Department of Communication Sciences and Disorders

College of Public Health

Temple University
Philadelphia, PA

10th Annual Eleanor M. Saffran Cognitive Neuroscience Conference

"Translational Research in the Communication Science: Challenges and Pathways to Solutions"

Frida y, September 18th & Saturday, September 19th

Student Scholar Award Program

SAFFRAN STUDENT SCHOLAR AWARD PROGRAM

One of the most important missions of the Eleanor M. Saffran Cognitive Neuroscience Conference is to provide a forum for discussions that will bridge the gap between basic research in language and cognition and clinical practice. Accordingly, the audience has consistently included clinicians, researchers, educators and students in cognitive neuroscience and communication sciences. Students who attend this conference are key players in this translational process, as many will be the clinical practitioners and/or researchers of the future. Thus, we are committed to making this conference accessible to all students who wish to attend. The program was initiated by a grant from Doctors Jenny Saffran and Seth Pollak that helps to support this conference. This year, the program was additional supported by a grant from The National Institute of Deafness and Other Communication Disorders. The program supports registration for students of all academic levels (undergraduate through post-doctoral fellows). This year we have awarded twelve S*affran Student Scholar Awards* for students who are pursuing doctoral degrees or are in post-doctoral training.

We are very excited about this program and its potential to foster a new generation of clinicians and scientists who see no gap at all between research and the clinic.

The recipients for this year's award are:

Annalisa Benetello	*Junko Kanero*
Susan Duncan	*Hyun Seung (Linda) Kim*
Carolyn Falconer-Horne	*Shih-Yuan Liang*
Mianisha Finney	*Marja-Liisa Mailend*
Sarai Holbrook	*Shannon MacKenzie Sheppard*
Jeffrey Johnson	*Lilla Zakariás*

The following pages include the essays they have submitted to receive this award.

Annalisa Benetello

University of Milan
Faculty of Medicine

My interest for languages and communication quickly developed from a cultural interest for foreign languages to the curiosity in deeply understanding human communication, its reasons, its functioning, and mis-functioning.

The initial fascination for generative grammar and Chomsky's theories soon left the place to the vertigo for the brain, and as a Master's student in Linguistics I struggled to find someone able to teach me who and what Broca and Wernicke were, and how to translate Chomsky's "Language Acquisition Device" into brain areas and connections. (This was not trivial in Italy 10 years ago, since classes of neurolinguistics, neuropsychology, and even psycholinguistics were not part of the curriculum of the program in Linguistics, yet.) Thanks to my Master's degree thesis, I had the opportunity to work with a multidisciplinary team on a study about morphosyntactic deficits in aphasia, and this decisively made me thrilled about research.

During the PhD program in Experimental Psychology, Linguistics, and Cognitive Neuroscience, I deepened my knowledge about the cognitive aspects of language, and in particular I focused on the role of short-term memory in language processing, both in healthy and brain-damaged speakers. Thanks to this topic, and to my desire to work with PWA, on the third year of my doctoral program I had the opportunity to join Dr. Nadine Martin and her coworkers at the Saffran Center for Cognitive Neuroscience, where I collaborated for a year to researches focused on language rehabilitation after stroke. The passion of the team, the strength and constancy of participants to the studies, and their happiness and gratitude when they succeeded in the tasks, helped me to understand how important for me is the whole process of treatment and rehabilitation, more than research per se.

Then, the last chapter of my academic life: after finishing my doctorate, I entered the Bachelor's program in Speech, Language and Hearing Sciences, to finally learn also the practical aspects of language rehabilitation, and to be able, at the end of the three-year degree program, to work as a clinician.

Diagnoses of language disorders are widely spreading in the last decades, and a good clinical practice that goes hand in hand with research is becoming more and more important, to guarantee the best degree of autonomy and efficiency, and so the best

quality of life, for both children and adults with communication difficulties. My goal would be to combine clinical practice with research activity, fulfilling both my desire to directly help patients and the will to improve treatment methods, in order to make the process of rehabilitation easier and more effective.

I think that my interests and achievements fit very well with the topic of this year's Eleanor M. Saffran Conference on Cognitive Neuroscience: translating research to the clinic, and implementing treatments thanks to both the awareness of the clinician and the knowledge of the researcher are the ideas that drove me to continue my educational career after the PhD. In Italy, speech pathologists are not often involved in research (this role is left to neuropsychologists), and it is not easy to have the possibility to discuss important topics on a common field: for this reason, attending the conference would be extremely enriching for my education and as a starting point for my future practice.

Moreover, this year's Conference is focused not only on adults, but also on children with language impairment. Knowing about children difficulties would be really interesting for me, because diagnoses of learning disabilities and SLI are getting more and more frequent in Italy, and it is becoming a very important topic for speech pathologists.

Considering all these aspects, I think that attending the Conference thanks to the Student Scholar Travel Award would give me the opportunity to connect with researchers in my field, who could give me insightful suggestions for my future career and for the development of a new, fundamental approach for Italian Speech Therapy: an approach merging the theoretical and practical aspects, through the dialogue between research and clinical practice.

Sarai Holbrook

Utah State University
Disability Disciplines

What am I going to do with my groups today? How can I be sure what I do will make a difference? As an American Speech-Language-Hearing Association (ASHA) certified speech-language pathologist practicing in elementary schools and rehabilitation centers, these questions constantly plagued me. I often found the need for strong, research-based interventions; however, robust studies and interventions were not always available, and if they were, they were time consuming to find. Consequently, I decided to return to school to pursue doctoral studies. I wanted to be a part of the solution for the creation and dissemination of practical, powerful, and efficient treatment strategies. Now, as I begin my studies in narrative language intervention with Dr. Sandi Gillam, I seek to further develop my skills in translating theory into practice. Attendance at the Eleanor M. Saffran Conference on Cognitive Neuroscience and Rehabilitation of Communication Disorders will equip me with additional tools I need to accomplish my two-fold goal of conducting meaningful research and powerfully communicating that research.

The birth of my desire to conduct my own research and share it came from my undergraduate and graduate research methods classes. I discovered research and its application fascinated me. This fascination blossomed as I gained practical experience during my thesis research at Brigham Young University, which research resulted in my partial authorship on a poster presented at the 2013 Annual ASHA Convention entitled "Using a Humanoid Robot to Facilitate Social Interaction in Children With ASD." Through my thesis experience, I came to understand that research is not a "hoop" to jump through, but is rather an invigorating means to effectively provide support for or against interventions. I wanted to try it again to find even more effective treatments.

As a practicing speech-language pathologist, my interest and participation in research and intervention development continued. During my summer break in 2013, I participated as a volunteer intervention co-facilitator in a research study involving siblings of children with autism. During my three years of clinical practice, I made it a point to attend as many professional development opportunities as possible, including the Utah State Speech-Language-Hearing Association annual conferences in 2014 and 2015 and the Utah State University Summer Seminars in Communicative Disorders in June 2014. Research presentations at these conferences

cemented my enthusiasm for translating research into practice, particularly the potential of using narrative language in interventions with language impaired populations.

I have always loved sharing my knowledge of and passion for language. My teaching experiences, which continually focused on connecting the abstract to the functional, began during my senior year of high school when I developed and implemented a narrative-based activity program at the local Boys and Girls Club. For each day I volunteered, I chose a children's picture book and designed concrete activities connected to the abstract concepts of the narrative. I continued my teaching pursuits related to speech-language pathology in graduate school as a teaching assistant for two classes: the undergraduate introduction to communication disorders and the graduate course in severe disabilities. Further, I presented at three Jordan School District SLP in-services in three years, each of them based on information I had learned in classes or conferences designed to provide practical, powerful intervention strategies for the therapists in the district. I continued to relish contributing to others' learning and progression.

As a doctoral student, among other things, I plan to investigate using the SKILL program with varied populations, so practicing clinicians can report to parents and students that the intervention is truly effective for their specific child's type of disability. At the Eleanor M. Saffran Conference, I am excited to hear ideas and views of other clinicians for how they translate theory into practice, particularly using the SKILL program. I'm interested in how they use it now, how they might use it, and further ideas for its development and implementation. Attendance of this conference is a powerful way to begin my studies as a doctoral student. I look forward to enlarging my native interest and efforts for connecting theory to practice.

Susan Duncan

University of California, Irvine
Cognitive Sciences & Neurology

As a practicing speech-language pathologist pursuing a PhD in Cognitive Neuroscience, my interest in attending this year's Eleanor M. Saffran conference cannot be overstated. In the years that preceded my return to graduate school, I worked full-time as a clinician at a public hospital. Over time, it occurred to me that the eclectic methods I employed with my patients with aphasia, while effective, were primarily informed by linguistic, psychological and educational principles. Yet the disorder I was treating was a biological one, caused by the death of brain tissue. Increasingly, I turned towards the neuroscience literature on both normal and disordered language mechanisms in order to find new techniques I could use, informed by biological processes that are disrupted in aphasia and implicated in recovery. I uncovered a great deal of knowledge, but few concrete approaches I could apply in therapy. Recognizing this gap in translation from basic research to real world practice suggested a need for greater representation of clinical experience in a research role, and I returned to graduate school to study the neurobiology of language as a researcher in the Department of Neurology at the University of.

I believe that the quality of, and the significance assigned to, translational research in communication disorders has increased greatly over the past five years since I decided to return to school. I have also become far more familiar with the many challenges of undertaking such work, the lack of which brought me to my current position. As a clinician, the difficulty of operationalizing meaningful functional outcomes is one with which I struggle, as these are difficult to standardize, and consequently, to publish. The heterogeneity of patients, lesions, and behavioral deficits creates a parameter space too vast to explore in a single study, and strictly narrowing inclusion criteria to induce greater uniformity presents a difficult issue for recruitment numbers.

Currently, my research is concerned with intra-individual variability in aphasia. I am pursuing this both behaviorally, as a predictor of potential to improve with therapy, and using neuroimaging, to determine whether a single baseline scan is adequate to reliably detect changes following therapy.

Progress in basic medical science is essential to maximizing the achievable gains of aphasia therapy. Once I had the opportunity to hold a brain that had sustained a large left hemisphere stroke. As I gazed into that lesion, I literally saw the serious physiological constraints we face in aphasia rehabilitation. As clinicians, the goals we set in treatment are scaled to our professional knowledge of the disorder; our patients never cease to desire to be as they once were. In the future, we will be able to regrow brain tissue, perhaps through stem cell transplants and suppression of proteins that inhibit neural regeneration. With my background in aphasia therapy and neuroscience, I see a role in this evolving landscape to develop and validate biologically informed treatment methods to effectively rewire that new brain tissue into the existing language network

to optimize language capacity. Though such techniques may benefit patients most greatly in conjunction with medical intervention, augmenting therapy with an understanding of the neurological underpinnings of language function is highly relevant even as this world approaches.

I anticipate that the highlight of this year's Saffran conference will be the translational workshop. I enthusiastically applaud the innovative design of the day and the commitment it demonstrates to bridging the distance from bench to bedside by addressing this critical issue as a responsibility to be shared by clinicians and researchers. Given my interest in aphasia, I am especially eager to hear the talks by Drs. Jane Marshall and Branch Coslett and to have the opportunity to speak with each of them in person. In particular, I would like to discuss the use of transcranial direct current stimulation (tDCS) with Dr. Coslett. The concentration exam that preceded my MS in Cognitive

Neuroscience focused on tDCS, and I am currently planning a study to explore its effects on language function in neurologically intact participants, with the hope of better understanding some of the literature regarding its use in aphasia, as well as a myriad of other conditions. Dr. Coslett's insight and feedback would be greatly appreciated during the piloting stage.

In brief, this year's Saffran conference could hardly be better aligned with not only my research interests, but with my very purpose for being where I am today. I gratefully acknowledge Drs. Jenny Saffran, Seth Pollack and Nadine Martin for their roles in my past attendance and contribution to my continuing development as a clinician-researcher dedicated to improving our collective treatment of language disorders. The opportunity to be in an environment celebrating translational research in communication science, and confronting the concomitant challenges, is a thrilling prospect, and I appreciate your consideration.

Carolyn Falconer-Horne
New York University
Department of Speech and Hearing Sciences

Prior to doctoral study I worked as a speech-language pathologist for over ten years specializing in the rehabilitation of adults with neurological impairments. During that time I developed an appreciation for research as I applied evidence-based treatments to my clinical practice. I returned to school for a Ph.D. with the goal of contributing to both improved language outcomes for people with aphasia and to developing additional effective evidence-based aphasia treatments. My research focus is the neural and cognitive processes underlying language production and recovery with an emphasis on the neurorehabilitation of aphasia. Both of my qualifying papers have resulted in first authored publications and I am nearing the completion of my dissertation. To date my research has been either basic or clinical but I am now ready to learn more about translational research so that my findings may be applied to clinical practice. That is why I would benefit from Dr. Raymer's talk "Research to practice: Education future clinicians" as one of my career goals is to obtain a tenure track academic position at a college of university.

Currently I am working on two studies for my dissertation regarding refinement of our knowledge of the use of transcranial direct current stimulation (tDCS) in the treatment of chronic aphasia. This is a topic that Dr. Coslett and Dr. Kelley will be discussing. Application of anodal tDCS has been shown to enhance rehabilitation of the impaired side of the body following stroke. These principles have recently been applied directly to the treatment of aphasia and show promise for treatment of chronic aphasia.

Two basic research questions are addressed in this line of inquiry. The first is whether speech/language improvements occur after multiple sessions of anodal tDCS applied to the left motor cortex preceding right arm hemiplegia treatment in patients with chronic aphasia/apraxia. A theoretically motivated language battery has been designed to detect motor speech or expressive language changes expected based on current theories of language and motor speech control. This battery is intended be sensitive to changes based on increasing cortical excitability in the motor strip near the centers of oral control. This study is also concerned with whether tDCS stimulation of motor cortex preceding right arm training stimulates language regions related to lexical selection of action words/verbs above object words. Stimulation with anodal tDCS coupled with motor training should activate neurons within the motor network. This could preferentially benefit the production of movement-related action words over objects not associated with arm movement (i.e., clap vs. clock). A hypothesis-driven object/action naming test was designed specifically to address this question.

The broad goal of the second study is investigate whether timing of tDCS in relation to the delivery of aphasia treatment affects confrontation naming outcomes. Two groups of people with chronic aphasia will receive both sham an anodal stimulation (counterbalanced) over left perilesional cortex and will serve as their own controls. One group will always receive tDCS immediately prior to aphasia therapy and the other group will always receive tDCS concurrent with aphasia therapy. The within subjects comparison will be anodal compared to sham conditions and the between groups comparison will be the timing of tDCS (before or during) in relation to aphasia therapy

Prior to the dissertation project I have investigated aphasia in both basic and clinical research projects. In my first qualifying paper, Falconer and Antonucci (2012) Use of semantic feature analysis in group discourse treatment for aphasia: Extension and expansion, semantic feature analysis (SFA) was used in group discourse treatment for people in the chronic stage of aphasia. Group treatment is often viewed only as an avenue of social support but I postulated that group therapy could also serve as a language intervention if the discourse of each individual treated within a single group was treated with a focused therapeutic treatment. SFA was chosen because it has the advantage of encouraging semantic circumlocution and self-cuing, even if the target word is not achieved. Findings support the use of SFA focused group treatment for chronic and varied aphasia syndromes and result in individual gains.

In Falconer and Buchwald (2013), Do activated letters influence lexical selection in written word production?, the interaction of word-level and letter-level processes in the written semantic errors of a person with acquired dysgraphia (and aphasia) was explored. These semantic errors contained a large number of letters in common with the stimulus word, exceeding the expected letter overlap of chance. This pattern suggested feedback between letter-level processes and lexical-semantic processes. The knowledge of this interaction can help in the development of theoretically motivated treatment approaches to the remediation of writing, which continues to grow in importance as more of our interactions occur through written digital media.

The speakers at this year's Saffran Conference are particularly well-suited to enhance my knowledge in the areas of translational research and tDCS. I am asking for a Saffran Student Scholar Travel Award because this knowledge will help me to refine my methodology and translate my basic findings into clinical practice and will help me achieve my goal of becoming a teacher-investigator.

Mianisha Finney

Ohio University
Communication Sciences and Disorders

Under the guidance of Dr. Jim Montgomery, I have completed all of my doctoral coursework over the past three years. My main area of coursework concentrated on child language development and impairments, with an emphasis on the mental lexicon and sentence comprehension. In addition, I have had three core areas of study central to my emerging line of research: 1) specific language impairment (SLI) and the development of grammatical abilities, 2) information processing and SLI, and 3) research methods and behavioral statistics.

I have spent the past two years developing a systematic research program examining sentence comprehension in typically developing (TD) children, and next children with SLI. My immediate goals have focused on developing comprehension and memory-related tasks as a way to model children's complex sentence comprehension. My work to date has focused on TD children, but I will soon apply my work to children with SLI. I am in the dissertation phase of my program. My long term interests and goals include creating therapies that will support children's lexical development and improved sentence comprehension. I am especially interested in attending the 2015 Saffran conference because of its focus on translational research.

My current research focuses on sentence comprehension and its association with memory abilities in TD children and children with SLI. A major gap in the SLI literature on this topic, is that we do not yet understand the nature of these children's sentence comprehension problems, and how memory deficits might relate to these problems. Better understanding this relationship could provide important insights into the nature of these children's comprehension problems, and may lead to thinking about a range of new intervention approaches not yet considered.

As a doctoral student, I have completed a preliminary study (Finney, Montgomery, Evans, & Gillam, 2014) that showed that both memory storage and attention focus switching ability account for significant/unique portions of variance in TD children's complex sentence comprehension. The findings not only support an emerging developmental picture that memory storage plays a role in children's complex sentence comprehension, but, more important, that the ability to switch attention between ongoing processing to memory retrieval also appears to be important. For my dissertation, I will extend this work by examining much more closely the

potential role of memory retrieval in the time-course of TD children's sentence comprehension. All of this work is critical to my building a theoretically and methodologically sound research program focusing on children with SLI as I soon begin my own research program as a junior faculty member.

This year's conference, *Translational Research in the Communication Sciences: Challenges and Pathways to Solution,* will be important in expanding my developing knowledge of translational research, and how to begin to think about developing sound intervention methods and integrating them into my future research efforts. I am excited for the opportunity to learn more about the challenges and solutions others have encountered in translating basic research to clinical practice. In addition, I am particularly excited that many of Friday's afternoon sessions on interventions translated from basic science are relevant to my current/ future work in child language and sentence processing. The most exciting component of this conference is the "Hands-on" workshop. I look forward to joining Sandra and Ron Gillam for Saturday's breakout session on child language treatment applications to school and clinical setting.

Jeffrey Johnson
Boston University
Speech, Language, and Hearing Sciences

I am writing to apply for a Saffran Student Scholar Award for the 10th Annual Eleanor M. Saffran Cognitive Neuroscience Conference. I was pleased to learn that the theme of this year's conference is translational research in the communication sciences, as one of my primary research interests is in the development of practical and well-validated techniques for therapy, evaluation, and prognostication in aphasia. While working as a clinical speech-language pathologist before I returned to school to pursue a doctorate, it became apparent that although our field has produced numerous theoretically sound therapies for acquired language disorders, much of our research has "ceilinged out" in the early to middle stages of the research continuum. In other words, many early efficacy studies have been performed to evaluate the viability and impact of therapies in small, highly focused patient samples; however, studies examining the same therapies in terms of their effectiveness in multiple sites, their financial impact, and other practical issues that affect service delivery are fewer and further between. These late stages of translational research, as well as the subsequent intersection of translational research and implementation science, should not be overlooked, as they are essential to the scalability and widespread dissemination and adoption of evidence-based practices.

As a doctoral student in the Boston University Aphasia Research Laboratory, I have spent much of the past year developing a treatment protocol for acquired alexia and agraphia that is based on theoretical language processing models. The protocol consists of multiple steps, each of which is intended to address one or more of the processes engaged during single-word oral reading and/or writing to dictation (e.g., the phonological and orthographic input lexicons, semantic access, and the phonological and orthographic buffers). In addition to monitoring overall changes in reading and writing performance, we are carefully tracking participants' responses to each step of the protocol. Preliminary analysis of this data has given us insight into which treatment steps may be most responsible for behavioral improvements (i.e., the factors that Whyte et al., 2014, refer to as "essential ingredients" 1). We are continuing to collect data in the feasibility/early efficacy phase, but my long-term goal is to refine the protocol and test its effectiveness in the hands of practicing clinicians outside of our controlled research clinic. Along the way, I will surely encounter many of the obstacles and barriers that will be discussed at this year's conference, and I would undoubtedly benefit from Drs. John Whyte and Myrna Schwartz's discussion of challenges in translational research and Dr. Schwartz and Ruth Fink's seminar on solutions to implementation challenges.

In addition to clinically practical research in the area of aphasia, I am also interested in conducting basic research that will contribute to our understanding of language and other cognitive processes in neurologically healthy individuals and those who have experienced neurological damage. Under

the mentorship of Dr. Swathi Kiran, I am assisting with a large, NIH-funded grant examining neural activation in persons with aphasia and neurologically healthy control participants during picture naming and semantic feature verification tasks in Jeffrey P. Johnson June 2015) order to study how language therapy contributes to the reorganization of language following stroke. It is precisely this type of work that leads to new theories and models for language function and recovery. As such, I feel it is important to approach basic research with an eye on how it may ultimately serve as a foundation for new or revised therapeutic and diagnostic strategies and tools. Attending the Saffran Conference and workshop, especially given the emphasis on interaction between researchers and clinicians, would not only help me think about how to transform basic science into clinical tools, but also how to conduct and frame basic science research that has the potential to inform and enhance clinical practice.

My interest in attending the Saffran Conference extends beyond the primary theme of translational research to many of the individual talks on the schedule. Those on brain stimulation and sentence processing treatments for aphasia will be quite relevant to the work we are conducting in Dr. Kiran's laboratory at BU, but the talks on language interventions for children and adolescents are also appealing, as I feel that inspiration often comes from learning about work conducted in areas other than one's own. Furthermore, while my primary goal right now is to develop my skills as a researcher, my interests are largely influenced by what I have learned and experienced as a clinician. I feel it is extremely important to maintain and improve my clinical abilities, so the clinically oriented aspects of the Saffran Conference are also of great interest to me. In fact, I see the integration of research and clinical work as an obvious strength of the Saffran Conference, and I would welcome the opportunity to exchange ideas with professionals and students with varying backgrounds, interests, and levels of experience.

Once I complete my PhD, my goal is to obtain a position as a researcher in a university or hospital system, where I will focus on the study of neurogenic language disorders and rehabilitation, as well as the implementation of fully validated evidence-based practices at the clinical level. I hope to ensure that clinicians are using rigorously tested therapies and that they have the resources necessary to make informed decisions about the types of therapy they use and how various therapies may be customized to meet individual patients' needs without compromising their effectiveness. Given my interests and the theme and structure of this year's conference, I would be excited to attend under any circumstances; however, participating in the Student Scholar Award Program would further enrich my experience. I would very much appreciate the additional opportunities to engage with other attendees, to participate in the pre-conference dinner with the conference speakers, and to learn more about the NIDCD's grant review and selection process from Dr. Judith Cooper. I know that such opportunities are rare and I appreciate your time and consideration for this award.

Junko Kanero

Temple University
Department of Psychology

I am a rising fifth-year PhD student in the Department of Psychology at Temple University. My research examines language development in infancy and childhood, neural processing of language. Since I first attended the Eleanor M. Saffran Cognitive Neuroscience Conference (EMS Conference) in 2011, this conference has fascinated me, and I am truly grateful that a meeting of this caliber is held every year at Temple. The range of topics that have been covered in the past match closely with my research interests, but I feel especially passionate about this year's program because translation of theory into practice has been my major concern during my time as a graduate student. This year, I would like to apply to the Saffran Student Scholar Award as I feel eager not only to participate in the conference as part of the audience, but to exchange opinions with the speakers and with my peers.

Since the beginning of my research career, my interest has primarily in understanding the cognitive and neural mechanisms of language acquisition and processing. Although my research utilizes a broad range of methodologies, including behavioral and neurophysiological measures, the majority of my past and current projects probe into why and how humans are able to process word meanings. At the Temple Infant & Child Lab, co-directed by Dr. Kathy Hirsh-Pasek, however, I have been fortunate not only to continue my theoretical and basic research, but also to become involved in several applied research projects. Through these experiences I have become increasingly interested in exploring how to apply theoretical findings to educational practice.

For example, I took part in a few projects that examined language development in children who are learning English as Second Language (ESL). In one study, our research team developed a computerized language assessment that evaluates children's knowledge of vocabulary and grammar, as well as their ability to learn new words in both English and Spanish. I have also worked on developing six evidence-based principles of language learning to help facilitate language development in ESL children. These projects both boosted my interest in using the basic research I conduct to help children who are struggling to learn language. In my future career, I would like to move beyond my current expertise and take part in the development of intervention programs and school curricula. I believe that this year's EMS Conference would be the perfect opportunity for me to explore what I can do

to make contributions to the field and the general public.

I am also passionate about finding effective ways to communicate research findings to non-academics, including parents, educators and journalists, which I think is also highly relevant to the topic of this EMS Conference. I have been fortunate enough in my lab to receive numerous opportunities to discuss this issue with people in journalism, policy, and other related areas. We recently had a meeting with a science journalist to discuss ways to publicize our research without misrepresenting the science. It was helpful to gain advice on writing and public speech, but what struck me as the most important take away message was that the public would not receive accurate scientific information unless we, the scientists, take initiative.

Applied work and communication with the public can be difficult for scholars. Young scientists especially are pressured to produce academic publications as frequently and as quickly as possible. Yet bringing those findings into the public sphere is inarguably important. I was excited to learn that the EMS Conference is taking leadership to advance the field in this direction, and I am eager to take part in the effort. I am thrilled for the possibility of personally meeting Drs. Sandra Gillam and Ron Gillman and all the other speakers to discuss a broad range of topics. I believe that my research interests and experience are a great fit for the 10th EMS Conference, and this meeting would be the excellent environment for me to refine my career goal of becoming an academic who is able to carry out both theoretical and applied research.

Hyun Seung (Linda) Kim

University of Pittsburgh
Communication Science and Disorders
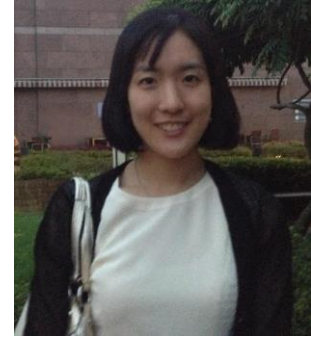
I completed my master's degree at Yonsei University in Korea in 2006. I worked in the university's hospitals dedicating my first year to patients experiencing hard of hearing at the Ear, Nose and Throat Department, and the next three years diagnosing and treating various kinds of patients with speech and language problems at the Rehabilitation Department. During that time, even after a constant endeavor to improve myself, I felt I needed to understand my field more in depth and study it in a more systematic way in order to diagnose and treat patients with more confidence. This thirst motivated me to pursue doctoral-level study in the US, where I believed the academia is more advance, and where I thought I would be able to receive more systematic clinical training.

I expected that I would experience more systematic clinical training during the Ph. D study. However, unlike my expectation, my interests in the clinic were not recommended during the Ph. D program. At first, I was disappointed with this fact, however, I soon realized the value of focusing on theory rather than clinical tips or strategies during the program. I realized that I have limited time during my Ph. D period to study theories and models about speech and language processes, and learning them has provided me with a short-cut to diagnose and treat patients in a better way. If I am well-trained with theoretical thinking, it will lead me to a better understanding of pathological symptoms, to acquire the ability to perform differential diagnosis, and to plan speech treatment better. Therefore, studying theories during the Ph. D program was the path I needed to take to become a confident Speech-Language Pathologist (SLP) and is something I will emphasize while directing my future students when I work in the university settings in the future.

However, it is true that questions raised in the theoretical debates are sometimes impractical, whereas questions raised from clinical needs may lack theoretical roots in the academia. Therefore, it is important to establish a communication between clinicians and researchers. Clinicians may provide creative research ideas based on practical needs to researchers, and researchers may guide clinicians to formulate their questions based on theoretical reasoning. This cooperation will help clinicians to develop theoretically driven research ideas, and researchers to cast questions more clinically relevant. It is also an active way to apply research findings to the clinics. I

have an expectation that the 2015 Saffran conference will help me learn how to establish better communication between both clinicians and researchers.

Recently, researchers in the medical field have increasingly been interested in how medical research findings may be applied more effectively to the daily lives of our local community. In the past there was a lag in translation between research finding and clinical use, and this was acceptable by most researchers and clinicians. Now, with increased interest in efficient research activities compared to the resources invested in the research activities in addition to urgency in clinical needs, and an increased possibility of fast translation with technology; the world is expecting a more rapid translation between research activities and clinical application. For example, when a newly evolved respiratory disease, MERS (Middle East Respiratory Syndrome), recently killed more than five hundred people around the world, a Japanese research group quickly responded to the need to develop a vaccine, and now their research finding is under examination by a US research group for its clinical applicability.

Although it is understandable that the efficiency of applying research findings to practical needs is important, it is also important to be careful in applying research findings to the clinical setting. If research findings are applied to patients without thorough examination, patients will suffer from unforeseen side effects. Therefore, researchers must not disregard ways to develop a safe protocol in examining research findings thoroughly before applying them to clinical settings.

In order to achieve this goal, Speech-Language Pathology researchers will need to collaborate with many other entities including clinicians, statisticians, psychologists, physicians, and engineers. Ethical aspects including FDA regulations will also need to be considered especially when research findings involve the development of a medical product.

I participated in the 9th Annual Eleanor M.Cognitive Neuroscience Conference in 2014, because the topic of the 2014 conference, "Working Memory," was closely related to my lab work. I found the structure of the Saffran conference and its overview about the topic very helpful for a student like me, who had only a short-sighted understanding on the topic. The first day of the conference oriented me around the major issues related to working memory, and the second day helped me to consider how I can apply learned knowledge to clinical setting. Overall, it was a very effective and helpful conference.

After this positive experience, I decided to apply for the student travel grant this year as the topic is of interest to me and connects well to my training as a Ph. D student in approaching clinical issues theoretically. Knowing how to reflect my theoretical knowledge for the clinical need is something I hope to learn from this conference. I expect this conference will provide me with the opportunity to consider issues related to this translation, and I expect to learn how to communicate better with clinicians as a researcher in the future. I believe that because all the SLPs have potentials to perform research on human subjects, it is the researchers and clinicians' responsibilities to take the time to sit down together and to find better solutions in translating research to communities. This effort will guarantee the success to both researchers and clinicians in the long run, and will bring everyone's efforts to the benefit of patients' quality of life. If selected, I will take this opportunity to meet all the leaders engaged in this issue before me, and become an active participant in translational research.

Shih-Yuan Liang

Vanderbilt University
Hearing and Speech Sciences
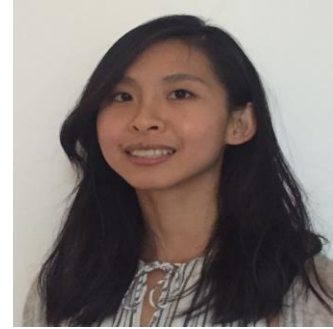
I am a second-year doctoral student in the Child Language and Literacy Lab (director: Melanie C. Schuele, Ph.D., CCC-SLP), Vanderbilt University. My research interest primarily focuses on the linguistic and cognitive underpinnings of literacy skills and the early identification and evidence-based intervention of struggling readers. This research interest derives from my interdisciplinary background in psychology, neuroscience, linguistics, and research experience in a clinical setting. My current research project aims to investigate whether higher-order language skills uniquely predict reading comprehension before children move to the next stage, reading to learn. These higher-order language skills include the ability to monitor grammatical acceptability and to generate an integrated understanding of the cognitive concept, linguistic form, and semantic content of various types of complex sentences. Research findings may be used to inform the design of early screening and intervention that can potentially benefit struggling learners who are flying under the radar in the early school years. This research is of particular interest for children who do not demonstrate evident word recognition deficits but show subclinical weaknesses in multiple language- or literacy-related domains.

Late-emerging (or late-identified) struggling learners often make me ponder the challenges and limitations of the existent assessment tools and intervention approaches. Increasing awareness of the limitations of current practices has always been the major force that prompts science to advance. In the meanwhile, the difficulty of moving basic research into application has afflicted both scientists and practitioners for a long time. Therefore, I was delighted to learn that the 10th Annual Eleanor M. Saffran's Conference provides an in-depth discussion on this particular topic.

I had worked in a rehabilitation clinic as a research assistant of the pediatric neurosurgery team after receiving my M.S. degree in clinical linguistics. In this position, I had the opportunity to closely interact with various clinical populations,

including children with intracranial brain tumors, epilepsy, developmental issues, and learning disabilities. I developed a working knowledge of a wide range of neurocognitive and language assessments under the supervision of experienced clinicians. Given my success in helping neurosurgeons gain a better understanding of the language and neurocognitive outcomes of patients who survived the neurological disorders and ensuing medical treatment, I had always contemplated the applicability of my clinical research. That is, exactly how findings in communication and psychological sciences can be translated into useful messages that guide the planning of rehabilitation. Moreover, how can we make the most essential messages penetrate into a different discipline such as education (i.e., school re-entry)? As intrigued by the above questions, I decided to come to the Vanderbilt University to pursue answers and prepare myself to become an independent researcher who can break these barriers in the future.

Experiences in Vanderbilt have reshaped my understanding of the term, *evidence-based*. As learned from Douglas Fuchs and his colleagues, the leading researchers in special education, '*evidence-based*' needs to be addressed at multiple phases. These include the development process of intervention, evidence of feasibility and usability for the type of setting and intended users, as well as measures to ensure fidelity of implementation. Yet despite of collective commitment, the general practitioners, publishers, or policy makers often fail to recognize the importance of evidence-based practice. Professionals from the communication sciences are faced with a similar situation. Hindrance to the development of translational research and its implementation may be attributed to several factors. These factors include the conceptual challenges when linking theory to practice, school speech pathologists' frontline experiences about what works, a lack of well-developed programs written with sufficient details for implementation, hospital politics, and limited time and funds. Furthermore, unlike educators who use the progress monitoring data to inform the adaptation of intervention plans, a speech language intervention has its own distinct nature with regards to the setting, frequency, and content to be delivered. Often, a well-developed progress monitoring tool is not available at hand, and therefore, a SLP must have a flexible and creative mind to come up with a strategy that can genuinely illustrate a client's improvement over time.

From reviewing the conference schedule, there are several sessions that echo with

my research interest. I believe the Saturday morning session: Challenges in translating basic research to clinical practice will spar interesting conversation between clinicians and researchers. I also look forward to Dr. Gillams' talks regarding the evidence-based language intervention for school-age children with language impairment as well as the Q&A and SKILL sessions. Their research works are highly relevant to the research project that I recently launched. I believe that the heated discussion (which I experienced last year) over the challenges and solutions of translational research will enlighten a young researcher like me who intends to further work on closing the gap between basic research and clinical practice.

Marja-Liisa Mailend

The University of Arizona
Speech,Language, and Hearing Sciences

One of the most appealing aspects about conducting research in communication sciences and disorders is the strong and obvious relationship between science and clinical practice. Basic research inspires clinical applications designed to improve the lives of people with communication impairments, and vice versa, studying communication impairments promotes understanding of human communication in unimpaired speakers. This relationship is one important reason for why I am pursuing a doctoral degree in this field, and it forms a central theme in my research. My research focuses on adult neurogenic communication impairments such as apraxia of speech and aphasia. I am currently working on my dissertation which aims to further our understanding of the motor planning impairment in apraxia of speech by testing two theoretically-motivated hypotheses, grounded in current state-of-the-art models of speech production. I see this work as a necessary step towards developing theoretically-driven applications for differential diagnosis and treatment of apraxia of speech and aphasia. These applications are the focus of my long-term career goals, for which I am currently laying the foundation. Recently, I successfully applied for pre-doctoral funding from the NIH. In addition to the two main experiments of the research plan, this F31 also includes a training component centered specifically around developing psychometrically sound diagnostic instruments. After completing my doctoral studies I plan to pursue postdoctoral training to further develop theoretically motivated clinical applications in the area of neurogenic communication disorders.

Considering my research interests and career goals, attending the Saffran Conference and Workshop would be an invaluable opportunity. The focus of this conference – translational research in the communication sciences – aligns perfectly with my own research interests and perspectives. I look forward to hearing about the challenges inherent to this type of research from renowned scientists such as Dr. Whyte and Dr. Schwartz. Learning from their experiences would be most valuable as I prepare for the subsequent steps in my career path. I am also excited about Dr. Raymer's talk. Ultimately, I would like to hold a faculty position in a department of communication sciences and disorders. Educating future generations of clinicians is one appealing aspect of this position for me. For that reason, I look forward to hearing Dr. Raymer's thoughts on the issue of educating future generations of clinicians.

I also expect this conference to be an excellent networking opportunity, particularly considering the interactive nature of this meeting. Not only will this foster development of potential future collaborations, but as I am approaching the end of my doctoral studies, I am also beginning to look for a post-doctoral position. My research interests bridge psycholinguistics, neuropsychology, and clinical research, making rehabilitation research institutes such as the Moss Rehabilitation Research Institute potentially a great fit. Bearing in mind the attendees of this meeting, networking opportunities at the Saffran Conference may prove particularly valuable. The Saffran Student Scholar Award 2015 June 18, 2015.

Finally, I appreciate the importance of extramural funding in the modern academic world as well as the increased competition for limited available funds among scientists. One of my training goals under my F31 is to develop an F32 application to fund my post-doctoral studies. The opportunity to interact with Dr. Cooper and tap into her vast experience and knowledge about the funding mechanisms at NIH-NIDCD would be a great prospect and privilege.

In summary, attending the Saffran Conference in September 2015 would be a great and timely opportunity considering my research interests in translational research and my career phase.

Shannon MacKenzie Sheppard

San Diego University
Speech, Language and Hearing Sciences

I would like to attend the 10th Annual Eleanor M. Saffran Cognitive Neuroscience Conference because it is so relevant to my research and career goals. I am currently beginning my fifth year in the San Diego State University – University of California, San Diego Joint Doctoral Program in Language & Communicative Disorders (JDP-LCD). My research interests run the gamut from sound-to-meaning, and focuses on investigating the moment-by-moment processing of sentences in neurologically unimpaired college-age and elderly populations, and in patients with aphasia. I am supervised by Drs. Lew Shapiro and Tracy Love in the Language and Neuroscience Group Laboratory and I am also working closely with Drs. Phil Holcomb and Katherine Midgley in the NeuroCognition Laboratory. I am particularly fascinated by aphasia research because of its theoretical as well as practical clinical implications for understanding brain-language relationships. Furthermore, it's no small thing to be able to help those individuals with aphasia function in the real world, a particular passion of mine. My ultimate goal is to become a professor and independent scientist and conduct treatment research of acquired neurogenic language disorders. To this end I am also in the process of completing the clinical requirements to become a licensed speech-language pathologist through the JDP-LCD program. I pursued this option to allow me to better understand treatment research both from the viewpoint of a scientist and from that of a clinician. Attending the 'Saffron Conference' will allow me to learn directly from other experts in the field about translating basic research to clinical practice. I hope to also benefit from the opportunity to speak with clinical scientists at the conference in its more intimate setting.

Through my research training, I have learned to use a wide variety of cognitive neuroscience experimental techniques to examine language processing and comprehension in aphasia, including eye tracking, pupillometry, cross-modal lexical priming, fMRI and electroencephalography (EEG)/event-related brain potentials (ERPs). My current research focuses on the interaction of language with other cognitive processes in aphasia. My first two doctoral research projects examined the role of similarity-based interference (argued to be a main focus within working memory for language) during the processing of *Wh*-questions both in neurologically unimpaired participants and in persons with aphasia. The results of this study have recently been published in the *Journal of Speech Language and Hearing Research* (Sheppard et al., 2015). Consider the following sentences:

Two mailmen and a fireman got into a fight yesterday afternoon.
1a. Who pushed the fireman yesterday afternoon? **(Subject-extracted Who)**
1b. Who did the fireman push ___ yesterday afternoon? **(Object-extracted Who)**
1c. Which mailman pushed the fireman yesterday afternoon? **(Subject-extracted Which)**
1d. Which mailman did the fireman push ___ yesterday afternoon? **(Object-extracted Which)**

There is evidence from the linguistic and psycholinguistic literatures that suggest *which*-questions are more difficult to understand than *who/what*-questions and within those, that object-extracted are more difficult than subject-extracted. I used a unique eye tracking-while-listening method where listeners were presented with sentences while gazing at a three-figure picture (e.g., a picture of a mailman pushing a fireman who is pushing another mailman); I measured gazes to the referents in the pictures across the time-course of the sentences, and also collected accuracy and response time data to answer the questions (by button press). I investigated three specific hypotheses: Discourse, Word Order, and Intervener.

The Discourse hypothesis suggests that *which* questions should be more difficult to process than *who*-questions because the former is required to refer to an individual taken from a set of entities previously mentioned in the discourse (Donkers & Stowe, 2006). The Word Order hypothesis suggests that, regardless of question type (*which* or *who*), object-extracted should be more difficult to understand than subject-extracted questions because the former are in non-canonical word order. Finally, the Intervener hypothesis suggests that only object-extracted *which*-questions should be problematic, particularly for those participants with language disorders (e.g., Friedmann & Novogrodsky, 2011). An intervener is a noun phrase (NP) that has similar properties to other

NPs in the sentence, and thus results in similarity-based interference. Under this definition, only object-extracted *which*-questions contain an intervener (e.g., *the fireman* in (1d)), which interferes with the chain consisting of the displaced Which-phrase, *Which mailman*, and its direct object gap occurring after the verb). I only found support for the Intervener Hypothesis and I explained why this hypothesis might account for many of the comprehension deficits we observe in individuals with Broca's aphasia. In the future, these findings may lead to developing treatments programs that focus on the similarity of NPs in sentences; that is certainly one of my goals.

I am also collaborating with Dr. Phil Holcomb and Dr. Katherine Midgley to extend my investigations of aphasia. My training in their lab has primarily focused on learning to use electroencephalography (EEG) and the resulting event-related brain potentials (ERPs) to study language. In my most recent study I am examining the effect that prosody and lexical semantics has on real-time processing in individuals with aphasia. I'm accomplishing this via examining the susceptibility to interference

in sentence comprehension from prosodic and lexical-semantics using the ERP technique, which has real-time millisecond sensitivity. Consider the following sentences where prosody is manipulated to either facilitate (2a & 2b) or disrupt (2c & 2d) syntactic processing. Lexical-semantic information of the noun phrase (e.g. *the song/the beer*) is also manipulated to either be a good (2c) or poor (2d) thematic fit (2c) for the verb (e.g. *played*).

> 2a. [While the band played] the song pleased all the customers.
> 2b. [While the band played] the beer pleased all the customers.
> 2c. [While the band played the song] pleased all the customers.
> 2d. [While the band played the beer] pleased all the customers.
> [] Indicates prosodic contour

Two language-related ERPs are being examined, the N400 and the P600. The N400 is sensitive to semantic information effort (Kutas & Hillyard, 1980, 1984) and the P600 reflects syntactic integration processes (Osterhout & Holcomb, 1992). Thus far 24 college-age students, 13 adults with aphasia, and 9 agematched controls have participated in my study. Briefly, preliminary results suggest that individuals with aphasia possess a delayed sensitivity to prosodic cues, which then may affect their ability to recover from misanalysis from an incorrect parse. The results also indicate that individuals with aphasia are sensitive to thematic fit information and have the capacity to process this information similarly to college-age controls. I am currently running additional participants. I will also be using the results from this study to examine the relationship between brain anatomy and the electrophysiology of syntactic and semantic processing in persons with aphasia. We have obtained structural magnetic resonance images for several left hemisphere-damaged individuals with Broca's aphasia, and have identified areas of lesioned and intact brain tissue. I will use this information in combination with cytoarchitectonic probability maps generated by our colleagues in Germany (Dr. Katrin Amunts) to compute the proportion of lesioned tissue in anatomically distinct regions of interest (e.g., BA 45; Te3) to complete structure-function analyses. This tactic should help reveal how damage to the language network contributes to language specific ERP components (e.g. N400 and P600) when syntactic and semantic processing are disrupted. Again, the overall goal of this work is to understand brain/language relationships and how language and other cognitive processes go awry when the brain is damaged.

While I have learned a great deal in my doctoral program about conducting aphasia research through several different methods, I do not yet have experience conducting treatment research. From my time working as a student clinician in the SDSU Speech-Language Clinic and at Sharp Grossmont Hospital, and discussing this issue

with my mentors, I know that implementing theory- and evidence-based treatments in clinical practice is a challenging endeavor. Attending this conference will allow me to learn from leaders in the field both about conducting treatment research and about implementing research findings in the real world. Finally, with this as part of my academic and clinical training, I hope to bring what I have learned to future clinicians and clinical scientists.

Lilla Zakariás

University of Potsdam
Department of Linguistics

I am writing you to apply to the *Saffran Student Scholar Award*. I am a speech and language pathologist (BA) and a cognitive scientist (MA), and have extensive experience in therapy and research with individuals with aphasia. These experiences have shaped my research interest and led me to focus on the relationship between aphasia and non-linguistic cognitive functions, as well as individual differences and treatment-related factors influencing therapy outcome in aphasia.

In two recent studies, we detected a specific pattern of non-verbal cognitive impairment in one type of aphasia, and showed that an adaptive, computerized cognitive training led to improvements, which might generalize to language.

Currently, the main questions I am most interested in are: Is working memory (WM) and executive function (EF) training beneficial for individuals with aphasia? Does enhancement in WM and EFs generalize to domains of language, particularly, sentence comprehension? How do individual differences contribute to a successful training in aphasia? Answering these questions, besides its theoretical significance, has very important clinical implications.

For five years, I have worked in a hospital with individuals with aphasia, dysarthria, and apraxia of speech following stroke, as well as with patients with language and speech disorders accompanying progressive neurodegenerative disorders. I have become increasingly interested in various assessment and therapy methods, especially combining the results of traditional speech pathology and cognitive psychology to make clinical work as efficient as possible. In line with these and driven by the need for such materials in Hungary, I have recently completed and published a workbook targeting semantics and phonology for 2

Hungarian-speaking individuals with aphasia in collaboration with colleagues at the National Institute for the Medical Rehabilitation in Budapest, Hungary. In addition, I am involved in adapting the Comprehensive Aphasia Test into Hungarian in the framework of an EU-funded project. As my research interest, as well as my academic

and applied work show, I am tremendously interested in evidence-based therapy methods and learning how to transmit knowledge emerging from basic research to clinicians' everyday practice.

Given the above considerations, I see a great fit between my interests and the theme of the *10th Annual Eleanor M. Saffran Conference*. I find this year's topic – *Translational Research in the Communication Science: Challenges and Pathways to Solution* – extremely appealing. I hope to benefit from talks by experts of the Moss Rehabilitation Institute as well as researchers focusing on evidence-based interventions and neurostimulation approaches to facilitating treatment. These together with the lecture to be held by Professor Jane Marshall on sentence processing and its treatment in aphasia could specifically contribute to my doctoral studies. In addition, I see the potential benefit of getting in touch with people within the widespread network of aphasia researchers I could otherwise not meet.