

# Sung-Joo Lim

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Department of Speech, Language and Hearing Sciences  
College of Health and Rehabilitation Sciences: Sargent College  
Boston University  
Boston, MA

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## RESEARCH INTERESTS

Auditory and speech processing, auditory selective attention and working memory processes, role of experience in shaping perceptual representations, auditory learning and categorization, implicit vs. explicit learning, neural mechanisms of learning and auditory processing revealed through fMRI and EEG

## EDUCATION

**Ph.D., Psychology** 2007-2013

**Carnegie Mellon University**, Pittsburgh, PA

**Center for the Neural Basis of Cognition**, Pittsburgh, PA

Thesis: *Investigating the Neural Basis of Sound Category Learning within a Naturalistic Incidental Task*

**B.Sc., Computer Science** 2001-2005

**Carnegie Mellon University**, Pittsburgh, PA

## ACADEMIC EMPLOYMENT

**Research Assistant Professor** 2019-Present

**Boston University**, Boston, USA

Department of Speech, Language & Hearing Sciences

**Postdoctoral Fellow** 2017-2018

**Boston University**, Boston, USA

Department of Speech, Language & Hearing Sciences

Biomedical Engineering

**Postdoctoral Fellow** 2014-2016

**Max Planck Institute for Human Cognitive and Brain Sciences**, Leipzig, Germany

**University of Lübeck**, Department of Psychology, Lübeck, Germany

Max Planck Research Group "Auditory Cognition"

## AWARDS & HONORS

Advanced Research Training in Communication Sciences and Disorders (T32), NIH 2017-2018

Graduate Student Abstract Merit Award, Society for the Neurobiology of Language 2013

The Richard King Mellon, the Presidential Fellow Award 2011-2013

NIH National Graduate Student Research Conference Presenter and Travel Award 2011

Multimodal Neuroimaging Training Program Training Grant, NIH 2011-2013

Integrative Graduate Education and Research Traineeship (IGERT), NSF 2009-2011

Behavioral Brain (B<sup>2</sup>) Research Training Grant, NIH 2007-2009

Travel Award, CMU Graduate Student Association 2009

School of Computer Science Dean's List, CMU Fall, 2004

## **RESEARCH FUNDING**

NSF BCS 1840674 PI: Andrew Oxenham 2018-2020  
NeuroDataRR. Collaborative Research: Testing the relationship between musical training and enhanced neural coding and perception in noise  
Role: Co-Investigator  
Total Costs: \$600,000

### ***Submitted & Pending Awards***

NIH R21 DC017786 PI: Sung-Joo Lim 2019-2022  
Speech processing in listeners with hearing loss: cognitive consequences of talker variability  
Role: Principal Investigator  
Requested: \$495,000

## **PUBLICATIONS**

- Lim, S.-J.**, Wöstmann, M., Geweke, F. & Obleser, J. (2018). The benefit of attention-to-memory depends on the interplay of memory capacity and memory load. *Frontiers in Psychology*. 9, 184.
- Alavash, M.\*, **Lim, S.-J.\***, Thiel, C., Sehm, B., Deserno, L., & Obleser, J. (2018). Dopaminergic modulation of signal variability and functional connectome during cognitive performance. *NeuroImage*. 172, 341–356. (\*equal contribution)
- Wöstmann, M., **Lim, S.-J.**, & Obleser, J. (2017). The human neural alpha response to speech is a proxy of attentional control. *Cerebral Cortex*. 27(6), 3307-3317.
- Lim, S.-J.**, Wöstmann, M., & Obleser, J. (2015). Selective attention to auditory memory neurally enhances perceptual precision. *Journal of Neuroscience*. 35(49), 16904–16104.
- Lim, S.-J.**, Lacerda, F., & Holt, L. L. (2015). Discovering functional units in continuous speech. *Journal of Experimental Psychology: Human Perception and Performance*. 41(4), 1139-1152.
- Guediche, S., Holt, L. L., Laurent, P., **Lim, S.-J.**, & Fiez, J. A. (2015). Evidence for cerebellar contributions to adaptive plasticity in speech perception. *Cerebral Cortex*. 25(7): 1867-1877.
- Lim, S.-J.**, Fiez, J. A., & Holt, L. L. (2014). How may the basal ganglia contribute to auditory categorization and speech perception?. *Frontiers in Neuroscience*. 8:240.
- Lim, S.-J.** & Holt, L. L. (2011). Learning foreign sounds in an alien world: Videogame training improves non-native speech categorization. *Cognitive Science*. 35, 1390-1405.

## **MANUSCRIPTS**

### ***Under review***

- Lim, S.-J., Fiez, J. A., & Holt, L.L. (*invited to submit revision*). The role of the striatum in incidental learning of sound categories. *Proceedings of the National Academy of Sciences of the United States of America*.
- Lim, S.-J., Shinn-Cunningham, B. G., & Perrachione, T.K. (*in revision*). Effects of talker continuity and stimulus rate on auditory working memory. *Attention Perception and Psychophysics*.

### ***In preparation***

- Lim, S.-J., Carter, Y., Shinn-Cunningham, B. G. S., & Perrachione, T.K. (*in prep*). Impact of talker continuity and stimulus rate on neural processing of speech processing and working memory.

- Lim, S.-J., Tin, J. A. A., Qu, A., & Perrachione, T.K. (*in prep*). Talker adaptation as allocation of attention.
- Lim, S.-J., Thiel, C., Sehm, B., Deserno, L., Lepsien, J., & Obleser, J. (*in prep*). Effects of L-dopa on the benefit from attention to memory.
- Lim, S.-J., Lotto, A. J., & Holt, L. L. (*in prep*). Online learning of distributional characteristics in auditory categorization.

### **PEER-REVIEWED CONFERENCE PROCEEDINGS**

- Kimball, G., Cano, R., Feng, J., Feng, L., Hampson, E., Li, E., Christel, M. G., Holt, L. L., **Lim, S.-J.**, Liu, R., Lehet, M. (2013). Supporting research into sound and speech learning through a configurable computer game. *Proceedings of the IEEE Games Innovation Conference (IGIC)*, Vancouver, 2013.
- McLaren, B.M., **Lim, S.-J.**, & Koedinger, K.R. (2008). When and how often should worked examples be given to students? New results and a summary of the current state of research. *Cognitive Science Society*.
- McLaren, B. M., **Lim, S.-J.**, & Koedinger, K. R. (2008), When is Assistant Helpful to Learning? Results in Combining Worked Examples and Intelligent Tutoring. *Intelligent Tutoring Systems (ITS)*.
- McLaren, B. M., **Lim, S.-J.**, Yaron, D., Koedinger, K. R. (2007). Can a Polite Intelligent Tutoring System Lead to Improved Learning Outside of the Lab?. *Artificial Intelligence in Education (AIED)*.
- McLaren, B. M., **Lim, S.-J.**, Gagnon, F., Yaron, D., Koedinger, K. R. (2006). Studying the Effects of Personalized Language and Worked Examples in the Context of a Web-Based Intelligent Tutor. *Intelligent Tutoring Systems (ITS)*, (*Finalist for the Best Paper Award*).

### **INVITED TALKS & PRESENTATIONS**

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|---|-----------|
| CRESCENT Auditory Working Memory Workshop, Boston University (Boston, MA).      | June 2017 |
| CBBM Colloquium, University of Lübeck (Lübeck, Germany).                        | Feb. 2016 |
| Basque Center on Cognition, Brain and Language (Donostia-San Sebastian, Spain). | Jan. 2016 |
| Department of Psychology, Korea University (Seoul, Korea).                      | Sep. 2015 |
| Department of Psychology, Yonsei University (Seoul, Korea).                     | Sep. 2015 |
| Max Planck Institute for Human Cognitive and Brain Sciences (Leipzig, Germany). | Aug. 2013 |
| Department of Modern Languages, Carnegie Mellon University (Pittsburgh, PA).    | Jan. 2011 |

### **CONFERENCE PRESENTATIONS**

- Lim, S.-J.**, Tin, J.A.A., Shinn-Cunningham, B.G., & Perrachione, T.K. (2018). Impact of talker adaptation on speech processing and working memory. *Acoustical Society of America* (Minneapolis, MN).
- Lim, S.-J.**, Tin, J.A.A., Shinn-Cunningham, B.G., & Perrachione, T.K. (2018). Impact of talker adaptation on speech processing and working memory. *Cognitive Neuroscience Society* (Boston, MA).
- Lim, S.-J.**, Shinn-Cunningham, B., & Perrachione, T.K. (2017). Effects of voice continuity and stimulus rate on auditory working memory. *Advances and Perspectives in Auditory Neuroscience XV* (Washington, DC).
- Alavash, M., **Lim, S.-J.**, Thiel, C., Sehm, B., Deserno, L., & Obleser, J. (2017). L-dopa modulates brain networks and signal variability in the listening brain. *Organization for Human Brain Mapping*. (Vancouver, Canada).
- Lim, S.-J.**, Thiel, C., Sehm, B., Deserno, L., Lepsien, J., & Obleser, J. (2016). Effects of L-dopa on the benefit from attention to memory. *Society for Neuroscience*. (San Diego, CA).

- Lim, S.-J.**, Wöstmann, M., Geweke, F. & Obleser, J. (2016). Does attention to objects in auditory working memory enhance perceptual precision?. *Cognitive Neuroscience Society* (New York, NY).
- Wöstmann, M., Fiedler, L., **Lim, S.-J.**, & Obleser, J. (2016). The behavioural and neural fate of ignored speech. *Cognitive Neuroscience Society*. (New York, NY).
- Lim, S.-J.**, Wöstmann, M., & Obleser, J. (2015). Evoked responses and alpha oscillations reflect the top-down modulation of working memory representations. *Society for Neuroscience*. (Chicago, IL).
- Lim, S.-J.**, Lepsien, J., Wöstmann, M., & Obleser, J. (2015). Selective attention to memory representations of auditory objects. *Cognitive Neuroscience Society*. (San Francisco, CA)
- Lim, S.-J.**, Fiez, J. A., & Holt, L. L. (2015). The Neural Basis of Sound Category Learning through an Incidental Task. *Korean Society for Cognitive and Biological Psychology*. (Jeju, S. Korea).
- Lim, S.-J.**, Lotto, A.J., Obleser, J., & Holt, L. L. (2014). The development of internal representations of sound categories. *Society for the Neurobiology of Language* (Amsterdam, Netherlands).
- Lim, S.-J.**, Holt, L. L., & Fiez, J. A. (2013). Context-dependent modulation of striatal systems during incidental auditory category learning. *Society for Neuroscience* (San Diego, CA).
- Lim, S.-J.**, Fiez, J. A., & Holt, L. L. (2013). Investigating the role of speech-selective regions during videogame-based non-speech sound category acquisition. *Society for the Neurobiology of Language* (San Diego, CA).
- Lim, S.-J.**, Fiez, J. A., Wheeler, M. E., & Holt, L. L. (2013). Investigating the Neural Basis of Video-game-based Category Learning. *Cognitive Neuroscience Society* (San Francisco, CA).
- Holt, L. L., **Lim, S.-J.**, & Liu, R. (2012). Learning Foreign Sounds in an Alien World. Invited Presentation in the *Second Language Research Forum: Building Bridges Between Disciplines, Second Language Acquisition in Many Contexts*. (Pittsburgh, PA).
- Lim, S.-J.**, Holt, L. L. (2012). Non-native speech category learning using a video-game-based training paradigm. *Eastern Psychological Association* (Pittsburgh, PA).
- Lim, S.-J.**, Fiez, J. A., & Holt, L. L. (2011). Investigating the Learning Mechanism of a Video Game Task. National Institute of Health (NIH) National Graduate Student Research Conference. (Bethesda, MD).
- Lim, S.-J.**, Lacerda, F., Holt, L. L. (2011). Learning acoustically complex word-like units within a video-game training paradigm. *Acoustical Society of America* (Seattle, WA).
- Lim, S.-J.**, Holt, L. L. (2009). Investigating non-native category learning using a video-game-based training paradigm. *Acoustical Society of America, Cross-language Speech Workshop* (Portland, OR).
- Lim, S.-J.**, Holt, L. L. (2009). Sensitivity to input distributions and decision boundaries in auditory category learning. *Acoustical Society of America* (San Antonio, TX).
- Lim, S.-J.**, Holt, L. L. (2009). Effect of Video-game-based Training on Non-native Speech Contrasts. *Eastern Psychology Association* (Pittsburgh, PA).
- Lim, S.-J.**, Holt, L. L. (2008). Learning non-native speech categories with a video game. *Psychonomics Society* (Chicago, IL).

## **PROFESSIONAL MEMBERSHIPS**

Society for Neuroscience  
Cognitive Neuroscience Society  
Society for the Neurobiology of Language  
Acoustical Society of America  
Association for Psychological Science

## **ACADEMIC SERVICES**

Ad-hoc Reviewer: Cerebral Cortex, Journal of Neuroscience, NeuroImage, Neurobiology of Aging, Brain and Language, Attention, Perception & Psychophysics, Journal of Experimental Psychology: Learning, Memory, and Cognition, Brain Research, Frontiers in Human Neuroscience

## **MENTORING EXPERIENCE**

Alex Kapadia <i>Master's Thesis Committee</i>	Boston University, Boston, MA	2018-Present
Rita Sio Nga Kou <i>Master's Thesis Committee</i>	Boston University, Boston, MA	2018-Present
Isabelle Nastaskin <i>Master's Thesis Committee</i>	Boston University, Boston, MA	2018-Present
Andrea Chang <i>Master's Thesis Committee</i>	Boston University, Boston, MA	2017-2018
Nichole Chen <i>Undergraduate Research Assistant</i>	Boston University, Boston, MA	2018-Present
Joan (Michelle) Njoroge <i>Undergraduate Research Opportunities program, Student Research Award</i>	Boston University, Boston, MA	2017-Present
Allen Qu <i>Undergraduate Research Assistant</i>	Boston University, Boston, MA	2017-Present
Frederik Geweke <i>Undergraduate Internship</i>	Max Planck Institute, Leipzig, Germany	2015
Mirja Kuhlencord <i>Bachelor's Thesis</i>	University of Leipzig, Leipzig, Germany	2014

## **TEACHING EXPERIENCE**

Research Methods in Cognitive Psychology (TA with Dr. Lori L. Holt)  
Biological Foundations of Behavior (TA with Dr. Marlene Behrmann)  
Social Psychology (TA with Dr. Chante Cox-Boyd)

## **PREVIOUS RESEARCH / WORK EXPERIENCE**

### **Full-Time Research Assistant**

Speech Perception & Learning Lab  
Psychology, Carnegie Mellon University

Sep. 2006-Aug. 2007

**Full-Time Research Staff**

June 2005-Aug. 2007

Pittsburgh Science of Learning Center  
Human Computer Interaction Institute, Carnegie Mellon University

**Research Intern/Programmer**

June 2005-Aug. 2005

RADAR – Time & Space Project  
Language Technologies Institute, Carnegie Mellon University

**Research Programmer**

May 2004-May 2005

ASDMCon Project – Graphical Tool Development  
Robotics Institute, Carnegie Mellon University

**SKILLS****Platforms:** Unix, Linux, Solaris, Windows, Mac OSX**Computer Language:** MATLAB, C, C++, C#, Java, SML, Assembly (IA 32), SQL, Lisp, Python**Software:** SPSS, AFNI, R, Eclipse, Klatt (1988), Praat, Cool Edit, GDB, Intel Compiler, GCC, Visual .NET, MS Office**REFERENCES****Lori L. Holt**

Professor  
Department of Psychology  
Carnegie Mellon University  
loriholt@cmu.edu

**Jonas Obleser**

Professor  
Department of Psychology  
University of Lübeck  
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**Barbara G. Shinn-Cunningham**

Professor  
Director, Neuroscience Institute  
Carnegie Mellon University  
bgsc@andrew.cmu.edu

**Julie A. Fiez**

Professor  
Chair, Department of Psychology  
Department of Neuroscience  
University of Pittsburgh  
fiez@pitt.edu

**Tyler K. Perrachione**

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Department of Speech, Language,  
and Hearing Sciences  
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tkp@bu.edu