ASHA KIRAN

The Annual Newsletter of the Asian Indian Caucus (AIC)

2020

About the Asian Indian Caucus

The Asian Indian Caucus is one of the six multicultural constituency groups of the American Speech-Language-Hearing Association (ASHA). The Asian Indian Caucus was established in 1994 to address the professional, clinical, and educational needs of persons with communication disorders of Asian Indian origin residing in the United States. Asian Indians, otherwise known as South Asians, refer to persons who trace their origin to the Indian subcontinent, including, but not limited to the following countries (in alphabetical order):
Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka.

Asian Indian Caucus Objectives

- To motivate and provide opportunities for greater participation of Asian Indians in professional service to Speech-language Pathology and Audiology
- To serve as a resource to meet the needs of clients of Asian Indian origin and/or professionals working with clients of Asian Indian origin
- To promote exchange of information and networking among members to enhance professional development and/or quality of service delivery to Asian Indian clients with communication disorders
- To compile information about evidence-based practices relating to service delivery for Asian Indian clients globally

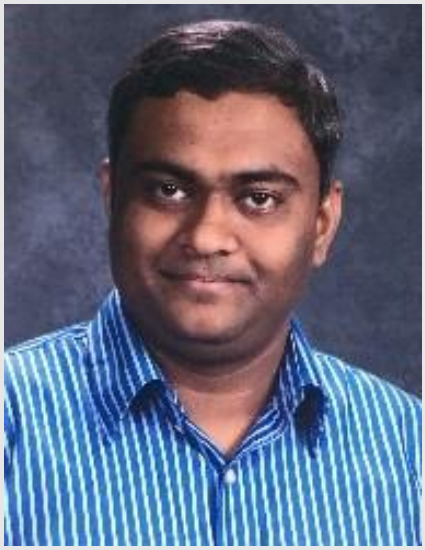
To connect with us or learn about our updates, please email us at asianindiancaucus@gmail.com

Become a member of the Asian Indian Caucus through this link

Follow us on social media https://www.facebook.com/Asian-Indian-Caucus-AIC-ASHA-301397089920693/ and https://www.instagram.com/aic_asha/

In this issue

President's Message



Dear AIC Members,

Namaste!

We hope you and your family are safe and healthy. Although the 2020 ASHA Convention has been canceled due to COVID-19, the Asian Indian Caucus of ASHA has continued the tradition of publishing the annual newsletter ASHA KIRAN during this time of the year. Our editorial team, Dr. Siva priya Santhanam and Mrs. Reethee Madona Antony, has done exemplary work to bring this amazing newsletter ASHA KIRAN 2020 to you this year!

Our caucus has introduced various initiatives over the past year. These initiatives would not have been made possible but for the great enthusiasm and support from our dynamic executive team – Dr. Ranjini Mohan (Vice President -Professional Development), Dr. Shriya Basu (Vice President - Public Relations), Dr. Anusha Sundarrajan (Secretary), and expert guidance from Dr. Akila Rajappa, (President of the AIC January 2017- December 2018).

We held our first virtual Meet & Greet event '**Namaste AIC**' in July 2020. Mrs. Vicki R. Deal-Williams, Chief Staff Officer for Multicultural Affairs (MIB), and Dr. Linda Rosa-Lugo, ASHA Board Vice- President-Elect for the Speech-Language Pathology Practice presided the event as chief guests. Mrs. Williams shared about MIB/ASHA's initiatives on promoting diversity in the field, and Dr. Rosa-Lugo discussed service delivery models which can be utilized while serving the culturally and linguistically diverse (CLD) population. This event was well attended by our caucus members and practicing SLPs in the field.

One topic that gained wide attention this year was **issues relating to racial equality.** ASHA hosted their Listening Session on Racism in July 2020. As a follow-up, the Asian Indian Caucus invited our members to share their personal experiences of microaggression, implicit bias, prejudice, and racism at school or work. The survey responses were compelling and overwhelming, and we have forwarded the responses to ASHA's Office of Multicultural Affairs and ASHA's Board of Directors. The Asian Indian Caucus values the multicultural and multilinguistic background of our members and shall continue to promote diversity and equality for all our members.

We launched the **virtual AIC Speaker Series** in August 2020. Our first event "AAC You Virtually: Quick Start Guide to Tele-AAC" by Punam Desormes, M.A., CCC-SLP, ATP Carolyn Buchanan, M.A., CCC-SLP, ATP was well attended by school-based SLPs, students, and faculty. We are continually seeking speakers who can present on contemporary topics for this series. Please contact us if you are interested in presenting to our caucus members.

The current AIC executive board met with the past presidents and advisors of the AIC and discussed changes to the bylaws, which were originally developed in the late 1990s. The new information will be available for review on our website in January 2021.

The AIC has collaborated with ASHA and developed diversity recruitment brochures Make A Difference: Make A Change targeting Asian Indian high school students and individuals in the USA. These informative brochures emphasize the value of pursuing a career as an audiologist or speech-language pathologist and giving back to the community as a professional. We encourage our caucus members to order the materials through this link and share with their families and friends, counselors at high schools and colleges, career events, and colleagues. We hope for increased diversity in the field of Audiology and Speech-Language Pathology in our country. We also strongly encourage our caucus members to identify themselves as a bilingual service provider with ASHA. https://www.asha.org/Members/Self-Identify-as-a-Bilingual-Service-Provider/. As a professional, you'll be able to provide quality services by communicating in the client's native language.

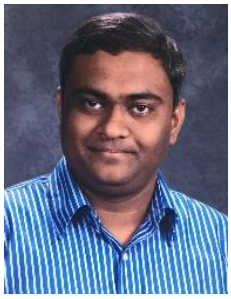
The Asian Indian Caucus will continue to work on these goals:
1) enhancing diversity and equality in the profession
2) building a resource repository of speech-language test materials in South Asian languages which can be used by clinicians across the United States
3) increasing visibility and networking of the AIC and the members
4) fundraising efforts to support research on the Asian Indian population in the USA.

We, the AIC executive members, hope to meet you all at the 2021 ASHA Convention in Washington D.C.

Thank you,

Prabhu Eswaran M.S., CCC-SLP
President (Jan 2019-Dec 2021)

Executive Board of the Asian Indian Caucus



Prabhu Eswaran,
M.S., CCC-SLP

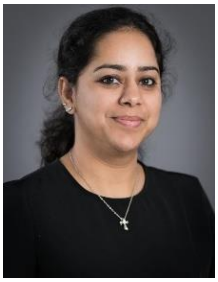
President, Prabhu Eswaran is an ASHA certified school-based speech-language pathologist in Los Angeles, California. He has over fifteen years of clinical experience in working with the early childhood and school-aged population. His areas of interest include child language disorders, communication disorders in culturally and linguistically diverse populations and technology in special education. He is actively involved in various community activities and camps relating to communication disorders in the Southern California region. He has served in the AIC board under various capacities since 2013. Prabhu can be contacted at prabhuslp@gmail.com

Ranjini Mohan,
Ph.D., CCC-SLP

Vice President (Professional Development), Ranjini Mohan is an Assistant Professor at Texas State University in the Dept. of Communication Disorders. Her research interests include understanding the neural bases of cognition and language in typically aging adults and those with neurogenic diseases. She has clinical experience working with adults in acute, sub-acute, and outpatient settings, both in the U.S. and in India.

Shriya Basu,
Ph.D., CCC-SLP

Vice President (Public Relations), Dr. Shriya Basu, Ph.D. CCC-SLP is an Assistant Professor at California State University-Long Beach, CA. She received her Ph.D. from the University of Minnesota with dual focus majoring in Speech Language and Hearing Sciences with a minor in Cognitive Sciences. Her research interests include Fluency, Language and Cognition. Her past and current research projects are aimed at understanding the Multi-dimensional model of Stuttering: more specifically the effects of Attention, Executive Function and Working Memory on Linguistic Variables in children and adults who stutter.



Anusha Sunderrajan, Ph.D., CCC-SLP

Secretary, Dr. Sundarrajan is an Assistant Professor at the Department of Speech, Language, Hearing Sciences at San Francisco State University, California. She received her bachelor's and master's degrees in Audiology and Speech-Language Pathology in India. She earned her Ph.D. in Speech Language Pathology and a minor in Gerontology at Purdue University in 2016. Her research interests center around understanding the physiology of aging voice using aerodynamic and acoustic measures. She is specifically interested in understanding how the healthy young and old larynx responds to the effects of unhealthy, and excessive use of the laryngeal mechanism. She has extensive clinical experience working with children with developmental disabilities in schools and private practices both in the U.S. and in India.

Siva priya Santhanam, Ph.D., CCC-SLP

Chief Editor, Siva priya Santhanam is an Assistant Professor at the Dept. of Speech, Language, Hearing Sciences at Metropolitan State University of Denver, Colorado. She developed and directs the Integrated Supports for Students with Autism in College (ISSAC) program at her university. Her research interests include developing strengths-based and support-based interventions for adults on the autism spectrum and addressing the unique needs of children on the autism spectrum and their families from diverse cultural and linguistic backgrounds.

Reethee Madona Antony, MPhil., CCC-SLP

Associate Editor, Reethee Madona Antony, is an Assistant Professor in the department of Speech-Language Pathology at Misericordia University, Pennsylvania. She is an alumnus of Sri Ramachandra University and is completing her doctoral dissertation at the Graduate Center of City University of New York (CUNY). Her areas of interests include neurogenic communication disorders, neural encoding of speech sounds using cortical evoked potentials, non-native speech perception, and multilingualism.

Akila T. Rajappa,
Ph.D., CCC-SLP, BCS-S

President Advisor, Akila T. Rajappa, is an Assistant Professor at Department of Communicative Sciences and Disorders (CSD) program at College of Health Sciences, East Stroudsburg University of Pennsylvania. Dr. Rajappa is passionate about teaching and researching scientific topics related to neuroscience, medical speech pathology, psychophysics and research methods. Her primary research interests are two-fold, basic science and clinical research. In terms of basic science, her interests lie in understanding neural mechanisms of airway protective disorders (cough/swallow) and exploring sensory perception of upper airway stimuli, specifically cough stimuli through the science of psychophysics. In terms of clinical practice, she is interested in evaluating evidence-based practice (EBP), community out-reach and service-learning initiatives in speech, swallowing and cough rehabilitation for aging, stroke and neurodegenerative disease population. Dr. Rajappa has been a practicing clinician for many years across many clinical settings and is a Board-Certified Specialist in Swallowing and Swallowing Disorders (BCS-S). She is also interested in clinical service delivery in multicultural population and has served in the capacity of President of Asian Indian Caucus (AIC), a multicultural constituency group of American Speech-Language & Hearing Association (ASHA). Outside of school and work, Dr. Rajappa enjoys performing Bharatanatyam, a form of Indian classical dance, swimming and spending quality time with her family.

Editor's Message

Vanakkam!

Hope you are all keeping well during the pandemic. Welcome to ASHA KIRAN 2020! This year is a unique one for all of us – an unforgettable one in our lives and a year that has already made its mark in history. This newsletter is nothing different! Over the past five years, on an average we receive approximately eight articles. This year, we will be showcasing sixteen articles! Thanks to your readership and thanks to all the contributors who made it happen!

It gives us immense pleasure to highlight the work of Dr. Subhash Bhatnagar from Marquette University and Dr. Sumitrajit Dhar from Northwestern University in the spotlight section. Dr. Bhatnagar requires no introduction to many of us. A number of us grew up reading his textbooks. He is a pioneer in the field of aphasia. I enjoyed reading about Dr. Bhatnagar's partnership with Dr. Andy that changed his career for the better. It was informative to know that he is currently looking for translators in Odia and Assamese languages. Dr. Dhar's area of interest include cochlear mechanics, otoacoustic emissions, and hearing healthcare delivery. He is the Associate Dean for Research at Northwestern University. I was excited to learn about CEDRA, a questionnaire that helps a client/patient gain an insight about one's hearing before obtaining a hearing device. I was also intrigued to learn about Dr. Dhar's skill in making things out of wood (he even held a wood working summer camp for his daughter this year!) and his new interest in being a team mechanic where he happens to fix and repair bicycles for fun!

A consistent theme in the lives of many great individuals happen to be their strength to grow across and beyond years. Although the two of them have different areas of expertise, a characteristic similar to both of them is "altruism". Be it with Dr. Bhatnagar's vision to translate the aphasia resource materials in numerous languages for the good of our community or with Dr. Dhar's willingness to help growing professional or researcher, what makes these exceptional men shine is their radiance, the selfless commitment, and passion towards the community. Dr. Bhatnagar and Dr. Dhar, thank you very much for lending your time and for allowing us to know you better!

Our COVID Champions Mr. Sundeep Venkatesan, Mr. Deepak Sathiyanarayanan Vijayakumar, and Dr. Ashwini Namasivayam-MacDonald are featured in the following section. They share their COVID experience with us either from a clinical or research perspective. They give us hope and share their words of wisdom with us, For example, it was informative to learn about mitigation plans in the skilled nursing facilities during the pandemic from Mr. Venkatesan's article. It was inspiring to read how Mr. Vijayakumar performed COVID testing for individuals in the general public. Congratulations to Dr. Namasivayam-MacDonald on receiving two COVID-related grants! Thank you for sharing your words of wisdom and for reminding us that we need to be kind to ourselves in this difficult time.

The next section is a compilation of articles from our SLP Trailblazers including Dr. Devanga, Dr. Sebastian, Dr. Virani, and Dr. Chakraborty. Dr. Devanga emphasizes the need for Rich Communicative Environments (RCE) and examines the impact of RCE in individuals with Aphasia;

Dr. Sebastian describes her novel approach of using cerebellar transcranial direct current stimulation to augment aphasia treatment. Dr. Virani then shares her experience of creating Oncology Rehabilitation Programs. It was a gratifying experience to read her article! Dr. Chakraborty shares her work with individuals with Parkinson's disease. It was interesting to read about disfluency clusters in these individuals. Finally, Ms. Mathew shares what she learned from her experiences in Dubai.

Drs. Shruti Balvalli Deshpande & Rohit Ravi, Dr. Rupa Balachandran, and Ms. Kaul Sharma are our Audiology Trailblazers. Congratulations Drs. Deshpande and Ravi on securing the GOLE grant! It was wonderful to read how students across the globe can collaborate and learn from one another as a team. We wish you the best in your venture! Dr. Balachandran in her article discusses comprehensive amplification solutions for the elderly population that can lead to increased hearing aid use in these individuals. In this newsletter, we also have Ms. Kaul Sharma, an entrepreneur and an Audiologist, who shares her journey of AURA with us!

In the last section, we present our Rising Stars: Ms. Suswaram, Ms. Mazumdar, and Dr. Gangopadhyay! All three articles are extremely well written! A common theme in the three articles is to explore the linguistic-cultural variations in our field. Ms. Suswaram's article focuses on feeding behaviors in children on the autism spectrum in India; Ms. Mazumdar describes the development of a Bangla Picture Description Task, and Dr. Gangopadhyay, the Director of the Language Experience and Multilingualism Research (LEMuR) lab, shares with us the importance of using socio-pragmatic cues for word learning in children.

I hope you enjoy reading this newsletter! A big thank you to all our contributors for putting in your time and effort in sharing your knowledge and experiences with the global community! Please feel free to reach out to us or share your feedback with us at asianindiancaucus@gmail.com.

Special thanks to our Chief Editor, Dr. Santhanam, for her hours of dedicated work! Her vision for our newsletter is mind-blowing and it keeps growing with the years. I admire how you multi-task and still remain on top of things. Thank you, Siva, for making our work fun!!! I cannot ask for a better team-player than you!!!

I also take this opportunity to thank the AIC executive board members and the President of AIC, Mr. Prabhu Eswaran for your continued work during the pandemic. Thank you for keeping the spirit of AIC alive via virtual events! COVID has taught us a number of lessons – the most important being to continue what we enjoy doing and to face the challenges in solidarity!

Together we shall rise!!

Sincerely,
Reethee Antony & the AIC Executive Board

AIC SPOTLIGHT

Dr. Subhash C. Bhatnagar

Ph.D. and Post-doctoral learning: Rochester University, New York
Faculty Emeritus: Marquette University, Milwaukee, Wisconsin

Founder: Aphasia and Stroke Association of India www.aphasiastrokeindia.com

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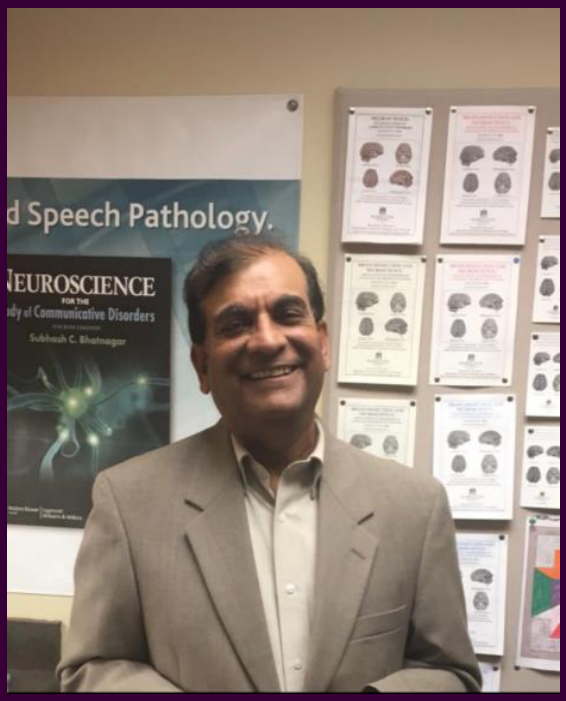
I would like to start with a predictable question, sir! Please share with us your professional journey. We would love to hear about your journey starting from your early education in India.

My interest in language and its structure started at a young age, when I attended a seminary school (Gurukul) to study Sanskrit literature and Indian philosophy. While learning Sanskrit, I was taken by the descriptive power of its succinct grammar, which was written by Panini in the seventh century BC. This grammar is in the form of a set of abbreviated directives (sutras-based rules and exceptions) and a creative inflectional system for lexical formation. At the same time, I also developed an interest in another coding system: the shorthand coding method, which is a manmade writing system of abbreviations and symbols used for transcribing speech. This interest in the structural properties of language inspired me to study structural linguistics at Agra University. Through my academic work, I began to explore the many applications of linguistics, including to areas like language learning, machine language, acoustics, and field survey studies. After graduating, I was fortunate to come upon a unique opportunity to apply my growing interests. I joined a team of linguists to develop pedagogical material on the grammar of Hindi for foreign language learners – first at the American Peace Corps (Karnal, Haryana, Prayagraj, and Uttar Pradesh) and later at the American Institute of Indian Studies (New

Delhi). After a year of this hands-on experience in language analysis, I resolved to further explore the application of linguistics in language acquisition and enrolled in the doctoral program of linguistics at the University of Rochester in New York.

At the University of Rochester, I spent my early years exploring a wide range of research areas in the search of a topic for my doctoral research, including sociolinguistics, computational linguistics, and psycholinguistics. Although interesting, none of them jumped out at me as the right topic for me to build a career around. The turning point for me was a course in physiological psychology and reading about the primate brain and its cognitive abilities. This shifted my interest more to the biological correlates of human behavior and I subsequently focused my academic work on the area of the brain-language relationship. This brought me to work more closely with Professor Harry Whitaker, a pioneer in neurolinguistics, who had arrived at the University of Rochester after his own doctorate in neurolinguistics. His support and mentorship would last throughout my career. With this new direction and focus on the organization of language in the human brain, I began to build bridges between my work and the more traditional study of medicine. I sought opportunities for collaboration and learning in the Neurology and Anatomical Sciences departments at College of Medicine. This blended training in neuroanatomy with a focus in neurological underpinnings of language paved the way for my academic pursuit in neurolinguistics, which later evolved into other areas with implications for higher mental functions, such as neuroembryology and neuropharmacology.

You are an internationally renowned scholar, and your work has been varied and meaningful! I have particularly enjoyed your papers that shed light on the interactions between speech, language, and neuroscience. As students and early career faculty, many of us struggle to establish a niche. Would you please tell us your experiences and insight into how you went about building a specialty/niche in neuroscience?



After completing my Ph.D., I similarly wanted to focus my work on a niche area to sustain my future research, but research did not immediately have a clear path. I returned to the neurology department at the University of Rochester for a summer to work with Dr. David Goldblatt, where I was introduced to Dr. Orlando J. Andy, which is a partnership that changed my career for the better. Dr. Andy was a cognitive neurosurgeon who had been researching the potential effect of the thalamic stimulation on absence attacks, pain control, and movement disorders. His work was unique from the other contemporary cognitive neurosurgeons in that he targeted a different thalamic nucleus named centromedianum (CM) though a chronically implanted electrode.

This approach was immediately interesting to me because this nucleus had not previously been explored in humans with stimulation. Anatomically, this nucleus is part of the brainstem reticular formation with direct facilitating projections to the entire neocortex to regulate cortical arousal (attention). Working with Dr. Andy gave me a unique opportunity to study subcortical anatomy and its complex axonal connectivity in detail, as well as applications of an innovative neurosurgical technique to help understand the functioning of the brain. It also put me on the cutting edge of research as deep brain stimulation (DBS) was in its early stages of

development as a treatment for movement disorders. For the next twenty years of my career, my work focused on examining language functions using neurosurgical techniques. This included the intraoperative language mapping of the brain in awake patients undergoing cortical resection primarily for intractable seizures and examining the effects of the reticular stimulation in the left or the right thalamic (CM) nucleus on various language functions. The result of our long-term study of neurological subjects was the conclusion that the focal stimulation of the CM, in addition to managing pain and movement disorders, also had a facilitating effect on the ability to register and recall information, to attend and process language stimuli, and to regulate the speech fluency. Accordingly, my research led to the conclusion the quality of language use and its processing is closely related to the state of brain's reticular modulated homeostasis.

Several of us have grown up reading your textbooks. Was there a specific clinical, teaching, or research experience that provided impetus for writing such a well-rounded textbook? If you have any interesting experiences in your journey as an author, please do share them as well.

I recall an early experience during my studies of communicative disorders at the State University of New York – Buffalo when I was asked to teach a senior level introductory course in functional neuroscience. The request left me literally speechless – I knew there was a dearth of practical resources with simplified explanations to rely upon, and I doubted my own ability as a graduate student to teach the subject for an entire semester. The only resources available to me at the time were the classic neuroscience textbooks, which were written for medical professionals and contained extensive and complex details. Later in my career, during my first semester as a faculty, I was asked to teach a graduate class in functional neuroscience and encountered similar limitations.

Much of my teaching career has been spent on how (instead of what) to teach so students can absorb, enjoy, and apply the learning of neuroscience. My neuroscience textbook (Neuroscience for the Study of Communicative Disorders) was directly in response to my perceived need of a practical, accessible guide for neuroscience. My objective in writing the book was to adopt a visual approach to exploring the dissected brain to promote critical thinking and make the learning of neuroscience more enjoyable experience. The acceptance of this book by the professional community has been gratifying, as well as the positive response to my interactive teaching philosophy. To extend the interactive approach to teaching functional neuroscience embodied by book, I also started an annual, intensive summer institute in neuroscience training that revolves around the hands-on experience of dissecting the human brain. This intensive institute was held for two decades (1998-2017) and has been attended by approximately a thousand practicing clinicians and faculty over the years. Between the book and institute, approximately 75,000 thousand students over 25 years have benefitted from my efforts to integrate neuroscience in the field of communication disorders, which is an immensely gratifying aspect of my career.

Would you please share with us a short description of your work in Indian languages?

During my two sabbaticals in the Department of Neurology at the All India Institute of Medical Science (AIIMS) in New Delhi, I was exposed to the fact that India has a large patient population that lacks access to even the most basic information and literature common in other patient populations I had worked with. I committed myself to meeting the important need for educating this patient population about the nature and cause of stroke, stroke prevention, aphasia, self-help, post stroke mental health, patient safety, functional independence, options for functional communication and the importance of rehabilitation. In partnership with two Indian neurologists, I established Aphasia and Stroke Association

of India in 1995. Through this organization, I published a guide for families (titled Facts about Aphasia and Stroke) for the free distribution to neurological patients, families, and health care workers. This guide is now available in six Indian languages (Bengali, English, Hindi, Kannada, Tamil, Telugu, and Urdu) and tens of thousands of copies of this guide have been distributed. This association also maintains an educational website (www.aphasiastrokeindia.con) for providing information about stroke, aphasia, and the ways to improve patients' quality of life to families and neurological patients in India. Many self-helping therapeutic exercises are also posted on the website for the convenience of patients and their families.

A committed group of translators across India have helped me and the organization translate our clinical and educational material in multiple Indian languages. The association also has a core group of dedicated volunteers across most regions of India, and they serve the most important role in our efforts for advancing the social educational information to the patient population. The names of our hard working translators and volunteers are listed on the website of the ASA ((www.aphasiastrokeindia.com). We always welcome volunteers in new regions and currently need translators to advance our work in Odisha and Assam.

I have often been inspired and amazed by your willingness to collaborate with the next generation of students and researchers. These experiences have not only helped those individuals advance in their careers but have also been an exceptional learning experience for them. Would you please talk to us about your interests in mentoring and collaboration?

Professional collaboration is a powerful lever for transformational research. Collaboration both adds an interdisciplinary depth to research, but also encourages us to learn and engage with the perspectives in other disciplines. My research has substantially benefitted from collaboration with scholars in neuroscience, linguistics, and psychology. This collaboration opened many new options for my research that otherwise would have remained unknown and unexplored.

As a person from India who has lived and worked in the United States for over three decades, have there been experiences or incidents that often remind you of your roots back home in India? More importantly, what do you as you cope with the daily personal and professional demands while a part of you still misses India?

As a professional in the United States from India, I know that I (like the members of other diasporas from India) serve as an ambassador for the society and culture from which I come. Over the years, my students and colleagues have often engaged with me about issues related to Indian culture, social issues, health care, community diversity, educational system, Ayurvedic medical system, and Indian cooking. I found my students interested in the linguistic and ethnic diversity of India. I am deeply proud of my Indian heritage. But when I think back about my roots in Rajasthan, I do regret the paucity of available resources and development of our profession in India. Until we have adequate clinical services and effective service delivery, we need to ponder on alternate ways to meet the needs for the patient population. In this regard, speech, language, and hearing clinicians based in the United States could have a greater impact by working in India, even if on a temporary basis.

In the past three to four decades, your work has touched many lives including students, colleagues, and your clients. As a faculty in Emeritus Status, what would your advice be for the future generation of teachers, clinicians, and researchers in our field?

Be confident of your academic strengths, keep looking for innovative clinical and research concepts, and never miss an opportunity for collaborative work.

On a lighter note, we have heard that you enjoy music and traveling. Pardon me if I got those wrong, sir. Please tell us more about your hobbies and what you enjoy doing outside of work.

I enjoy old Hindi songs and art movies. I have an interest in reading about Indian history, as well as keeping informed about current social and political developments of India. I also like travel, particularly exploring the rural and natural landscapes of India and the United States through train travel. I took a memorable train trip from the north of India to its southern terminus at Kanyakumari. I have also crossed the United States to the west coast by train many times. Someday I hope soon to travel on the famous Trans-Siberian express.

For your curious admirers out there, what is one thing you would not tell us about yourself if we did not ask? 😊

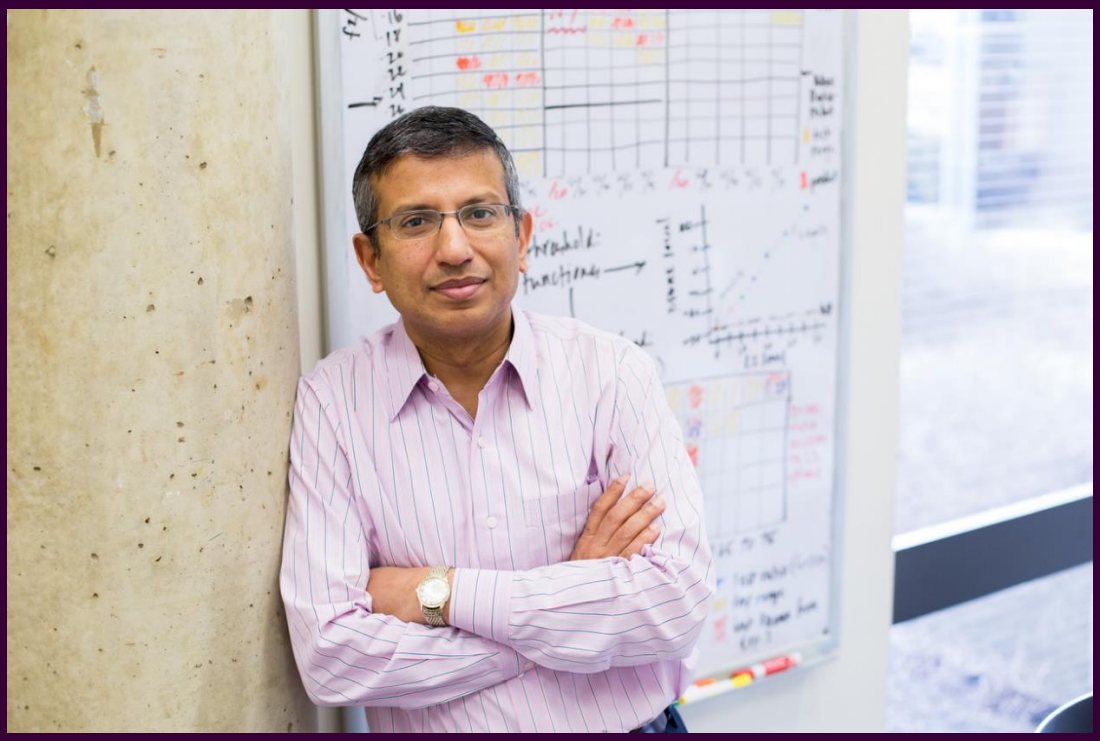
I think you did a good job asking questions and have covered the most important items!

If there is anything else that we may have missed in terms of your contributions to the field and/or your contributions to the Indian community both in North America and India, please do share, sir.

Recently, I have become interested in exploring some of the ancient healing tools that for centuries have been used for training brain circuitry. Interestingly, many of these tools including mental imagery, meditation, focused attention, and relaxation exercises are rooted in the Hindu religion. In recent years, there is a growing acknowledgment within western medicine of the role that these practices can play in recovery and healing. These concepts are clinically important since the same brain region is active whether an action is performed (through rehabilitation) or is contemplated (through these techniques). I hope these mental concepts that originated from the Indian culture get the full academic, medical, and clinical attention they warrant for their role in the recovery and language rehabilitation.

At the end, all I can say is that this journey has been very fulfilling. It started with one question and continued to unfold in interesting, unexpected and ultimately satisfying ways.

AIC SPOTLIGHT



Dr. Sumitrajit Dhar

Hugh Knowles Professor of Hearing Science
Associate Dean for Research, School of Communication,

Northwestern University, Illinois

Sumitrajit (Sumit) Dhar *is the Hugh Knowles Professor of Hearing Science at Northwestern University. Sumit also serves as the Associate Dean for Research at the School of Communication, Northwestern University. Sumit's research group works on cochlear mechanics, otoacoustic emissions, and hearing healthcare delivery.*

What an amazing professional journey in the best places! From University of Mumbai in India to Utah State University, Purdue University, Indiana University and currently Northwestern University! From being a Clinical Audiologist in Kolkata to your current position as the Associate Dean for Research and the Chair of the department at Northwestern University! What is your mantra for excellence and perseverance? What factors have helped you in shaping your professional career?

You started with a googly. Let me start by thanking you for asking me to think about, and answer, these questions. Occasions like these always end up being opportunities for reflection and introspection – things I do not stop to do very often. You ask about excellence and perseverance. The first is for others to decide and perhaps should not even be considered till long after a scientist's career. After all, truly meritorious science needs to stand the test of time.

I can definitely speak about perseverance, the essential fuel for many aspects of life in my opinion. Thinking back, I believe I have been lucky to have essentially fallen into things that I have enjoyed so much that it has been easy to persevere. It was sports before college. Then I fell into hearing and my curiosity about how this wonderous sense worked and shaped us and our environment took over. Later in graduate school, I fell into otoacoustic emissions, and the wonderment about how the inner ear made sounds consumed me. And most recently a chance invitation to an NIH workshop on accessibility and affordability of hearing health care for adults opened the door to the many unanswered questions in that area. Perseverance has come easy because it has always been accompanied by curiosity, enjoyment, and fulfillment.

You are an internationally renowned scholar in the areas of oto-acoustic emissions (OAE) and hearing healthcare delivery. OAEs and cochlear mechanics are abstract concepts to some of us. How did you develop an interest in such a unique and specialized area?

I first heard about otoacoustic emissions during my master's degree at Utah State University. As if the fact that our ears made sounds was not amazing enough, I learned that we could even record these sounds out in the ear canal, that was all it took. Learning about these magical sounds made clear that the inner ear or cochlea was a marvel of evolutionary engineering. As I learned about yet one more mechanical or electrochemical event that had to occur in perfect synchrony with a million others for us to be able to hear, I was ever more surprised that the cochlea even worked for most people for a substantial part of their lives.

It was clear that I had to take a deeper dive into the physics and physiology of the cochlea to understand the mechanics that led to the intricate but controlled amplification achieved by the cochlea. It was an area of science in its prime with the debate about the cellular mechanisms responsible for cochlear amplification raging in the nineties. The fact that one could visualize things in motion, doors opening, ions flowing through the open doors, cells changing length pushing on membranes like pistons in a car engine was captivating to me. Fortunately, a lot remains to be learned even today about the cochlea and otoacoustic emissions. So, the journey continues.

What were some of the hurdles or challenges in your professional career and how did you overcome them?

I am one of the lucky winners of the lottery of birth. I was born into a family with enough means to allow me to have a very high-quality education, to have good examples for professional success around me, and most importantly, to witness role models for being a caring human being. The part about being a caring human being is still a work in progress. Luckily you did not ask about that. All this to say, that challenges and their severity are highly contextual and relative. While many things may have felt like insurmountable challenges to me in the moment, I look back at them simply as forks that determined the path that my life and career took. Let me say a bit more about perhaps the most significant such fork in my career. The results of our final-year examination were delayed by the University of Mumbai (then Bombay). They were delayed to the extent that we missed the admissions window into the master's program at the All India Institute in Mysore, the only master's program in India at that time. So, I had a year, unplanned in how it came about but hugely consequential in how it shaped the path forward. That was the year I worked in Kolkata at the Speech and Hearing Institute and Research Center and got my first taste of shaping organizations. That was also the year that I joined two close friends in preparing for the GRE together. My friends were biologists preparing for advanced degrees in the US and I joined them without much other thought. The biggest incentive was definitely the time I got to spend with them. We prepared for the GRE some of the time but did other (more pleasurable) things most of the time. Little did I know that taking the GRE would simply start a cascade of events that would lead me to writing answers to your questions almost thirty years later.

Would you please tell us about some of the research projects in your lab? And about your collaborative research with the Mayo Clinic and University of Texas?

Work in the lab has now become divided into two main branches. In the original branch we are still asking questions about the generation mechanisms of otoacoustic emissions and trying to develop better clinical applications using them. Of particular current interest is the onset and trajectory of age-related changes in the cochlea as well as the development and validation of better ways to unveil these changes using otoacoustic emissions and other assays. To give you a more concrete example, Samantha Stiepan just finished her PhD work developing and doing initial validation of an entirely new clinical protocol for recording distortion product otoacoustic emissions. Her initial motivation was to find stimulus parameters that would be better suited for recording these emissions at ultra-high frequencies. However, what Sammi found was that test performance can even be improved at regular test frequencies by using stimuli that are more in tune with cochlear mechanics.

Sammi has presented her initial findings at conferences already and we are excited to have her work published after peer-review soon.

In the other, newer, branch we are working on various projects to improve access and affordability of hearing healthcare for adults. The largest project to date is the creation of the Consumer Ear Disease Risk Assessment (CEDRA) questionnaire which is available for use at cedra.northwestern.edu. The impetus was to develop a questionnaire that would allow consumers to decide whether they needed to see a physician before being fit with hearing aids. This is a project my colleague David Zapala at the Mayo Clinic, Florida and I dreamed up together. I have learned so much about medical audiology from David, that I would have been perfectly happy if nothing else came out of this ongoing collaboration. Getting to work with and learn from colleagues such as David is one of the greatest joys of being a scientist.

We would love to hear about some of the best moments in your entire career related to your teaching, research, or clinical work. Would you mind sharing a few?

One of my many personality flaws is that I am not able to savor and relish successes in any meaningful way. It is usually the case that I am onto some other challenge or busy thinking about some new area where I am failing when good news arrives. Forced to think about it now, I have to say that the best moments that stick out are moments of shared triumph with my students. I have had the tremendous fortune of working with some incredibly talented PhD students and postdoctoral fellows. They have competed for and been awarded the most challenging of benchmarks. Be it a grant, a position at a top institution, or an immaculate presentation at a conference. These moments leave an enduring mark and very satisfying memories.

How do you strike a work-life balance? From your experience, do you have any suggestions and recommendations for professionals early in our career?

I don't!! I should be the last person you seek advice from about work-life balance. The only reason I still have a family is because my wife and I share our professional goals as collective family goals. We do what needs to be done to support each other and keep our family life moving forward. We have a saying at home that each of us has to do 60%, and we try to live it every day. When we do get time to spend as a family, we try to make the best of it. Vacations are one such example where we try to focus entirely on the family. We have also tried to create a few common activities that we are all passionate about. We do not get to do these activities everyday but when we do, we do them with the pedals to the metal.

What is your vision for the field of Audiology and Speech-Language Pathology ten years from now?

Our fields were born at the crossroads of other disciplines and have continued to grow by incorporating concepts, ideas, and techniques from other fields. I see a lot more of the same in the next decade. Generally speaking, big data, miniaturization of sensors, development of new materials particularly at the nano scale, low-power electronics allowing real-time processing of all kinds of signals, and human-computer interfaces are likely to greatly influence how we do things. In my smaller world, I am growing increasingly concerned that we may have viable therapeutics for various kinds of hearing loss well before we have dependable ways of differentially diagnosing one pathology from another. The days of the all-encompassing sensorineural hearing loss that covers everything between the oval window and brain should have been over a long time ago. I am optimistic that work

being done by various groups at many anatomical levels will give us better clinical discrimination in the days to come.

Please tell us more about your hobbies and what you enjoy doing outside of work.

I go through phases where different kinds of things interest me, and I spend time and energy doing them. Over the last six months since the disruptions due to COVID-19 I have found renewed interest and joy in making things out of wood. I had a lot of fun organizing and teaching a wood working summer camp for my daughter and a few of her friends. I enjoy cooking quite a bit and have found great comfort in recreating some of my mother's recipes in the last couple of years. The satisfaction here is two-fold, deep conversations with my elderly but very spry mother as well as yummy outcomes to be consumed. My regular soccer games were disrupted by COVID but that resulted in an uptick in cycling. I ride with a group of friends who are way faster than I am. That is generally my speed for most things in life. A nice side-effect of the new cycling hobby is that I have become the team mechanic which allows me to mess up many bicycles, and not just mine.

For your curious admirers out there, what is one thing you wouldn't tell us about yourself if we didn't ask? 😊

Well, if the first question was a googly, this one is a bouncer. My first inclination is to simply duck out of the way. But that would not be fair. So here goes. I have tried to start three companies and have completely failed the first two times. The outcome of the third attempt is yet to be determined. In retrospect, I never put enough time and energy into these efforts and now realize that I was not passionate enough about them to start with. I guess the moral of the story is the importance of alignment between passion, interest, curiosity, and enjoyment. I am learning to make sure that all four elements are aligned before I dive, headfirst, into new ventures.

If there is anything else that we may have missed in terms of your contributions to the field and/or your contributions to the Indian community both in North America and India, please do share, Sir.

I want to be careful not to answer this question in a way that comes off as boastful. I spend time and energy on many things related to our field that are deeply personal and are best kept that way. I would like to share one activity that may be of interest to readers who are starting their careers. A few years ago, I underwent training as a grant writing coach and have been running coaching groups ever since. I follow a very specific method of writing and fine-tuning grant proposals in small groups of three or four. I follow this method in my laboratory but also coach groups that are outside my lab, university, and even our fields. For instance, I am currently coaching a group of four towards December deadlines, one of whom is a physical therapist, one a neuropsychologist, and two,

biomedical engineers. My focus is on women and URM scientists and I am driven by my passion to increase diversity in the scientific workforce. Practically speaking, the process involves a two-hour meeting every two weeks for approximately three to four months. Each meeting has a specifically targeted section of the proposal, drafted prior to the meeting, and discussed in person. I mention this in case someone reading this is writing their first proposal to the NIH or another agency. Please reach out if you think I could help.

In closing, thank you again for giving me this opportunity to reflect on the topics of these questions. I do want to acknowledge that building and maintaining community is perhaps the hardest task of all. My gratitude to you for your commitment and dedication to our community.

Our Celebrated COVID Champions

Sundeep Venkatesan,

M.S., CCC-SLP is the Director of Rehabilitation in a skilled nursing facility with experience in variety of clinical settings including early intervention, school age population, home health, private outpatient clinic, and skilled nursing facilities. His areas of clinical and research interests include neurogenic cognitive communication, swallowing disorders, and interprofessional practice.

Working as an SLP/DOR (Director of Rehabilitation) in a Skilled Nursing Facility (SNF) during the COVID-19 pandemic

The COVID-19 pandemic reminded us who the real heroes are in our life. Hailing from South India and my undergraduate degree from Sri Ramachandra Medical College, I am a big fan of few film actors who I used to call “Heroes”. However, post COVID-19, I have better understanding that they are entertainers and that the real heroes are farmers, doctors, nurses, healthcare workers, truck drivers, staff at grocery stores, housekeeping staff, and so many other essential employees. The whole world was hit hard by the COVID pandemic and the hardest hit population was geriatric individuals (between 60 to 100 years old) and health- compromised individuals such as those with lung-related disorders, cancer, and history of smoking or alcohol.

Being an SLP working with the sensitive geriatric population who are at high-risk for COVID-19 due to age and complicated medical issues, I had to take utmost care with any contact with my family, people outside my family, and my time back in the skilled nursing facility (SNF) at work every day; strictly adhering to hand washing protocols and hygiene. My SNF was proactive and stopped any visitors/family members, non-essential employers/businesses entering the facility before the COVID-19 started spreading in Pennsylvania. Temperatures for all employees were documented during both entry and exits; anyone with an elevated temperature (more than 100 degrees in Fahrenheit) were not permitted in the facility until the temperature subsided without any help from medications.

Each SNF had developed a mitigation plan as per guidelines from the Department of Health and respective counties in the wake of COVID-19. The mitigation plan covered six key areas. I have explained them in my own terms with my experiences based on the mitigation points:

1. **Testing** (residents and staff) and **cohorting** (to ensure isolation of confirmed COVID-19 positive residents and suspected Person Under Investigation (PUI)):

   The testing was gruesome via swabbing the nasopharyngeal region twice a week. Often, I was worried that I may have contacted COVID-19 after getting tested, as each time I would

end up with severe cold for the rest of the day. I did not find until recently that there is an oropharyngeal testing option which is thousand times better; however, less effective. We had three dedicated zones – red, yellow and green. Red zone was for all COVID-positive patients only, yellow zone was for all persons under investigation or possibly exposed, and the green zone was for all the residents who recovered from COVID positive or were unexposed. Staff were assigned separately to red zones and had to enter and exit the facility through a separate entrance.

2. **Infection and prevention control:**
   Education and constant reminders to staff, residents with and without dementia, practicing proper hand washing protocol, use of alcohol-based hand rub (ABHR), proper procedures to don and doff the personal protective equipment (PPE) (gowns, masks, gloves, goggles) were key elements to prevent the spread of COVID-19. I also came across an interesting phrase - we tell our residents "***Don't touch MEN"*** (in this MEN stands for Mask/Mouth, Ear, and Nose).
3. **Personal Protective Equipment**:
   This included masks, gowns, face shield, gloves, and goggles.
4. **Staffing shortages** (policies to address shortages/planning for contingencies and crisis):
   There was a chronic shortage with nursing staff and the exact opposite with rehab staff in SNF with low caseload. However, there was no compromise of what we could offer to residents as they were not able to see their loved ones and they had no group activities (like Bingo, clubs, games) including the dining programs. Lack of understanding/education about COVID also led to increased staffing shortages. Despite educating them, some staff failed to understand that working in a yellow zone is much dangerous than actually working in red zone due to the fact that the yellow zone is PUIs and you would never know when someone can turn COVID-19 positive, whereas, in red zone the residents were already positive and you enter with full PPEs.
5. **Designation of space:** Separate areas were assigned for staff who worked in the COVID-19 red zone for use of restrooms and for meals. We also had contract with alternate/nearby facilities where we can seek safe and appropriate placement for the residents that we are unable to provide care for.
6. **Communication** (with staff and residents regarding the status and impact of COVID-19 in SNF): COVID also took a toll on residents' mental well-being as it did for all of us who were observing lockdown/quarantine. Depression, poor food intake by mouth, decreased social interaction, decline in functional status (ambulation, Activities of Daily Living (ADL), transfers) were some important issues that we all had to deal as a team.

As much as I admired the hard work and commitment shown by the entire team (rehab, nursing, housekeeping, dietary, and maintenance) in my skilled nursing facility to prevent the COVID-19 virus, I do have to give a special shout out to all the SLPs across the world who worked with the clinical population and were involved in direct face-to-face care especially for swallowing and speech and language therapy. My colleague and I had to work closely with patients during swallowing therapy with the shortage of PPEs all over the USA. We had to work with masks only (no goggles or face shield) and it was hard to dodge the coughs or the occasional sneezes right on our face, especially when working with patients who underwent tracheostomy and were NPOs (Nil Per Os is Latin term for nothing by mouth). While I had my fair share of challenges during these COVID times and fear of not knowing when I would contract the virus, a smile from a resident or the gains that patients were making in their cognition and communication, were totally heartwarming.

The increased number of COVID cases and reduced number of admissions in the SNFs led to low census. A SNF facility that regularly supports about two full-time SLPs was not able to support even a part-time caseload for one SLP. I lost my job due to COVID-19 secondary to low census. Thankfully, I was fortunate to find a job and remain grateful to those who helped in need. The responsibility only increased from there on, as the SLP/Director of Rehabilitation to keep my own rehab staff and the residents safe. The only way a resident could contract the virus was from an exposed clinician or nursing home staff. So, the organization developed a tracking system of signs and symptoms along with temperature logs at entry and exit. Despite all these measures, the virus slowly started hitting the facility and 21 residents were positive at one point and 5 of them passed away due to COVID. It is not an easy thing to go through for the staff and especially, the family who were not allowed to be beside their loved ones even during the end of their life.

While I agree that working from home is even harder as I observed my wife teaching online one day (with the kids being noisy), being in the frontline demanded other facets that required much discipline with work, personal hygiene, and immense support from my family. I did miss so many important experiences on a personal level like playing with my kids in close contact and also feeding from my plate to my wife and kids (as I do often before COVID) in fear of passing on the virus just in case I was carrying it. Also, with my mom at home, keeping her safe was our topmost priority. So, sanitizing commonly touched things, leaving my work shoes outside the home, washing my work clothes separately, shopping for essentials once in two or three weeks were some of the precautions, we took at home to avoid carrying the virus. Although COVID has taken a lot from all of us, it did teach me resilience, adaptability, and has made me realize the reason that I am in this field of speech-language pathology and doing what I am doing no matter what.

Deepak Sathyanarayanan Vijayakumar *is an Audiologist who works for Primary Health Care Corporation (PHCC) at Doha, Qatar since 2018. He completed his graduate and undergraduate education at Sri Ramachandra University (SRU) and had served as a faculty at SRU (2011-18) prior to joining PHCC. He recently received a Certificate of Recognition from the government appreciating him for his service to the community during this pandemic.*

The experience of performing COVID testing for general public

Front-line staff was more appropriately called as front-line warrior; they were just words for me until I was in the job. It takes great commitment, dedication, sacrifice, strength and support from family to be a front-line staff. I am an Audiologist in Doha and as part of my daily life, I perform diagnostic audiological testing for the most part. The pandemic took a toll on my life just like it did for everyone else in the world. My job was to perform COVID testing for the public.

The threat from COVID-19 was real and we had to be there; I had to be there for those individuals who were affected. It was a calling. I took on the challenge and embraced the opportunity to serve the community. On days of screening, we were randomly assigned to a specific area in the community. Our team then travelled to those specific areas that were designated for the day and perform the testing. Most of the patients were puzzled and scared to the core after they had a positive contact. We would perform the screenings, COVID-testing, Our job was to identify the symptoms, explain the procedure, and take oral and nasal swabs for individuals. We also provided correct information related to COVID-19 and informed people ways to protect themselves as there were several myths floating in the air, then send the swabs to the testing facilities. Every time a patient gets tested and the reports indicate COVID positive, the person who tested the individual was notified.

With the personal protective equipment (PPE) on, there were many days when we worked without a break, because we tested patients back-to-back. Some of my days were long with eight hours of duty where we tested approximately 200 individuals per day. The swab test results from some of these individuals indicated COVID positive findings. As a front-line staff, we were continuously monitored and tested for COVID periodically; however, just being in that environment really made us vulnerable to the COVID. All of this happened while my wife was pregnant. As I served the community, she took care of me, herself with another life within, and our four-year-old child. She took care of the entire family and she motivated me for the greater cause. So, here I was in a country that was relatively new to me, serving the people, without knowing their native language, with my pregnant wife and our child while my elderly parents and other relatives were in India. Due to COVID, family could not travel to assist my family.

All throughout pregnancy, I was determined to serve our community, but I was extremely afraid of transmitting the infection to my family. On most days I did not go home, instead I stayed at my friend's place for fear of taking the virus home with me. Now, that my little princess is born, I still spend many days and nights in a separate room limited in my capacity to embrace my little bundle of joy for the same fear lingers within me. It is a price that I chose to pay for the greater good of our community and I am certain that my family is proud of me.

This pandemic has brought out the real strength in me both physically and emotionally. It made me realize my priorities in life. I continue to do my job as an Audiologist and as a front-line staff with great pride and satisfaction knowing that it is for the wellbeing of the society. It was wonderful experience overall; to see all the medical professionals in the line of duty taking up the opportunity; to stand as one without any grade, cadre, race, cast, creed, and religion; leaving all their loved ones back home; and out in the community to fightback the common enemy.

Let's all hope that we win the battle as always for a better world without COVID!

Ashwini Namasivayam-MacDonald *is a clinically trained speech-language pathologist and Assistant Professor in the School of Rehabilitation Science at McMaster. Ashwini completed her doctoral training at the University of Toronto where she explored the relationship between malnutrition and swallow impairments (dysphagia) in long-term care.*

Ashwini's overarching research goal is to develop a more comprehensive and collaborative approach to dysphagia management that unites the biomedical and psychosocial aspects of care, in order to improve health and quality of life within the individual and across the family system. Her current research focuses on: 1) understanding dysphagia in older adults with dementia; 2) developing multidisciplinary interventions to prevent impairment and maintain swallowing function in older adults; and 3) understanding dysphagia-related caregiver burden in caregivers of older adults. Ashwini is highly motivated to conduct clinically salient research that impacts patient care.

Performing Speech-Language and Audiology Research During A Global Pandemic

This year has been a challenging one for our global population. Not only do we continue to face a worldwide pandemic that is challenging our healthcare systems – the foundation upon which our profession is built - but we have also been forced to quickly pivot to adjust our lifestyles, including how we work. As a clinical scientist and speech-language pathologist working at McMaster University in Canada, I have had to carefully reconsider how to move my program of research forward while abiding by the constantly evolving precautions put in place to keep both researchers and participants safe and healthy.

My research has historically focused on swallowing impairments in older adults. More specifically, I am in interested in understanding the impaired physiology associated with dysphagia (swallowing

difficulties) in order to design targeted intervention approaches that are comprehensive in nature. I am also interested in better understanding dysphagia-related caregiver burden so that clinicians can better support caregivers to in turn support their patients. Given that my research is clinical in nature and generally takes place in-person, I have been unable to do any data collection since March of this year. The tight university restrictions on research – which are absolutely necessary – have precluded me from collecting any data for my ongoing projects. As such, like many of you, I have been forced to "pivot" in order to keep my work both relevant and viable. I personally think that I have done so much more than "pivot" – some would better describe what many of us have done as "scramble". I have scrambled to find work for research assistants, scrambled to submit COVID-related grant applications with tight deadlines, scrambled to adjust ongoing studies to allow for minimal in-person interactions, and scrambled to find time for all of the Zoom meeting requests to discuss the aforementioned scrambling. I have also scrambled to manage my family life and strike a work-life balance. I am certain most of you can relate. However, with so much uncertainty I feel like I had no other choice.

Much of my time over the last six months has been spent on COVID-related work. I have quickly morphed into a knowledgeable resource for those wanting to understand what personal protective equipment is most useful for speech-language pathologists in various clinical situations. Together with three other faculty members in the School of Rehabilitation Science at McMaster University, I developed a brief guidance for the rehabilitation of patients with COVID-19 across the continuum of care, including what personal protective equipment is required for different types of patient contact. This has led to consulting projects for our national association, Speech-Language & Audiology Canada, to help them communicate with Health Canada and advocate for speech-language pathologists and audiologists working in acute care settings. I have also worked with my provincial association to advocate for the needs of patients requiring speech-language pathology services in long-term care settings during this challenging time. With the knowledge I have acquired, I recently published a consensus document with initial recommendations to guide clinical practice for speech-language pathologists working with adults with COVID-19 in acute care. Together these projects have helped to keep me – and our profession – relevant and informed amidst an everchanging medical landscape.

I have also been a co-investigator on two COVID-related grants: one to understand the long-term effects of COVID-19 on swallowing and respiration, and another to develop masks with clear windows so that listeners can see the speaker's facial movements and emotions. Both of these projects will allow my research program to advance regardless of the status of the pandemic. Many of my ongoing research projects have halted entirely, leaving me and my students to perform secondary data analyses, systematic reviews, and survey studies. While such opportunities are not available or viable for every area of research or every academic, the main message is that we need to rethink how we perform research. Are there opportunities to ask new questions with data you have already collected? Do you need to determine gaps in the currently available literature which may lend itself to a formal systematic review? Is it necessary to collect all data in person? Are there telehealth methods you can adopt to help collect data remotely? Can some of your study questions be answered through questionnaires?

Now that we have spent six months scrambling, can we take some time to thoughtfully pivot? Can we carefully design future projects in a way that will allow us to continue to keep our research assistants busy even if the numbers of people diagnosed with COVID-19 begin to surge again? If you perform clinical research, are the clinical populations you study affected by the pandemic in any way? Can you study the impact of these effects on patients and their families, or can you study solutions to minimize the impacts? Does the clinical population you study have different needs

because of the pandemic? Can you study how these needs are being fulfilled, or the best ways to support these patients? Can you form collaborations with others who are doing similar work in order to divide and conquer while not wasting valuable resources?

While the current situation is undeniably stressful, we have no idea when things will return to “normal”, or what “normal” will look like. As such, I urge you to consider how you might be able to change some of your methods, ask new questions, and/or continue to publish based on information you already have. Write up some of the manuscripts that you have not been able to get to, apply for some new grants, and take time to brainstorm what your five-year research plan now looks like in the face of a pandemic.

All this said, remember to also be kind to yourself. You are likely juggling so much more than a research career that is not going to plan. You may also be converting your in-person classes to online modules and/or juggling many responsibilities at home, including having more people at home at once than you are used to. It is okay if you are not as productive as you have been in years past, or as productive as you hoped to be. We are all in the same boat, struggling to keep afloat to some degree. So, take some time to repair your raft, and then take some more time to determine a new route to get back to safety. And in the meantime, do not be afraid to ask for support when needed. We are all in this together.

Our SLP Trailblazers

Suma Devanga is an Assistant Professor in the Department of Speech, Language and Hearing Sciences at Western Michigan University (WMU). Dr. Devanga is the director of the Neurogenic Communication Intervention (NCI) Lab. Her research focuses on understanding and working to bridge the gap between clinical improvements and functional outcomes in everyday life of individuals with aphasia and related cognitive-communication disorders. Dr. Devanga is also affiliated with the Aphasia Communication Enhancement (ACE) program and provides clinical services to adults with aphasia and clinical instruction to students. She teaches undergraduate and graduate courses in neuroscience and aphasia and related disorders.

Creating Rich Communicative Environments (RCEs) within Clinical Spaces for Aphasia and related Cognitive-Communication Disorders

Introduction

Social approaches to aphasia intervention focus on the overall well-being of people and encourage researchers and clinicians to develop personalized interventions that target meaningful goals and to measure communicative impacts on everyday life (e.g., Hersh et al., 2012; Simmons-Mackie, 2001; Worrall et al., 2011). Going beyond language impairments, social-based treatment approaches argue for the importance of identifying communication needs of individuals with aphasia, of directing treatments and conversations to address topics relevant to clients' lives, and of drawing on the power of social connections between communication partners to support successful communication.

Grounded in sociocultural theories of cognition and communication (e.g., Hutchins, 1995; Irvine, 1996), my research team and collaborators have been studying communicative interactions that go beyond isolated language behaviors and focus on the rich communicative environments that shape the interactions and their mutual engagement (e.g., Hengst, Duff, & Jones, 2019; Hengst, McCartin, Valentino, Devanga, & Sherrill, 2016). My research also focuses heavily on a clinical intervention called the collaborative referencing intervention for aphasia and related cognitive-communication disorders that is embedded in the framework of rich communicative environments (e.g., Devanga, 2014, 2017; Devanga, Hengst & Sherrill, 2020; Hengst, Duff & Dettmer, 2010).

Rich Communicative Environments and Collaborative Referencing

The positive effects of complex or enriched environments on health, learning, and neuroplasticity are widely accepted and documented in animal research literature (e.g., Churchill et al., 2002; Hebb, 1949). Applying the environmental complexity to human communication, Hengst et al., (2019) proposed a model of rich communicative environments (RCE) involving three components, meaningful complexity, voluntary participation and experiential optimization. RCEs offer multiple means of participation for individuals in personally meaningful activities that are optimized to increase experiential quality along with multiple communication partners who use multimodal resources and display communicative flexibility. This is in contrast to the traditional treatment frameworks that target isolated productions of language forms within predetermined clinical tasks with rigid communicative roles of clinicians and using extrinsic metrics as a measure of success.

Originally used in psychological experiments (Clark & Wilkes-Gibbs, 1989), collaborative referencing tasks involve a picture-matching game between stranger pairs involving a complete physical barrier that prevent any form of non-verbal communication. Clark and Wilkes-Gibbs (1986) state that collaborative referencing entails back and forth play of attempts at conveying the speaker's intention and listener's understanding of the implication by establishing a common ground through shared communicative histories. They studied how the speakers and listeners collaborated in developing and using references across six trials. The participant in the role of director described 12 Chinese tangram cards (abstract black and white shapes) and where to place them on a numbered board to the matcher (who was a stranger to the director). Novel Chinese tangrams were used to study the development of references. Overall, they found that when a pair had repeated opportunities to complete the task using the same cards, they got faster. Specifically, they moved quickly from indefinite descriptions of target cards to definite labels, the labels themselves shortened, and they displayed less overt collaborative effort (e.g., fewer words and turns). This research concluded that collaboration between interlocutors establishes a common ground for referencing leading to simplification of future references to the same items.

Hengst (2003, 2006) redesigned Clark's referential task as a game-like protocol to study collaborative referencing in adults with chronic aphasia. She used a partial barrier (to allow the use of verbal and nonverbal resources by blocking only the view of the boards), included familiar communication partners, and encouraged the pairs to have fun and communicate freely. Four adults with chronic aphasia and their routine communication partners completed four collaborative referencing sessions with six trials each. Results revealed that these pairs successfully completed card placements in all trials (96% accuracy) and displayed successful collaborative referencing (moving from indefinite to definite referencing expressions; reduced collaborative effort in later trials/sessions) as predicted by the collaborative referencing model. Going beyond these expected findings, the authors also found that the pairs displayed creative and playful use of language, shared stories and engaged with one another throughout the game play. These complex communicative practices captured in the redesigned version of the collaborative referencing task demonstrated its potential to create a rich communicative environment that could support language learning. Similar patterns of collaborative referencing and complex discourse patterns have been documented in adults with a variety of cognitive communication disorders such as Alzheimer's disease (Duff et al., 2013); hippocampal amnesia (Duff et al., 2006); traumatic brain injury (Gordon, Rigon, & Duff, 2015) and ventromedial prefrontal cortex damage (Gordon, Tranel, & Duff, 2014).

Encouraged by the positive findings of the collaborative referencing research, Hengst, Duff and Dettmer (2010) adapted the game-like research paradigm as a clinical intervention by incorporating the RCE design principles. Specifically, they chose individualized referencing targets around the themes of people, location, activities and experiences. Their pilot study involved a participant with

chronic anomia and amnesia partnered with a trained clinician who served as a skilled communication partner. The client-clinician pair completed 10 treatment sessions (six trial each) using 12 personalized photocards in each session (and a total of 30 referencing targets), and alternately took the director-matcher roles. The results showed that the pair was highly successful at card placement accuracy (98.9%), streamlining of specific labels, and reduction in collaborative effort across trials. The authors highlighted that the referential learning observed in the pairs was not due to simple repetition, but rather due to the pair's repeated engagement with the cards within a meaningful activity across a period of time.

Collaborative Referencing Intervention (CRI): Outcomes and Empirical Evidence

Although studies on collaborative referencing showed that adults with cognitive communication disorders successfully collaborate and learn referential labels, their participation in communication outside of the task and the treatment impacts on their psychosocial well-being were not explored. Devanga (2014) addressed these issues in a case study of an individual with chronic aphasia paired with a clinician-partner for the first 10 CRI sessions, and with his spouse for the last 5 CRI sessions. The study successfully demonstrated collaborative referencing between the participant pairs and also revealed consistent conversational support of the partner during the treatment. Additionally, patient-report measures indicated improved communication confidence and improved communicative participation outside treatment conditions. Devanga and Hengst (in preparation) conducted a secondary analysis of this 15-session CRI data by analyzing the participant's interactional displays of communication confidence during CRI sessions using situated discourse analysis methods. Findings revealed increases in the interactional displays of communication confidence across treatment sessions, that were consistent with the findings from the patient-report measures. Complex communicative practices were again observed and documented in this dataset in the form of verbal play (Marcoski et al., 2016) and interactional displays of complexity (Rohde et al., 2015).

In order to investigate the efficacy of the collaborative referencing intervention and to replicate the treatment on additional participants with aphasia, Devanga (2017) employed a mixed-methods design with an overarching interpretive case study design and an embedded multiple probe single-case experimental design. Four new participants with chronic aphasia were paired with unfamiliar clinician-partners and they completed 15 sessions of CRI. A collaborative confrontation naming probe was the primary dependent variable to assess the generalization of referential learning to a clinical naming task. The multiple probe analysis revealed that the CRI was efficacious with a significant positive treatment effect on clinical naming (Devanga, Hengst & Sherrill, 2020). In addition, participants also reported improved communication confidence levels and improved participation in diverse communicative activities across the study (Devanga, 2017). Evidence of complex communicative practices in this dataset included conversational flow within everyday talk (Ernat et al., 2017), patterns of repeated engagement (Smego et al., 2017) and use of semiotic discourse registers (Devanga, Sherrill & Hengst, 2018).

Devanga (2020) replicated the CRI efficacy study in order to confirm and assert the original findings in three new participants with chronic aphasia and a clinician-partner. A 15-session CRI was implemented with a primary dependent variable of collaborative confrontation naming probe and patient-report measures to assess the psychosocial well-being. A conversation probe with the clinician and with the spouse was added to assess the treatment effects on conversations between client-clinician and client-spouse pairs. Multiple probe analysis successfully revealed significant positive treatment effects on clinical naming. Patient-report measures also revealed consistent findings of improved communicative participation and confidence levels. Conversation probe analysis is currently on-going.

Future Research Directions

The future research directions are aimed at extending the line of work on collaborative referencing. The patterns of collaborative referencing in individuals with severe language comprehension impairments were not documented and is currently being studied (Devanga, Wilgenhof & Mathew, in preparation). In addition, my research team and collaborators plan to investigate the treatment effects of CRI on conversational abilities of participants with aphasia paired with a clinician within a clinical setting, as well as with a familiar partner such as the spouse within a community setting. Long-term effects of CRI and the persistence of referential learning is another area that has been currently unexplored. Finally, the next big step in our research is conducting a clinical trial of the CRI at multiple sites involving a larger number of individuals with aphasia.

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Rajani Sebastian, Ph.D., CCC-SLP *is an Assistant Professor in the Department of Physical Medicine and Rehabilitation at Johns Hopkins University. Her research focuses on recovery from post-stroke aphasia with particular interest in brain plasticity. She received her Ph.D. in Communication Sciences and Disorders at The University of Texas at Austin and her postdoctoral fellowship in Cognitive Neurology at Johns Hopkins University. Her research is funded by the National Institutes of Health.*

Stroke is a common, serious, and disabling global health-care problem. Every year about 15 million people have a new or recurrent stroke worldwide (WHO, 2017). Aphasia or impairment of language is one of the most devastating symptoms in stroke survivors (Hilari, 2011; Pollock et al., 2012). Aphasia is commonly associated with a left hemisphere stroke. Even the mildest forms of aphasia can have detrimental effects on patient's lives including loss of employment, social isolation, depression, and lower quality of life (Boden-Albala et al., 2005; Dalemans et al., 2010; Naess et al., 2009). The most widespread current rehabilitation approach for aphasia is speech and language therapy (Raymer and Rothi, 2017). Although language therapy is beneficial, progress is often very slow and many people with aphasia experience lifelong language and communication deficits. Several challenges such as clinician time constraints, insurance coverage limitations, and lack of resources at clinical sites limits the amount of therapy patients with aphasia receive. Therefore, to address how the treatment of aphasia might be made more effective, researchers are now investigating using an emerging brain stimulation method called transcranial direct current stimulation (tDCS, Crinion, 2016).

My research is focused on developing innovative and effective treatment for speech and language deficits in individuals with post-stroke aphasia. For the past 5 years, I have been using non-invasive

brain stimulation techniques such as tDCS to augment the benefits of speech and language therapy in post-stroke aphasia. tDCS is a safe, low-cost, and non-invasive approach that is used to modulate brain excitability (Nitsche and Paulus, 2001). It is usually administered via saline-soaked surface sponge electrodes attached to the scalp and connected to a direct current stimulator with low intensities (1-2 mA). tDCS can increase or decrease brain excitability due to a shift of the resting membrane potential of the nerve cells in the brain (Floel and Cohen, 2010). Anodal (positive) stimulation results in greater brain excitability, whereas cathodal (negative) stimulation results in lower brain excitability. There is an increasing interest in the use of tDCS to enhance recovery of aphasia because (1) the setup for tDCS is relatively cheap, (2) the technology is highly portable, and (3) minimal side effects such as mild irritation, mild scalp itching, tingling, and occasional headache are reported.

Researchers have adopted different approaches for electrode placement in tDCS treatment in post-stroke aphasia. A majority of aphasia studies have placed the anode (positive) electrode on the non-damaged left hemisphere region, with the goal of facilitating the residual tissue in the left hemisphere to improve language recovery. A major disadvantage to placing the electrode on the left hemisphere is that patients with aphasia after stroke often have large regions of encephalomalacia filled with cerebrospinal fluid at the site of their stroke, which in turn could affect the electrical current flow (Turkeltaub et al., 2016). One approach to overcoming this challenge has been to individualize electrode placement on the basis of a pre-treatment functional MRI scan so that stimulation targets residual functional tissue (Fridriksson et al., 2018). However, functional MRI are cost-intensive and require substantial technological expertise. In addition, fMRI scan as a requirement for entry into tDCS treatment studies significantly limits the number of patients that can be investigated, because many people have contraindications for MRI or find it difficult to complete tasks inside the scanner, particularly under stressful or timed conditions.

I proposed a novel approach to augment aphasia treatment by stimulating the right cerebellum. The right cerebellum is not only involved in cognitive and language functions, but also distant enough from typical stroke locations associated with aphasia that electrical current flow patterns are unlikely to be affected by the encephalomalacia. In addition, this approach is suitable for patients who have large left hemisphere strokes and patients with aphasia associated with bilateral hemispheric strokes. My work has shown that repetitive sessions of cerebellar tDCS combined with behavioral language therapy improved naming and spelling in stroke patients with aphasia (Sebastian et al., 2017, Sebastian et al., in press). In our study, participants received 15 sessions of language treatment (3-5 times per week) and tDCS was administered for the first 20 minutes.

Cerebellar tDCS holds promise in the treatment of post stroke aphasia. Cerebellar stimulation could potentially serve as a single target location that could be used across patients with aphasia with varying lesion locations and sizes in the left hemisphere. However, large randomized controlled trials are needed to replicate and establish these effects. Finding an optimal electrode placement location that can be easily administered in a clinical setting is a crucial factor that needs to be considered prior to implementation of tDCS in clinical practice. Other practical issues that we need to address before we can adopt tDCS in clinical settings includes training of clinicians regarding tDCS to facilitate competent practice, affordability and reimbursement from insurance companies.

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Aneesha Virani Ph.D., CCC SLP *graduated with her doctorate degree in Communication Sciences and Disorders from the Louisiana State University in 2012. Her interests include the diagnosis and management of voice, airway and swallowing disorders, particularly in the head and neck cancer patient population. She currently serves as the Clinical Coordinator of Rehabilitation Services for Audiology and Speech Pathology (Acute and Outpatient) at Northside Hospital's Atlanta, Cherokee and Forsyth campuses. She developed the head and neck cancer program at Northside Hospital, which provides speech and swallowing services to patients diagnosed with head and neck cancers across the survivorship timeline. She also leads the development of several other programs relevant to the care of patients with speech and swallowing impairments in the acute care and outpatient settings.*

Development of Oncology Rehabilitation Programs

With a strong foundation in the areas of speech-language pathology, audiology and psychology obtained via my undergraduate training in India, I traveled to the United States to pursue specialization with decently clear career goals in mind. Much diversity was added onto my career, via a strong clinical education in the area of voice and resonance disorders during my master's program and in the area of swallowing and swallowing disorders during my doctoral program. After obtaining my Ph.D., in 2012, I was very clear on my career goals being: translating the evidence base to clinical management and clinical research, utilizing administrative privileges to establish evidence based clinical care models within service delivery settings and providing as a collaborator and mentor to my colleague-community to engage in best, evidence based patient-care practices. With strong feelings of gratitude, I have been able to live up to my career goals from 2012 ongoing via my affiliations with the American Speech-Language & Hearing Association (ASHA), Georgia Speech-Language & Hearing Association (GSHA) and the American Congress of Rehabilitation Medicine (ACRM). I currently serve as the Editor for the Perspectives on Swallowing and Swallowing Disorders Journal. Additionally, as Editor, I also collaborate with the Professional Development Committee and report up to the Coordinating Committee. I have also previously served on ASHA Convention's Topics Committee (Swallowing and Swallowing Disorders), Editorial Review Board as a member, as Continuing Education manager and as Associate Editor for the Perspectives on Swallowing and Swallowing Disorders Journal. I have served as an invited reviewer for the Archives of Physical Medicine and Rehabilitation Research Journal.

I have previously served as a Convention Committee member for the GSHA and have supported as an annual Convention speaker since 2013. I currently serve on ACRM's Cancer Rehabilitation

Networking Group's Education Task Force and Outcomes and Research Task Force. These affiliations have been integral in allowing me to network within our profession to materialize my goals. They have also given me invaluable opportunities to make invaluable connections and collaborations that promote a strong learning environment for myself. The mentors that I have come across during these past eight years have encouraged me to continue to persevere and learn and grow.

I'd like to share with you via this article, some of the clinical research work that I have had the opportunity to collaborate on and the clinical application of this work in my clinical practices and practices that I lead. As mentioned before, my clinical interest and expertise lies in the oncology patient population, which will also remain the focus of the information I share within this article.

My doctoral dissertation focused on investigating the impact of two different swallowing exercise regimens performed during concomitant chemoradiation therapies for head and neck cancers on swallowing function (Virani et al., 2015). This work was shared with the professional community at various conferences and meetings (Virani et al., 2011; Virani et al., 2012; Virani et al., 2013; Virani et al., 2014). Over the past two to three decades enormous research has been published to support chemoradiation therapies as providing equivalent or improved survival outcomes as compared with organ-sparing techniques even in advanced stage head and neck cancers. Overtime, an increased body of literature investigating post-cancer treatment voice and swallowing dysfunction grew, as these organ-preservation therapies left toxic impacts on function and quality-of-life, specifically voice and swallowing impairments.

Certainly, swallowing impairments are documented toxicities of tumors themselves as well as the surgical and non-surgical interventions of head and neck cancers. Impaired swallow function's biggest negative impact on quality of life is the resultant feeding tube dependence in patients, which in turn can further deteriorate swallow function due to reduced muscle use. The realization occurred that it was going to be important to keep patients' swallowing, no matter how much oral intake they tolerated. We therefore investigated the impact of an evidence-based, standardized exercise protocol against a structured regimen of increased swallow frequency to determine which would yield more favorable outcomes, if any, to determine the least burdensome intervention protocol for these patients. It was found that patients who followed an evidence-based, standardized exercise protocol were significantly more likely to eliminate feeding tube dependence due to ability to tolerate oral diets safely, at 3 months following completion of chemoradiation therapies. Several studies around the same timeline and since, have validated the importance and benefits of prophylactic swallow exercise therapy in head and neck cancer patients, on swallowing physiology, function and quality of life outcomes. In fact, the National Comprehensive Cancer Network's (NCCN® Inc. 2019, All Rights Reserved) guidelines for head and neck cancers now call for speech and swallowing services prior to the start of cancer treatment as well as throughout.

Fortunately, over the years, programs offering medical and rehabilitation services to patients with head and neck cancers, continue to implement these evidence-based exercise protocols within their clinical settings to obtain significantly improved functional and quality of life patient outcomes. Here at Northside Hospital, we implemented these protocols and services several years ago as well. As a result of this roll out, patients typically captured during tumor board meetings, receive a clinical and/or instrumental evaluation of swallow function prior to or right at the beginning of treatment by a licensed speech language pathologist. This time is also utilized to provide patients and their caregivers, education on what to expect during treatment and learn exercises while the structural swallowing mechanism is least impacted. Particular emphasis is laid on providing patients with objective research that justifies the value of performing this exercise protocol in the absence of

essentially any dysphagia. This has been key to receiving patient buy-in into the program. Thereafter patients receive services at the same location as their radiation treatment, weekly, based on an individualized plan of care with an individualized frequency and intensity of treatment. Not having to travel to yet another location for a speech pathology appointment takes away significant burden off of the patient and their caregivers and has proved further successful in their abilities to comply with their plans of care and reap the invaluable benefits of the same. Once cancer treatment is completed, patients continue therapy within the speech pathology department. Re-evaluations via clinical assessments and/or instrumental exams are completed as often warranted by the patients' clinical presentations. Collaboration with the medical team, dietary services, nutrition therapies, social workers and navigators throughout this process is non-negotiable if the intention is truly to provide a multidisciplinary care model.

Northside Hospital's Rehabilitation Services in collaboration with Northside Hospital's Cancer Institute (NHCI) offer similar clinical programs for many other oncological practices including blood and marrow cancers, thoracic cancers, breast cancers and gynecological cancers among others. Speech pathologists, occupational therapists, physical therapists, and audiologists work closely to ensure patients' rehabilitation needs are met to the best of our abilities. Ongoing communication with patients' medical providers and teams is always at the forefront as it is necessary to ensure progress in treatment and update goals and plans of care as necessary, timely. With ongoing developments in programs as well as services offered, we founded an Oncology Rehab Steering Committee to oversee our oncology programs and ensure that the highest quality of services aligning with the evidence-base are provided at all times. As you may be well aware, some of the most basic barriers to implementation of evidence-based protocols to large clinical practices include a wide range of experiences and expertise of clinicians and a permanent modification needed to 'habitual' practices. Additionally, especially when multiple departments are involved, logistical factors can pose serious delays or risk of 'things falling through the cracks.' The Oncology Rehab Steering Committee therefore was founded to focus on four main strategic goals: establishment and ongoing development of clinical treatment guidelines, clinician education at all levels of experiences and expertise, data collection and outcomes analyses and lastly, building community relationships and increasing community engagement.

Development of clinical treatment guidelines includes creating evidence-based diagnosis-specific medical and rehabilitation pathways that allow for a standardization in clinician practices with specific patient populations. These pathways are completed in collaboration with physician champions which further leads to a standard alignment of practices across the multidisciplinary teams. Pathways closely associate with NCCN® guidelines, again to standardize communication approaches. Guidelines are updated from time to time as advances in medical and rehabilitation treatment occur. Clinician competencies at all levels of experiences and expertise has previously been described as a basic barrier in implementation protocols. Hence, timely dissemination of information occurs in the form of newsletters, electronically shared updates, in-services, meetings, recommended continuing education courses and conferences that would allow staff along the continuum of expertise to calibrate their approaches in treating specific patient populations. As and when needed, creative modalities of education such as handouts, reference sheets, memorandums etc. may also be utilized, again to meet the needs of the hour and ensure patients can be accommodated and treated using the best standard of care. Data collection and outcomes analyses teams initially focused on creating a local database to capture information including volumes, patient demographics, tumor related characteristics, cancer treatment factors such as phase of treatment, as well as functional outcome measures data. Data is analyzed quarterly and reported up to the Oncology Rehab Steering Committee and NHCI's Cancer Committee. Clinicians also receive data as a means of feedback on patient performance.

Certainly, data trends assist in driving advances in clinical patient-care practices through the survivorship continuum and also help determine the quality of programs, allowing identification of opportunities for further enhancements. Lastly, community engagement focusses on disseminating clinical treatment guidelines and education to the community so that patients can receive a standardized level of care not just at Northside Hospital but wherever in the community that they choose to go. If patients leave Northside Hospital to receive care closer to home, these education initiatives allow outside clinicians to align their practices in a manner that provides for a natural, smooth transition for patients. Community education is achieved through professional meetings and conferences (Virani et al., 2018; Virani et al., 2019), newsletter publications both professionally as well as to the survivor community, support group engagements and collaborations with national and international committees that collaborate to disseminate information. One such international community is the American Congress of Rehabilitation Medicine (ACRM). Through the efforts on the Education as well as the Outcomes and Research task forces,

I have the opportunity to collaborate on highly relevant oncology research topics (Virani et al., 2018; Virani et al., 2019). The Outcomes and Research Task Force is actively conducting a systematic review of the literature, contributing to the development of a Cancer Rehabilitation Guideline (Sleight et al., 2019). Additionally, a second systematic review of the literature is also underway to evaluate the state of the science regarding telehealth-based cancer rehabilitation. The results of this systematic review will help to inform and improve upon current and new telehealth-based models of cancer rehabilitation interventions and policy justifying utility of these services. The Education Task Force completed a National Delphi Study to develop a Cancer Rehab Competency Verification Tool for healthcare personnel working with the oncology patient population (Christensen et al., 2019; Christensen et al., 2020).

It has been a pleasure to share my clinical and research journey with you. The scope of the field of speech pathology is beautifully vast and certainly for me a very satisfying quality of work. I hope that you will be encouraged by this work and continue to contribute to our field in your own ways. Thank you for your outstanding readership, always.

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Dr. Nalanda Chakraborty *is an Assistant Professor in the Communication Sciences and Disorders Program at Texas A&M University – Kingsville. She completed her Ph.D. at University of Florida, Gainesville, and both her undergraduate and master's degree from Manipal University, India. Dr. Chakraborty's research is focused on examining various speech production characteristics including voice, articulatory acoustics, fluency, and performance effort in individuals with Parkinson's disease. Along with motor speech disorders, her research interests also include stuttering, neuroscience, and acoustics of speech. Prior to coming to the USA for her PhD, she worked as a speech-language pathologist in a hospital setting in India.*

Understanding Speech Disfluencies in Speakers with Parkinson's Disease

Fluency is a facet of speech production that reflects the continuity, rate, rhythm, effort, and naturalness of speech (Logan, 2015). Stuttering is a chronic speech disorder that is characterized by frequent interruptions in speech continuity and the most common disfluency types in stuttered speech include repetition of sounds, syllables, words and audible or inaudible fixed articulatory postures. Though there are number of causal factors associated with developmental stuttering, genetic, neuroanatomical and neurophysiological correlates of stuttering have been the focus of many contemporary researchers.

Neurogenic Stuttering

Neurogenic form of stuttering is regarded as being distinct from developmental stuttering, in that it is non-developmental (i.e., acquired). With neurogenic stuttering, the onset of fluency impairment is reliably linked to the occurrence of a precipitating factor such as brain injury or neurodegenerative condition that adversely affects the speech production system. As per past surveys (Market, Montague, Buffalo, & Drummnd, 1990), neurogenic stuttering is most commonly associated with conditions such as stroke (37-50% of cases), traumatic brain injuries (19-38% of cases), neurodegenerative diseases (15% of cases), and drug-induced disfluencies (6% of cases).

The disfluencies associated with neurogenic stuttering often resemble those observed in developmental stuttering, but it is common to also see disfluency profiles that include variants of the typical stuttering and are often referred to as "stutter-like" disfluencies (Goberman, Blomgren, & Metzger, 2010; Van Borsel & Tallieu, 2001). Some of the more common stutter-like disfluencies in neurogenic stuttering are sound, syllable, and part-word repetitions, sound prolongations, long silent pauses, and blocked speech sounds, with repetitions being the most common type (De Nil, Jokel, & Rachon, 2007). Additionally, some studies have reported excessive frequency of other disfluency types such as whole word repetitions, phrase repetitions, interjections, and revisions which can also be referred to as "non-stutter" disfluencies (Jokel, De Nil, & Sharpe, 2007; Lundgren, Helm-Estabrooks, & Klein, 2017). Furthermore, the loci of the stuttering syllables are not limited to word-initial phonemes or syllables, but also in word-medial as well as word-final positions in speakers with neurogenic stuttering (Theys et al., 2008). Additionally, like speakers with developmental stuttering, individuals with neurogenic stuttering may also exhibit more disfluencies in speech tasks that feature relatively high language formulation demands (e.g., conversation, narration) than they do in tasks that feature fewer language formation demands (e.g., oral reading, sentence repetition; Ludlow et al., 1987).

Speech Disfluencies in Individuals with Parkinson's Disease (PD)

For the past few decades, it has been interesting for researchers to seek the neurogenic correlates and pattern of disfluencies in different neurological conditions. One of such conditions is Parkinson's disease, which is particularly interesting to study because of the slow and progressive loss of functioning, parallel to the decline of functioning in dopaminergic neurons in the basal ganglia and resulting motor deficits in subsystems of speech production. Along with the typical speech articulation, phonation, and resonance characteristics of hypokinetic dysarthria in individuals with PD, past research has reported that the profile of speech deficits accompanying PD often includes disruptions in speech fluency (e.g., De Nil et al., 2007; Goberman & Blomgren, 2003).

The speech disruptions noted in the speech of speakers with PD, when they occur excessively, are characterized as a form of neurogenic stuttering, as they are caused by brain dysfunction that results for reasons other than neurodevelopment during childhood (De Nil et al., 2007; Goberman & Blomgren, 2003). Interestingly, researchers' descriptions of the core disfluency characteristics in PD often are mostly parallel to those mentioned in the developmental stuttering literature; however, some deviations in disfluency types have been noted as well. Prior research that has focused on profiling the disfluency characteristics in individuals with PD indicates that the most common disfluencies noted are multi-iteration repetitions of sounds, syllables, and words; prolongations of sounds and syllables; audible and inaudible blocks on syllables and words; inappropriate and/or excessively long pauses; as well as revisions and interjections (Chakraborty, Hegland, Altmann, & Logan, 2018; Goberman, & Blomgren, 2003; Leder, 1996). These disfluencies are usually relatively brief in comparison to disfluencies that may be observed in developmental stuttering, and repetitions may sound rapidly paced with indistinct articulation, and may be analogous to the "freezing" or "shuffling" gait features in these patients. In some studies, the frequency of stuttering-like disfluencies presented by individuals with PD has been greater than 3%, which often is used as a perceptual threshold for identifying impaired fluency in speakers with developmental stuttering (Brabo, Minett & Karin, 2014; Goberman et al., 2010). Nonetheless, non-stutter disfluencies such as interjections, revisions, and incomplete phrases often also can be common types of fluency disruptions in the PD population (Chakraborty et al., 2018; Goberman & Blomgren, 2003; Juste & Andare, 2017).

Additionally, sometimes speakers with PD may produce disfluency clusters that include more than one type of disfluency (e.g. the disfluency |th- theee| glass includes partword repetition and prolongation). A study by Chakraborty et al. (2018) showed that about 22% of the total disfluencies produced by speakers with PD across different speaking tasks included disfluency clusters. They identified and labeled these clusters based on the disfluency type that occurs first. For example, in the disfluency cluster the disfluency |th- theee| glass because the first disfluency is a part word repetition (PWR) this cluster was labelled as PWR-initiated cluster. The findings of this study showed that speakers with PD produced various combinations of disfluency clusters that also varied across different speaking tasks. During reading, speakers with PD more frequently produced disfluency clusters initiated with blocks and revisions, whereas, during the narration task, they presented disfluency clusters initiated with interjections (see Table 1).

Speech task influencing speech disfluencies in speakers with PD

The type of speech task may also influence the frequency and disfluency types in individuals with PD. Goberman et al. (2010) reported that the overall frequency of disfluencies produced by individuals with PD significantly is more during spontaneous speech tasks such as monologues than reading task. Similarly, Chakraborty et al. (2018) reported that speakers with PD produced significantly more stutter-like and non-stutter disfluencies for narration task than reading task. Table 1 shows the different types of disfluencies produced by speakers with PD in highest to lowest frequency of occurrence during reading and narration tasks (as observed by Chakraborty et al., 2018). Findings of this study revealed, speakers with PD most often presented, in descending order, part-word repetitions (PWR), blocks, audible prolongations, whole-word repetitions (WWRs), and revisions during the reading task; and blocks, followed by part-word repetitions, tension pause, prolongation, whole word repetition, revisions and interjections during narration task.

Table 1. Types of disfluencies produced by speaker with PD in descending order of occurrence during reading and narration tasks as reported by Chakraborty et al. (2018).

Disfluency Type	Speech Task	
	Reading task	Narration
Stutter-like	Part -word repetitions (PWR) Blocks (BLK) Prolongation (PRO) Whole-word repetitions (WWR) Phrase repetition (PH.R)	Blocks (BLK) Part -word repetitions (PWR) Tension pause (TP) Prolongation (PRO) Whole-word repetitions (WWR) Phrase repetition (PH.R)
Non-stutter	Revisions (REV)	Revisions (REV) Interjection (INJ)
Disfluency clusters	Revision-initiated Block-initiated	Revision-initiated Whole word repetition-initiated Interjection-initiated Block-initiated

Conclusion

In summary, speakers with PD present with variety of both stutter-like and non-stutter disfluencies; and the overall disfluency in speakers with PD is significantly higher when compared to healthy older adults. However, when compared to developmental stuttering, it is not as frequent. Additionally, they also may present disfluency clusters with include various combinations of more than two types of disfluencies.

Furthermore, there is a significant impact of speech task on speech disfluency frequency as well as types in speakers with PD. The disfluency frequency is fewer in tasks that have relatively low linguistic planning demands (such as reading or automatic speech) in comparison to tasks that have relatively high linguistic planning demands (such as conversation and narration) (Chakraborty et al., 2018; Goberman et al., 2010). The occurrence of non-stutter disfluencies in speakers with PD can be linked to linguistic planning for speech and, as such, it can be influenced by factors such as attentional focus and word retrieval rates (Goberman et al., 2010). Although such disfluencies are seen in all speakers, when produced often by speakers with neurodegenerative disease, they are regarded as evidence of difficulty in conceptualizing communicative intentions and/or formulating linguistic plans which place more demands on processes such as working memory, attention, and linguistic retrieval for speech.

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Marlyn is a Speech-Language Pathologist with extensive experience working with school-aged children of various nationalities (including Western European, European, transcontinental and Asian). She has worked as a lecturer and clinical supervisor and university examiner in India for undergraduate and graduate students. Marlyn has also been honoured as main speaker/resource person in various national and international rehabilitation conferences and is currently working with the Choice School, India, as a speech language pathologist.
She can be reached at marlynslp@gmail.com

Tips for new SLPs: A perspective from an SLP with experience working in two different countries

My name is Marlyn and I am from South India with a mixed upbringing. I was born and brought up in the Middle East but was fortunate to spend a few years of my childhood studying in Mumbai and Kerala. I hope this write-up will benefit readers who are from India and are aspiring to gain experience in a western culture and vice-versa.

After completing my graduation (Mangalore University) and post-graduation (Mysore University) in India, I spent most of my career as a lecturer and clinical supervisor in Calicut University in India. In 2011, I was recruited to work as a speech-language therapist in Dubai at the British Institute for Learning Development. I was really excited for the opportunity. To work in Dubai, one needs to have a DHA (Dubai Health Authority) licence or a DHCC (Dubai Healthcare City) licence. The DHCC is the world's largest medical free zone operating under the free economic zone within Dubai comprising of high-tech hospitals, clinics, fashion boutiques, and department stores. After obtaining a professional licence, one could opt to work in a clinic, school, or a hospital (private or government). Certain centres in Dubai also provide home visits and school visits for therapy and also conduct educational sessions in schools to educate teachers on identification and referral for special services.

During my initial years of professional practice in Dubai, I was fortunate to work among therapists and other rehabilitation professionals who graduated from UK and South Africa. What followed was a lovely time of cultural and professional exchange. On the cultural side, what caught my attention was the work attire of the western therapists who usually wore plain polo shirts and crop/full length pants to work with very minimal make-up and jewellery. This was also the norm for therapists from the Arab countries in the different set-ups that I worked with.

On the professional side, I was impressed by the methods of assessment and documentation in the western clinical setting. For example, I was introduced and trained to use a wide range of test materials such as 'Test of Auditory Processing Skills' which tested in detail the auditory processing skills (auditory memory, auditory cohesion, segmentation and blending skills etc.) that were vital for classroom performance. This was something that I did not do back in India.

Also, in the settings (British Institute of Learning Development, Dubai and KidsFIRST centre in Dubai) that I had worked in, after each professional completed their assessment, a meeting would be scheduled with all the professionals and the parents/caregivers in the absence of the child to discuss the results and provide feedback on the best way to deliver services. Additionally, the therapists would make sure that any communication with the parent was done in the absence of the child.

The emphasis given to early identification and parental training was also truly remarkable. This would also follow a uniform criterion in terms of the font, margins, and front cover page with personal details. Therapists were very careful with the words they wrote in the assessment form. "Negative" words or a judgemental tone would never be seen in the reports- such as "poor", "not cooperative", "not interested". The reports would also highlight the strengths of the child. This was a real eye-opener for me.
After feedback from my colleagues and contacts who work in India, I was strongly convinced that it would be helpful to add report writing and documentation as part of the curriculum for speech and

language pathologists. After a few years of having worked in different therapy settings in Dubai, when my husband had to move to India, I joined him. But this was one great experience that I have carried to India. I even had my current school purchase and use the test materials I had found so apt and useful for testing school aged population. Even though I still have a long way to go, overall, I would say that my experience working in a different country has enriched me and groomed me to be a better person both personally and professionally while appreciating diversities. My heartfelt gratitude to all my colleagues and friends who have supported me in my journey.

Our Audiology Trailblazers

Dr. Shruti Balvalli Deshpande *is an Assistant Professor at St. John's University, NY and at the Long Island Doctor of Audiology Consortium. Her research lies at an intersection of auditory neuroscience, auditory assessment, and management with a focus on technological applications and service-learning. Her biography can be found here: https://www.stjohns.edu/academics/faculty/shruti-deshpande-phd*

Dr. Rohit Ravi *is an Assistant Professor in the Department of Audiology & Speech-Language Pathology, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, Karnataka, India. His area of research is in pediatric audiology, systematic reviews, and knowledge attitude and practice surveys.*

A Global Online Learning Exchange (GOLE) Project with a Goal of Increasing Audiology's Visibility through Service-Learning during the COVID-19 Pandemic: A Partnership between the US and India

Background and Needs

"Education gives us the chance to understand that we are all tied together as citizens of the global community, and that our challenges are interconnected." — *Ban Ki-moon, UN Secretary-General*

Audiology is a relatively new profession. Recently published peer-reviewed work indicates that awareness about the profession of audiology is lacking (Deshpande, 2019; Windmill & Freeman, 2013). This has two implications: 1) The general public is unaware of the 'go-to' professional for hearing/balance related complaints and hence it leads to health disparities; 2) College-age aspirants are unaware of the profession and in the next 30 years projections indicate that there will be a drastic imbalance between high-demand and low- supply of audiologists (Windmill & Freeman, 2013). Additionally, in the US, data indicates that most audiologists/audiology students identify themselves as white and female (ASHA, 2019; CSDCAS, 2019). Therefore, increasing the number of audiologists as well as the diversity in the audiology workforce is crucial (Deshpande, 2019). Such challenges regarding Audiology are world-wide and students in India and in the US are interconnected through these challenges. As citizens of the global community and as audiology aspirants, cross-cultural interactive experiences can offer students opportunities to work together to identify specific challenges and explore solutions.

St. John's University recently structured a novel cross-cultural online experience for St. John's University's students to collaborate on projects with international peers. Such projects are funded by the Global Online Learning Exchange grant awarded to select faculty members at the university (please see: https://www.stjohns.edu/about/news/2019-11-20/online-global-exchange-program-broadens-student-options). The current manuscript details a GOLE grant awarded to Dr. Shruti Deshpande (New York, USA) who will collaborate with her international faculty partner, Dr. Rohit Ravi (Manipal Academy of Higher Education, Mangalore, India), on a cross-cultural service-learning project in 2021. During this COVID-19 pandemic, the GOLE project has the potential to offer high-impact active learning, cross-cultural collaborative experiences to speech and hearing majors in the US and in India.

Objective

Design and compare the effectiveness of an educational intervention program regarding 'Audiology' through service-learning in Queens, NY and Mangalore, India.

Methods

The GOLE project will be implemented via online platforms like Zoom or Microsoft Teams to allow students to communicate synchronously. Students will also be encouraged to interact with each other via the GroupMe platform, asynchronously. Drs. Ravi and Deshpande will lead a group of undergraduate students in their respective undergraduate courses at Manipal Academy of Higher Education (MAHE), India (Pediatric Audiology) and St. John's University, NY, USA (Introduction to Hearing Sciences), respectively. While students will work collaboratively, the process of grade assignment will be determined individually by each instructor for his/her cohort. The GOLE project will be divided into the following components-

I. **Baseline evaluations/Pre-reflection:**

In January 2021, students will be provided with basic information pertaining to the GOLE project. They will be asked to submit a brief pre-reflection paper. Prompts/questions will be provided to help them write the pre-reflection.

II. **Orientation/Empathy-building phase:**

Both the instructors and students will be required to post an introductory video on a pre-decided online platform (e.g. a learning management system, Google Classroom). Through this activity, students will learn more about the instructors, students from the cohort from their own schools as well as students from the partner school. After watching all the videos, students will post a comment/question on the video of another student from the partner institution. Instructors will moderate the activities for content and professionalism.

III. **Content-Related and Reflection Phases:**

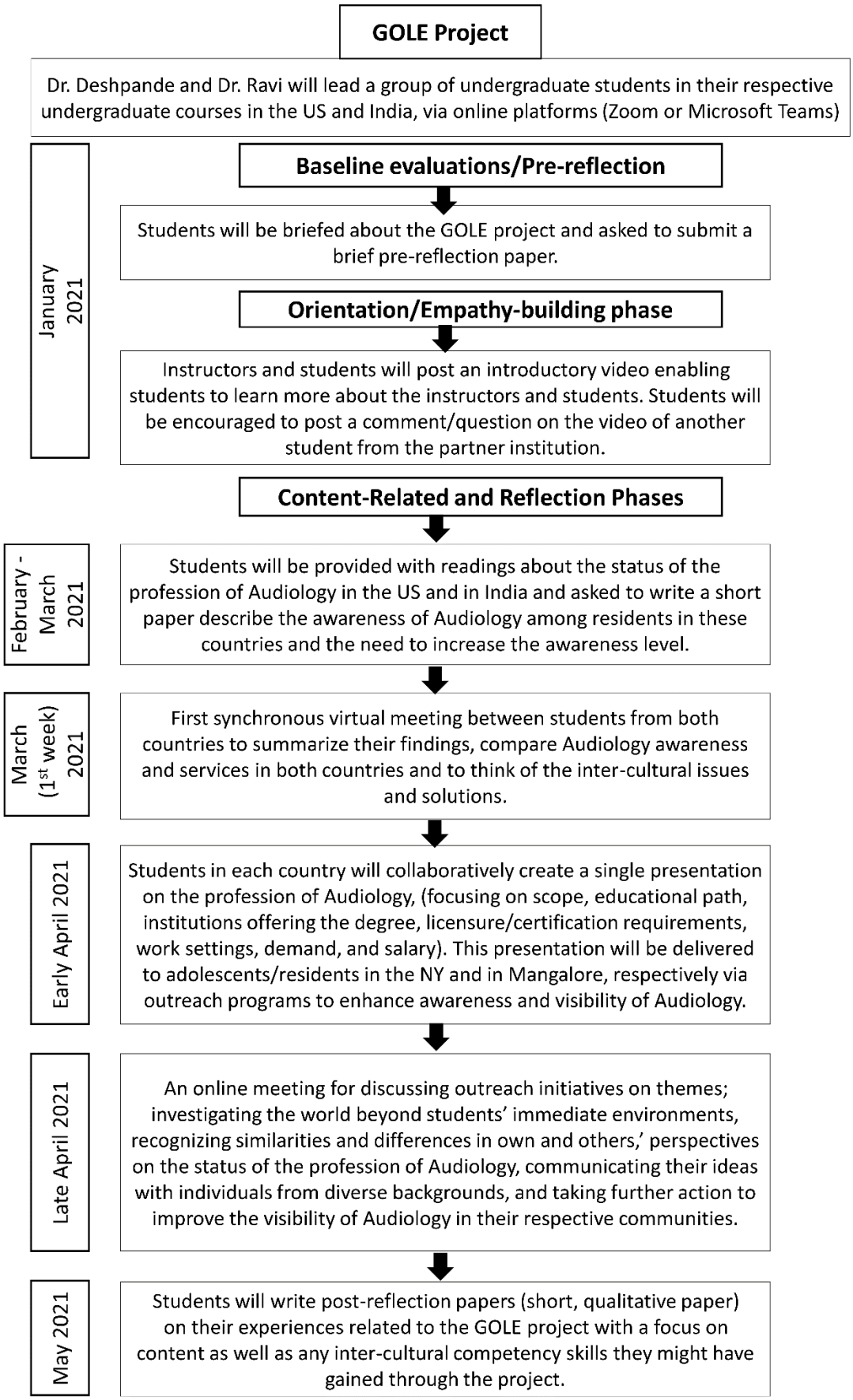
i. Between February and March 2021, students will be provided with readings about the status of the profession of Audiology in the US and in India (e.g. Deshpande, 2019; Easwar et al., 2013; Easwar et al., 2016; Manchaiah, 2016; Manchaiah et al., 2010; Windmill & Freeman, 2013). Thereafter, students will be required to write a short paper by responding to the following prompts- (1) describe the awareness of Audiology among residents in the United States of America and in India; (2) analyze the need to increase the awareness-level about the profession of Audiology among residents in New York, USA and Mangalore, India.

ii. In the first week of March 2021, the first synchronous meeting will be scheduled. Students at St. John's and at MAHE will have the opportunity to virtually meet one another as well as summarize their findings enumerated in the paper (as listed above). This meeting will be scheduled via the Zoom platform at a mutually convenient time. This synchronous session will be important because it might be the first opportunity for most students to meet Audiology-aspirants and an Audiology professor from another country. Based on the readings, students will be encouraged to compare Audiology awareness and services in the US and in India. Some examples include: 1) Reflecting on issues related to high population density and poverty affecting hearing-health in the developing world; 2) Articulating the importance of Universal Newborn Hearing Screening in the US; 3) Reflecting on the availability of free/low-cost health-related services in most government funded hospitals in India (a challenge here in the US for low-income families). This experience will help students think about inter-cultural issues and challenges in Audiology and will provide them with a platform to think of solutions as future leaders.

iii. Students in each country will collaboratively create a single presentation on the profession of Audiology (one presentation by students at MAHE and another presentation by students at St. John's University). The presentation will be an interactive one, focusing on questions related to the profession of Audiology in each country (scope, educational path, institutions offering the degree, licensure/certification requirements, work settings, demand, and salary range). This presentation will be delivered to adolescents/residents in the NY and in Mangalore, respectively via outreach programs that will be individually scheduled by Dr. Deshpande and Dr. Ravi in early April 2021 (either in-person or virtually depending on the COVID-19 related health restrictions in each country/city). The overall goal of the outreach programs is to enhance awareness and visibility of the profession of Audiology (Deshpande, 2019).

iv. In the last week of April 2021, a Zoom session will be conducted. Students from each cohort will have the opportunity to discuss their outreach initiatives. Instructor-led discussion will ensue based on the following themes: investigating the world beyond students' immediate environments, recognizing similarities and differences in their own and others' perspectives on the status of the profession of Audiology, communicating their ideas with individuals from diverse backgrounds, and taking further action to improve the visibility of Audiology in their respective communities.

In early May 2021, the students will write post-reflection papers on their experiences related to the GOLE project. Prompts will be provided for the students to write a short, qualitative paper on the GOLE project with a focus on content related as well as any inter-cultural competency skills they might have gained through the project.


GOLE Project
Dr. Deshpande and Dr. Ravi will lead a group of undergraduate students in their respective undergraduate courses in the US and India, via online platforms (Zoom or Microsoft Teams)
January 2021
Baseline evaluations/Pre-reflection
Students will be briefed about the GOLE project and asked to submit a brief pre-reflection paper.
Orientation/Empathy-building phase
Instructors and students will post an introductory video enabling students to learn more about the instructors and students. Students will be encouraged to post a comment/question on the video of another student from the partner institution.
Content-Related and Reflection Phases
February - March 2021
Students will be provided with readings about the status of the profession of Audiology in the US and in India and asked to write a short paper describe the awareness of Audiology among residents in these countries and the need to increase the awareness level.
March (1st week) 2021
First synchronous virtual meeting between students from both countries to summarize their findings, compare Audiology awareness and services in both countries and to think of the inter-cultural issues and solutions.
Early April 2021
Students in each country will collaboratively create a single presentation on the profession of Audiology, (focusing on scope, educational path, institutions offering the degree, licensure/certification requirements, work settings, demand, and salary). This presentation will be delivered to adolescents/residents in the NY and in Mangalore, respectively via outreach programs to enhance awareness and visibility of Audiology.
Late April 2021
An online meeting for discussing outreach initiatives on themes; investigating the world beyond students' immediate environments, recognizing similarities and differences in own and others,' perspectives on the status of the profession of Audiology, communicating their ideas with individuals from diverse backgrounds, and taking further action to improve the visibility of Audiology in their respective communities.
May 2021
Students will write post-reflection papers (short, qualitative paper) on their experiences related to the GOLE project with a focus on content as well as any inter-cultural competency skills they might have gained through the project.

Anticipated Outcomes and Implications

In the time of a pandemic, the GOLE project will have a tangible outcome of service-learning and cross-country, cross-cultural partnerships. Such high-impact pedagogical experiences will provide holistic educational outcomes for our students- the future leaders of our profession. We also hope to collect outcome based qualitative and quantitative data as a result of this project.

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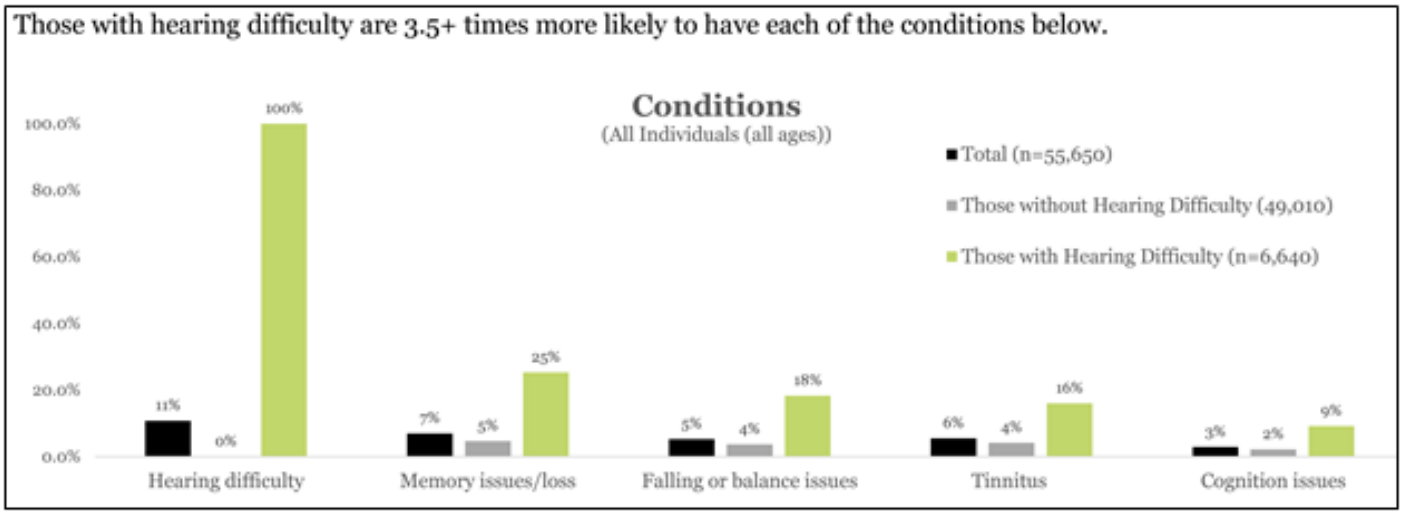
Dr. Rupa Balachandran *is the Chair of the AuD program at the University of the Pacific. She obtained her Ph.D. in Speech and Hearing Sciences from the Graduate school of the City University of New York. She is a licensed Dispensing Audiologist in the State of California. Her current research involves objective measures of auditory functioning and evidence-based therapy for central auditory processing disorders. Dr. Balachandran has presented at several national meetings on the topics of central auditory processing and speech perception by hearing-impaired individuals. She is the Past-President of the California Academy of Audiology.*

She lives in Oakland, California with her husband and two children.

Comprehensive Amplification Solutions for the Elderly Population

Current health statistics show that one in four adults over the age of 65 has a significant hearing loss and one in two over the age of 80 has a significant hearing loss. This has several implications for aging safely in place. The 2010 census data suggest that 29% of individuals over the age of 65 live alone with nearly half of them being over the age of 85. Living alone poses several challenges for adults who are hearing-impaired. Hearing-impaired individuals often have co-morbid conditions such as low vision, poor balance, and chronic health conditions (MT10: Powers and Rogin 2019).

Fig 1. Common health conditions reported by adults with and without hearing difficulty (MT 10, Powers and Rogin, 2019)



Hearing aids and a variety of assistive listening devices are available for the treatment of hearing loss. For individuals with low vision and poor dexterity, hearing aids are not easy to manipulate due to their size and complexity of operation. The inability to insert and remove hearing aids and make adjustments in a primary cause for non-use of hearing aids by hearing impaired adults. Being able to access communication easily and efficiently is key to living independently. Assistive technologies can be used effectively to help adults with their communication needs which in turn can allow them to live independently for a longer duration.

A comprehensive amplification solution

Hearing aids are typically not covered by most insurance plans including Medicare and very often, the patient needs to pay out of pocket for hearing aids. The cost can range for $1500 to $6500 for a pair of devices. Often, the price of the device includes the follow-up service and adjustments of the product. The patient is buying both a product and follow up care. Patients “shop” around for the best price and sometimes make a price-based decision without evaluating the service component. With the lack of differentiation between the role of provider and the role of the device often people with hearing loss are left with the question “How do I ensure I am getting the best hearing health care?”

A combination of hearing aids and assistive listening devices can provide a comprehensive solution for the needs of the hearing-impaired patient. There are several options that improve hearing in different situations.

1. Remote microphone technologies can be used with hearing aids to provide improved audibility in environments with increased background noise, reverberation or poor visibility (large venues, arenas, houses of worship)
2. Amplified and captioned telephones can improve communication over the phone
3. Television amplifiers
4. Alerting devices
5. Smart phone applications for situation specific use

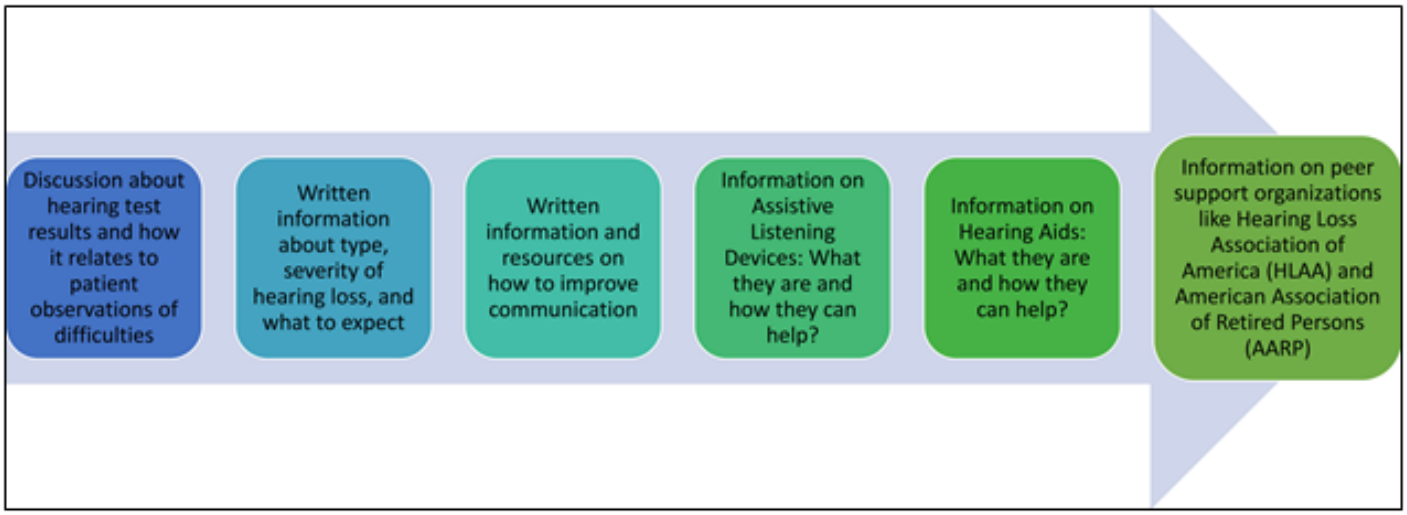
Stand-alone assistive listening devices such as amplified telephones, television amplifiers and pocket talkers are underutilized in the management of hearing-impairment. They provide situation specific help and can be a very effective tool in the management of hearing-impairment for the following reasons:

1. They can be used without hearing aids

2. They are simple to operate and have easy to use controls
3. They are much lower in cost than traditional hearing aids
4. They provide opportunities for hearing-impaired individuals to function independently.

When a hearing-impaired adult is seen for a hearing evaluation for the first time, they need time to understand their diagnosis and the variety of treatment options that can benefit them. Often, the existence or confirmation of the hearing impairment can create a new emotional state in the patient wherein additional information about different device options is not processed effectively. An effective way to ensure that the person understand their diagnosis and the available options to help mitigate their communication difficulties is shown below.

Fig 2. Recommended workflow for a typical hearing aid consultation.



In this model, the patient has the opportunity to review materials, review different resources and have a better understanding of the technologies that can help them. Providing links to resources for your patient to review in their own time helps develop trust in you as the specialist in hearing health care. It also opens opportunities for conversations on various technologies that will help a hearing-impaired individual in different environments. Over time, the patient will be able to identify the best devices to help them hear in different situations.

Technology access by elderly adults

Increasingly elderly adults spend a lot of their time on pursuits that require access to technology. A recent study from the Pew research center showed that adults over the age of 65 spent over 5 hours of their day watching television. This also included time watching your tube videos and information related videos. Use of the internet has also increased to about 73%. Improving auditory information via television streaming accessories or standalone devices like TV Ears or blue tooth enabled headphones, improves the quality of the audio signal the individual experiences. Headphones are increasingly offering customization for the peripheral hearing sensitivity to allow the user to customize the sound output for greater clarity and comfort.

Assistive listening Devices in Emergency situations

Most hearing-impaired individuals do not wear hearing aids at bedtime. In an emergency where a hearing-impaired listener does not have their hearing aids on, assistive and alerting devices can play a critical role to function effectively. Being able to quickly access an amplified telephone which does not require the individual to wear their hearing aids is critical during an emergency. It can build

great confidence for seniors who would like to prolong the time that they can safely live independently.

Situations that require hospitalizations or convalescence in medical settings may again not be conducive to hearing aid use. Use of captioning on smart phone devices and the addition of a device like a pocket talker, allow hearing-impaired individuals to continue communicating with their medical providers and their families during these times. Patients 'ability to communicate better with their provider in these settings and can improve patient outcomes due to improved adherence to care plans (Balachandran 2015).

Summary

Hearing solutions that incorporate different technologies are necessary for elderly adults to participate fully in different environments. Hearing health care providers can choose technologies to ensure that hearing-impaired individuals can access services vital to letting them live independently and safely for longer periods of time.

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Iera Kaul Sharma *is an entrepreneur and the proprietor of Aura Speech and Hearing Clinic in Faridabad – industrial capital of Delhi-NCR. Aura was the only clinic in northern zone awarded the best service provider for Audiology in 2019. Iera, proudly known as Mr. Kaul's daughter, is an alumnus of Sri Ramachandra Medical College and Research Institute (BASLP 2002-06 batch) – Porur, Chennai. She is a Kashmiri by birth, Tamilian by habits and an entrenched Delhiite. She has been working for the last three years with Cleft Children International- Switzerland (a prestigious project which is granted to very few hospitals or NGOs in India) and in the area of cochlear implants since 2010. Iera is the elected Executive Committee member of the Delhi branch of Indian Speech and Hearing Association (ISHA).*

Namaskar Sarni! (Kashmiri)

Journey of AURA began with a phone call between two old college friends who were vexed by the situation and standard of so called professional ASLP's in Haryana.
Non - professionals were providing speech therapy and were dispensing hearing aids. Parents were unaware of the difference between the two and non-professionals were taking undue advantage of the situation. I take pride in myself for being analytical, and for thinking through the problem rather than sitting on it and complaining. Change had to come from within; it had to come from me: thus, came the existence of AURA SPEECH AND HEARING CLINIC on the 4th of September 2017. Aura was built on just one belief *'to provide professional and ethical services under one roof'*.

The biggest barrier that I faced and continue to face is the cultural expectation of being a woman and to fight the price war. The concept of a female audiologist and sole owner/decision-maker is hard to digest for the population of Haryana. Let alone her being good. They are not open to medical advice or recommendations from a female Audiologist, whereas a female Speech-Language Pathologist is always welcome. Our objective is to make our hearing aids cost effective. However, we face fierce competition from multiple companies despite our cost-cutting practices.

The main idea behind AURA is to create awareness among caregivers, co-professionals, and schools towards the specially-abled population thus bringing to the table the concept of early intervention which was and still is missing in the system. We have conducted many parent-training programs at schools at the primary (elementary) level. We realised that there was lack of awareness among the parents regarding normative milestones and existence of rehabilitation professionals. Parents and families had no knowledge about early identification and intervention. I believe this is from lack of counselling on the part of the co-professionals. Parents are not sufficiently informed about neonatal screening, hearing impairments, language and speech development, the options following a diagnosis, or even given any realistic expectations about hearing aids/cochlear implants and speech and language therapy before being referred to any allied health care professional. During these camps or Parent Education Conferences (PECs), we provide all the parents with handouts of normative and few common language stimulation techniques that can be used on a daily basis. We also train teachers to identify children with different needs.

At AURA, we take pride in the infrastructure we provide. Regardless of age, no hearing impairment is insignificant to us. Audiometry room has been built in accordance to international standards, i.e. two room set up in a sound treated room. This is the only centre in the whole of Faridabad to provide such a facility. I have always believed that hearing aids are not expensive; it's the ignorance towards hearing health that is expensive. We emphasise on early identification and provide unsurpassed quality of care to the patient and to their family, trying to improve the quality of life one step at a time. We work with the family and that takes the treatment to a new perspective.

With time and efoort, the journey of wearing a hearing aid or attending speech therapy has become less of a taboo to families. Regular articles are being published in the local newspapers in regional languages to help individuals become aware of the advantages of hearing aids and speech therapy and its outcomes. Few articles on malpractices in the surrounding area have also been published to create public awareness. This has encouraged families to become more sensitive to the needs of the hearing user and has also encouraged patients to actively come in for follow ups.

I strongly emphasize and have always advocated the importance of providing home-based interventions and support to families in low-resource settings**.** I believe that parent training or parent coaching cater to the needs of a wider population and help address the needs of children in the crucial early years of development, irrespective of any speech and language disorders. As a part of

outreach program, we are trying to reach as many schools and NGO as possible for screening camps for individuals with speech, hearing and social communication difficulties.

In this short span of time, the clinic has gained the trust of schools and surrounding occupation therapy centres. The schools are a vital part of the clinic. The clinics USP (Unique Selling Proposition) has always been goodwill - what we give always comes back. ALL my clientele is by word-of-mouth; not a single reference so far has been from medical co-professionals (hopefully that changes soon), and yet we have completed three years and are going strong. The future does look bright and strong for ‘Aura’ as its name suggest. The present scenario of COVID-19 has come with huge challenges. The re-opening did affect us financially, but I thank the almighty and the blessings of all the elders who have been a continuous support; we are back better than before. Hoping and praying that this pandemic ends soon and that all of us stay safe.

Our Rising Stars!

***Suma Suswaram** (she/her/hers), holds a master's degree in Audiology and Speech-Language Pathology from Bangalore University, India. She is currently a doctoral candidate in the department of Speech Language Hearing at the University of Kansas. Her research focuses on the role of supporting personnel in developing early communication skills for children across cultures. Apart from research, she also advocates for equity and inclusion in higher education at the local (University of Kansas), national (ASHA), and international (India) levels. She is also a multilingual with proficiency in five Indian languages (Kannada, Hindi, Tamil, Telugu, and Malayalam), in addition to English.*

Feeding Behaviors in Children with Autism Spectrum Disorder in India

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition that manifests as social communication deficits with the presence of restrictive and repetitive behaviors (Kanimozhiselvi & Jayaprakash, 2020). An estimate of 2 million individuals in India have ASD (Krishnamurthy, 2008). Among these individuals, approximately 50%-90% exhibit food selectivity issues. This abnormal mealtime behaviors, often referred as "picky eaters" prevents children with ASD from gaining adequate weight (Siddiqi et al., 2019), nutrition (Attlee et al., 2015), disturbances in bowel movements, and sleep patterns (Prosperi et al., 2017). Furthermore, children with ASD also exhibit difficulty mastering other feeding skills such as self-feeding abilities. Additionally, oral motor deficits, behavioral issues, and failure in developing verbal communication skills are commonly associated with feeding issues in children with ASD who are minimally verbal (Dominick et al., 2007).

At a peripheral level, feeding skills appear as a simple task; however, the actual process involves complex interactions between several biological variables such as neurological, physiological, and anatomical mechanisms (Arvedson, 2000). Further, extrinsic factors such as environmental, social, and cultural expectations introduce variability in feeding behavior across communities (Harwood et al., 1999; Blissett & Bennett, 2013). Although neurotypically developing children also exhibit food selectivity, the severity and longevity in children with ASD are greater (Leader et al., 2020). Evidence suggests that restricted and repetitive behaviors, oral sensory sensitivity, executive functioning, fear and anxiety, social and language skills influence development of feeding skills in children with ASD (Panerai et al., 2020). Most effective interventions for addressing feeding problems require multidisciplinary team involvements (Chistol et al., 2018).

Occupational therapy, nutrition and diet, child psychiatry, and speech-language and swallowing therapy are known to work with children with ASD that exhibit difficulties in feeding behaviors. For instance, occupational therapists work on feeding behavior as an everyday function (American Occupational Therapy Association, 2020). Further, as the name suggests, the nutritionist and dietitian focus on weight gain and nutritional intake (Attlee et al., 2015). Child psychiatrists focus on anxiety and stress associated with feeding difficulties (Kodak & Piazza, 2008). Finally, speech-language and swallowing therapists focus on both assessment and intervention of feeding behaviors (ASHA, 2001).

Social communication difficulties in ASD make the speech-language and swallowing therapy services among the most sorted services for ASD interventions (Camarata, 2014). Further, the Western literature notes speech-language and swallowing therapists as a key team member in rehabilitating feeding issues in ASD (Brackett et al., 2006). Speech-language and swallowing therapists bridge the connection between feeding behaviors, oral motor skills, and speech and language development (Twachtman-Reilly et al., 2008). Moreover, no individual discipline has the ability to address feeding issues adequately, making evidence from each discipline as a unique contributor towards the understanding of feeding issues in ASD (Arvedson, 2000).

A brief review of the Indian scientific literature suggests multiple evidence on feeding issues in children with ASD with a focus on sensory issues (Crasta et al., 2014; Suresh et al., 2014), nutrition, and diet (Malhi et al., 2017), physical development (Attlee et al., 2015), or with the focus on stress and anxiety (Subramanyam et al., 2019). Literature that focuses on oral motor skills, communication abilities, and behavioral issues associated with feeding behaviors emerging from speech-language and swallowing discipline, are lacking in the Indian scientific literature (Patra & Kar, 2020). A likely impact of limited research is low awareness on the importance of addressing feeding difficulties in ASD among speech-language and swallowing therapists. Speech-language and swallowing interventions that ignore feeding issues might adversely affect children's speech and language development and overall health. Further, because feeding behaviors differ across extrinsic conditions, there is a need for research from India in addition to the existing knowledgebase from the west. Future research with the focus on Indian population will benefit redesigning intervention protocols, especially early intervention programs, and accelerate rehabilitation of children with ASD in India and Indian origins.

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Barnali Mazumdar *completed her M.A. in Linguistics from the University of Calcutta, Kolkata, and her M.Phil from Jawaharlal Nehru University, New Delhi. Presently, she is pursuing her Ph.D. from the Department of Communication Sciences and Disorders at Louisiana State University under the supervision of Dr. Neila J. Donovan. Her research interests include aphasia and related neurogenic communication disorders and assessment development. Being a linguist, who speaks Bangla as her native language, her primary research focus is to develop a culture- and language-specific Bangla aphasia assessments.*

Identifying an Appropriate Picture Type for Bangla Picture Description Task

According to the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD 2010), stroke or cerebrovascular accident is the third leading cause of disability with approximately 62 million survivors worldwide (Ferri et al., 2011; Johnson, Onuma, Owolabi, & Sachdev, 2016). Over the last few decades, low- and middle-income countries reported that the stroke incidence rate increased more than double compared to the high-income countries, which reported a 42% decrease in the stroke incidence rate (Feigin et al., 2014). South Asian countries, a part of the low- and middle-income countries, are the highest contributors to worldwide stroke populations (Wasay, Khatri, & Kaul, 2014). In short, South Asian countries are presently dealing with the burden of stroke and a high disability rate. Aphasia, one of the most common disabilities associated with stroke, occurs in approximately 45% of stroke survivors (Ali, Lyden, & Brady, 2015).

Due to aphasia, individuals experience reduced communicative effectiveness that restrains stroke survivors from leading independent lives, which affects their overall quality of life (Lam & Wodchis, 2010). Speech-language pathologists (SLPs) use different language intervention techniques to support people with aphasia (PWA) in improving their communicative effectiveness and quality of life. However, accurate, comprehensive aphasia diagnoses are necessary to determine the appropriate language interventions for the targeted linguistic areas to shape the treatment plan. Also, an aphasia diagnosis helps SLPs measure the degree of improvement or regression of linguistic skills over time (Ivanova & Hallowell, 2013). As a result, developing or identifying culture- and language-specific aphasia assessments in different spoken languages is necessary to provide the appropriate diagnosis. Considering South Asian countries have the highest number of stroke cases, it is expected that there is a large number of PWAs residing in these countries. Therefore, it is essential to identify aphasia assessments for the dominant languages spoken in this region. Bangla or Bengali, one of the dominant South Asian languages, does not have a culture- and language-specific aphasia assessment.

Bangla is the world's sixth most spoken language, with approximately 250 million existing speakers (Noack & Gamio, 2015). Bangla is a regional language in India and the national language of Bangladesh. India and Bangladesh experience 545 and 300 stroke cases per 100,000, respectively (Banerjee & Das, 2016; Wasay et al., 2014). Given 45% of stroke survivors experience aphasia (Ali et al., 2015), we can estimate a high incidence and prevalence of post-stroke aphasia in Bangla speakers. A recent India-based study reported that 40.39% of post-stroke, Bangla-speaking population were diagnosed with aphasia (Lahiri et al., 2020). However, the absence of culture- and language-specific aphasia assessment in Bangla underscores a critical problem in the field of Communication Disorders and affects the effectiveness of SLPs working with Bangla-speaking PWA. Therefore, it is necessary to develop a culture- and language-specific comprehensive aphasia assessment for native Bangla speakers.

The first subtest of most comprehensive aphasia assessments is the picture description task (PDT), which elicits semi-spontaneous discourse production from PWA (Prins & Bastiaanse, 2004). The first step towards developing a culture- and language-specific comprehensive Bangla aphasia assessment is to identify an appropriate picture stimulus for the culture-specific Bangla PDT. Existing aphasia research on identifying appropriate picture type for picture stimuli used with PWA varies within a broad range, from black-and-white line drawings (LDs) to colored LDs, and to black-and-white photographs, to depict the realism of a picture stimulus (Berube et al., 2019; Brown & Thiessen, 2018; Heuer, 2016). Existing studies on stimulus realism reported contradictory results. Few studies reported less realistic picture stimuli such as black-and-white LDs, did not affect PWA's naming efficacy compared with more realistic picture stimuli, such as photographs and colored LDs (Corlew & Nation, 1975, Towne & Banick, 1989). In contrast, some recent studies with PWA and neurologically healthy individuals reported that (1) photograph over LD and (2) color over black and white, improved the language production and picture comprehension (Berube et al., 2019; Dietz, Hux, McKelvey, Beukelman, & Weissling, 2009; Griffith, Dietz, & Weissling, 2014; Heuer, 2016). Despite the reported effectiveness of color photograph (CP) over black-and-white LD by recent studies, most existing aphasia assessments use black-and-white LDs for PDTs. Therefore, we aimed to identify an appropriate picture type for Bangla PDT. The present article summarizes the findings after comparing the spontaneous language samples elicited from native Bangla speakers using a culturally related CP and a culturally related black-and-white LD (Mazumdar, Donovan, & Sultana, 2020).

For this study, we recruited 30 neurologically healthy adults between the ages of 20 and 60 years. All of the participants were of middle socioeconomic status with at least 12 years of formal education. A total of four linguistic measurements correlating with aphasia and aging (Capilouto, Wright, & Maddy, 2016; Druks, Varkanita, Kasselimis, Potagas,& Evdokimidis, 2011; Gordon, 2006; Nippold, Cramond, & Hayward-Mayhew, 2014; Wright & Capilouto, 2012) were used to analyze the language samples of the participants. Two of those variables measured grammatical and syntactic complexity of language production, and the other two variables measured the amount and fluency. All the elicited language samples were analyzed following the guidelines provided by the Bangla adaptation of SALT software (Sultana, 2016). All four measurement variables compared the language samples elicited using two different picture stimuli.

The primary research question of this study was to identify if there are differences in the language production of Bangla speakers using a culturally related CP and a culturally related black-and-white LD. We hypothesized that the CP would elicit a larger number of results for all the measurement variables. The findings reported a statistically significant difference between the two picture types only for the grammatical complexity of language production. The other three variables, measured syntactic complexity, fluency, and amount of language production, reported

statistically non-significant results (Mazumdar et al., 2020). The findings partially supported our hypothesis and the existing literature that reported the presence of two visuo-graphic variables, color and photograph, within a picture improve the language production of PWA as well as neurologically healthy adults (Berube et al., 2019; Dietz et al., 2009; Griffith et al., 2014; Heuer, 2016). There are three limitations related to the recruiting process that may have contributed to the current non-significant findings for the other three measurement variables. Potential recruiting factors include: (1) relatively small number of participants, (2) low mean age of the participants, and (3) high education level of the participants. A follow-up study is in the process with a relatively larger sample size, and with a broader range of age and education levels.

Although the present study reported non-significant results for most of the measurement variables, the findings are essential in understanding the importance of incorporating color photographs in PDTs. Most previous studies that compared various picture types observed language production using different naming tasks (Corlew & Nation, 1975; Heuer, 2016; Towne & Banick, 1989). A recent study compared two picture types (colored LD and black-and-white LD) for PDTs, where only one visuo-graphic variable, color, was incorporated (Berube et al., 2019). In contrast, the present study included both the visuo-graphic variables, color and photograph, in PDTs, and elicited spontaneous language samples from neurologically healthy native Bangla speakers. Hence, the present findings contributed to the literature on selecting appropriate picture stimuli for PWA. The findings will also guide us in developing culture-specific Bangla PDT, which will be used to elicit semi-spontaneous discourse production from Bangla-speaking PWA.

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Ishanti Gangopadhyay *completed her B.A. at Clark University, Worcester, MA in Psychology and Ph.D. at University of Wisconsin-Madison, USA in Communication Sciences and Disorders. She also received her postdoctoral training at New York University and is currently an Assistant Professor at Indiana University-Bloomington in the department of Speech, Language and Hearing Sciences. Ishanti is the Director of the Language Experience and Multilingualism Research (LEMuR) lab, and her research broadly examines language development in children with and without communication difficulties who come from culturally and linguistically diverse backgrounds.*

Word learning in monolingual and bilingual children: The use of social-pragmatic cues

Children from Hispanic backgrounds, who speak both English and Spanish, constitute the largest bilingual population in the US (US Census, 2015) under the age of 17 years. It is well-documented that educational outcomes of Hispanic children tend to lag behind those of their non-Hispanic peers (Kohler & Lazarín, 2007). This achievement gap may be rooted in differences in English vocabulary skills observed as early as 3 years of age (Mancilla-Martinez & Vagh, 2013). Spanish-English bilingual children tend to have significantly smaller language-specific vocabulary than their English-speaking monolingual counterparts (Bialystok, Luk, Peets, & Yang, 2010). Since vocabulary knowledge predicts academic outcomes (Kastner, May, & Hildman, 2001), it is critical to assess the processes that are involved in learning new words, and it is paramount that these processes be examined in both monolingual and bilingual children. We still know very little about how bilingual children actually *learn* words; yet, this process is likely to be somewhat different in bilingual children than in monolingual children.

One method to contrast bilingual and monolingual children's word learning is to consider the ways in which their learning environments differ. Aside from the obvious differences in the degree of exposure to each language, bilingual children routinely have the opportunity to track speakers in

their environment in order to determine who speaks a given language, the speaker's language proficiency, and with whom the speaker is conversing. Thus, bilingual children have to monitor multiple cues from speakers, understand their intentions, and respond appropriately. As a result of navigating these demanding social situations, bilingual children may have a heightened sensitivity to social-pragmatic cues surrounding language use (Yow & Markman, 2011, 2015), which might be advantageous to them during the word-learning process. In fact, bilingual children have been shown to have greater pragmatic awareness (Buac, Tauzin-Larché, Weisberg, & Kaushanskaya, 2019; Fan, Liberman, Keysar, & Kinzler, 2015; Yow & Markman, 2011, 2015) than monolingual children, This raises the possibility that early bilingual exposure may facilitate the development of social-cognitive tools, and the degree to which social-pragmatic cues influence learning outcomes may fluctuate with children's language experience.

A prominent word-learning theory, the social-pragmatic account, posits that children learn the meanings of word by exploiting pragmatic and social cues the speaker provides (Grassmann, & Tomasello, 2010). Past research has investigated the role of social-pragmatic cues in word learning, including gaze direction (Baldwin, 1993) and speaker reliability (Koenig & Harris, 2005), and the findings have indicated that children appreciate the relevance of social-pragmatic cues and rely on them to aid in word learning. However, there remain two significant gaps in our understanding of the impact of social-pragmatic cues on word learning.

1. Previous studies have almost exclusively focused on English-speaking monolingual children, and the literature on how bilingual children utilize social-pragmatic cues is sparse (cite). Because bilingual and monolingual children occupy distinct social and linguistic environments, they may exploit these cues differently.
2. Contributions of social-pragmatic cues to word learning have mainly been inferred from performance on a single trial (referent selection), and how these cues shape children's ability to *retain* new words over the short term is yet to be ascertained. Retention of new words is one of the first steps to long-term integration and consolidation of words into the lexico-semantic network. In the context of challenges inherent to real-world learning, it is vital to examine whether social-pragmatic cues can stimulate actual word retention.

To fill these gaps in research, the impact of two prominent social-pragmatic cues on word learning were examined. Experiment 1 tested the impact of a verbal social-pragmatic cue – *speaker reliability* – on word learning and Experiment 2 tested the impact of a non-verbal social-pragmatic cue – *speaker eye-gaze* – on word learning. Both experiments employed a visual world eye-tracking paradigm to assess children's retention of novel words.

Four- and 5-year old typically-developing English-speaking monolingual children and Spanish-English-speaking simultaneous bilingual children were recruited. Monolingual children were exposed only to English from birth and had no significant exposure to any other language (defined as >5% weekly exposure). Bilingual children were exposed to both English and Spanish by the age of 36 months and did not have significant exposure to a third language. Exclusionary criteria for all children included hearing loss, psychological or behavioral disorders, neurological impairments, other developmental disabilities, and scoring 1.5 standard deviations below the mean on the non-verbal IQ test. Children were also excluded if they met any two of the following criteria: standardized vocabulary scores below 85 (English for monolinguals and English-Spanish composite for bilinguals), diagnosis of a language impairment, or parent concerns regarding their child's language development/skills. All children passed a hearing screening.

Experiment 1: the impact of speaker reliability on word learning in monolingual and bilingual children. Preschool children are selective with respect to whom they ask for information and whose claims they endorse and a number of studies have examined the role of speaker cues in word learning, showing that children are particular about who they want to learn from (Birch, Akmal, & Frampton, 2010; Corriveau & Harris, 2009; Koenig & Harris, 2005a). Speaker reliability is one such cue, where children keep track of a person's record of past accuracy and inaccuracy. Multiple studies have confirmed that preschool children are sensitive to speaker reliability, and prefer to seek out information from accurate, reliable speakers versus inaccurate, unreliable speakers (Corriveau, Meints & Harris, 2009; Koenig, Clément, & Harris, 2004; Koenig & Harris, 2005). Although there is ample evidence indicating that children are sensitive to a speaker's past accuracy, research has yet to address whether and how children are able to utilize such a cue to actually retain information, and particularly how bilingual children respond to such a cue.

To test how speaker-reliability impacts word learning, children were taught novel words under two conditions: *Reliable*, where the child knew that this speaker always gave correct labels for objects, and *Unreliable*, where the child knew that this speaker always gave incorrect labels for objects. Reliability of the speakers was established in a familiarization phase. Analyses on mean accuracies (i.e. looks to target collapsed across the critical window of 325-3200ms) revealed no effect of Condition (reliable vs. unreliable), Group (monolingual vs. bilingual), or an interaction between the two variables. This indicates that despite knowing the reliability status of the speakers, all children, regardless of language experience, demonstrated similar levels of novel-word retention in both conditions. In other words, speaker reliability did not affect how *well* children learned the novel words (Figure 1, Left Panel).

Time-course analysis also failed to yield effects of Condition, Group, and an interaction, across the critical time period. These results align with the results of mean accuracies showing that the probability that children fixated the target object was similar for all children across both conditions. However, this analysis yielded interesting time-course patterns (linear and quadratic). We found that children's word recognition was faster in the reliable condition than in the unreliable condition. Moreover, although children were slower to identify the target in the unreliable condition, they consistently kept looking at the target once it was identified. Overall, results of the first experiment suggest that speaker reliability, while it may influence children's immediate preferences for word learning, has little downstream consequence. Importantly, this effect held true for all children, irrespective of language status (Figure 1, Right Panel).

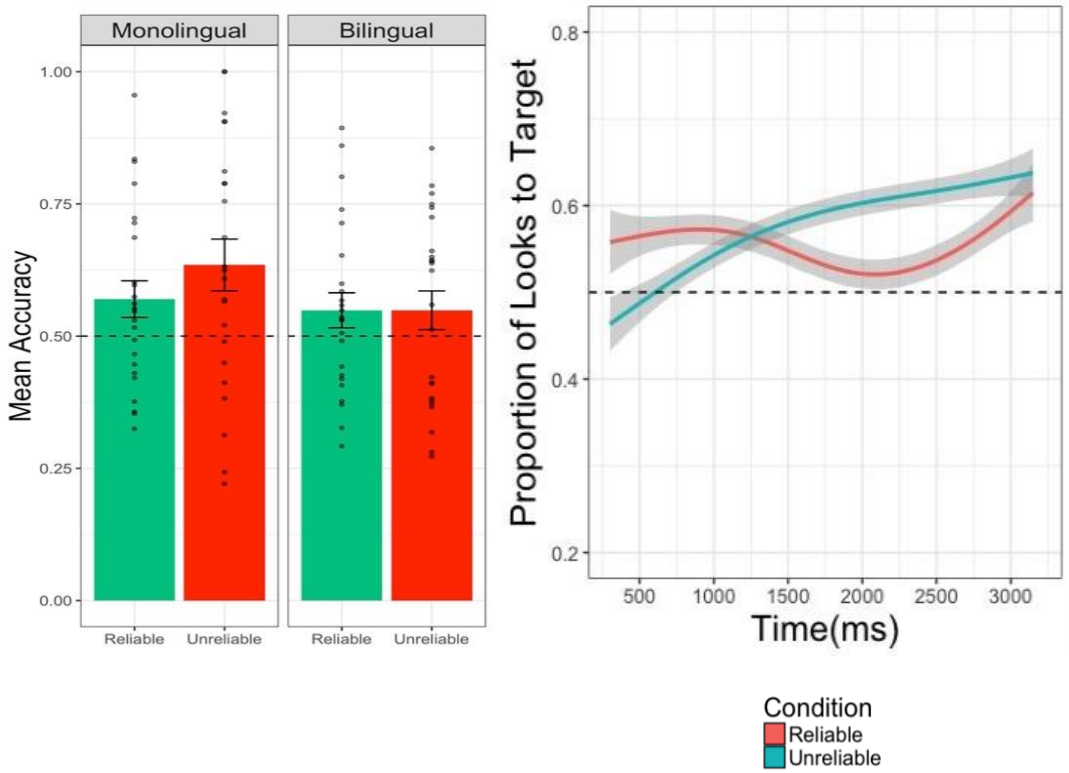

Figure 1. Left Panel: Children's mean proportion of looks to target across the Reliable and Unreliable conditions (groups collapsed). Right Panel: Children's time-course of looks to target in both conditions in the critical time window (325-3200ms).

Experiment 2: The impact of speaker eye-gaze on word learning in monolingual and bilingual children. And adult's eye-gaze is a robust pragmatic cue that children are highly sensitive to and a large literature attests to children's success in spontaneously following a speaker's eye-gaze to map a novel word to an object (Baldwin, Bill, & Ontai, 1996; Paulus & Fikkert, 2014; Woodward, 2005). However, similar gaps in knowledge remain: it is unclear how a speaker's gaze shapes children's subsequent short-term retention of novel words, and only a handful of studies have investigated the tole of speaker eye-gaze in word learning in bilingual children (Brojde, Ahmed, & Colunga, 2012; Yow & Markman, 2015).

To test how eye-gaze impacts word learning, children were taught novel words under two conditions: *Consistent*, where the speaker always looked at the object while labeling it, and *Inconsistent*, where the speaker only looked at the object the first time while labeling it, but not the second time. Retention was tested by asking children to select between two novel objects when hearing a novel word. Time-course analysis revealed no effect of Condition (consistent vs. inconsistent), indicating that the probability that children fixated the target object was similar across both conditions across the critical time period of 500-2600ms. However, Condition interacted with the linear and cubic time terms, which showed that children's looks to target kept increasing over time in the consistent (vs. inconsistent) condition but that the inconsistent (vs. consistent) condition had steeper changes in target fixation at the beginning and end of the time window. Therefore, a single exposure to a speaker's gaze was sufficient to induce optimal learning in all children.

Unexpectedly, this experiment also revealed better novel-word retention in monolingual children than bilingual children, such that overall the monolingual children were more accurate (main effect of Group) and quicker (Group interaction with quadratic time) at identifying the target object than the bilingual children. These findings contrast with the numerous studies demonstrating the positive effects of bilingualism on pragmatic functioning (Fan et al., 2015) and on word learning (see Hirosh & Degani, 2018, for a review). Nonetheless, it is notable that monolingual and bilingual children alike responded to the manipulation of the eye-gaze cue similarly, suggesting that sensitivity to this cue is not conditioned by differences in socio-linguistic environment.

Finally, we also found that bilingualism did not impact how children responded to the teaching trials in the consistent condition (i.e. similar proportion of looks to target, speaker, and distractor, and similar processing of target-distractor pairs in the divergence analyses between both groups of children). However, in the inconsistent condition, bilingual children's mapping of the novel words in trials without gaze information occurred earlier than monolingual children's mapping. This suggests that there may be a bilingual advantage for 'in the moment' mapping of novel labels to novel objects, especially in word-learning situations that offer less reliable information. However, this advantage does not carry over to retention.

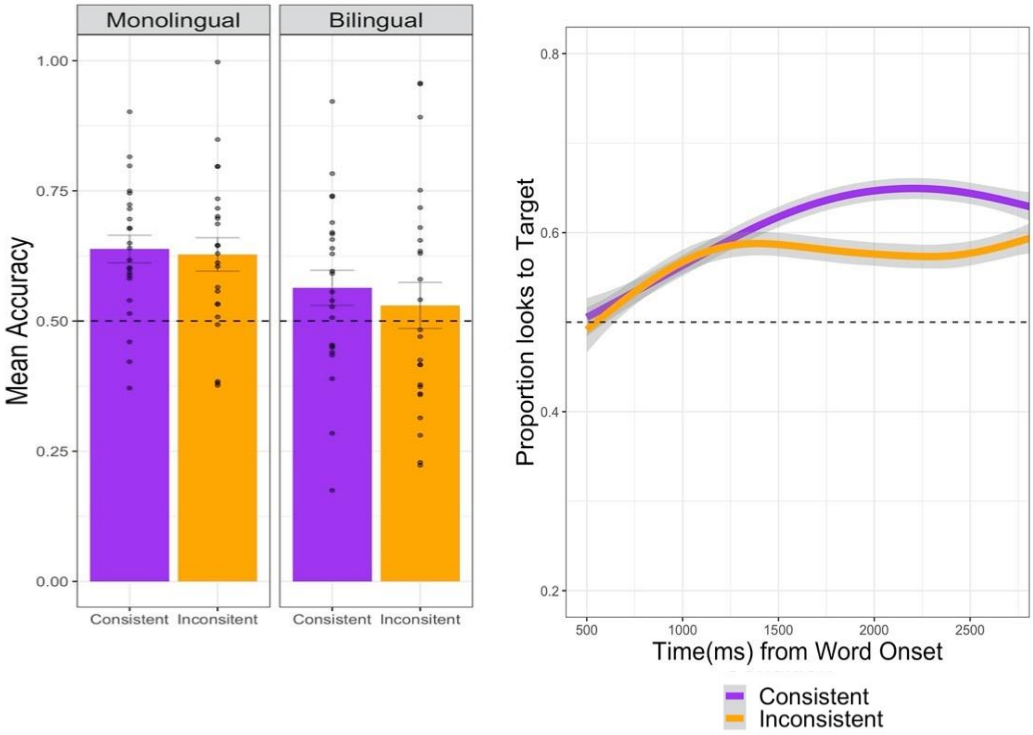

Figure 2. Left Panel: Children's mean proportion of looks to target across the Consistent and Inconsistent conditions (groups collapsed). Right Panel: Children's time-course of looks to target in both conditions in the critical time window (500-2600ms)

If successful educational strategies and intervention techniques are to be designed for bilingual children, it is imperative that we identify the mechanisms that predict successful word learning in these children. Determining which mechanisms facilitate optimal learning in children from different backgrounds will provide insight into the types of cues children use when they learn words, in turn informing parents, teachers, and clinicians on how best to enable learning in all children. Findings from the two experiments indicate that individual social-pragmatic cues can

stimulate short-term retention of words. However, different learning situations yield distinct patterns of retrieval, suggesting that children encode information differently based on the learning circumstance. Therefore, less optimal learning situations (e.g. unreliable speaker and a single exposure to eye-gaze) can elicit retention that is equivalent to its more optimal counterparts (e.g. reliable speaker and two exposures to eye-gaze), but the more optimal learning situations yield more robust object-label associations. Nevertheless, both monolingual and bilingual children seem to respond to these circumstances similarly. Moreover, effects of bilingualism are observed for some social-pragmatic cues and not others, suggesting that bilingual children's performance fluctuates for different word-learning tasks when compared to monolingual children's performance. One specific finding that makes an important practical contribution is that a speaker's gaze alone may be insufficient to elicit optimal learning in bilingual children. While bilinguals may be more sensitive to eye-gaze than monolingual children in certain situations, to boost retention, it may be useful to combine a speaker's gaze with another cue.

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