

### 3.3.2.

## Research Papers in the Journals notified on UGC Website

# NISH

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This is to declare that 34 research papers have been published in reputed peer-reviewed national and international scholarly journals with high impact factors during the past 5 years. However, the Rehabilitation Council of India (RCI) is not an institutional member of the University Grants Commission Consortium for Academic and Research Ethics (UGC-CARE). As a result, the majority of publications in our field are not on the UGC-CARE list. The following is a summary:

Sl No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	DOI (Digital Object Identifier)
1	Bibliographic Reference Management Software Awareness Among LIS Professionals in India	Tomy Varghese, Jassimudeen S	LIBRARY	Informatics Studies	April-June 2016	2320-530X	<a href="http://192.168.10.27:8080/xmlui/handle/123456789/1174">http://192.168.10.27:8080/xmlui/handle/123456789/1174</a>
2	Survey of Cognitive Rehabilitation Practices in the state of Kuwait	Fahad Manee, Mohammed S Nadar, Zainab, A. Jasem, Shashidhar R Chavan	OT	Scandinavian Journal of Occupational Therapy	Feb 2016	1103-1128	<a href="https://doi.org/10.3109/11038128.2016.1139176">https://doi.org/10.3109/11038128.2016.1139176</a>
3	Auditory short term memory and academic achievement in normal school going children	Annamma Abraham, Vinitha Mary George & Suja K Kunnath	ASLP	International Journal of Health Science and Research	2016	2249-9571	<a href="https://www.ijhsr.org/IJHSR_Vol.6_Issue.1_Jan2016/66.pdf">https://www.ijhsr.org/IJHSR_Vol.6_Issue.1_Jan2016/66.pdf</a>
4	Capitalizing on technology for developing communication skills in autism spectrum disorder: a single case study	Veena Mohan, Suja Kurian Kunnath, Vineetha Sara Philip, Lakshmi Santha Mohan & Neethu Thampi	NDS	Disability and Rehabilitation: Assistive Technology	2017	1748-3115	<a href="https://doi.org/10.1080/17483107.2017.1413144">https://doi.org/10.1080/17483107.2017.1413144</a>

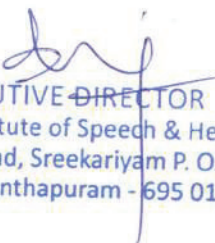
  
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5	Effect of yoga and working memory training on cognitive communicative abilities among middle aged adults.	Namratha, Vinitha Mary George, Gagan Bajaj, Mridula & Jayashree S Bhat	ASLP	Complementary therapies in clinical practice	2017	1873-6947	<a href="https://doi.org/10.1016/j.ctcp.2017.05.007">https://doi.org/10.1016/j.ctcp.2017.05.007</a>
6	Effect of working memory training on cognitive communicative abilities among young- and middle-aged adults	Mridula, Vinitha Mary George, Gagan Bajaj, Namratha & Jayashree S Bhat	ASLP	Cogent Psychology	2017	23311908	<a href="https://doi.org/10.1080/23311908.2017.1416885">https://doi.org/10.1080/23311908.2017.1416885</a>
7	Effect of Age on Strategic Problem Solving Abilities Using an Open Ended Version of the Twenty Questions Task	Gagan Bajaj, Vinitha Mary George, Jayashree S Bhat, Dhanya, Shrunga, Namratha & Mridula	ASLP	Online Journal of Health and Allied Sciences	June 2018	0972-5997	<a href="https://www.ojhas.org/issue66/2018-2-4.html">https://www.ojhas.org/issue66/2018-2-4.html</a>
8	Predictors in the selection of AAC system- An evidence based report on overcoming the challenges	Sita Sreekumar, Suja K Kunnath, Vineetha Sarah Philip	ASLP	Disability, CBR & Inclusive Development	2018	2211-5242	<a href="http://doi.org/10.5463/dcid.v29i1.673">http://doi.org/10.5463/dcid.v29i1.673</a>
9	Perspectives of School Educators in India on Inclusive Education of Children with Autism Spectrum Disorders	Dr. Suja K Kunnath., Lakshmi S Mohan, Sajan Sam Varghese, and Veena Mohan P,	NDS	Language in India	2018	1930-2940	<a href="http://www.languageinindia.com/oct2018/sujaeducationautismfinal.pdf">http://www.languageinindia.com/oct2018/sujaeducationautismfinal.pdf</a>

  
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10	Higher Education for Students with Disabilities in India: Insights from a Focus Group Study	Kunnath SK, Mathew SN	NDS	Higher Education for the future	2019	2348-5779	<a href="https://doi.org/10.1177%2F2347631119840540">https://doi.org/10.1177%2F2347631119840540</a>
11	Exploring the Free Play Patterns of Children with Autism Spectrum Disorders: A Pilot Study	Lakshmi.S. Mohan, Dr Jayashree Shanbal	NDS	Language in India	April 2019	1930-2940	<a href="http://www.languageinindia.com/april2019/lakshmiplaypatternsautism1.pdf">http://www.languageinindia.com/april2019/lakshmiplaypatternsautism1.pdf</a>
12	Play Behaviours of Children With ASD: A Comparison Between Direct Observation and Informant Rating Scale	Lakshmi.S. Mohan, Dr Jayashree Shanbal	NDS	Language in India	June 2019	1930-2940	<a href="http://www.languageinindia.com/june2019/lakshmiplaybehaviourschildrenASDfinal1.pdf">http://www.languageinindia.com/june2019/lakshmiplaybehaviourschildrenASDfinal1.pdf</a>
13	Auditory brainstem response characteristics in spastic diplegic cerebral palsy secondary to periventricular leukomalacia - a single case illustration.	Arya S.S, Divya M, Neethu Mol P. S and Sreebha Sreedhar	ASLP	International journal of health science and research	2019	2249-9571	<a href="https://www.ijhsr.org/IJHSR_Vol.9_Issue.3_March2019/IJHSR_Abstract.046.html">https://www.ijhsr.org/IJHSR_Vol.9_Issue.3_March2019/IJHSR_Abstract.046.html</a>
14	Importance of play in the development of language and social skills- A case Study on twins	Ruth Deborah D, Preethy Susan Reni, Julie Sandra A, Priyanka A	ASLP	International journal of health science and research	2019	2249-9571	<a href="https://www.researchgate.net/publication/335395750_Importance_of_Play_in_the_Development_of_Language_and_Social_Skills_-_A_Case_Study_on_Twins">https://www.researchgate.net/publication/335395750_Importance_of_Play_in_the_Development_of_Language_and_Social_Skills_-_A_Case_Study_on_Twins</a>

  
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15	Integral stimulation and gestural reorganization in the management of childhood apraxia of speech: A case study	Preethy Susan Reni, Ruth Deborah D	ASLP	Research & Reviews: A journal of health professions	2019	2277-6192	<a href="https://doi.org/10.37591/rrjoh.p.v9i1.651">https://doi.org/10.37591/rrjoh.p.v9i1.651</a>
16	"Advancement to higher communicative functions with transition to iPad app - a case report"	Sita Sreekumar, Sangeetha G S, Betsy Mathew.	ASLP	Disability and Rehabilitation: Assistive Technology	2019	1748-3115	<a href="https://doi.org/10.1080/17483107.2019.1629116">https://doi.org/10.1080/17483107.2019.1629116</a>
17	Psychosocial Concerns among Parents of Children with Hearing Impairment	Sita Sreekumar, Rejitha Kumari L, Lekha S Nair, Jumin Mary Joseph	ASLP	Loyola Journal of Social Sciences	July - Dec 2019	0971-4960	
18	Emergent literacy: Knowledge and belief of preschool teachers in Kerala	Anjana, A. V., & Prema, K.S	NDS	Language in India	30- 42 2019	1930-2940	<a href="http://www.languageinindia.com/july2019/anjanaemergentliteracykeralafinal.pdf">http://www.languageinindia.com/july2019/anjanaemergentliteracykeralafinal.pdf</a>
19	Vowel space area in children using cochlear implant	Preethy Susan Reni, Dr. Powlin Arockia Catherine, Abhinaya A	ASLP	Language in India	July 2020	1930-2940	<a href="http://www.languageinindia.com/july2020/preethyvowelspacecochlearimplantfinal.pdf">http://www.languageinindia.com/july2020/preethyvowelspacecochlearimplantfinal.pdf</a>

  
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20	"Preparing, Planning, and Executing a Successful Short-Term Study Abroad Program: A Case Study—Speech, Language, and Hearing Sciences in India	Lata A. Krishnan, Saumya Sundaram, Sita Sreekumar, Spoorthi Thammaiah, and Gita Mitra	ASLP	ASHA Perspectives Journal	July 2020	2381-473X	<a href="https://doi.org/10.1044/2020-PERSP-19-00119">https://doi.org/10.1044/2020-PERSP-19-00119</a>
21	Efficacy of working memory training in middle aged adults	Vinitha Mary George, Gagan Bajaj, Jayashree S Bhat	ASLP	Communication Sciences and Disorders Journal	Dec 2020	22880-917	<a href="https://doi.org/10.12963/csd.20768">https://doi.org/10.12963/csd.20768</a>
22	Telerehabilitation in the field of speech Language pathology during pandemic COVID 19 outbreak- an analysis in Kerala	Vrinda R, Preethy Susan Reni	NDS	Bioscience Biotechnology Research Communications	Dec 2020	2321-4007	<a href="http://dx.doi.org/10.21786/bbrc/13.4/99">http://dx.doi.org/10.21786/bbrc/13.4/99</a>
23	Nonword Repetition and Identification skills in Kannada speaking School-aged Children who do and do not Stutter	Nirmal Sugathan & Santosh Maruthy	ASLP	Journal of Fluency Disorders	March 2020	0094-730X	<a href="https://doi.org/10.1016/j.jfludis.2019.105745">https://doi.org/10.1016/j.jfludis.2019.105745</a>
24	Predictive Factors for Persistence and Recovery of Stuttering in Children: A Systematic Review	Nirmal Sugathan & Santosh Maruthy	ASLP	International Journal of Speech-Language Pathology	September 2020	1754-9515	<a href="https://doi.org/10.1080/17549507.2020.1812718">https://doi.org/10.1080/17549507.2020.1812718</a>

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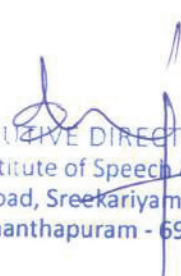
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25	Time domain analysis of electroencephalogram[eeeg] signals for word level comprehension in deaf graduates with congenital and acquired hearing loss	SHIRLY G	NI	IOPScience	2020		<a href="https://iopscience.iop.org/article/10.1088/1757-899X/1070/1/012083">https://iopscience.iop.org/article/10.1088/1757-899X/1070/1/012083</a>
26	Mathematical modelling of EEG-comprehension in deaf adults a pilot study	SHIRLY G	NI	ICRIET	2020		DOI: 10.5373/JARD CS/V12SP4/20201620
27	Benefit from Cochlear Implant in adults with post-lingual hearing loss: A single case study	Sita Sreekumar, Nafla PV and Lakshmi Satheeshan	ASLP	International Symposium on Audiological Medicine Journal	January 2021	2230-8601	
28	I Think I Can Remember: Age-Related Changes in Self-Efficacy for Short-Term Memory	Dasmine D'Souza, Gagan Bajaj, Vinitha Mary George, Sudhin Karuppali & Jayashree S Bhat	ASLP	Journal of Natural Science, Biology and Medicine	January 2021	2229-7707	<a href="https://insbm.org/article/3716">https://insbm.org/article/3716</a>
29	Academic Outcomes and Coping Mechanisms of Children using Cochlear Implants in Mainstream Schools in Kerala, India	Anju George, Jee na Mary, Joy, Sita Sreekumar	ASLP	Disability, CBR & Inclusive Development	February , 2021	2211-5242	<a href="http://doi.org/10.47985/dcidj.425">http://doi.org/10.47985/dcidj.425</a>

  
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30	Gender Differences in quality of life, physical activity and risk of hypertension among sedentary occupational workers	Hanan E. Badr, Shashidhar R Chavan, Fahad Manee	OT	Quality Life Research	2021	0962-9343	<a href="https://doi.org/10.1007/s11136-020-02741-w">https://doi.org/10.1007/s11136-020-02741-w</a>
31	Virtual 'Study Abroad': Promoting Intercultural Competence Amid the Pandemic	Lata A. Krishnan, Sita Sreekumar, Saumya Sundaram, Manju Subramani am, Praveena Davis	ASLP	The Hearing Journal	2021	Online ISSN: 2333-6218	<a href="https://journals.lww.com/thehearingjournal/Fulltext/2021/04000/Virtual_Study_Abroad_Promoting_Intercultural.13.aspx">https://journals.lww.com/thehearingjournal/Fulltext/2021/04000/Virtual_Study_Abroad_Promoting_Intercultural.13.aspx</a>
32	Impact of Screen Time on Communication in Toddlers: A Parental Awareness Survey	Vrinda. R, Maria M Reji, Swathi S Sajeevan	NDS	Language in india	2021	1930-2940	<a href="http://www.languageinindia.com/may2021/vrindascreentimetoddlersfinal.pdf">http://www.languageinindia.com/may2021/vrindascreentimetoddlersfinal.pdf</a>
33	Listening Text story comprehension and story recall in children with ASD	Arya Manoharan , Asha Manoharan	NDS/ ASLP	International Journal of science and Research	May 2021	2139-7064	<a href="https://www.ijser.net/archive/v10i5/SR21525230249.pdf">https://www.ijser.net/archive/v10i5/SR21525230249.pdf</a>
34	Participation of young children with hearing loss in everyday life situations	Aleena Elizebeth Thomas, Najmunees a AK , Sita Sreekumar	ASLP	International Society for Audiological Medicine Journal	January 2021	2230-8601	

  
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# Bibliographic Reference Management Software Awareness Among LIS Professionals in India.

Jasimudeen S. and Tomy Varghese

## Abstract

Surveys the familiarity and use of Bibliographic Reference Management Software among Library and Information Science (LIS) professionals in India. The study found that the awareness and use of such tools is relatively low among LIS professionals in the region. Among a few packages used in India, Open Source Reference Management Software Zotero was found to be more popular than its proprietary counterparts among LIS professionals. It was also found that the Library professionals who are using Zotero package are confident in training co-workers and faculty and students in handling Zotero.

## Introduction

Bibliographic Reference Management Software (BRMS) is also known as citation management software or personal bibliographic management software. It is a tool for researchers and authors to record and manage references or bibliographic citations. (Francesse, 2013). If a citation is recorded once, it can be used again and again for generating references and bibliographies of books or research papers. It is the rapid expansion of scientific literature that necessitated development of tools for reference management.

BRMS generally consist of a database in which full bibliographic references can be entered, plus a system for generating selective lists of articles in the different standards and formats prescribed by publishers of books or journals. Today's BRMS packages can usually be integrated with word processors so that a reference list in the appropriate format can be produced automatically when an article is written, reducing the risk that a

cited source is not included in the reference list. They will also have a facility for importing the details of publications from bibliographic databases.

BRMS can not fulfill the functions of a specialized bibliographic database which tries to list all articles published in a particular discipline or group of disciplines like those provided by Ovid Technologies (e.g. CAB Abstracts), Thomson Reuters (e.g. Web of Science) or monodisciplinary learned societies like the American Psychological Association (PsycINFO). These databases are large and have to be housed on major server installations. Reference management software collects a much smaller database, of the publications that have been used or are likely to be used by a particular author or group, generally for a specific book, research paper, conference presentation or a project report and such a database can easily be housed on an individual's personal computer. Apart from managing references, most BRMS enables users to search references from online libraries when the websites are based on Z39.50 public protocol.

ORIGINAL ARTICLE

## Survey of cognitive rehabilitation practices in the state of Kuwait

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### ABSTRACT

**Background** Rehabilitation professionals must be astute at recognizing, assessing, and treating individuals with cognitive deficits. No research is available to examine cognitive rehabilitation practices applied to individuals with neurological conditions in Kuwait. *Objectives:* To identify the use of cognitive assessments, the availability of resources, and the barriers to cognitive rehabilitation practices in Kuwait. **Methods** Face-to-face interviews were conducted with health care professionals working with adult individuals with neurological conditions. These professionals included occupational therapists, speech-language pathologists, psychiatrists, and neurologists. **Results** The most commonly used cognitive based assessments are MMSE (41%), and MoCA and LOTCA (15.2%). The only clinical assessment used is the Line-Bisection Test (2.2%). The most used occupation-based assessments are FIM (6.5%), COPM (4.3%), the Interest Checklist (2.2%), and the Barthel Index (2.2%). Resources related to cognitive rehabilitation in Kuwait that are unavailable to practitioners include journal clubs (91%), special interest groups (89%), and continuing education programmes (82.6%). Barriers to cognitive rehabilitation practice included lack of sufficient funds for continuing education, lack of time, lack of standardized assessments, and lack of inter-professional teamwork. **Conclusion** Many adults in Kuwait live with cognitive impairment. There is a need to develop appropriate evidence-based cognitive rehabilitation clinical guidelines in Kuwait.

### ARTICLE HISTORY

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### KEYWORDS

Cognitive therapy; health care professionals; resources; standardized assessments

## Introduction

Cognition refers to the conscious and unconscious information-processing functions that are carried out by the brain.[1] Primary cognitive capacities include orientation, attention, memory, and executive functioning such as planning, reasoning, and problem-solving. Cognitive dysfunction can result from trauma or disease, and can lead to impaired functioning. Even minor cognitive dysfunction can influence functional performance in social participation, well-being, academics, and employment.[1] Cognitive rehabilitation interventions should be tailored to the neuropsychological profile of the patients and their own goals for life activities and participation.[2] Rehabilitation professionals must be able to recognize, assess, and treat individuals with cognitive impairments so as to address deficits in functional performance.

In the past decade, practice guidelines have been developed to address the needs of persons diagnosed with stroke,[3–5] Alzheimer's disease,[6] multiple sclerosis,[7] traumatic brain injury,[8] and schizophrenia.[9] Primary to all is the need to screen patients for cognitive deficits on hospital admission, by using a standardized tool. When screening indicates a potential cognitive impairment, then a deeper, more focused evaluation,

using valid and reliable cognitive assessments, is required. If the impairment is of such magnitude that the client requires rehabilitation, then the cognitive assessments should be re-administered periodically to evaluate both progress and the effectiveness of the intervention.

Many standardized screening instruments exist, including the Mini-Mental State Examination (MMSE),[10] which is identified as the screening tool most frequently used by clinicians.[11] However, because the MMSE is highly influenced by age and education, newer valid, and more reliable, screening tools have emerged as replacements. Two that have been used extensively in clinical practice and research are the Mayo–Portland Adaptability Inventory-II and the Montreal Cognitive Assessment (MoCA),[12] both excellent screening tools for cognitive impairment and both available in Arabic.[13]

A common approach to the assessment of cognitive impairment is to determine the functional consequences of the impairment in the daily activities that the patient must perform or wishes to perform. The Functional Independence Measure (FIM) is often used in inpatient rehabilitation settings, and includes an overall function score as well as cognitive and motor subscores.[14] Finally, assessments such as the Kitchen Task

# Auditory Short Term Memory and Academic Achievement in Normal School Going Children

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## ABSTRACT

Short-term auditory memory is essential to hold, process, understand and assimilate spoken language. It relates directly to the speed with which one can articulate words, and influences the speed at which children learn new words and learn to read. The aim of the present study was to assess auditory short term memory in normal school going children and to find its influence on their academic achievement. The participants of the study consisted of 60 students in the age range of 7 to 8 years. The participants were divided into two groups based on their academic grade A & C. Digit span and monosyllable span tasks were used to assess auditory short term memory. Results of the study showed significant difference between the two groups on both the tasks indicating the effects of auditory short term memory and academic achievement.

**Keywords:** Short term memory, language, learning, digit span, monosyllable span.

## INTRODUCTION

Memory is the retention of information over time. It is the process of encoding, storing and retrieving information. Encoding refers to the active process of putting stimulus information into a form that can be used by our memory system. The process of maintaining information in memory is called storage and the active process of locating and using information stored in memory is called retrieval. A popular model of memory, divides it into three different processes, sensory memory, short term memory and long term memory. <sup>[1]</sup>

The two separate subsystems of short-term memory that have been studied the most, and therefore there is clear evidence for, are, the visual and verbal or

auditory short-term memory systems. <sup>[2]</sup>

Auditory memory is one of the most important learning skills. The ability to learn from oral instructions and explanations is a fundamental skill required throughout life. Children with weak auditory learning skills often have difficulty understanding what words mean, and can show a delayed grasp of language. This is because phonics requires auditory short term memory for children to remember word sounds and piece them together to form words. Furthermore, since many children learn to read by being read to, those with problems with auditory learning will likely take longer to learn to read, and these delays may be reflected later in life with poor reading and writing skills



CASE REPORT



## Capitalizing on technology for developing communication skills in autism spectrum disorder: a single case study

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### ABSTRACT

**Purpose:** In this case study, we discuss the application of a patient-centred clinical approach that led to the use of an assisted communication platform to combat severe communicative deficit in a child with autism spectrum disorder (ASD).

**Methods:** Initial assessment at four years of age revealed that the patient had rudimentary communication skills, with significant sensory integration dysfunction manifested as oral, olfactory, and tactile seeking behaviours; self-stimulatory behaviour; and complete dependence on caregiver for activities of daily living. Intensive, multi-disciplinary intervention resulted in minimal improvement in communicative skills and sensory seeking over six months. Subsequently, a tailor-made picture-assisted communication training with the mother as the communication facilitator was adopted. This approach was abandoned due to the patient's poor response and mother's low acceptance of picture-based interaction. A preference for printed material was observed in the patient. Accordingly, further management was focused on employing a computer-based interactive platform that the patient was taught to use over the course of a few months as a part of augmentative and alternative communication (AAC) intervention program. This resulted in a remarkable improvement in the child's skills that now allowed for a better intentional communication of his thoughts and needs.

**Conclusions:** This study highlights the importance of revisiting conventional rehabilitation strategies for communicative deficits and tailoring them according to the patient's needs and preferences. It also emphasises that besides excellent observation skills, clinicians must be willing to consider technology based approaches in patients responding poorly to traditional approaches in order to develop effective interventional programmes.

### ARTICLE HISTORY

Received 12 June 2017  
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### KEYWORDS

Technology; autism spectrum disorder; communication; intervention; reading and writing; augmentative and alternative communication

### ► IMPLICATION FOR REHABILITATION



- The current study highlights the importance of exploring the application of technology based intervention for building communication skills in the early stages of rehabilitation for persons with communicative deficit.
- It also emphasises the need for excellent observation skills among clinicians so that the peculiar interests of children with ASD may be applied in designing training programmes to overcome communication barriers.
- Additionally, clinicians should familiarise themselves with the latest assistive technology-based rehabilitation approaches and be willing to explore newer approaches if traditional ones fail to yield satisfactory outcomes.
- Use of technology-based interventions to reduce dependence among persons with disability would be beneficial, both socially and economically, in developing countries with limited resources.

### Introduction

The discriminating attribute of a human from other living being is his ability for social communication and the integration of various sensory information to accommodate the changing needs of the society. Autism spectrum disorders (ASD) are a group of neurodevelopmental disorders where the affected person fails to develop adequate skills for communication, social interaction and ability to integrate the information from all senses [1]. They might exhibit a minimal disturbance to severe impairment in social communication and restricted repetitive behaviours [1]. Intervention for

children with ASD mainly targets on the core challenges of these individuals such as social communication [2–4], sensory dysregulation and behavioural skills. Conventional intervention is based on specific approaches determined by the therapist depending on nature and severity of problem. With the upheaval in the field of technology a large portion of the people with ASD has been moving from the conventional way of intervention towards more dynamic strategies involving technology [5].

The positive impact of technological advancement on almost all walks of life is well documented in children with ASD.

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Effect of yoga and working memory training on cognitive communicative abilities among middle aged adults

H.G. Namratha, Post Graduate students, Vinitha Mary George, Research Scholar, Gagan Bajaj, Assistant Professor-Senior Scale, J. Mridula, Post Graduate students, Jayashree S. Bhat, Professor and Head of the Department

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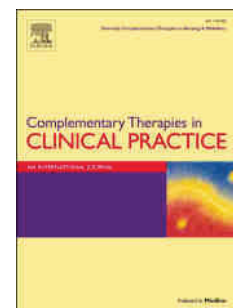
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 the end of the article

## COGNITIVE SCIENCE & NEUROSCIENCE | RESEARCH ARTICLE

# Effect of working memory training on cognitive communicative abilities among young- and middle-aged adults

J. Mridula<sup>1</sup>, Vinitha Mary George<sup>1</sup>, Gagan Bajaj<sup>1\*</sup>, H.G. Namratha<sup>1</sup> and Jayashree S. Bhat<sup>1</sup>

**Abstract:** *Objective:* Cognitive training gains have been reported to be larger among young adults in comparison to older adults. However, differences in the magnitude of improvements between the earlier ages of adulthood have been less explored. In this attempt, the aim of the present study was to investigate the working memory training effects on cognitive communicative abilities among young- and middle-aged adults. *Method:* An interventional research design was incorporated. Thirty young- (19–40 years) and middle-aged (40–65 years) adults each, were recruited from the community and randomly assigned into the experimental and control groups. The experimental groups received 10 sessions of working memory training. Pre- and post-training assessments were performed and data was statistically analyzed. *Results:* The data analysis revealed no statistically significant difference in the training effects between young- and middle-aged adults, though young adults showed higher trends of improvement with training. *Conclusion:* The study highlights the importance of initiating working memory training at an early age to enhance or restore one's cognitive abilities as age progresses.

**Subjects:** Health and Social Care; Medicine, Dentistry, Nursing & Allied Health; Allied Health

**Keywords:** Aging; working memory training; transfer; cognitive-communication

### ABOUT THE AUTHORS

The cognitive communication research group at the Department of Audiology and Speech Language Pathology, Kasturba Medical College, Mangalore, Manipal University, Karnataka, India is involved in research activities relating to promote a sense of cognitive communicative well-being among the healthy aging adults. The research group, which is being financially supported by the Department of Science and Technology—Technology Intervention for the Disabled and Elderly, Government of India, is working towards a project for developing a cognitive-communicative self-learning tool for the healthy aging adults. The project involves objective and behavioral assessments of cognitive communication pre- and post-intervention. The present research is a section of the project addressing the behavioral changes in the working memory abilities, as a function of working memory intervention program, among the young- and middle-aged adults.

### PUBLIC INTEREST STATEMENT

The global statistical data which is emerging with regard to the incidence of cognitive communication disorder like dementia is alarming. The increment in the incidence is expected to be multifold in South-East Asian countries like India. Therefore, various efforts are being made to either delay or decelerate the onset of the age-related pathological changes in cognition through early interventions. However, how early should an early intervention be, is unclear. The present study is an attempt to answer this by providing working memory training among healthy aging young- and middle-aged adults. It was found that the working memory training enhanced working memory and short-term memory abilities of both the participant groups. The gains were significantly higher for the young-aged adults, highlighting the need for promoting the sense of cognitive communicative well-being as early as in young adulthood.



**Original Article:**

**Effect of Age on Strategic Problem Solving Abilities Using an Open Ended Version of the Twenty Questions Task**

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**Citation**

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**Abstract:** The study explores the age-related trends for an open ended version of the Twenty Questions task, which requires an individual to freely choose questions pertaining to a category in order to organize concepts and solve problems, further making it sensitive in assessing frontal lobe functions. The study comprised of 63 adult participants with 21 participants each, in the young, middle and old age group, to whom an open-ended Twenty Questions task was administered. The accuracy of response, number and type of questions asked and impulsivity were measured. Statistically significant differences in performance were observed between old vs. young ( $p < 0.05$ ) and old vs. middle aged ( $p = 0.002$ ) adults. Older adults obtained lower accuracy scores (Median = 0.333) and highest number of hypothesis scanning questions (Median = 6.1667) and impulsivity (Median = 3.333). The study highlights a reflection of frontal lobe functioning on the age-related differences in concept formulation with problem solving abilities, on a Twenty Questions task.

**Key Words:** Aging, Problem solving, Twenty questions task, Frontal lobe

**Introduction:**

Executive function includes a spectrum of processes like concept formation, verbal fluency, problem solving, reasoning and judgment. They have been assessed through several cognitive communication test batteries in various ways (1). One such task which has gained relatively lesser attention in the executive assessment practice is the 'Twenty Questions task' which originated in the United States during Nineteenth century. It gained its popularity during the late 1940s. Twenty

Questions is an extension of the old parlor game which requires the participants to guess the semantic entity from a category that the examiner has in mind within a limit of 20 polar questions, which elicits the answer in the form of yes or no. This task taps the way people organize their knowledge about the world and it requires them to modify their answers based on the examiner's feedback for their previous answers (2). The participants' concept-formation skills are directly reflected in his/her approach towards identifying the entity. There are two versions of the Twenty Questions task: one is closed, in which the participant selects a response from a limited array of objects and the other is open, in which the participant is free to choose from the entire category and is not presented with an array of items (3). The close-ended version of the task has been used in past for studying frontal lobe dysfunctions and age-related changes (4). However, studies with open-ended version have been limited to frontal lobe dysfunction. (3, 5)

The frontal regions of the brain have been reported to be sensitive in planning, evaluating the feedback and in adopting an appropriate strategy to complete a task like Twenty Questions (6). Various clinical conditions which involve the frontal regions in the cortex, like Autism spectrum disorders (7); Chronic alcoholism (8), and Traumatic brain injury (9-10), have shown deviant performances on the Twenty Questions task.

Within the frontal regions, the orbitofrontal regions are reported to be responsible for the reduction in the impulse control (11-13). The dorsolateral regions are suggested to be

## Predictors in the Selection of an AAC system: An Evidence-based Report on Overcoming Challenges

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### ABSTRACT

**Purpose:** Identification of the most suitable Augmentative Alternative Communication (AAC) device for individuals with varying degrees of communication impairments is immensely challenging. This study aimed to understand the effectiveness of analysing the various sensory, cognitive and environmental factors during the selection of an AAC.

**Methods:** Four children with different developmental disabilities were assessed in the domains of sensory ability, cognitive skills and environmental factors. The selection of an AAC was primarily dependent on the positive indicators in these domains and the specific challenges pertaining to each participant.

**Results:** Participants' progress was assessed. All the children progressed across the levels of the Communication Matrix.

**Conclusion:** Understanding of sensory perceptual capacities and an attempt to overcome environmental barriers lead to the successful use of an AAC system. The study attempts to establish a platform for further research on the efficacy of utilising sensory perceptual learning with AAC to overcome communication barriers in children with severe developmental disabilities.

**Key words:** Augmentative Alternative Communication, developmental disability, sensory perceptual capacities

### INTRODUCTION

Identification of the most suitable Augmentative Alternative Communication (AAC) device for a person with a multitude of impediments in various anatomical

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# Perspectives of School Educators in India on Inclusive Education of Children with Autism Spectrum Disorders.

- **Source:** Language in India . Oct2018, Vol. 18 Issue 10, p278-296. 19p.
- **Author(s):** Kunnath, Suja K.; Mohan, Lakshmi S.; Varghese, Sajan Sam; Mohan P., Veena
- **Abstract:** Inclusive education is an important as well as a challenging concept in a developing country like India. It is meant to strengthen the capacity of an education system to reach out to all learners ensuring a stable growth of the society. A developing society should ensure inclusive education irrespective of language, gender, and ethnicity/ cultural and disability. This philosophy is widely accepted around the globe and India is one among them. Though a reformation on education was initiated more than a century before, comprehensive steps for inclusive education in India were taken up only in the last few decades. However we are not sure whether the spirit of inclusive education has happened in the society and especially with teachers in its true sense. The paradigm shift from segregated to an inclusive education should be best implemented in the mind of the teachers rather than in documents. Autism spectrum disorder (ASD) would be one of the commonest disorder that would benefit from inclusive curriculum considering the figure in which the awareness created and incidents reported (Fombonne, 2002). This call for an understanding on the teacher's readiness for classroom management of children with ASD.
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# Higher Education for Students with Disabilities in India: Insights from a Focus Group Study

Higher Education for the Future  
1–17

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## Abstract

Higher education plays a vital role in the employability of people with disability. It promises an independent existence for the person in the society. Understanding this, stakeholders are moving towards an inclusive environment in educational institutions. But the reality is quite alarming in that only a very small number of people with disabilities have access to higher education in developing countries like India. This study conducted through focus group discussions systematically explores the challenges, existing facilities and needed accommodations in a higher education set-up for the benefit of students with disability (SwD). The qualitative study was conducted in six major metropolitan cities across India among adults with disability who had higher education opportunities. Themes such as accessibility, functions in the classroom, accommodations for examinations, communication, social attitude and employment challenges were highlighted as major aspects that needed attention. The results reflect on poor planning, implementation of disability policies, lack of disability sensitization in the society and inadequate availability of resources in a developing country. Reports of support networks provided by friends in colleges, underscored the strength of humanity in the midst of inadequate disability accommodation facilities. Voices of people with disabilities resonates over the lack of available policies and services in a developing country like India.

## Keywords

Higher education, India, disability, focus group, qualitative study, people with disability

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## **Exploring the Free Play Patterns of Children with Autism Spectrum Disorders: A Pilot Study**

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### **Abstract**

Free play opens up a natural and potentially powerful window for the assessment and treatment of children with autism spectrum disorders. The current study employed a cross sectional study design to investigate the nature of play behaviours in 12 children with autism spectrum disorders between the age ranges of 2-5 years. Play behaviour were video recorded in a clinical environment for duration of 10 minutes. The play behaviours were analysed using ELAN software. The particular play behaviours observed were coded by three speech language pathologists. Statistical analysis revealed a significant difference between play behaviours. The results suggested the preponderance of sensorimotor play along with deficits and or delay in other advanced play namely functional play in children with autism spectrum disorder.

**Keywords:** autism spectrum disorders, free play, sensorimotor play, functional play, symbolic play, ELAN, video analysis

### **Introduction**

Autism spectrum disorders (ASD) are a group of neurodevelopmental disorders characterized by marked deficits in social communication, interaction & the presence of restricted repetitive patterns of interest or behavior (American Psychiatric Association, 2013). Early identification of children at risk for ASD, probably at a younger age is still challenging for the professional as well as medical practitioners even in the presence of several standardized checklists and assessment tools. One of the reasons highlighted could be the lack of culturally valid and reliable assessment tools. As the early identification of children at risk for ASD at a younger age is solely based on the behavior manifestation and is been influenced by the culture of an individual living in a specific ethnographic location, availability of culturally based tools plays a key role. Another reason could be the difference in the response eliciting method, i.e., most of the time a diagnosis of ASD is made based on the parental reports of child's behavior. An over concerned and anxious parent may state

# Auditory Brainstem Response Characteristics in Spastic Diplegic Cerebral Palsy Secondary to Periventricular Leukomalacia - A Single Case Illustration

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## ABSTRACT

Auditory behaviours and objective audiological findings have limited clarity to explain the underlying pathological conditions in children with periventricular leukomalacia (PVL). The purpose of this study was to examine auditory brainstem response (ABR) characteristics in a child with spastic cerebral palsy (CP) secondary to PVL and to discuss correlation between behavioural observation audiometry (BOA) and ABR findings. Audiological evaluations consisted of BOA, immittance audiometry, ABR and cochlear microphonics followed by a detailed case history. Informal observation of auditory behaviours was also carried out with verbal and non-verbal stimuli. Behavioural responses in terms of informal and BOA results found to be correlated well nevertheless, ABR findings indicated poor correlation with behavioural responses. In the test results, it had been evident that ABR findings were over estimating the actual hearing thresholds of the child. The neurological conditions underlying CP will affect myelination process of the central and peripheral nervous system. The changes in myelination process and altered neural firing may have disturbed the ABR finding. Disorders affecting neural maturation and synchronized firing are among the common neurological impairment seen in children with CP and there for the pathological conditions alter their responses in multiple ways.

**Key words:** ABR, Periventricular leukomalacia, Cerebral Palsy, Behavioural Observation Audiometry, Cochlear Microphonics

## INTRODUCTION

Periventricular leukomalacia (PVL) is a type of brain injury which involves death of brain tissues surrounds the ventricles. PVL is commonly seen in premature babies as ischemic brain injury.<sup>[1]</sup> The ischemia occurs in white matter (WM) adjacent to the lateral ventricles lead

to deep white matter injury which most commonly results from insults occurring between 24 to 34 weeks of gestation. During this period WM is more susceptible to injury as it attempts to complete the complicated and dynamic process of maturation. WM plays a significant role in cortical organization and neural networking



*Case Study*

# Importance of Play in the Development of Language and Social Skills -A Case Study on Twins

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## ABSTRACT

Play fosters language development in young children in which an effective language-learning environment is established to facilitate language. Language deficits in twins tend to persist through the early years of life. The present case study focussed on the relationship between language, social skills and play in a pair of twins diagnosed with language delay. A set of identical twins aged 3 years was evaluated for their speech and language skills. A detailed pre and post therapy evaluation was carried out formally and informally. Individual therapy and group therapy were provided to facilitate language through symbolic and associative play. A notable improvement was observed in language and social communication skills. Increased spontaneity of communication, social reciprocity, commenting, use of questions and use of linguistic markers were also observed. The study concludes that play facilitates language skills in children with language disorders.

**Keywords:** Play, Twins, Language, Social skills

## INTRODUCTION

Language is crucial for a child's development and is an essential key for learning, communicating and building relationships with others. Language facilitation occurs when children interact with adults and peers in a playful manner, suggesting that play can make contributions to some aspects of language development. [1] According to Ginsburg (2007) play enhances children's development and incorporates many social and cognitive elements vital for language learning. [2] Among children aged 1-6 years, those who scored higher on a test of symbolic play showed better receptive and expressive language skills. [3] Play and linguistic communication share a representational

character; hence play provides children with opportunities to practice forming symbolic relationships. [4] Play with adults and peers bolsters language development because it encourages greater language use. As the symbolic play progresses, infants become more capable of combining mental representations of such relationships into sequences or organizing them into a hierarchical manner. Ferrera et.al (2011) reported increased use of spatial language while children and their parents played with block in which parents scaffolded the interaction where the child's lead was encouraged. [5] Language delay in twins persists through early school years and has been reported particularly in males. This could lead to decreased academic



## CASE REPORT

# Advancement to higher communicative functions with transition to iPad app – a case report

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### ABSTRACT

Children with complex communication needs (CCN) develop severe limitation in communication functioning due to restricted access to environment, limited interactions with their communication partners, and few opportunities for communication (Light, 1997). In order to overcome these challenges and to enhance communication abilities, Augmentative Alternative Communication (AAC) can be introduced in intervention. This single case study reports the improvements in communication skills when the child made a transition from a communication book to an iPad speech generating app. Participant was a 7 year old child with multiple disability and CCN who was undergoing intervention using communication book and transitioned to an AAC app namely AVAZ. A comparison of pre and post-therapy communicative function was carried out using tool Communication Matrix to understand the improvement. When the child made transition from a communication book to a iPad speech generating AAC app, significant improvement was observed in all communicative functions namely refusal, obtaining, social purpose and for gathering information. After a total of 10 training sessions, the child advanced from level of using concrete symbols to a level of “Language” i.e. using a combination of abstract symbols for communication. This case report indicated that transition to an iPad AAC app had significant benefits on improving communication skills which in turn had positive impact on linguistic and literacy skills. Consequently, an improvement in levels of motivation and confidence was noted. Hence, providing access to the appropriate AAC device/technology in ongoing intervention is the foundation to building effective communication skills.

### ARTICLE HISTORY

Received 7 August 2018  
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### KEYWORDS

Complex communication needs; augmentative alternative communication; communicative functions; speech generating app; AVAZ

### ► IMPLICATIONS FOR REHABILITATION

- Importance of ongoing assessments to understand the varying communication demands of AAC user.
- The timely decision of selecting appropriate AAC devices.
- Transition to appropriate AAC device to address higher communicative functions.
- Documenting evidence-based practices using AAC in a developing country like India.

## Introduction

“Complex communication needs” is a term used in the literature to describe people who have little or no speech, where there are many possible causes. Complex communication needs can be associated with developmental or acquired disabilities. Children with severe developmental disabilities frequently fail to develop adequate speech and language skills due to a wide range of physical, sensory and cognitive impairments. These children with complex communication needs (CCN) develop severe limitation in communication functioning due to restrictions in accessing the environment, limitations in interacting with their communication partners, and limited opportunities for communication [1]. In such instances to overcome these challenges and give access to the power of communication, Augmentative and Alternative Communication (AAC) can be introduced by speech pathologists to help achieve a person’s communication goals.

Augmentative and Alternative Communication (AAC) is an area of assistive technology that “attempts to compensate (either temporarily or permanently) for the impairment and disability patterns of individuals with severe expressive communication

disorders (i.e., the severely speech-language and writing impaired)” [2]. AAC includes any forms of communication that are used to express thoughts, needs, wants, and ideas. AAC can be unaided and aided. Unaided AAC refers to communication strategies which do not require the use of external aid. Aided AAC refers to communication strategies which involve the use of an external item. It can be “low technology” (low/light tech) equipment, such as a communication board, photographs or real objects and “high technology” (high tech) aids, such as a computer or speech generating device (SGD). High tech communication aids usually have the capability to “speak” after input is presented and thus are usually referred to as either voice output communication aids (VOCA) or speech generating devices (SGD).

Research suggests that AAC can be introduced in intervention as early as possible [3–5]. Interventions that utilize AAC approaches allow young children with CCN to improve functional communication skills and stimulate the development of both receptive and expressive language skills [6,7]. Also, introducing AAC intervention at an early age have not shown to hinder the development of speech [8–10].

# PSYCHOSOCIAL CONCERNS AMONG PARENTS OF CHILDREN WITH HEARING IMPAIRMENT.

- **Source:** Loyola Journal of Social Sciences . Jul-Dec2019, Vol. 33 Issue 2, p21-38. 18p.
- **Author(s):** Sreekumar, Sita; L., Rejitha Kumari; Nair, Lekha. S.; Joseph, Jumin Mary
- **Abstract:** Managing psychosocial needs of parents of children with hearing impairment (HI) is an important aspect that needs to be looked into for achieving optimum outcome from interventions like Early Intervention Programme(EIP). Parents face many serious psychosocial issues, which negatively influence the outcome of interventions. The aim of this study was to understand the psychosocial factors hindering the progress of children with HI undergoing EIP. In-depth interviewing was conducted to explore the parent's perspectives on factors hindering adequate progress of their children. The study identified four major psychosocial concerns that prevented the parents from focussing and providing best inputs for their children's intervention programme. The factors as perceived by the parents were inadequate family support, imbalance in the emotional status of parent, lack of awareness on supportive services and financial constraints. In countries like India, living with several psychosocial concerns poses a significant challenge for parents with children, having hearing impairment. The need for the support and intervention of a professional team and strengthening of the parent support group, to empower parents to undertake this responsibility is discussed.
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## Emergent Literacy: Knowledge and Belief of Preschool Teachers in Kerala

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### Abstract

Emergent literacy skills are considered as very important precursors for the development of conventional literacy skills. Knowledge and belief of preschool teachers regarding emergent literacy are influenced by their educational qualification and number of years of experience. Classroom practices as well as academic performance of children are likely to differ based on the above two factors. The current study aims to investigate the knowledge and belief of preschool teachers in Kerala, a southern state of India about emergent literacy. A survey was conducted with 20-item questionnaire. Forty-eight female preschool teachers from 10 CBSE schools of south Kerala were selected for the study. Questionnaire was administered individually through an interview method. Results revealed that neither educational qualification nor years of experience have an impact on teachers' knowledge and belief. The results are discussed with reference to the in-service training programs offered to preschool teachers.

**Keywords:** Kerala State, preschool teachers, emergent literacy, knowledge and belief.

The academic success of an individual is influenced by a range of factors such as biological, environmental, social and instructional methods. Studies on instructional and environmental constructs have established the importance of early literacy skills (National Early Literacy Panel, NELP, 2008; Neuman & Dickinson; 2001), which are considered to be precursors of conventional literacy skills. Importance of preschool period in later reading success has been much investigated



## Vowel Space Area in Children Using Cochlear Implant

Preethy Susan Reni, M.Sc. (Speech & Hearing)

S. Powlin Arockia Catherine, Ph.D. (SLP)

A. Abinaya, BASLP.

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### Abstract

This study investigated vowel space area in children with unilateral cochlear implant (CI) and compared it with typically developing (TD) children. More specifically, this study compared the vowel space characteristics across the short vowels /a/, /i/, /u/ in word medial position in Tamil. Subjects were divided into two groups. Group I consisted of 10 children with unilateral cochlear implant (CI) in the age range of 3 to 11 years. Group II consisted of 10 age matched peers. Pictures for the three words with short vowels /a/, /i/ & /u/ in the word medial position were prepared and presented to children individually and were instructed to name them. Audiorecording of naming was done using Computerized Speech Lab 4500 and formants 1 and 2 were extracted. Using the frequency values of formant 1 and 2, vowel triangle was plotted. The formant values and vowel triangle space were compared between the groups. Results of the study showed significant differences in first and second formant frequencies between the groups and a smaller vowel space area for children using CI. The reduced vowel space area represents deviant articulation abilities in children with CI when compared TD children during vowel production.

**Keywords:** Vowel space area, Tamil language, Cochlear implant, Formant frequencies

### Introduction

Speech is an oral expression of language which constitutes voice, fluency, articulation, resonance and prosody. Speech is used as the primary mode of communication by most of the humans. Hearing plays a crucial role in the development of speech and language in children. Thus, children with hearing impairment have significant delay in the speech and language skills. Cochlear implant is one among the various management options that is available for individuals with hearing loss. A cochlear implant is a device that provides direct electrical stimulation to the auditory nerve in the inner ear. Children and adults with a severe to profound hearing loss are benefited with cochlear implants. Following Cochlear implant surgery, auditory verbal training is essential for acquiring listening, language, and speech skills which would in turn improve their speech intelligibility. Speech intelligibility is influenced by accurate, precise production of speech sounds. Speech sounds consists of vowels and consonants. Vowels are produced with a minimal constriction of vocal tract.

## Clinical Focus

# Preparing, Planning, and Executing a Successful Short-Term Study Abroad Program: A Case Study—Speech, Language, and Hearing Sciences in India

Lata A. Krishnan,<sup>a</sup>  Saumya Sundaram,<sup>b</sup> Sita Sreekumar,<sup>b</sup> Spoorthi Thammaiah,<sup>c</sup> and Gita Mitra<sup>d</sup>

**Purpose:** The purpose of this clinical focus article is to describe the development and execution of the Speech, Language, and Hearing Sciences in India service learning (SL) study abroad program. It includes the perspectives of the faculty leader from the United States and of the faculty and staff from the community partner organizations in India. **Method:** The development of the program utilized an SL model and occurred over the course of 1 year of planning and discussions with three primary community partner

organizations in India, and the program has been offered in the summer of 2018 and 2019.

**Results:** Program planning and development, program activities, as well as benefits and challenges are described. Feedback from community partners and qualitative comments from participants are included.

**Conclusion:** A short-term SL study abroad program can be mutually beneficial with careful planning that includes input from community partners in the destination country.

There is a need for culturally competent clinicians to meet the demands of an increasing culturally and linguistically diverse caseload, and the American Speech-Language-Hearing Association (ASHA) requires students to acquire knowledge and skills in the area of cultural competence. Study abroad (SA) experiences are one way that students can develop intercultural competence (Vande Berg et al., 2009). There are a few descriptive reports of international programs in the professions of audiology and speech-language pathology (e.g., Crowley & Baigorri, 2011, 2012; McBride & Belus, 2014; Williams et al., 2013). Only three papers were found that examined the effects of SA programs on cultural competence and demonstrated

student gains in intercultural competence (de Diego-Lázaro, 2018; Krishnan, Masters, Holgate, et al., 2017; Krishnan et al., 2016).

Despite the dearth of research in this area, a search on ASHA EdFind reveals 171 speech and hearing programs in the United States that mention SA opportunities (ASHA EdFind, 2019), which is a significant increase from the 77 programs offering SA in 2017 (Krishnan, Masters, & Simpson, 2017). As more and more universities offer SA programs, it is imperative that they prepare and plan carefully in order to execute successful SA programs that benefit the students going abroad, but also do no harm in the destination country.

The Speech, Language, and Hearing Sciences (SLHS) in India program was created in 2017 to fill the need for an SA program in the SLHS department at Purdue University

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# Efficacy of Working Memory Training in Middle-aged Adults

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**Objectives:** Decline of working memory (WM) resources is an important concern for individuals right from middle age, as middle adulthood is comprised of cognitively demanding tasks which require higher cognitive performance. In view of the global efforts to promote greater cognitive reserves and the cognitive diversities observed among middle-aged adults, alongside a dearth of ethno-culturally relevant WM training programs for the Indian population, the present research aimed at examining the efficacy of a WM training for middle-aged adults. **Methods:** Sixty-two middle-aged adults between 40-65 years of age were divided into experimental and control groups, each group consisting of 31 participants. The experimental group underwent a 10-session WM training program comprising of 17 WM tasks, with each session lasting for 45 minutes to one hour, while no training was given to the matched control group. **Results:** The results showed significant improvement in post-training performance ( $p < .05$ ) on the trained tasks and near transfer tasks among the experimental group in comparison to the control group. **Conclusion:** The present research highlights the benefit of WM training in enhancing the cognitive-communicative abilities with the help of a structured training program among middle-aged adults. These results seem encouraging for the promotion of healthy cognitive well-being among aging adults.

**Keywords:** Working memory, Middle aged adults, Training, Efficacy, Cognition

## Working Memory and Middle Adulthood

### Working memory

Working memory (WM), as described by Miller, Galanter, and Pribram (1960) refers to a work space in the memory system that allows for simultaneous storage and information processing during a cognitive task (Baddeley, 2001). According to Salthouse (1994), WM is an active system which involves temporary storage as well as manipulation of information. It allows for the interaction between attention, perception, and memory (Baddeley, 1992). WM can be reckoned as a vital cognitive-communicative process as it plays a pivotal role in basic language abilities; such as recognizing and comprehending words, understanding spoken discourse and reading comprehension. WM skills are vital for per-

forming several day-to-day tasks; like conversations, remembering a phone number between the time of hearing it and dialing it, recalling the directions while driving until the destination is reached, and so on. WM has been considered as a paradigm essential for higher cognition. There is vast psychometric evidence which emphasizes WM capacity as an important factor influencing individual variances in fluid intelligence and executive functioning (Engle, Tuholski, Laughlin, & Conway, 1999), language acquisition (Baddeley, 2003), reading comprehension (Daneman & Carpenter, 1980), a number of domain-specific reasoning skills (Kane et al., 2004) and non-verbal problem solving (Logie, Gilhooly, & Wynn, 1994).

# Telerehabilitation in the Field of Speech Language Pathology During Pandemic Covid19 Outbreak-an Analysis in Kerala

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## ABSTRACT

Telerehabilitation is the application of telecommunications technology for the delivery of speech language pathology and audiology services at a distance by linking clinician to client or clinician to clinician for assessment, intervention, and/or consultation. It is an emerging field, but due to the lack of trained professionals, the number of professionals providing telerehabilitation in Kerala is few in number. The outbreak of the pandemic COVID 19 has forced the speech language pathologists (SLPs) to shift from the traditional face to face therapy to telerehabilitation which was a new experience for most of the speech language pathologists. The present study aimed to understand the challenges faced by the speech language pathologists to provide telerehabilitation services to the clients during the outbreak of pandemic COVID-19 and how they overcome those barriers using a self- rated questionnaire developed. The questionnaire was sent to speech language pathologists through mail and WhatsApp. 105 speech language pathologists responded. Among them, 77 speech language pathologists provided telerehabilitation and served clients of all ages and different disorders with language disorder being the most common and dysphagia and apraxia being the least served client population. Telerehabilitation was found to be a viable form of service delivery in the field of speech language Pathology. All possibilities of Information and Communication Technology (ICT) were utilized by the SLPs to provide the best services despite the lack of training and non-availability of resources. This survey depicts the need for publishing standard guidelines for providing telerehabilitation services and also it emphasizes the need for improved infrastructure and training to professionals to ensure quality services to their clients.

**KEY WORDS:** COVID 19, KERALA, SPEECH LANGUAGE PATHOLOGY, TELEREHABILITATION.

## INTRODUCTION

Corona virus disease-19 is caused by a new strain of coronavirus, which previously was referred to as '2019 novel coronavirus' or '2019-nCoV.' With the recent

outbreak of pandemic COVID 19, social distancing is practiced all over the world to prevent the spread of the disease. This has led to the exploration of the possibilities of technology in almost every aspect of life. Telerehabilitation refers to the use of Information and Communication Technologies (ICT) to provide rehabilitation services to people remotely in their homes or other environments. Telepractice in speech language pathology is the application of telecommunications technology to the delivery of speech language pathology and audiology professional services at a distance by linking clinician to client or clinician to clinician for assessment, intervention, and/or consultation, (ASHA, 2005a , Brennan et.al, 2009, World Health Organization, 2020).

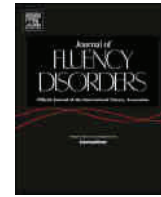
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# Nonword repetition and identification skills in Kannada speaking school-aged children who do and do not stutter

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### Keywords:

Nonword repetition  
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## ABSTRACT

**Purpose:** The present study employed nonword repetition and nonword identification tasks to explore the phonological working memory (PWM) abilities and its interaction with speech motor control in school-aged children who do and do not stutter.

**Method:** Participants were 17 children who stutter (CWS) (Age range = 7–12) and 17 age and gender-matched children who do not stutter (CWNS). For the nonword repetition task, the participants repeated sets of 2-, 3-, and 4-syllable nonwords (n = 12 per set). The participants silently identified a target nonword from a subsequent set of three nonwords (n = 12 per 2-, 3- and 4-syllable length) for the nonword identification task. The performance of CWS on the nonword repetition task was compared with the CWNS for the mean number of accurate repetitions, number of trials taken, number of accurate repetitions on initial trial, and number of fluent repetitions across the three-syllable conditions for the tasks. For the nonword identification task, the number of nonwords identified accurately by the two groups were subjected to analysis.

**Results:** CWS were significantly less accurate on the initial production of nonwords and required significantly more number of attempts to repeat the nonword accurately. Further for the nonword identification task, CWS were significantly less accurate than CWNS in correctly identifying the target nonword.

**Conclusions:** The present findings suggest that, in addition to limitations in PWM capacity, an unstable speech motor control system in CWS may lead to dysfluent speech.

## 1. Introduction

Stuttering is a multifactorial fluency disorder characterized by disruptions in the forward flow of speech (Bloodstein & Bernstein Ratner, 2008; Conture, 2001; Guitar, 2014; Yairi & Seery, 2011). Approximately 5 % of the preschool children tend to stutter at least once in their lifetime, with roughly 25 % of these children developing chronic stuttering that persists into adulthood (Yairi & Ambrose, 1999). Several theories have been proposed to explain the development of the disorder, with the most accounting for stuttering as a deficit in linguistic, psychological, and sensorimotor control processes (Conture & Walden, 2012; De Nil, 1999; Guitar, 2014; Kalvaram, 2001; Max, Guenther, Gracco, Ghosh, & Wallace, 2004; Neilson & Neilson, 1987; Postma & Kolk, 1993; Smith, 1999; Smith & Kelly, 1997; Vasić & Wijnen, 2005; Webster, 1990; Yairi & Ambrose, 2005). This has led several researchers to take a multifactorial approach to stuttering (Conture, 2001; Smith & Kelly, 1997).

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## Predictive factors for persistence and recovery of stuttering in children: A systematic review

Nirmal Sugathan & Santosh Maruthy

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# Time domain analysis of electroencephalogram (EEG) signals for word level comprehension in deaf graduates with congenital and acquired hearing loss

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**Abstract.** Deafness can be classified on the basis of onset as congenital and acquired hearing loss. The brain is a sensitive part of our body, electrical pulses from the neurons interact with each other, generating brain signals. EEG signals are extensively used for clinical diagnosis for any brain anomalies, language comprehension and performance measurement studies. This study mainly focuses on analysing the word level comprehension in deaf adults in the age group (21 - 25 years) using EEG signals. The raw EEG signals were pre-processed and the relevant time domain linear and nonlinear features were extracted and classified using machine learning algorithms. The approximate entropy feature was found to be best suited for finding the comprehension of both congenital and acquired deaf adults. This feature of ISL was observed to be achieving better classification rate with a maximum average accuracy of 96% in both congenital and acquired deaf adults using SVM classifier.

**Keywords:** - Deafness, EEG, Comprehension, Artifact, Indian Sign Language

## 1.Introduction

Hearing is a complex function of ear which allows discrimination of sounds. Hearing plays a key role in facilitating the language and speech advance [1]. As the table 1 shows, Goodmann classified deafness on the basis of the hearing impairment severity[2].

**Table 1.** Classification of hearing impairment severity

Classification	PTA range in dBHL
Normal hearing	-10 to 15
Slight hearing loss	16 to 25
Mild hearing loss	26 to 45



# “I Think I Can Remember” Age-Related Changes in Self-Efficacy for Short-Term Memory

Dasmine Fraclita D'Souza, Gagan Bajaj, Vinitha Mary George<sup>1</sup>, Sudhin Karuppali, Jayashree S. Bhat

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## Abstract

**Introduction:** Changes in metacognitive abilities due to aging, like self-efficacy, have received less attention in cognitive research. Short-term memory (STM) declines among aging adults are well known but the age-related trends of self-efficacy linked to the same have received less attention. The present research aimed at studying age-related trends in self-efficacy linked to STM among the young-aged, middle-aged, and old-aged adults. **Materials and Methods:** Participants performed face recall, name recall, object recall, face-name association, first-second name association, and face-object association tasks. The self-efficacy linked to these STM tasks was measured through a pre-task prediction question and a post-task judgment question. Descriptive statistics and two-way mixed model ANOVA with *post hoc* Bonferroni analysis were performed to assess age related changes in self-efficacy measures. **Results:** The findings revealed significant overestimation of performance, during pretask prediction, by old-aged adults and middle-aged adults. While the posttask judgment was recalibrated closer to the actual performance by participants of all age groups. **Conclusion:** The current research findings indicate that self-efficacy for STM follows an age related decline. Therefore, inclusion of self-efficacy measures in the assessment of STM would provide a valuable insight as it describes an individual's own awareness about their STM abilities, provides realistic feedback about one's STM performance and also aids clinicians in understanding the perception-performance dynamics among the aging adults.

**Keywords:** Aging, prediction, self-efficacy, short-term memory

## INTRODUCTION

Short-term memory (STM), a cognitive mechanism is defined as the “faculties of the human mind that can hold a limited amount of information in a very accessible state temporarily”.<sup>[1]</sup> Retrieval of information from STM can be in the form of recall referring to the constant re-access of information and association referring to the retrieval by linking two or more items, from a previously presented original set of items.<sup>[2,3]</sup> STM is essential for higher order actions such as troubleshooting, developing plans, and problem solving.<sup>[4]</sup> It includes recalling faces, objects, names of people and making associations between first and second names of a person, names of people, their faces, the objects they possess and age-related STM decline have been reported to begin from middle twenties to old age.<sup>[5,6]</sup> The awareness of decline in STM abilities is critical to understand the real capacities in deciding how one utilize recollections in ordinary circumstances.<sup>[7]</sup> Self-efficacy is defined as “people's beliefs about their capabilities to

produce designated levels of performance that exercise influence over events that affect their lives.”<sup>[8]</sup> Self-efficacy beliefs are responsible for the regulation of an individual's feelings, thoughts, motivation, and behaviors. Individuals with better awareness about their memory abilities, are able to implement appropriate strategies, thus take maximal advantage of their memory.<sup>[9]</sup> The existing research regarding effect of age on self-efficacy linked to memory has given mixed understanding. For example, there are some reports which suggest an overestimation of performance on memory tasks by

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# Academic Outcomes and Coping Mechanisms of Children using Cochlear Implants in Mainstream Schools in Kerala, India

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## ABSTRACT

**Purpose:** *The aim of the present study was to understand the academic outcomes of children using cochlear implants in mainstream schools in Kerala, India and to explore the compensatory strategies used by them to overcome the difficulties faced in classrooms.*

**Method:** *Thirty-one children using cochlear implants who were attending first and second grades in mainstream schools, and their parents and teachers participated in the study. Teachers were asked to rate a questionnaire, "Teachers' Perceptions of Academic Outcomes", which consisted of five sections – oral comprehension, oral expression, reading, writing and mathematics. The performance of the children using cochlear implants was compared with the performance of typically hearing children in the class. The grades obtained in the previous examination were also used for the comparison. Information was collected regarding difficulties faced by the children inside the classroom and their strategies to overcome the challenges.*

**Results:** *The class teachers rated the performance of 71 % of these children as 'above average'. Though the academic outcomes were found to be good on the questionnaire and classroom tests, most of the children with cochlear implants faced various difficulties and had used different compensatory strategies to give their optimum performance in the classroom.*

**Conclusion:** *The study emphasizes the importance of having mid- and long-term follow-ups with children using cochlear implants, even after mainstreaming. It*

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# Gender differences in quality of life, physical activity, and risk of hypertension among sedentary occupation workers

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## Abstract

**Purpose** This study aimed to explore gender differences among sedentary occupation workers with regard to their quality of life (QoL), physical activity, and risk for high blood pressure, and to identify factors associated with QoL.

**Methods** A convenience sample of 2562 employees from randomly selected ten ministries in Kuwait completed self-administered questionnaires. Collected data included employees' socio-demographic characteristics, levels of QoL (using World Health Organization QoL-Brief tool), and physical activity (using the New Zealand Physical Activity Questionnaire Short Form), and anthropometric measures of weight, height, and blood pressure. Multinomial regression analysis, Chi-square, ANOVA, and student's *t* tests were implemented. A *p* value of 0.05 was considered significant.

**Results** Participants' mean age was 35.3 years. QoL mean scores were total QoL (74.7), physical health (81.1), psychological health (75.4), social relationship (71.1), and environment (70.8). Females showed worse level of QoL, better physical activity, and higher prevalence of hypertension relative to males. Multinomial regression analysis revealed that female gender, low educational attainability, poor income, high job ranks, shorter working years, obesity, physical inactivity, hypertension, or having at least one chronic illness significantly correlated to fair and poor QoL.

**Conclusion** Sedentary occupation workers reported modest level of QoL and were at high risk of hypertension. Socio-demographic factors, physical activity, and health status were correlated to QoL. Gender differences existed in QoL, physical activity, and risk of hypertension. Improving employees' QoL through adopting strategies to promote healthy lifestyle in work settings should be activated. Further studies are recommended to explore cultural factors that drive gender differences in QoL.

**Keywords** Quality of life · Gender differences · Physical activity · Risk of hypertension · Kuwait

## Introduction

Quality of life (QoL) is an indirect measure of an individual's physical and psychological wellbeing and overall life satisfaction. More than two decades ago, the World Health Organization (WHO) defined QoL as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social

relationships and their relationship to salient features of their environment"[1]. On the other hand, the rising prevalence of non-communicable diseases (NCDs) is potentially efficient enough to worsen individual's QoL through different ways by limiting individual's physical and functional capability to be productive and consequently deteriorating individual's comprehensive wellbeing [2]. Therefore, QoL should be the individual's thermometer of his/her health status and wellbeing.

Moreover, sedentary work lifestyle is becoming a new norm of work places globally. Offices, in particular, have primarily sitting-related job demands with very low physical activity for the employees. Office workers on a workday are reported to have 75.8% [3] to 81.8% [4] of sedentary work hours. Sedentary behaviors, characterized by sitting or reclining with low energy expenditure, are independently associated with high blood pressure (HBP) [5] and cardiovascular diseases (CVD) [6]. Moreover, sedentary work

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# Virtual 'Study Abroad': Promoting Intercultural Competence Amid the Pandemic

By Lata A. Krishnan, PhD, CCC-A; Sita Sreekumar, MASLP; Saumya Sundaram, MASLP; Manju Subrahmanian, MASLP; and Praveena Davis, MASLP

The importance of intercultural competence among health care professionals has long been recognized in providing appropriate care to individuals from diverse backgrounds. Study abroad (SA) programs have been shown to enhance the participants' intercultural competence,<sup>1-3</sup> but only a small fraction of about 10.9 percent of U.S. undergraduate students have the opportunity to study abroad.<sup>4</sup> Over the past year, the COVID-19 pandemic put a halt to university SA programs, but instead of viewing these cancellations as a problem, our team at Purdue University took this as an opportunity to develop a novel program to "study abroad" without going abroad. Upon cancellation of these programs, the university implemented a new grant opportunity: the Virtual Experiential Intercultural Learning (VEIL) grant to promote continuous international intercultural learning without studying abroad. This grant was used to continue the Speech, Language, and Hearing Sciences in India SA program, which was developed in collaboration with multiple community partner organizations in India, including the National Institute of Speech and Hearing (NISH). Here's how we collaborated to promote intercultural competence without traveling abroad.

## COURSE PLANNING & IMPLEMENTATION

In July 2020, Purdue and NISH started to discuss the feasibility of the program, which focused on pediatric audiology. This graduate-level course offers a perfect opportunity to incorporate intercultural learning. In the United States, more than 42 percent of Deaf and hard-of-hearing school-age children are non-White.<sup>5</sup> The U.S. Census Bureau figures indicated that 50.4 percent of children below one-year-old and 49.7 percent of children 5 years old and below were minorities.<sup>6</sup> Thus, it is imperative that audiology students develop the skills needed to provide culturally sensitive and appropriate care to the children they are likely to encounter in their practice.

During the initial planning stage, the organizers considered many factors, including the different academic calendars, the course syllabi in India regulated by a national body, the Rehabilitation Council of India, the 9.5-10.5-hour time difference,



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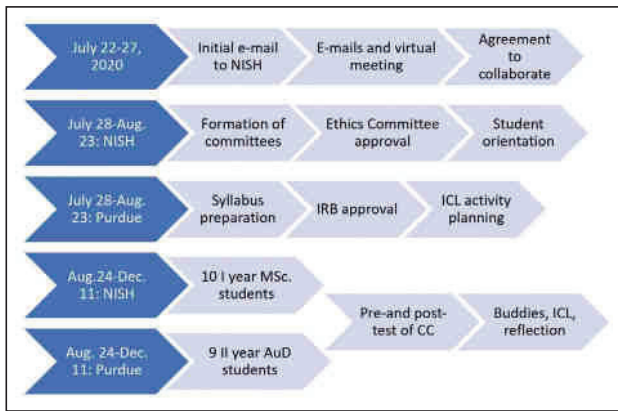
how to provide access to course materials for NISH students, and the recognition NISH students would receive upon course completion. Figure 1 shows the timeline of events that occurred leading up to and until the conclusion of the course.

The NISH faculty formed four committees to oversee all aspects of the program to be offered to students in their Master's in Audiology program:

- 1) **Student program coordination:** This committee provided a detailed orientation to the students regarding the course requirements, including information about Purdue University and the previous collaboration, the intercultural exchange program, and the pediatric audiology course with a certificate at completion. This was an additional course to their already prescribed masters program, but the 10 participating students were enthusiastic about the opportunity.
- 2) **Intercultural Learning (ICL):** The Purdue and NISH faculty together decided on topics for the ICL activities that ranged from discussing differences in pediatric audiology assessment and management protocols to cultural differences in festivals and celebrations, educational systems, family dynamics, parenting styles, gender roles, colorism, arranged and child marriage, dowry, poverty, and the caste system in India. Since ICL is a new and unfamiliar topic in India, NISH faculty informed their students about the ICL program and



From left: **Dr. Krishnan** is a clinical professor in the department of speech, language, and hearing sciences at Purdue University. **Ms. Sreekumar** is a senior lecturer and head of the CI Unit in the department of audiology and speech-language pathology at the National Institute of Speech & Hearing in India, where **Ms. Sundaram** is an assistant professor and clinical coordinator, **Ms. Subrahmanian** is an assistant professor and the vice-principal, and **Ms. Davis** is an assistant professor and the head of the Research and Project Consultancy Centre.



**Figure 1. Timeline and aspects of course planning and implementation.** Note: ICL = intercultural learning; CC = cultural competence.

its objectives, the assessment process using a pre- and post- questionnaire (the Intercultural Development Inventory: IDI®), the ICL topics, and reflection papers, and encouraged students to have a free and open discussion.

- 3) **Academic learning:** A Google classroom was created to discuss the course syllabus, readings, video lectures, and other information with the NISH students.
- 4) **Institutional Ethics Committee (IEC) Approval:** NISH faculty presented the proposal for the course that included pre- and post- assessment of cultural competence to the IEC, and received approval to conduct the assessments.

During this time, the course instructor at Purdue prepared the course syllabus, planned ICL materials (readings, TED talks, etc.), and received IRB approval to perform the pre- and post-assessment.

The program set up involved pairing Purdue and NISH students into studies buddies throughout a 16-week course that included a range of topics on pediatric audiology, including assessment strategies for infants, toddlers, and older children to management and counseling. Case discussions were an integral part of every class meeting. The Purdue class meetings were primarily in person, but all lectures were recorded and made available to both groups of students, in addition to readings for the course. One class session at the start of the semester was used to have a group virtual meeting where all students and faculty introduced themselves. Student buddies were encouraged to talk freely with each other and discuss the range of suggested ICL topics. Buddies communicated via e-mail, text messaging, and video chats. At the request of NISH students, three virtual meetings were held with the course instructor to answer their questions. All students wrote monthly reflection papers regarding their ICL activities and completed the IDI® questionnaire at the start of the semester and after the course.

## PRE- AND POST-ASSESSMENT

Figure 2 shows the pre- and post IDI® scores for the two groups of students. An independent samples *t*-test indicated there was no significant difference in pre-IDI® scores between the two groups. Paired samples *t*-tests indicated there

was a significant difference between the pre- ( $M = 92.4$ ) and post- ( $M = 114.8$ ) score for the Purdue group ( $p = .0009$ ), and a significant difference between the pre- ( $M = 82.2$ ) and post- ( $M = 98.4$ ) score for the NISH group ( $p = .009$ ).

Reflection papers from both groups of students further substantiated the benefits of the course, with comments related to (1) the course format, (2) cultural learning, (3) transfer to clinical skills, and (4) lifelong learning. Here are examples:

“Being paired with a buddy was the most impactful part of this process for me.”— Purdue student

“I think interacting with a native is one of the best ways to understand a country and gain knowledge about its culture, which was made possible only because of this program.”— NISH student

For almost all the NISH students, this was their first experience interacting with someone from a different culture. Both groups of students commented on intercultural learning with many comments such as:

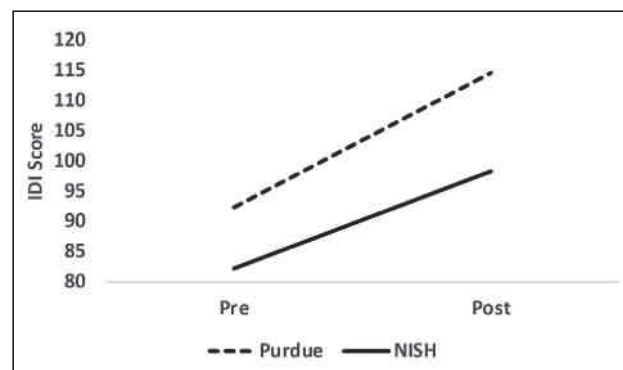
“I feel like I learned a lot, including how to challenge and acknowledge my own biases.”— Purdue student

“We should appreciate there are differences between people instead of pretending nobody is different. Only then we will be less different.”— NISH student

Some comments focused on being better prepared for clinical experiences, such as this feedback from a Purdue student: “Through the intercultural development activities and my efforts to actively learn about another culture, I feel that I am better equipped to see patients in the clinic too.”

Finally, students also spoke about lifelong learning:

“I hope to use the powerful lessons that I’ve learned this semester to continue my intercultural growth and learning, both professionally and personally.”— Purdue student



**Figure 2. Pre- and post-IDI® scores of the two student groups showing growth in intercultural competence (Purdue:  $p = .0009$ ; NISH:  $p = .009$ ).**



## Impact of Screen Time on Communication in Toddlers: A Parental Awareness Survey

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### Abstract

**Purpose:** To understand the awareness among parents of toddlers on the impact of increased screen time on language and communication development.

**Method:** A screen time awareness questionnaire was developed. 200 Malayalam speaking parents of toddlers participated in the study. The Screen time awareness questionnaire was sent to the parents via google forms.

**Results:** 88.5% reported that they were aware of the impact of increased screen time. Among the specified impacts, vision problems stand first and the least reported problem was speech delay. 67% believed that children will start speaking by watching screen. 84% believed that increased screen time leads to attention problem. 93.8% believed that screen time has to be restricted but 56% were not aware of any guidelines set.

**Conclusion:** Increased screen time has detrimental effects on children's language and other cognitive development including delayed language development, poor social skills, reduced attention, etc. Even when many parents are aware of the impact of increased screen time, misunderstandings persist and are not aware of the guidelines on screen time restriction. With improved awareness, screen time in young children can be limited thereby increasing the parent child interaction and play time which in turn lessens the detrimental effects of screen time on communication development.

**Keywords:** Screen time, toddlers, Awareness, language and communication development.

# Listening Text Story Comprehension and Story Recall in Children with Autism Spectrum Disorders (ASD); A Glean to Social Inferencing Skills

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**Running Title:** *Listening text comprehension and story recall in autism spectrum disorders*

**Abstract:** ***Introduction:** Comprehension of oral or written language involves complex process that requires the processing of both literal and inferential information and involves various components. However, children and adolescents with Autism Spectrum Disorders (ASD) without cognitive impairment showed lacunae in their ability to infer meaning from spoken or test messages due to the specific pragmatic deficits. Present study investigated how ASD children with normal language (ALN) comprehend literal and inferential information in oral text. **Method:** Ten children with ALN without cognitive impairment in the age range of 5-8 years and ten age matched typically developing (TD) children participated in the study. Both TD and ALN group underwent evaluation for language skills, non-verbal cognitive skills using Assessment of Language Development (ALD) and Raven's Colored Progressive Matrices - 2 (CPM -2). In addition, ASD symptomatology was ascertained through Child hood Autism rating Scale 2 (CARS-2). Clinical and control groups were evaluated as to their listening text comprehension and recall using stories. The listening text comprehension task necessitate the participants to answer questions about the literal content of the story, as well as questions involving two types of inferences: text-connecting and gap-filling. **Results:** The results of the study revealed that TD group outscored the clinical group on listening text comprehension involving inferential processing skills in both text connecting and gap filling task. However, ALN group performance in literal comprehension task was comparable to that of TD group. The results indicated that despite of having normal cognitive abilities and language children's skills, the poor performance in inferential processing task by ALN group is due to underlying socio-pragmatic deficit as well as lack of social inferencing skills. There exists a strong relationship between morpho syntactic skills, vocabulary and story recall. **Conclusion:** It is concluded that there is strong relation exist between inferential processing skills and pragmatic deficits in ALN group. Further conclusion can be drawn that comprehension aids recalls by enabling the listener to build a more stable mental representation of the story. The pragmatics deficits in ALN compromises these processes.*

**Keywords:** Inferential skills, Autism Spectrum Disorders, Story recall, Semantic Pragmatic deficit, listening comprehension

## 1. Introduction

The linguistic skills alone are not enough for successful communication. Successful communication requires skills that expand over the information given linguistically, because there are contextual and social factors that continuously contribute to our interpretation and expression of language (Gibbs & Colston, 2012; Leinonen, Letts & Smith, 2000). In many situations, utterances possibly have many interpretations, however the hearer automatically attempts to make use of relevant information only in utterance interpretation; this is called inferential comprehension. A troubled inferential comprehension skill can result in literal interpretation there by misunderstanding the intention of what is been said, heard or read (Grice, 1989). There is a close connection between the role of inference in pragmatic interpretation. Pragmatics is the study of language use especially focusing on how an individual utilize contextual information in the comprehension and expression as well as how the contextual factors interact with the linguistic meaning (Sperber & Wilson, 1995, 2012). Pragmatic skills are determined by one's ability to make inferences through adaptation to the linguistic and physical

context and demands. The ability to make inferences is as essential as language skills for effective communication (Leinonen, Ryder, Ellis & Hammond, 2003). Human communication, whether it is verbal or nonverbal is primarily a matter of inference and language is an add-on. Hence, we can clearly conclude that human communication is arguably inferential (Sperber & Wilson 2012). Leinonen et al., 2003; Perkins 2007 reported that social comprehension or inferential processing skills are largely embedded in comprehension. In addition, they stated that long and short-term memory, theory of mind, reasoning skills, lexical, syntactic knowledge, integration and thinking remain central to the comprehension process.

Children with language impairments have difficulty in reporting verbal inferences, however it remains unclear if the underlying cause is the limitations in language comprehension, inability to access world knowledge or integrating the information in a discourse (Botting & Adams, 2005; Karainski & Weismer, 2010; Dodwell & Bavin, 2008). Among the neurodevelopment disorders, children with Specific language impairment (SLI) and Autism Spectrum disorders (ASD) demonstrated

# “I Think I Can Remember” Age-Related Changes in Self-Efficacy for Short-Term Memory

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## Abstract

**Introduction:** Changes in metacognitive abilities due to aging, like self-efficacy, have received less attention in cognitive research. Short-term memory (STM) declines among aging adults are well known but the age-related trends of self-efficacy linked to the same have received less attention. The present research aimed at studying age-related trends in self-efficacy linked to STM among the young-aged, middle-aged, and old-aged adults. **Materials and Methods:** Participants performed face recall, name recall, object recall, face-name association, first-second name association, and face-object association tasks. The self-efficacy linked to these STM tasks was measured through a pre-task prediction question and a post-task judgment question. Descriptive statistics and two-way mixed model ANOVA with *post hoc* Bonferroni analysis were performed to assess age related changes in self-efficacy measures. **Results:** The findings revealed significant overestimation of performance, during pretask prediction, by old-aged adults and middle-aged adults. While the posttask judgment was recalibrated closer to the actual performance by participants of all age groups. **Conclusion:** The current research findings indicate that self-efficacy for STM follows an age related decline. Therefore, inclusion of self-efficacy measures in the assessment of STM would provide a valuable insight as it describes an individual's own awareness about their STM abilities, provides realistic feedback about one's STM performance and also aids clinicians in understanding the perception-performance dynamics among the aging adults.

**Keywords:** Aging, prediction, self-efficacy, short-term memory

## INTRODUCTION

Short-term memory (STM), a cognitive mechanism is defined as the “faculties of the human mind that can hold a limited amount of information in a very accessible state temporarily”.<sup>[1]</sup> Retrieval of information from STM can be in the form of recall referring to the constant re-access of information and association referring to the retrieval by linking two or more items, from a previously presented original set of items.<sup>[2,3]</sup> STM is essential for higher order actions such as troubleshooting, developing plans, and problem solving.<sup>[4]</sup> It includes recalling faces, objects, names of people and making associations between first and second names of a person, names of people, their faces, the objects they possess and age-related STM decline have been reported to begin from middle twenties to old age.<sup>[5,6]</sup> The awareness of decline in STM abilities is critical to understand the real capacities in deciding how one utilize recollections in ordinary circumstances.<sup>[7]</sup> Self-efficacy is defined as “people's beliefs about their capabilities to

produce designated levels of performance that exercise influence over events that affect their lives.”<sup>[8]</sup> Self-efficacy beliefs are responsible for the regulation of an individual's feelings, thoughts, motivation, and behaviors. Individuals with better awareness about their memory abilities, are able to implement appropriate strategies, thus take maximal advantage of their memory.<sup>[9]</sup> The existing research regarding effect of age on self-efficacy linked to memory has given mixed understanding. For example, there are some reports which suggest an overestimation of performance on memory tasks by

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# Academic Outcomes and Coping Mechanisms of Children using Cochlear Implants in Mainstream Schools in Kerala, India

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## ABSTRACT

**Purpose:** *The aim of the present study was to understand the academic outcomes of children using cochlear implants in mainstream schools in Kerala, India and to explore the compensatory strategies used by them to overcome the difficulties faced in classrooms.*

**Method:** *Thirty-one children using cochlear implants who were attending first and second grades in mainstream schools, and their parents and teachers participated in the study. Teachers were asked to rate a questionnaire, "Teachers' Perceptions of Academic Outcomes", which consisted of five sections – oral comprehension, oral expression, reading, writing and mathematics. The performance of the children using cochlear implants was compared with the performance of typically hearing children in the class. The grades obtained in the previous examination were also used for the comparison. Information was collected regarding difficulties faced by the children inside the classroom and their strategies to overcome the challenges.*

**Results:** *The class teachers rated the performance of 71 % of these children as 'above average'. Though the academic outcomes were found to be good on the questionnaire and classroom tests, most of the children with cochlear implants faced various difficulties and had used different compensatory strategies to give their optimum performance in the classroom.*

**Conclusion:** *The study emphasizes the importance of having mid- and long-term follow-ups with children using cochlear implants, even after mainstreaming. It*

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