

Jessica Slater

EDUCATION

PhD, Communication Sciences and Disorders (Expected summer 2016)

Northwestern University, Evanston, IL

Dissertation Advisor: Dr. Nina Kraus, Auditory Neuroscience Laboratory,
Dissertation title: The role of rhythm and temporal processing in the perception of speech in noise

Specialization: Cognitive Science

MA, Communication Sciences and Disorders (2014)

Northwestern University, Evanston, IL

BA with Honors, Philosophy and Psychology (1995)

University of Oxford, Oxford, U.K.

PUBLICATIONS

Journal Articles:

1. **Slater J** and Kraus N. (2015). The role of rhythm in perceiving speech in noise: A comparison of percussionists, vocalists and non-musicians. *Cognitive Processing*
2. **Slater J**, Skoe E, Strait D, O'Connell S, Thompson E, Kraus N. (2015) Music training improves speech-in-noise perception: Longitudinal evidence from a community-based music program. *Behavioural Brain Research*
3. Strait DL, **Slater J**, O'Connell S, Kraus N. (2015) Music training relates to the development of neural mechanisms of selective auditory attention. *Developmental Cognitive Neuroscience*
4. Krizman J, **Slater J**, Marian V, Skoe E, Kraus N. (2015) Neural processing of speech in children is influenced by bilingual experience. *Neuroscience Letters*
5. **Slater J**, Strait DL, Skoe E, O'Connell S, Thompson EC & Kraus N. (2014) Longitudinal effects of group music instruction on literacy skills in low-income children. *PLoS One*
6. Kraus N, **Slater, J**, Thompson EC, Hornickel J, Strait DL, Nicol T, & White-Schwoch T. (2014) Music enrichment programs improve the neural encoding of speech in at-risk children. *The Journal of Neuroscience*
7. Kraus N, **Slater J**, Thompson EC, Hornickel J, Strait DL, Nicol T, & White-Schwoch T. (2014). Auditory learning through active engagement with sound: biological impact of community music lessons in at-risk children. *Auditory Cognitive Neuroscience*
8. Kraus N, Hornickel J, Strait DL, **Slater J**, Thompson EC. (2014) Engagement in community music classes sparks neuroplasticity and language development in

children from disadvantaged backgrounds. *Frontiers in Psychology, Cognitive Science*

9. Strait DL, **Slater J**, Abecassis V, & Kraus N. (2014) Cortical response variability as a developmental index of selective auditory attention. *Developmental Science*
10. **Slater J**, Tierney A, & Kraus N. (2013) At-risk elementary school children with one year of classroom music instruction are better at keeping a beat. *PLoS One*

Books:

1. Kraus N and **Slater J**. (2016) Beyond Words: How humans communicate through sound. *Annual Review of Psychology, Vol 67*
2. Kraus N and **Slater J**. (2015) Music and language: relations and disconnections. *Handbook of Clinical Neurology: 3rd Series The human auditory system*

Invited Presentations:

1. **Slater J** & Kraus N. (2015) Music as a Universal Language for Understanding. The Foundation for Human Potential 10th Symposium. Whitney Young Magnet High School, Chicago, IL.
2. **Slater J** & Kraus N. (2013) Biological Benefits of Musical Training in At-risk Children. Grammy Foundation Chicago Chapter, Chicago, IL.
3. **Slater J** & Kraus N. (2013) Tuning Up the Brain: Biological Benefits of Music Education. Learning & the Brain “Educating for Creative Minds” Conference, San Francisco, CA.
4. **Slater J** & Kraus N. (2012) From Notes to Neurons: The Biological Impact of Music. 3rd EISA (International Meeting of Health and Art), Escola de Artes, Sociedade Artistica Musical dos Pousos, Portugal (keynote)
5. **Slater J** & Kraus N. (2012) Tuning up the Brain, Biological Benefits of Music Education. The Musical Offering, Faculty and parent orientation for fall events, Evanston, IL.

Conference Posters and Presentations:

1. **Slater J**, Tierney A, Woodruff Carr K, Kraus N. (2015) Rhythm without beat? Defining the role of rhythm in the perception of speech in noise. Society for Music Perception and Cognition, Nashville, TN.
2. **Slater J**, Strait DL, Thompson E, Hornickel J, Kraus N. (2014) Longitudinal effects of group music instruction on speech and rhythm processing: Cognitive, perceptual and neural evidence. Neurosciences and Music-V, Dijon, France.
3. **Slater J**, Swedenborg B, Kraus N. (2014) How musical expertise influences speech perception in noise: A comparison of drummers, vocalists and non-musicians. Association for Research in Otolaryngology Symposium, San Diego, CA.
4. Strait DL, **Slater J**, Abecassis V, Kraus N. (2012) Cortical response variability as a marker of attention in children and adults and the impact of musical training. Association for Psychological Science Convention. Chicago, IL.
5. **Slater J**, Strait DL, Kraus N. (2011) Neural correlates of enhanced auditory attention in children with musical training. The Neurosciences and Music IV, Edinburgh, Scotland.

6. Strait, D, **Slater J** & Kraus N. (2011) Music lessons in early childhood promote speech perception in background noise. Music, Science and Medicine, New York Academy of Sciences, NY.

AWARDS & FELLOWSHIPS

- Predoctoral Ruth L. Kirschstein National Research Service Award (NRSA), National Institute on Deafness and Other Communication Disorders, National Institutes of Health: “Rhythm and temporal processing in the perception of speech in noise” (F31) (2015-2017)
- Northwestern University Graduate Writing Fellowship (2014-16)
- Northwestern University Cognitive Science Advanced Fellowship in Interdisciplinary Research (2014-15)
- Northwestern University School of Communication Rearwin Scholarship (2014-15, declined)

RESEARCH EXPERIENCE

Northwestern University, Evanston, IL.

Auditory Neuroscience Laboratory, PI: Dr. Nina Kraus
Ph. D. Candidate (2010-present)

Techniques

- EEG data collection of brainstem and cortical auditory-evoked responses to complex stimuli using Neuroscan and BioMARK
- Pure tone audiometry, tympanometry, OAEs
- Behavioral test administration, including language and learning evaluations (TONI, TOSWRF, TOWRE, Woodcock Johnson Cognitive assessments, NIH ToolBox) and custom drumming data collection.
- Data processing and analysis using MATLAB, Python
- Statistical analysis using SPSS, MATLAB.
- Extensive experience working with research participants, including toddlers, adolescents and adults.

Major Projects

- **ROTATION PROJECT: Attention and Cortical Response Variability**
Investigated the impact of music training on attention and cortical response variability across the lifespan, under mentorship of Dr. Dana Strait. This project introduced a novel approach to the quantification of cortical response variability, and led to co-authorship on two publications.
- **QUALIFYING PROJECT: Biological impact of music training**
Three-year longitudinal project assessing the biological impact of community-based music training, in partnership with Harmony Project in Los Angeles, CA.

Gained invaluable experience as project lead for two years, managing a large longitudinal study and troubleshooting electrophysiological data collection in challenging on-site test environments. This work yielded seven publications (three first-author) and provided groundbreaking longitudinal evidence for the impact of music education on learning and language development.

- **DISSERTATION: Rhythm and temporal processing in the perception of speech in noise**
Examines connections between music and language through the lens of musical expertise, focusing on neural and behavioral processing of sound in drummers, vocalists and non-musicians. This research has revealed a link between rhythm and speech-in-noise perception, supported by auditory working memory and neural timing precision across multiple timescales.

Leadership/Mentoring

- Responsible for maintaining IRB compliance across a large number of lab-wide projects, as well as report writing for lab-wide grants.
- Mentored undergraduate research assistant, Andrea Azem (2014-present), clinical research coordinator Joan Hargraves (2014-present) and AuD student, Britta Swedenborg (2012-13) on her capstone project: “The effects of musical experience on the adult peripheral auditory system”

University of Colorado, Boulder, CO

Neural Mechanisms of Language Processing Lab, PI: Dr. Albert Kim
Research Assistant (summer 2010)

- Electrophysiological data collection using event-related potentials to examine semantic processing in language

University of Newcastle-upon-Tyne, Newcastle, U.K.

History and Philosophy of Science, Dr. Milan Jaros
Undergraduate Research Assistant (summer 1994)

- Development of content and teaching materials for a new undergraduate program in History and Philosophy of Science.

University of Oxford, Oxford, U.K.

Department of Psychology, PI: Dr. David McHenry
Undergraduate Research Assistant (1994)

- Statistical analyses of relationships between Myers-Briggs personality type and job description.

TEACHING

Teaching Assistant/Guest lecturer

Northwestern University, Department of Communication Sciences and Disorders

- **Biological Foundations of Speech and Music** (2012-15)
Guest lectures: Acoustics of Speech, Acoustics of Music; Neural encoding of Speech and Music; Rhythm
- **Introduction to Audiology** (2014)
Guest lecture: Erroneous Hearing Loss
- **Electrophysiology of the Human Auditory System** (2012-4)
Guest lectures: Cortical Plasticity; Amplification: Speech and Music
- **Introduction to Learning Disabilities** (2011)
Guest lecture: Reading and Auditory Processing
- **Functional Neuroanatomy** (2012)
Guest lecture: Brainstem and Cranial Nerve Anatomy

Graduate Writing Fellow (2014-16)

Northwestern University

- Advise graduate students across university in writing
- Facilitate interdisciplinary writing group
- Develop and present quarterly workshops in science communication

SERVICE TO THE PROFESSION

- **Guest reviewer:** Neuroscience Letters, PloSOne, Music Perception, Experimental Brain Research, International Journal of Audiology
- **Webmaster** (2010-present) – Society for Music Perception and Cognition
- **Blog Writer** (2014-present) – Science in Society, Northwestern University

PROFESSIONAL EMPLOYMENT

I have over ten years of professional experience in media, communications and technology. This has equipped me with communication and technical skills that contribute greatly to my effectiveness and productivity as a researcher, from project management and team leadership, to systems analysis and proposal writing.

Freelance Copywriter (2009-2010)– National Endowment for Financial Education

Web Producer/Content Manager (2009) – Local Matters Inc, Denver, CO

Account Manager (2007 –2008) – Indigio/Bridgeline Software, Denver, CO

Web Development Manager (2005-2007) – Rocky Mountain News, Denver, CO

Technology Editor (2002 –2005) – Rocky Mountain News, Denver, CO

Systems Analyst (1999 –2002) – Rocky Mountain News, Denver, CO

Newsroom Technology Specialist (1997-1999) – International Herald Tribune, Paris, France