

Brian B. Monson

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EDUCATION

- 2011 Ph.D. Speech, Language, and Hearing Science, University of Arizona.
Minor: Neuroscience
Advised by Brad Story and Andrew Lotto
- 2006 M.S. Physics (Acoustics), Brigham Young University.
Minor: Vocal Performance
Advised by Scott Sommerfeldt
- 2003 B.S. Electrical Engineering, *Cum Laude*, Utah State University.

POSITIONS

- 2017-present Assistant Professor, Department of Speech and Hearing Science, University of Illinois, Urbana-Champaign.
- 2016-2017 Instructor in Pediatrics, Harvard Medical School.
- 2016-2017 Research Associate, Department of Radiology, Boston Children's Hospital.
- 2015-2017 Research Scientist, Department of Pediatric Newborn Medicine, Brigham and Women's Hospital.
- 2014-2016 Research Fellow, Department of Radiology, Boston Children's Hospital. Advised by Simon Warfield
- 2014-2016 Research Fellow in Pediatrics, Harvard Medical School.
- 2014-2015 Research Fellow, Department of Pediatric Newborn Medicine, Brigham and Women's Hospital. Advised by Jeffrey Neil and Terrie Inder
- 2011-2013 Research Fellow, Department of Neuroscience and Behavioral Disorders, Duke-NUS Graduate Medical School, Singapore. Advised by Dale Purves
- 2009-2011 Research Associate, The National Center for Voice and Speech, University of Utah. Advised by Eric Hunter and Ingo Titze
- 2008 Visiting Researcher, Speech/Music/Hearing Department, Royal Institute of Technology, Stockholm, Sweden.

RESEARCH INTERESTS

Prenatal/neonatal auditory neurodevelopment and development of speech/voice perception
Speech/voice perception
Speech/voice acoustics

RESEARCH SUPPORT

- 2010-2011 NIH (NIDCD) F31DC010533, National Research Service Award.
"High-frequency energy in speech and voice"

HONORS AND AWARDS

- 2016 *Travel Award*, Early-career Acousticians Retreat, Acoustical Society of America
- 2015 *Conferee*, Postdoc Leadership Workshop, Harvard Medical School, Boston, MA
- 2015 *Travel Award*, Auditory Development: From Cochlea to Cognition Meeting, Seattle, WA
- 2012 *Young Investigator Travel Award*, Acoustical Society of America
- 2012 *Best Student Paper Award* (First Prize), Acoustical Society of America 163rd Meeting
- 2010 *Travel Award*, Graduate and Professional Student Council, University of Arizona
- 2010 *Conference Fellowship*, Lessons for Success: Developing the Emerging Scientist, American Speech-Language-Hearing Association (ASHA). Advised by Bill Yost.
- 2009 *Travel Award*, Graduate and Professional Student Council, University of Arizona
- 2009 *Galileo Circle Scholar Award*, College of Science, University of Arizona
- 2007 *Best Student Paper Award* (First Prize), Acoustical Society of America 153rd Meeting
- 2006 *Fellowship* (4 years), Center for Science, Medicine, and the Performing Arts, Dept of Speech/Language/Hearing Sciences, University of Arizona
- 2006 *Research Presentation Award*, Graduate Studies, Brigham Young University
- 2006 *Conference Travel Award*, Society for Education, Music, and Psychology Research (SEMPRE), United Kingdom
- 2004 *Outstanding Young Presenter Award*, Acoustical Society of America 147th Meeting
- 2003 *Physics and Astronomy Scholarship* (3 years), Brigham Young University
- 2002 *Inductee*, Tau Beta Pi Engineering Honour Society, Utah Gamma Chapter
- 2000 *Presidential Scholarship* (4 years), Utah State University

PUBLICATIONS/PRESENTATIONS

In preparation

Monson BB, Eaton-Rosen Z, Brownell A, Warfield SK, Liebenthal E, Inder TE, and Neil JJ (*under revision*) Differential rates of perinatal maturation of human primary and nonprimary auditory cortex.

Monson BB, McPherson C, Liebenthal E, Warfield SK, Smyser C, Inder TE, and Neil JJ (*under revision*) High-dose caffeine therapy does not alter maturation of primary auditory cortex in preterm infants.

Published

Monson BB, Anderson PJ, Matthews L, Neil JJ, Kapur K, Cheong J, Doyle LW, Thompson DK, and Inder TE (2016) Examination of the pattern of growth of cerebral tissue volumes from hospital discharge to early childhood in very preterm infants. *JAMA Pediatrics*, 170(8):772-779. doi: 10.1001/jamapediatrics.2016.0781

Vitela AD, **Monson BB**, and Lotto AJ (2015) Phoneme categorization relying solely on high-frequency energy. *Journal of the Acoustical Society of America*, 137(1), EL65-EL70.

Monson BB, Lotto AJ, and Story BH (2014) Gender and vocal production mode discrimination using the high frequencies for speech and singing. *Frontiers in Psychology: Auditory Cognitive Neuroscience*, 5:1239. doi: 10.3389/fpsyg.2014.01239

Purves D, **Monson BB**, Sundararajan J, and Wojtach W (2014) How biological vision succeeds in the physical world. *Proceedings of the National Academy of Sciences*, 111(13), 4750-4755.

Monson BB, Hunter EJ, Lotto AJ, and Story BH (2014) The perceptual significance of high-frequency energy in the human voice. *Frontiers in Psychology: Auditory Cognitive Neuroscience*, 5:587. doi: 10.3389/fpsyg.2014.00587

Morgenstern Y, Rukmini DV, **Monson BB**, and Purves D (2014) Properties of artificial neurons that report lightness based on accumulated experience with luminance. *Frontiers in Computational Neuroscience*. 8:134. doi: 10.3389/fncom.2014.00134

Monson BB, Lotto AJ, and Story BH (2014) Detection of high-frequency energy level changes in speech and singing. *Journal of the Acoustical Society of America*, 135(1), 400-406.

Monson BB, Han S, and Purves D (2013) Are auditory percepts determined by experience? *PLOS One*, 8(5): e63728. doi: 10.1371/journal.pone.0063728

Monson BB, Lotto AJ, and Story BH (2012) Analysis of high-frequency energy in long-term average spectra (LTAS) of singing, speech, and voiceless fricatives. *Journal of the Acoustical Society of America*, 132(3), 1754-1764.

Monson BB, Hunter EJ, and Story BH (2012) Directivity of low- and high-frequency energy in speech and singing. *Journal of the Acoustical Society of America*, 132(1), 433-441.

Monson BB, Lotto AJ, and Ternström S (2011) Detection of high-frequency energy changes in sustained vowels produced by singers. *Journal of the Acoustical Society of America*, 129(4), 2263-2268.

Hunter EJ, **Monson BB** and Montequin D (2010) Relations between the voice and the ear with clinical implications. *Perspectives on Voice and Voice Disorders*, 20, 96-104.

Monson BB, Sommerfeldt SD, and Gee KL (2007) Improving compactness for active noise control of a small axial cooling fan. *Noise Control Engineering Journal*, 55(4), 397-407.

Monson BB and Sommerfeldt SD (2004) Global active control of tonal noise from small axial cooling fans. *INTER-NOISE and NOISE-CON Congress and Conference Proceedings*, 9, 327-337.

Abstracts/Presentations

Monson BB, Warfield SK, Liebenthal E, Inder TE, and Neil JJ (2017) Microstructural development of human primary and nonprimary auditory cortex during the perinatal period. International Conference on Auditory Cortex, Sept 10-15, Banff, Alberta, CA

Monson BB (2017) The acoustic environment of infants born prematurely. Acoustical Society of America 173rd Meeting, June 25-29, Boston, MA

Monson BB, Warfield SK, Liebenthal E, Inder TE, and Neil JJ (2017) Microstructural development of human primary and nonprimary auditory cortex during the perinatal period. Association for Research in Otolaryngology Midwinter Meeting, Feb 11-15, Baltimore, MD

Monson BB, Liebenthal E, Warfield SK, Inder TE, and Neil JJ (2016) Macro- and microstructural development of human auditory cortex during the perinatal period. LDS Life Science Symposium, July 20-22, Lehi, UT

Monson BB, Liebenthal E, Warfield SK, Inder TE, and Neil JJ (2016) Macro- and microstructural development of human auditory cortex during the perinatal period. Auditory System Gordon Research Conference, July 10-15, Lewiston, ME

Monson BB, Eaton-Rosen Z, Warfield SK, Liebenthal E, Inder TE, and Neil JJ (2016) Maturation of auditory cortical microstructure is disrupted in preterm infants. Association for Research in Otolaryngology Midwinter Meeting, February 20-24, San Diego, CA

Monson BB, Inder TE, Liebenthal E, Warfield SK, and Neil JJ (2015) Maturation of auditory cortical microstructure in preterm infants. Auditory Development: From Cochlea to Cognition Conference, August 14-15, Seattle, WA

Monson BB, Anderson PJ, Thompson DK, Doyle LW, and Inder TE (2015) Cortical gray matter growth in very preterm children between term and 7 years is unable to correct their volumetric deficit. Pediatric Academic Societies Annual Meeting, April 25-28, San Diego, CA

Monson BB (2014) An experience-based approach to auditory perception. Acoustical Society of America 167th Meeting, May 5-9, Providence, RI (**invited**)

Monson BB (2014) Are you hearing voices in the high frequencies of speech and voice? Acoustical Society of America 168th Meeting, Oct 27-31, Indianapolis, IN (**invited**)

Monson BB, Lotto AJ, and Story BH (2014) Speech spectral intensity discrimination at frequencies above 6 kHz. Acoustical Society of America 168th Meeting, Oct 27-31, Indianapolis, IN

Vitela AD, Monson BB, and Lotto AJ (2013) Lexical segmentation of speech from energy above 5 kHz. Acoustical Society of America 166th Meeting, Dec 2-6, San Francisco, CA

Monson BB, Morgenstern Y, and Purves D (2013) Response properties of sensory neurons artificially evolved to maximize information. COSYNE, Feb 28-Mar 3, Salt Lake City, UT

Monson BB, Story BH, and Lotto AJ (2012) Analysis of high-frequency energy in singing and speech. Acoustical Society of America 163rd Meeting, May 13-18, Hong Kong

Vitela AD, Monson BB, and Lotto AJ (2012) Perception of phonetic information from energy above 5 kHz. 2012 Meeting of the American Auditory Society, March 9, Scottsdale, AZ

Lotto AJ, Monson BB, and Vitela AD (2012) Exploring the acoustic forbidden zone: The mythical entities above 5.6 kHz. Auditory Cognitive Neuroscience Society Conference, Jan. 4-6, Tucson, AZ

Monson BB, Vitela AD, Story BH, and Lotto AJ (2011) Perceptually relevant information in energy above 5 kHz for speech and singing. Acoustical Society of America 162nd Meeting, Oct. 31-Nov. 4, San Diego, CA

Monson BB, Lotto AJ, and Story BH (2011) Perception of high-frequency energy in singing and speech. Acoustical Society of America 161st Meeting, May 23-27, Seattle, WA

Monson BB, Story BH, and Lotto AJ (2010) Perception of High-Frequency Energy in Singing. The 5th International Physiology and Acoustics of Singing Conference (PAS5), Aug 10-13, Stockholm, Sweden

Monson BB (2010). A Studio with a View: Employing Visualization Software in Your Daily Teaching. NATS 51st National Conference, July 2-5, Salt Lake City, UT (**invited**)

Monson BB, Ternström S, and Lotto AJ (2009) Audibility of High Frequency in Voice. Voice Foundation's 38th Annual Symposium: Care of the Professional Voice, June 3-7, Philadelphia, PA

Monson BB, Ternström S, and Lotto AJ (2009) Audibility of High Frequency Energy in Speech and Voice. Auditory Cognitive Neuroscience Society Conference, Jan. 9-10, Tucson, AZ

Monson BB (2007) The 1:6 Ratio in Vocal Pedagogy. Acoustical Society of America 153rd Meeting, June 4-8, Salt Lake City, UT (**invited**)

Monson BB and Thomson SL, (2006) Modeling the Influence of Vocal Nodules on Vocal Fold Vibration, Voice Foundation's 35th Annual Symposium: Care of the Professional Voice, June 1-4, Philadelphia, PA

Monson BB, Hopkin JA, and Ence K (2006) The 1-to-6 ratio: Is it real? The 3rd International Physiology and Acoustics of Singing Conference (PAS3), May 10-13, York, England

Monson BB and Sommerfeldt SD (2004) Optimal Configurations for Active Control of Axial Fans, Acoustical Society of America 148th Meeting, Nov. 15-19, San Diego, CA

Monson BB and Sommerfeldt SD (2004) Global Active Control of Tonal Noise from Small Axial Cooling Fans, ACTIVE 04, September 20-22, Williamsburg, VA

Monson BB, Sommerfeldt SD, Duke C (2004) Active Noise Control of Small Axial Cooling Fans, Acoustical Society of America 147th Meeting, May 24-28, New York, NY

Invited Lectures/Seminars

Neuroscience Seminar, Brigham Young University, October 21, 2016

Hearing Research Center Seminar, Boston University, November 20, 2015

Lab for Neonatal Research, Brigham and Women's Hospital, Harvard Medical School, October 17, 2013

The Department of Speech and Hearing Sciences Seminar, George Washington University, October 16, 2013

Natural Perception Lab, Case Western Reserve University, March 7, 2013

National Association of Teachers of Singing (NATS) Northern Utah Chapter Meeting, Salt Lake City, February 19, 2011

The Department of Speech, Language, and Hearing Sciences Colloquium Series, University of Arizona, January 26, 2009

The Marcus Wallenberg Laboratory (MWL) for Sound and Vibration Research Seminar, The Royal Institute of Technology, Stockholm, Sweden, December 3, 2008

The Acoustical Society of America Brigham Young University Student Chapter Technical Meeting, September 15, 2005, and April 13, 2006

Lay-language papers

Monson BB, Story BH, and Lotto AJ (2014) Hearing voices in the high frequencies: What your cell phone isn't telling you. Acoustical Society of America 168th Meeting, Indianapolis, IN (**invited**) <https://acoustics.org/?p=499>

Monson BB, Story BH, and Lotto AJ (2012) Scoping the treble sound in singing and speech: What your phone is not telling you. ACOUSTICS 2012 HONG KONG/Acoustical Society of America 163rd Meeting, Hong Kong (**invited**) http://acoustics.org/pressroom/httpdocs/163rd/Monson_2aMU12.html

Monson BB, Vitela AD, Lotto AJ, and Story BH (2011) Perception of high-frequency sounds in singing and speech: Studying singing to learn about speech. Acoustical Society of America 162nd Meeting, San Diego, CA (**invited**) http://acoustics.org/pressroom/httpdocs/162nd/Monson_5aSCb3.html

Sommerfeldt SD, Monson BB, and Duke C (2004) Quieting Computer Fans: Fighting Sound with Sound. Acoustical Society of America 147th Meeting, New York, NY (**invited**) <http://acoustics.org/pressroom/httpdocs/147th/Sommerfeldt.htm>

TEACHING

- 2017 Instructor, Graduate course, *Neural Bases of Speech and Language*, Speech and Hearing Science Department, University of Illinois, Urbana-Champaign
- 2016 Guest lecturer, Undergraduate course, *Sensation and Perception*, Psychology Department, Brigham Young University
- 2016 Guest lecturer, Newborn Medicine Journal Club, Brigham & Women's Hospital
- 2016 Guest lecturer, Undergraduate Summer Student Seminar, Brigham & Women's Hospital
- 2013 Co-lecturer, Undergraduate/graduate course, *Biological Perception in Digital Media*, Psychology and Electrical Engineering Departments (cross-listed), National University of Singapore
– Lectures based on textbook *Sensation and Perception*, E.B. Goldstein
- 2013 Guest lecturer, Cognitive Neuroscience Discussion Group, Duke-NUS Graduate Medical School
- 2012 Guest lecturer, Undergraduate/graduate course, *Sound, Music, and Mind*, National University of Singapore
- 2010 Graduate teaching assistant, *Principles of Voice Production*, The National Center for Voice and Speech, University of Utah
- 2010 Graduate teaching assistant, *Instrumentation for Voice Analysis*, The National Center for Voice and Speech, University of Utah
- 2008 Instructor, *Acoustics for the Speech and Hearing Sciences*, Speech/Language/Hearing Science Department, University of Arizona
- 2006 Graduate teaching assistant, *Voice Technique*, Music Department, Brigham Young University
- 2004 Instructor, *Descriptive Acoustics of Music and Speech*, Physics Department, Brigham Young University

Other

- 2002-2016 Volunteer instructor for courses at the high school and university level in the field of religion and life philosophy.

AFFILIATIONS

Auditory Cognitive Neuroscience Society
Association for Research in Otolaryngology
Acoustical Society of America
IEEE
Tau Beta Pi

SERVICE/LEADERSHIP

Ad-hoc Reviewer: Proceedings of the National Academy of Sciences; Attention, Perception, and Psychophysics; NeuroImage; Frontiers in Psychology (Auditory Cognitive Neuroscience); Ear and Hearing; Journal of the Acoustical Society of America; Journal of Speech, Language, and Hearing Research; Journal of Voice

2016-present	<i>Associate Director, Pediatric Newborn Medicine Summer Student Program, Brigham and Women's Hospital</i>
2015-present	<i>Member, Education in Acoustics Committee, Acoustical Society of America</i>
2014	<i>Organizing Committee, Future of Research 2014 Symposium, Boston, MA</i>
2014-2016	<i>Member, Advocacy Committee, National Postdoc Association</i>
2014-2016	<i>Chair, Advocacy Subcommittee, Harvard Medical Postdoc Association</i>
2014-2016	<i>Member, Harvard Medical Postdoc Association Governing Board</i>
2005-2007	<i>Chair, Acoustical Society of America National Student Council</i>
2005-2006	<i>Student Council Representative, Acoustical Society of America (Musical Acoustics Technical Committee)</i>
2005-2006	<i>Chair, BYU Student Chapter Executive Council, Acoustical Society of America</i>
2005-2006	<i>Vice President, Brigham Young University Singers</i>
2005	<i>Founder, BYU Student Chapter, Acoustical Society of America</i>
2004-2005	<i>Student Council Representative, Acoustical Society of America (Signal Processing Technical Committee)</i>
2001-2002	<i>President, Cache Valley Young Single Adult Council, Logan, UT</i>
2000-2001	<i>Student Council President, Logan Institute of Religion, West Campus, Logan, UT</i>
1998-2000	<i>Volunteer Church Representative, Seoul, Korea</i>

SOFTWARE/PROGRAMMING LANGUAGES

Matlab, Linux, FSL, R, SPSS, Stata, Prism, C++, Microsoft Office

FOREIGN LANGUAGES

Korean