (PiSCES) database (Teh, Yap & Rickard Liow, 2017), a set of pictures standardized on emotional valence, intensity and social engagement. The social and emotional complexity of the stimuli was increased gradually over eight 1-hour sessions.

Results & Discussion: The number and accuracy of mental state terms as a measure of perspective-taking, increased significantly with generalization to untreated pictures.

EBP Implications: Thought-bubble intervention based on gradated PiSCES pictures with a social engagement construct is an effective training strategy for enhancing perspective-taking skills in children with ASD.

Keywords: Autism Spectrum Disorders, perspective-taking, PiSCES, thought-bubble

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Abstract 29

The Effectiveness of IMST on Dysphagia in Adults with Parkinson's Disease: A Pilot Study

Yao Hui'en, Valerie Sera

Aim: Dysphagia is a frequent consequence of Parkinson's Disease (PD) and aspiration pneumonia is the leading cause of death in PD. Research on dysphagia intervention for people with PD has yielded variable results. The objective of this study is to investigate the effect of Inspiratory Muscle Strength Training (IMST) on swallowing function in people with PD and dysphagia.

Method: Two patients (aged 72 and 78 years) with moderate PD and moderate dysphagia, without untreated cardiac abnormalities and hypertension underwent four weeks of IMST. Swallowing function was evaluated at three baseline sessions, immediately post-IMST, and 4-weeks post-IMST. Outcome of IMST was measured by clinician ratings on New Zealand Index for Multidisciplinary Evaluation of Swallowing (NZIMES) and Penetration-Aspiration Scale (PAS) as seen during videofluoroscopy study (VFSS), Mann Assessment of Swallowing Ability (MASA), and self-ratings on Dysphagia Handicap Index (DHI).

Results: Swallowing function in Participant 1 improved, with lower ratings on the NZIMES, PAS and DHI, and higher ratings on MASA, post-IMST. Participant 2 did not exhibit functional improvements on swallowing but demonstrated small improvements in NZIMES and DHI.

Conclusion: Variable results from IMST may be expected in different individuals due to factors like the severity of PD symptoms and compliance to protocol. Larger scale studies are required for more robust results.

Keywords: Parkinson's disease, dysphagia, treatment, inspirator, muscle strength training, IMST, maximum inspirator pressure, NZIMES, PAS, MASA

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Abstract 30

Speech and Psychosocial Outcomes in Children with Cleft Lip and/or Palate

Yeap Xiao Hui, Celine

Background: Children with cleft lip and/or palate (CL/P) are at risk of speech impairment leading to difficulties being understood. Preliminary studies have suggested a link between having speech impairments and poorer psychosocial functioning in children with CL/P however, further studies are required to substantiate these findings.

Objective: To investigate the relationships between parent- and clinician-reported speech intelligibility speech severity, and child-reported perceptions of speech function and distress. **Method:** Children (8-16 years old) with non-syndromic CL/P (N = 24) and their parent (N = 24) were recruited. Speech intelligibility was rated by (a) clinician, based on a 10-minute conversational sample and (b) parent, via the Intelligibility-in-Context Scale (McLeod, Harrison, & McCormack, 2012). Speech severity (PCC) was obtained using the Diagnostic Evaluation of Articulation and Phonology (DEAP) articulation assessment (Dodd, Hua, Crosbie, Holm & Ozanne, 2002). Children's perceptions were measured using the CLEFT-Q Speech Function and Speech Distress scales (Klassen et al., 2018).

Results and Discussion: Children who reported poorer speech function also reported experiencing greater speech distress. Children's perspectives of speech function and speech distress were significantly related to speech severity but not to speech intelligibility ratings.

EBP Implications: Functional parent- and clinician-reported speech intelligibility measures should be supplemented with objective and patient-reported outcomes to better guide intervention planning. The CLEFT-Q speech function and distress scales are valuable clinical tools to understand psychosocial function related to speech.

Keywords: cleft lip and/or palate, speech intelligibility, psychosocial, children

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Abstract 31

Development of Mandarin Language Tools for Singaporean Elders with Presbycusis: A Preliminary Study

Yong Hui Min Clarice

Background: Research indicates a link between presbycusis (high frequency hearing loss) and cognitive function (Heywood et al., 2017) and auditory comprehension (Lodeiro- Fernandez et al., 2015), but it remains unclear what language processing differences speakers of tonal languages, such as Mandarin, will exhibit.

Objective: To establish normative data for older adults on two newly-devised screening tests in Mandarin, Minimal Pair Assessment (MPA-M) and Sentence Repetition task (SRep-M) and to examine the language processing differences that result from differing hearing acuity against a backdrop of limited screening tools in Singapore.

Method: Twenty-two older adults, proficient in Mandarin and aged between 62-85 years, nine with impaired hearing (IH) functions and 13 with normal hearing (NH) functions were recruited. The MPA-M was designed according to frequency variables - tone, vowels, consonants and the SRep-M task included length and syntactic complexity variables. Both assessments were presented in in three test conditions (binaural, left ear right ear) to examine within-group differences, and error types on both tests were collated and analysed.

Results & Discussion: SRep-M was found to be a more effective tool for identifying hearing loss and demonstrating NH and IH group differences and errors differences compared to MPA-M. Participants' language processes reflected no ear advantages which may suggest the influence of their bilingual experiences.

EBP Implications: SRep-M will be a useful clinician tool to identify patients with hearing loss and further research on hearing loss needs to consider bilingualism.

Keywords: Hearing Loss, elderly, Mandarin, language processing

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