Winter 2017 CATSS Scientific Symposium

Our Winter 2017 CATSS Scientific Symposium was held on February 3 at the McNamara Alumni Center, and was attended by around 75 people.

Presenters included Dr. Lotfi Merabet, OD, PhD, MPH, Director, the Laboratory for Visual Neuroplasticity, Harvard University, who spoke on the topic of brain plasticity in ocular and cerebral causes of visual impairment, and Andrew Oxenham, PhD, Professor and Director of the Auditory Perception and Cognition Lab, Department of Psychology, University of Minnesota, presenting on pitch perception and implications for auditory implants.

In addition to the scientific talks, 9 posters representing research from Psychology, Speech-Language-Hearing Sciences, Ophthalmology, Biomedical Engineering, Kinesiology departments, as well as Starkey Hearing Technologies were on display.

FROM THE EXECUTIVE DIRECTOR

2017 has started off well, despite the chilly spring. Science continues to progress, no matter the weather!

A couple of new projects we currently have underway in CATSS include:

- A study of conversational dynamics, funded by Starkey Laboratories (Dr. Andrew Oxenham)
- Development of an automated word recognition test (Dr. Robert Schlauch)
- A study of auditory streaming of speech in people with hearing loss, funded by Sonova (Dr. Andrew Oxenham)

New ones on the horizon include:

- Using EEG and imaging to evaluate the benefit of retinal implants (Dr. Sandra Montezuma et al.)
- Using VEMP (vestibular evoked myogenic potentials) to evaluate the effects of infrasound on the human auditory system (Dr. Meredith Adams and resident Dr. Joel Stanek)

In addition, we’ve been assisting with graduate education in audiology. Graduate students from Speech-Language-Hearing Sciences have been coming to CATSS to gain experience in vestibular testing with Prof. Sarah Angerman and the assistance of Dr. Michael Sullivan.

We’ve been featured in the University of Minnesota Alumni Association’s Arizona MinneCollege. Peggy Nelson gave a well-received talk entitled: “Emerging hearing loss solutions: How the newest ideas may change everything.”

We hope to coordinate a pool of participants who are interested in being subjects for some of our studies. In the meanwhile, here is an IRB-approved announcement for one project looking for participants, a one-hour study of
human response to very low-frequency sound.

We hear occasionally about industry partners looking for student interns. One is available for summer 2017 from Cochlear Corp. Stay tuned for other internship opportunities that may arise.

Come by for a tour or a visit! We'd love to see you.

- Peggy Nelson

2017 CATSS SMALL GRANT APPLICATION DEADLINE: April 15, 2017

CATSS promotes innovative interdisciplinary research in the sensory sciences. The CATSS Small Grant program provides seed money for faculty and students to collect preliminary data on sensory science projects that show promise for future investigations on a broader scale.

CATSS Grants

CATSS PODCAST #1: An Overview

Ken Mills, a journalist, writer, consultant, and blogger, is currently producing a series of audio podcasts about the mission, goals, current work, staff, and participants in CATSS research projects.

The podcasts, 6-10 minutes in length, will feature thematic presentations designed for educated listeners. They will be adaptable to video and other media.

The first podcast, an overview of CATSS and its purpose, mission, and goals, is now accessible on our web site. A transcript is also available.

CATSS HOPING TO LAUNCH SUMMER BROWN BAG LUNCH SERIES

Looking for a way to keep informed on sensory research at U of M this summer? Consider a monthly informal, noon-time gathering where colleagues can share their current research activities and discuss topics of interest to participants.

We are currently assessing interest in this concept. If you would be interested in attending and/or presenting at this summer series (May through August), please email us at catss@umn.edu.

CATSS Member Profile: Adam Svec, PhD

Adam Svec

Adam Svec, AuD, PhD, is a research scientist for hearing aid manufacturer GN ReSound. Svec, along with colleague Gene Brandewie, maintains a permanent desk in the CATSS office. This arrangement enables Svec and Brandewie to conduct R&D research for ReSound in CATSS's Multi-Sensory Perception Lab, with its state-of-the-art instrumentation and capabilities.

Svec, a Luther College grad, obtained his AuD (clinical doctorate in audiology) in 2014 and his PhD in Speech-Language-Hearing Sciences in 2015, both from the University of Minnesota. After a stint with Starkey, he joined GN ReSound in 2016.

Q. Tell a little about the research you have been involved in over the past few years.

A. As a student, I was fortunate enough to have landed brief research rotations with Dr. Walt Jesteadt at Boys Town National Research Hospital (Omaha, NE) and Dr. Judy Dubno at Medical University of South Carolina (Charleston, SC), completing both basic research and clinically-motivated research. Under the guidance of Dr. Peggy Nelson (current director of CATSS), I studied the effects of hearing loss on speech recognition and related
psychoacoustic measures. I had the opportunity to work with Dr. Magdalena Wojtczak on the final experiment for my
dissertation, and we are currently finishing up the associated paper. I was also involved in collaborative work with
EarMachine, a smartphone application built to allow for self-adjustment of hearing aid parameters.

For my dissertation work, I was mostly examining ways in which random fluctuations of background noise disrupt
listening cues over brief periods of time for individuals with hearing loss. In regions of hearing loss, it seems as
though the disruptive effects of noise fluctuations may persist for a greater duration (on the order of milliseconds)
than they do in regions of normal hearing.

Recently, some collaborative work with Dr. Peggy Nelson and Dr. Marc Brennan at Boys Town National Research
Hospital has suggested that hearing aid compression may generally reduce the effects of these noise fluctuations.
Somewhat surprisingly, this effort revealed that these disruptive effects of noise fluctuations are also observed for
older listeners without hearing loss, suggesting that age may play a greater role in this phenomenon than previously
expected.

Q. What research questions are you working on now?

A. Aside from a proprietary research project I'm working on for GN, I'm currently the content editor for GN's
research group. GN has independent research labs in Copenhagen (DK), Eindhoven (NL), and Chicago, IL, as well
as multiple collaborative sites, such as CATSS at the University of Minnesota. The organization has recently been
interested in aligning the tone of their research output across the sites in Europe and the US, so I've taken on the
responsibility of trying to do just that. Since I started in September, 2016, the learning curve has necessarily been
pretty rapid. The role has required a lot more reading and investigating than actual writing, as is true for most
research roles, I suppose.

Q. How "translational" is your science? Does your work have the potential to directly inform development
of product features?

A. To the second question, I hope so. While not every project I'm currently working on will be able to go directly
into product development, I think each project (including the collaborative work with investigators at Boys Town
National Research Hospital) may eventually lead to improvements in hearing aid design. However, I'm also
interested in improving our tools for categorizing patients with hearing loss. That particular effort is more focused on
re-defining the "patient space", as opposed to working on technological advancements for amplification.

Q. How does the scientific environment within CATSS and UMN affect your work? Collaborative or
competitive?

A. I love the environment of CATSS. Getting to attend journal seminar, academic talks, and conferences with some
of the top hearing scientists in the field is an incredible luxury. It keeps me sharp, and it sparks ideas and
discussions that would never happen in other surroundings (e.g., office park in the suburbs). In addition, the facilities
within CATSS, including the multi-sensory perception lab (MSP), allow for perceptual experimental design that is
nearly limitless. It's also no secret that I've always enjoyed having the opportunity to work with Dr. Nelson. Within the
scientific community, she is somewhat of an anomaly in that she is incredibly un-selfish, kind, generous, and
thoughtful.

CATSS is based on a collaborative spirit. Although we may compete for ideas with other institutions, I think we are
all working towards improving the experience of individuals with vision and hearing impairments. It's also a joy to
show up to work when you get to interact with Liz Anderson, Gene Brandewie, and Andy Byrne most days. Basically,
I have no complaints.

Q. How would you rate the model of CATSS as a resource/collaborative for industry partners?

A. I'd like to see more industry researchers take advantage of the facilities. If industry partners could coordinate
non-disclosure agreements among investigators sharing the space, I think this would increase the benefit to
everyone involved. Especially during times when federal funding for research is not particularly plentiful, industry
organizations with funding for research and development should build alliances with experts at academic institutions
for the proliferation of applicable work that might not otherwise be undertaken. In a perfect world, CATSS would gain
international notoriety for both its academic and industry collaborations.

Q. You are a musician, too, a singer/songwriter. Does your scientific work inform your songwriting? Does
your music inform your research?

A. Early in my career as a graduate student, I would have answered "yes" to both questions. However, as time
goes on, music is my escape. I try to keep my work and music a bit more separate than I originally anticipated. With
that said, I do think about the dangers of noise exposure more than I did prior to studying hearing science. I use
hearing protection pretty regularly, and I try to encourage my fellow musicians to do the same.
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