

Jennifer L. Krizman, M.S., M.A.
Ph.D. Candidate

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Education

- 2009-2016 Northwestern University, Evanston, IL**
Ph.D., Communication Sciences & Disorders
Cognitive Science Specialization
Dissertation: Influence of second language experience on auditory processing in adolescents: Consequences for real-world listening
Ph.D. Committee: Dr. Nina Kraus (chair), Dr. Viorica Marian, Dr. Steven Zecker, Dr. Casey Lew-Williams
- 2009-2013 Northwestern University, Evanston, IL**
M.A., Non-Clinical Communication Sciences
Qualifying Research Project: Speaking two languages changes how the brain processes sound
Qualifying Research Project Committee: Dr. Nina Kraus (chair), Dr. Viorica Marian, Dr. Steven Zecker
- 2008-2009 Northwestern University, Evanston, IL**
M.S., Neurobiology & Physiology
Thesis: Stimulus rate and subcortical auditory processing of speech
Thesis Committee: Dr. Nina Kraus, Dr. Garth Fowler (chair), Dr. Steven Zecker
- 2000-2005 Loyola University Chicago, Chicago, IL**
B.S., Biology; B.S., Psychology
Minor, Neuroscience; Minor, Chemistry
Research Advisor: Dr. Bill Rochlin

Research Interests The goal of my research is to understand how experience shapes the brain and its interactions with its dynamic sensory surroundings. I use electrophysiological techniques to understand how experience influences the neural encoding of sounds, especially speech, and aim to translate outcomes of this work into improvements in human communication.

Grants, Scholarships and Awards

National Institute of Deafness and Communication Disorders (2014-2016) Ruth L. Kirschstein National Research Service Award (NRSA) Predoctoral Fellowship (F31) (Recipient)

"Online measure of selective attention and neural function in real-world-listening"

Northwestern University (2014) Conference Travel Grant (Recipient)

Northwestern University (2013-2014) Cognitive Science Advanced Fellowship (Recipient)

"Understanding the influence of neural and cognitive factors on bilingual speech perception in noise"

National Institute of Health (2010-2012) T32 training grant for Translational Research (Trainee)

Spencer Foundation (2010) Field-Initiated Grant (Contributor)

“Bridging the Gap: Musical training and literacy in under-served adolescents”

Loyola University Chicago (2005) Mulcahy Research Scholarship (Recipient)

Loyola University Chicago (2005) Certificate of High Achievement (Recipient)

Loyola University Chicago (2000-2004) Loyola Academic Scholarship (Recipient)

Ongoing Projects

1. **Krizman J**, Tierney A, Nicol T, Kraus N. (in prep) Attention enhances cortical phase-locking but reduces subcortical phase-locking in humans.
2. **Krizman J**, Tierney A, Nicol T, Kraus N. (in prep) Listening in the moment: How bilingualism interacts with task demands to shape active listening.
3. **Krizman J**, Fitzroy A, Tierney A, White-Schwoch T, Kraus N. (in prep) Longitudinal investigation of sex differences on adolescent auditory development.
4. Lam S, **Krizman J**, White-Schwoch T, Kraus N. (in prep) Continued development of auditory processing in adolescence: A 4-year longitudinal study.
5. Lam S, **Krizman J**, Kraus N. (in prep) Understanding speech perception in noise through the lens of socioeconomic status.
6. MacLean J, **Krizman J**, Tierney A (in prep) Bilingual advantage in tapping to speech rhythm.
7. Fitzroy A, Skoe E, **Krizman J**, Tierney A. (in prep) Relationships between brainstem and cortical auditory processing in adolescents
8. O’Connell S, Skoe E, Strait DL, Slater J, Thompson EC, **Krizman J**, Kraus N. (in prep) Biological marker of reading ability in bilingual children.
9. Thompson EC, Slater J, White-Schwoch T, **Krizman J**, Kraus N (in prep). Neural consistency relates to auditory skills important for reading: longitudinal evidence.

Publications

1. Skoe E, **Krizman J**, Kraus N. (under review) Top-down guided learning: Evidence from simultaneous brainstem and cortical auditory-evoked potentials.
2. **Krizman J**, Bradlow A, Lam S, Kraus N. (in press) How bilinguals listen in noise: linguistic and non-linguistic factors. *Bilingualism: Language & Cognition*.
3. **Krizman J**, Skoe E, Kraus N. (in press) Bilingual enhancements have no socioeconomic boundaries. *Developmental Science*. doi: 10.1111/desc.12347
4. Fitzroy A, **Krizman J**, Tierney A, Agouridou M, Kraus N. (2015) Maturation of auditory cortical function during adolescence: A longitudinal approach. *Frontiers in Human Neuroscience*. 9:530.
5. **Krizman J**, Tierney A, Fitzroy A, Skoe E, Amar J, Kraus N. (2015) Continued maturation of auditory brainstem function during adolescence: A longitudinal approach. *Clinical Neurophysiology*. 126: 2348-2355.
6. Tierney A, **Krizman J**, Kraus N. (2015) Auditory enrichment through music training alters the course of adolescent auditory development. *Proceedings of the National Academy of Sciences*. 112 (32): 10062–10067.
7. **Krizman J**, Slater J, Skoe E, Marian V, Kraus N. (2015) Biological enhancements in speech processing track with amount of bilingual experience during childhood. *Neuroscience Letters*. 5: 48-53.

8. **Krizman J**, Marian V (2015) Neural consequences of bilingualism for cortical and subcortical function. In J.W. Schwieter (Ed.), *Cambridge Handbook of Bilingualism*. Cambridge University Press. pp 657-683.
9. Skoe E, **Krizman J**, Spitzer E, Kraus N. (2015) The bayesian brainstem: Prior experience biases the brainstem's sensitivity to patterns. *Journal of Cognitive Neuroscience*. 27(1): 124-140.
10. **Krizman J**, Skoe E, Marian V, Kraus N. (2014) Bilingualism increases neural response consistency and attentional control: Evidence for the convergence of sensory and cognitive processing. *Brain and Language*. 128: 34–40.
11. Skoe E, **Krizman J**, Anderson S., Kraus N. (2015) Stability and plasticity of auditory brainstem function across the lifespan. *Cerebral Cortex*. 25(6): 1415-1426.
12. Tierney A, **Krizman J**, Skoe E, Johnston K, Kraus N. (2013) High school music classes enhance the neural processing of speech. *Frontiers in Educational Psychology*. 4:855. doi: 10.3389/fpsyg.2013.00855.
13. Skoe E, **Krizman J**, Kraus N. (2013) The disadvantaged brain: The interaction between auditory function and socioeconomic standing. *Journal of Neuroscience*. 33(44):17221–17231.
14. Skoe E, **Krizman J**, Spitzer E, Kraus N. (2013) The auditory brainstem is a barometer of rapid auditory learning. *Neuroscience*. 243: 104-114.
15. **Krizman J**, Marian V, Shook A, Skoe E, Kraus N. (2012) Subcortical encoding of sound is enhanced in bilinguals and relates to executive function advantages. *Proceedings of the National Academy of Sciences*. 109(20): 7877-7881.
16. **Krizman J**, Skoe E, Kraus N. (2012) Sex differences in auditory subcortical function. *Clinical Neurophysiology*. 123: 590-597.
17. **Krizman J**, Skoe E, Kraus N. (2010) Stimulus rate and subcortical auditory processing of speech. *Audiology Neurotology*. 15: 332-342.

Invited Talks

Krizman J, Kraus N. (2013) Speaking two languages changes how the brain processes sound. Teachers of English to Speakers of Other Languages (TESOL) Convention. Dallas, TX.

Talks

Krizman J, Slater J, Marian V, Skoe E, Kraus N. (2013) Biological enhancements in speech processing depend on bilingual experience. International Conference on Multilingualism. McGill University, Montreal, Canada.

Krizman J, Marian V, Kraus N. (2012) Neural response consistency is enhanced in bilinguals and relates to sustained attention abilities. American Speech-Language-Hearing Association (ASHA) Conference. Atlanta, GA.

Contributed talks

Skoe E, **Krizman J**, Savitsky D, Kraus N. (2013) The disadvantaged brain: Auditory function and socio-economic standing. Annual MidWinter Meeting for the Association for Research in Otolaryngology. Baltimore, MD.

Invited Seminars

Skoe E, **Krizman J** (2009) BioMARK: Biological marker of auditory processing. Rush University. Chicago, IL.

Poster Presentations

1. **Krizman J**, Kraus N. (May, 2016) Sex differences in the FFR identify (at least) three distinct components of auditory processing. 2nd Annual FFR Workshop. Boston, MA.
2. Woodruff Carr K, Otto-Meyer S, Thompson E, **Krizman J**, White-Schwoch T, Davies E, MacLean J, Kraus N. (2016) Developmental Sex Differences for Speech Processing in Early Childhood. MidWinter Meeting of the Association for Research in Otolaryngology. San Diego, CA.
3. **Krizman J**, Bradlow A, Lam S, Kraus N. (2015) Bilingual hearing in noise: Strengths and weaknesses. Society for the Neurobiology of Language Conference. Chicago, IL.
4. Lam S, **Krizman J**, Kraus N. (2015) Understanding speech perception in noise through the lens of socioeconomic status. Society for the Neurobiology of Language Conference. Chicago, IL.
5. **Krizman J**, Tierney A, Skoe E, Kraus N. (2014) High school music classes enhance the neural processing of speech in noise. Annual MidWinter Meeting for the Association for Research in Otolaryngology. San Diego, CA.
6. Skoe E, **Krizman J**, Anderson S, Kraus N. (2013) Stability and plasticity of brainstem function across the lifespan. Annual MidWinter Meeting for the Association for Research in Otolaryngology. Baltimore, MD.
7. **Krizman J**, Skoe E, Marian V, Kraus N. (2012) Bilingualism and neural stability: examining the intersection of cognitive and sensory processing. Neurobiology of Language Conference, San Sebastian, Spain.
8. **Krizman J**, Shook A, Skoe E, Marian V, Kraus N. (2012) Speaking two languages promotes enhanced encoding of sound. Association for Psychological Science Convention. Chicago, IL.
9. **Krizman J**, Marian V, Shook A, Kraus N. (2012) Bilingual enhancements in sound processing relate to executive function advantages. Cognitive Neuroscience Society Meeting, Chicago, IL.
10. **Krizman J**, Marian V, Shook A, Skoe E, Kraus N. (2011) Bilinguals show enhanced subcortical representation of sound. Neurobiology of Language Conference, Annapolis, MD.
11. **Krizman J**, Marian V, Shook A, Skoe E, Kraus N. (2011) Bilinguals show enhanced subcortical representation of sound. Society for Neuroscience, Washington D.C.
12. Shook A, Marian V, **Krizman J**, Kraus N. (2011) Bilingual experience enhances subcortical encoding of sound. The Psychonomic Society. Seattle, WA.
13. **Krizman J**, Marian V, Shook A, Skoe E, Kraus N. (2011) Bilinguals show enhanced subcortical representation of sound. Advances and Perspectives on Auditory Neurophysiology (APAN), Washington, D.C.
14. **Krizman J**, Skoe E, Kraus N (2009). Stimulus rate inordinately stresses subcortical encoding of speech in poor readers. Society for Neuroscience. Chicago, IL.
15. **Krizman J**, Rochlin MW (2005) Ephrins Expressed in Gustatory and Adjacent Epithelial Cells. Mulcahy Scholars Research Presentation. Loyola University Chicago. IL.
16. **Krizman J**, Rochlin MW (2005) The roles of Ephrin and Eph in axon guidance. Parmlly Hearing Institute, Loyola University Chicago. IL.
17. **Krizman J**, Rochlin MW (2004) Ephrin and Eph patterning in the rodent gustatory system. Undergraduate Research Symposium. Loyola University Chicago, IL.

Teaching Experience

Guest Lecturer, Human Communication Disorders, Gen Com 108
Northwestern University, Department of Communication Sciences and Disorders
Professor: Dr. Steven Zecker
"The biology of reading and its remediation" (2012)

Guest Lecturer, Biological Foundations of Speech and Music, CSD 310/410
Northwestern University, Department of Communication Sciences and Disorders
Professor: Dr. Nina Kraus
"Language sculpts the brain: Evidence from single and dual language learning"
(2016, 2015)
"Auditory pattern learning" (2016, 2015, 2014)
"Bilingualism and the brain" (2014, 2013, 2012, 2011)

Guest Lecturer, Electrophysiology of the Auditory System, CSD 425
Northwestern University, Department of Communication Sciences and Disorders
Professor: Dr. Nina Kraus
"Hearing aids: Underlying neurobiology" (2014)
"Cortical development and plasticity: evidence from evoked potentials" (2014)
"Introduction to electrophysiologic recordings: averaging, intensity and polarity"
(2014, 2013)
"Introduction to electrophysiologic recording: electrode montage" (2014, 2013)
"Cortical development and plasticity: evidence from evoked potentials" (2013)
"Recording the brainstem response to speech: the cABR" (2013, 2012, 2011)
"Using ABR rate and filter settings in neurodiagnostics" (2013, 2012)
"The auditory brainstem response: Rate and filter effects" (2011, 2010)

Directed Teaching, Electrophysiology of the Auditory System, CSD 425 (2014)
Northwestern University, Department of Communication Sciences and Disorders
Professor: Dr. Nina Kraus

Teaching Assistant, Electrophysiology of the Auditory System, CSD 425 (2013, 2010)
Northwestern University, Department of Communication Sciences and Disorders
Professor: Dr. Nina Kraus

Teaching Assistant, Neurobiology of Communication, CSD 202 (2013, 2010)
Northwestern University, Department of Communication Sciences and Disorders
Professor: Dr. Jonathan Siegel

Teaching Assistant, Biological Foundations of Speech and Music, CSD 310/410 (2013)
Northwestern University, Department of Communication Sciences and Disorders
Professor: Dr. Nina Kraus

Teaching Assistant, Anatomy & Physiology of the Peripheral Hearing Mechanism, CSD 302
(2012)
Northwestern University, Department of Communication Sciences and Disorders
Professor: Dr. Jonathan Siegel

Teaching Assistant, Introduction to Learning Disabilities, CSD 202 (2010)
Northwestern University, Department of Communication Sciences and Disorders
Professor: Dr. Steven Zecker

Teaching Assistant, Pediatric Audiology, CSD 419 (2010)
Northwestern University, Department of Communication Sciences and Disorders
Professor: Dr. Susan Erler

Community Outreach

Thompson E, **Krizman J**, Kraus N. (2015) Sports and the Brain: Meeting with high school student athletes and their coaches to facilitate collaboration for examining effects of concussion on auditory brain function. North Shore Country Day School. Winnetka, IL.
Hornickel J, **Krizman J**, Kraus N. (2012) Hearing and the Brain: Talk given to 1st through 5th grades. North Shore Country Day School. Winnetka, IL.
Krizman J, Strait D, Kraus N. (2010) Music and the Brain: Talk given to 9th grade students. Pritzker College Prep: A Noble Charter School Campus. Chicago, IL.

Mentorship

Silvia Lam, Northwestern University Communication Sciences & Disorders PhD Student (2014-present)
Jessica MacLean, Indiana University Undergraduate (2014-present)
Kevin Steinhauser, University of Illinois at Urbana-Champaign (2014-2015)
Manto Agouridou, Mercer University Undergraduate (2013-2015)
Yardain Amar, Northwestern University Neurobiology & Physiology Masters Student (2013-2014)
Adam Maloney, Elon University Undergraduate (2013)
Natasha Ramanujam, Northwestern University Undergraduate (2013)
Camilla Zecker, Evanston Township High School's Biology Honors Internship Program (2012)
John Hruska, Evanston Township High School's Biology Honors Internship Program (2012)
Sarah Latimer, Evanston Township High School's Biology Honors Internship Program (2012)
Steven Medina, Evanston Township High School's Biology Honors Internship Program (2012)
Adam Rubman, Evanston Township High School (2012)
Jenya Rubman, Evanston Township High School (2012)
Elizabeth Barfield, Furman University Undergraduate (2011)
Cullen Fairchild, Northwestern University Undergraduate (2010)
Dawna Bagherian, Illinois Mathematics and Science Academy Student Inquiry and Research (SIR) Program (2009)
Carolyn Hsu, Northwestern University Undergraduate (2008)

Professional Affiliations

Association for Research in Otolaryngology (Student member, 2013 – present)
Association for Psychological Science (Student member, 2011 – 2012)
Cognitive Neuroscience Society (Student member, 2011 – present)
Society for the Neurobiology of Language (Student member, 2010 – present)
Society for Neuroscience (Student member, 2008 – present)

Referee Service

Scientific Reports; Developmental Science; Journal of the Acoustical Society of America; Frontiers in Neuroscience; Plos One; Journal of Cognitive Neuroscience; Hearing Research; Ear and Hearing; Journal of Speech, Language & Hearing Research; Child Development; Brain Research; Language, Cognition, and Neuroscience; International Journal of Audiology; Neuroscience Letters; Psychoneuroendocrinology; Perceptual and Motor Skills; National Science Foundation grant proposal review

Additional Skills

Programming Languages: Matlab, CSS/HTML, TCL, Python
ERP systems: Neuroscan, BioLogic AEP, IHS
Applications: SPSS, Microsoft Access, Adobe CS6 (Dreamweaver, Photoshop), Adobe Captivate 7