Jacie R. McHaney

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EDUCATION

A.S., General Studies in Science
Austin Community College,
Austin, TX

B.S., Psychology, *Psychology Honors*, Biology Minor
The University of Texas at Austin,
Austin, TX

Ph.D., Communication Science and Disorders
University of Pittsburgh,
Pittsburgh, PA

APPOINTMENTS & POSITIONS

05/2023-06/2023 **Research Associate,** *University of Pittsburgh*
Communication Science and Disorders

07/2023-Present **Research Assistant Professor,** *Northwestern University*
Roxelyn and Richard Pepper Department of Communication Sciences and Disorders

GRANT SUPPORT

Extramural

07/2024 – 06/2027 **Early Career Researcher Award** $600,000
R21DC022031
Role: Co-Investigator (PI: J. Lau)
National Institute for Deafness and Communication Disorders
The Role of Context in the Neural Processing of Speech in Autism Spectrum Disorder

Pending

07/2025-06/2028 **Early Career Researcher Award** $600,000
R21DC022914
Role: Principal Investigator
National Institute for Deafness and Communication Disorders
The Role of Extended High Frequencies on Speech Perception Challenges in Aging

Intramural

02/2025-01/2026 **Ryan Acceleration Funds** $242,474
Role: Co-PI
Neura-Speech: Bridging the Diagnostic Gap for Hidden Hearing Loss Through Electrophysiological Speech Markers

Prior Support

08/2015 – 12/2015 **Undergraduate Research Fellowship** $1,000
The University of Texas at Austin
These funds supported research for my undergraduate honors thesis.

09/2019 – 08/2021 **Training Program in Auditory and Vestibular Neuroscience** $85,252
T32DC011499
Role: Predoctoral Trainee (PIs: K. Kandler and B. Yates)
National Institute for Deafness and Communication Disorders
Training in Auditory and Vestibular Neuroscience

02/2022 – 01/2023 **University of Pittsburgh Clinical and Translational Science Institute Quantitative Methodologies Pilot Program** $25,000
UL1TR001857
Role: Co-Principal Investigator
National Center for Advancing Translational Sciences
Decision Strategies in Speech Perception in Aging

05/2022 – 04/2023 **NRSA Individual Predoctoral Fellowship to Promote Diversity in Health-Related Research** $145,608
F31DC020085
Role: Principal Investigator
National Institute for Deafness and Communication Disorders
Neural Mechanisms of Speech Perception in Noise in Middle-Age

11/2023 – 05/2024 **Undergraduate Research Assistant Program** $1,600
Role: Mentor
Northwestern University Office of Undergraduate Research
Neurophysiological indices of mechanisms underlying auditory processing
These funds supported an undergraduate research assistant for 100 hours of laboratory work.

04/2024-09/2024 **Summer Undergraduate Research Program** $4,000
Role: Mentor
Northwestern University Office of Undergraduate Research
Effect of Vibrotactile Stimulation on F0 Encoding
These funds supported an undergraduate research assistant for 8 weeks of full-time work over the summer for this project. This was one of the top-rated proposals and received special funding from an endowment.

ABSENCE FROM RESEARCH

08/2021 – 02/2022 Parental Leave

PUBLICATIONS

Peer-reviewed

1. Koski, J. E., **McHaney, J. R.**, Rigney, A. E., & Beer, J. S. (2020). Reconsidering Longstanding Assumptions About the Role of Medial Prefrontal Cortex (MPFC) in Social Evaluation. *NeuroImage*, *214*, 116752.
2. Llanos, F., **McHaney, J. R.,** Schuerman, W. L., Yi, H. G., Leonard, M. K., & Chandrasekaran, B. (2020). Non-invasive peripheral nerve stimulation selectively enhances speech category learning in adults. *npj Science of Learning, 5*(1), 1-11.
3. **McHaney, J. R.,** Gnanateja, G. N., Smayda, K. E., Zinszer, B. D., & Chandrasekaran, B. (2021). Cortical Tracking of Speech in Delta Band Relates to Individual Differences in Speech in Noise Comprehension in Older Adults. *Ear and Hearing, 42*(2), 343-354.
4. **McHaney, J. R.,** Tessmer, R., Roark, C. L., & Chandrasekaran, B. (2021). Working memory relates to individual differences in speech category learning: Insights from computational modeling and pupillometry. *Brain and Language, 222,* 105010.
5. Lescht, E., Venker, C., **McHaney, J. R.,** Bohland, J., & Hampton Wray, A. (2022). Novel Word Recognition in Childhood Stuttering. *Topics in Language Disorders, 42*(1), 41-56.

6. Cancel, V. E.*, **McHaney, J. R.***, Milne, V. Palmer, C., & Parthasarathy, A. (2023). A data-driven approach to identify a rapid screener for auditory processing disorder testing referrals in adults. *Scientific Reports, 13*, 13636. ***(*co-first authors).***
7. **McHaney, J. R.,** Schuerman, W. L., Leonard, M. K., & Chandrasekaran, B. (2023). Transcutaneous vagus nerve stimulation modulates pupillary responses during non-native speech category learning. *Journal of Speech, Language, and Hearing Research*, *66*(10), 3825-3843.
8. Mukhopadhyay, M., **McHaney, J. R.,** Chandrasekaran, B., & Sarkar, A. (2024). Bayesian semiparametric longitudinal inverse-probit mixed models for category learning. *Psychometrika*.
9. Roark, C. L., Paulon, G., Rebaudo, G., **McHaney, J. R.**, Sarkar, A., & Chandrasekaran, B. (2024). Individual differences in working memory impact the trajectory of non-native speech category learning. *PLOS ONE, 19*(6), e0297917.
10. Zink, M. E.*, Zhen, L.*, **McHaney, J. R.*,** Klara, J., Yurasits, K., Cancel, V., Flemm, O., Mitchell, C., Datta, J., Chandrasekaran, B., & Parthasarathy, A. (2024). Increased listening effort and cochlear neural degeneration underlie behavioral deficits in speech perception in noise in normal hearing middle-aged adults. *eLife,* 13:RP102823. ***(*co-first authors).***
11. **McHaney, J. R.,** Hancock, K. E., Polley, D. B., & Parthasarathy, A. (2024). Sensory representations and pupil-indexed listening effort provide complementary contributions to multi-talker speech intelligibility. *Scientific Reports, 14*(1), 30882.

Archived Pre-prints

1. **McHaney, J. R.,** Roark, C. L., McGinley, M. J., & Chandrasekaran, B. (2024). Combining pupillometry and drift-diffusion models reveals auditory category learning dynamics. *bioRxiv*. doi: 10.1101/2024.04.16.589753.
2. Guo, Z.*, **McHaney, J. R.*,** Parthasarathy, A., & Chandrasekaran, B. (2024). Reduced neural distinctiveness of speech representations in the middle-aged brain. *bioRxiv*. doi: 10.1101/2024.08.28.609778. ***(*co-first authors).***

CONFERENCE POSTER PRESENTATIONS

1. Koski, J. E., **Richardson, J. B.**[†]**,** Rigney, A. E., & Beer, J. S. (April 2016). Too much information or warm fuzzy feelings? Understanding the role of MPFC in processing the self versus others. Poster presented at the Social and Affective Neuroscience (SANS) Annual Meeting, New York, NY.
2. Smayda, K. E, **McHaney, J. R.**, & Chandrasekaran, B. (May 2017). Music Training for the Enhancement of Speech-In-Noise Processing in Older Adults. Poster presented at the Texas Leadership Luncheon, Austin, TX.
3. **McHaney, J. R.**, Zinszer, B. D., Smayda, K. E., & Chandrasekaran, B. (March 2018). Effect of listening environment on cortical entrainment to continuous speech in older adults. Poster presented at the Cognitive Neuroscience Society 25th Annual Meeting, Boston, MA.
4. Llanos, F., **McHaney, J. R.,** Leonard, M. K., Schuerman, W. L., Yi, H. G., & Chandrasekaran, B. (August 2018). Transcutaneous vagus nerve stimulation enhances non-native speech categorization. Poster presented at the 10th Annual Meeting of the Society for the Neurobiology of Language, Québec City, Québec, Canada.

[†] Last name changed to McHaney from Richardson in 2017

5. **McHaney, J. R.,** Zinszer, B. D., Smayda, K. E., Xie, Z., & Chandrasekaran, B. (December 2018). Cortical entrainment to the speech envelope relates to speech comprehension in older adults under adverse listening conditions. Poster presented at the 12th Annual Aging Institute Research Day, Pittsburgh, PA.
6. **McHaney, J. R.**, Schuerman, W. L., Leonard, M. K., & Chandrasekaran, B. (October 2020). Non-invasive peripheral nerve stimulation paired with speech sounds modulates pupillary responses and selectively enhances learning. Poster presented at the Twelfth Annual Meeting of the Society for Neurobiology of Language, Virtual.
7. Roark, C. L., Reetzke, R., Llanos, F., **McHaney, J. R.**, & Chandrasekaran, B. (December 2020). Learning Mandarin tone categories with natural speech and a non-speech homologue. Poster to be presented at the 179th Meeting of the Acoustical Society of America, Chicago, IL. (Conference canceled)
8. Lescht, E., Venker, C., **McHaney, J. R.,** & Hampton Wray, A. (January 2021). Novel word learning in children who stutter. Poster presented at the 12th Oxford Dysfluency Conference, Virtual.
9. **McHaney, J. R.,** Hancock, K. E., Polley, D. B., & Parthasarathy, A. (February 2022). Neurophysiological markers of central gain and their relationship to speech-in-noise intelligibility. Poster presented at the 45th Annual MidWinter Meeting of the Association for Research in Otolaryngology, Virtual.
10. Cancel, V. E., **McHaney, J. R.,** Milne, V., Palmer, C., & Parthasarathy, A. (February 2022). Hearing Difficulties with Normal Audiograms: Insights from the Auditory Processing Disorder Test Battery. Poster presented at the 45th Annual MidWinter Meeting of the Association for Research in Otolaryngology, Virtual.
11. Cancel, V. E., **McHaney, J. R.,** Milne, V., Palmer, C., & Parthasarathy, A. (April 2022). Hearing Difficulties with Normal Audiograms: Insights from the ADP Test Battery. Poster presented at the American Academy of Audiology 2022 + HearTECH Expo, St. Louis, MO. *Received the James and Susan Jerger Award for Excellence in Student Research, American Academy of Audiology Foundation*.
12. **McHaney, J. R.,** Yurasits, K., Hancock, K. E., Polley, D. B., & Parthasarathy, A. (July 2022). Neurophysiological markers of central gain and their relationship to speech-in-noise intelligibility in normal-hearing listeners. Poster presented at the Auditory System Gordon Research Conference: Preventing Loss and Recovering Function of the Auditory System, Smithfield, RI.
13. **McHaney, J. R.,** Zhen, L., Roark, C. L., Parthasarathy, A. & Chandrasekaran, B. (October 2022). Sensory Encoding and Decision-making in Speech Perception in Noise. Poster presented at the Fourteenth Annual Meeting of the Society for Neurobiology of Language, Philadelphia, PA.
14. Zhen, L. Q., **McHaney, J. R.,** Zink, M. E., Mitchell, C., Parida, S., Anthony, S., Hallihan, M., Brown, C. A., Chandrasekaran, B., & Parthasarathy, A. (February 2023). Age-related Differences in Neural and Perceptual Signatures of Temporal Fine Structure Processing Underlying Muti-talker Speech Intelligibility. Poster to be presented at the Association for Research in Otolaryngology 46th Annual MidWinter Meeting, Orlando, FL.
15. Zink, M. E., **McHaney, J. R.,** Mitchell, C., Hallihan, M., Anthony, S., Chandrasekaran, B., & Parthasarathy, A. (February 2023). Neurophysiological Markers of Sensory Gain and Their Relationship to Speech Perception in Noise in Young and Middle-Aged Adults. Poster to be presented at the Association for Research in Otolaryngology 46th Annual MidWinter Meeting, Orlando, FL.
16. Parker, A., **McHaney, J. R.,** Xie, Z., Chandrasekaran, B., & Hampton Wray, A. (February 2023). Cortical Tracking of Continuous Speech-in-Noise: Children's Use of Linguistic and Acoustic Information. Poster to be presented at the Association for Research in Otolaryngology 46th Annual MidWinter Meeting, Orlando, FL.
17. **McHaney, J. R.** & Chandrasekaran, B. (March 2023). Lexical knowledge facilitates phoneme categorization at intermediate noise levels. Poster presented at the American Auditory Society's 50th Annual Scientific & Technology Conference, Scottsdale, AZ.

18. Mitchell, C., Zink, M. E., **McHaney, J. R.,** Anthony, S., Hallihan, M., Chandrasekaran, B., & Parthasarathy, A. (April 2023). Relationship between altered auditory temporal processing and speech perception in noise in young and middle-aged adults. Poster to be presented at the American Academy of Audiology 2023 + HearTECH Expo, Seattle, WA.
19. Yurasits, K., Zhen, L. Q., Parida, S., Klara, J., **McHaney, J. R.,** Cancel, V., Zink, M. E., Mitchell, C., Chandrasekaran, B., & Parthasarathy, A. (April 2023). Age-related changes in the representation of stimulus temporal fine structure cues and their relationship to multi-talker speech intelligibility. Poster to be presented at the American Academy of Audiology 2023 + HearTECH Expo, Seattle, WA. *Received the James and Susan Jerger Award for Excellence in Student Research, American Academy of Audiology Foundation*.
20. Parker, A., **McHaney, J. R.,** Coleman, B., Chandrasekaran, B., & Hampton Wray, A. (November 2023). Phonological Awareness and the Impact of Noise Level on Speech Perception. Poster presented at the 2023 American Speech-Language-Hearing Association Convention, Boston, MA.
21. Guo, Z., **McHaney, J. R.,** Xiong, S., Chandrasekaran, B., & Parthasarathy, A. (June 2024). Decoding single-trial frequency-following responses to speech using an animal model. Poster presented at the 2024 Frequency Following Response Workshop, Chicago, IL.
22. **McHaney, J. R.,** Guo, Z., Gnanateja, G. N., Parthasarathy, A., & Chandrasekaran, B. (October 2024). Reduced temporal processing of fundamental frequency in middle-age impacts higher-level linguistic features for speech perception. Poster presented at the Advances and Perspectives in Auditory Neuroscience Annual Meeting, Chicago, IL.
23. Guo, Z., **McHaney, J. R.**, Xie, Z., & Chandrasekaran, B. (October 2024). Reduced neural encoding of phonemes in middle-aged adults. Poster presented at the Advances and Perspectives in Auditory Neuroscience Annual Meeting, Chicago, IL.
24. Choi, J. Y., Xiong, S., **McHaney, J. R.,** & Chandrasekaran, B. (October 2024). Pupillary measures of identifying talkers in native language and unfamiliar language. Poster presented at the Advances and Perspectives in Auditory Neuroscience Annual Meeting, Chicago, IL.
25. Parker, A., **McHaney, J. R.,** Coleman, B., Block, A., Chandrasekaran, B., & Hampton Wray, A. (October 2024). Receptive Language Proficiency Impacts Cortical Tracking of Continuous Speech in Noise in Children. Poster presented at the Sixteenth Annual Meeting of the Society for Neurobiology of Language, Brisbane, Australia.
26. Parker, A., **McHaney, J. R.**, Xie, Z., Chandrasekaran, B., & Hampton Wray, A. (December 2024). Developmental and Individual Differences in Red Tracking of Speech-on-Speech. Poster presented at the 2024 American Speech-Language-Hearing Association Convention, Seattle, WA.
27. Parker, A., **McHaney, J. R.,** Coleman, B., Chandrasekaran, B., & Hampton Wray, A. (May 2025). Language Skills Relate to Neural Tracking of Continuous Speech-on-Speech in Children. Poster abstract submitted for consideration to the Society for Research in Child Development 2025 Biennial Meeting, Minneapolis, MN.

CONFERENCE PODIUM PRESENTATIONS

1. **McHaney, J. R.,** Zhen, L., Anthony, S., Xie, Z., Parthasarathy, A., & Chandrasekaran, B. (February 2023). Deficits in Sensory Decision-Making Underlie Self-Perceived Hearing Difficulties. Talk presented at the Association for Research in Otolaryngology 46th Annual MidWinter Meeting, Orlando, FL.

INVITED PRESENTATIONS

Aug 2023 *Neural encoding of the fundamental frequency supports the decisional processes in speech in noise categorization,* Mini-symposium on Speech processing in challenging listening environments: Towards a multi-dimensional framework, Northwestern University, Evanston, IL.

Mar 2024 *Neural Mechanisms of Speech Perception in Noise in Middle-age*, Ear Day, RUSH University, Chicago, IL

Jan 2025 *Rethinking speech perception challenges in adults without hearing loss,* ContinuEd, AudiologyOnline and Association of VA Audiologists, Virtual

PRESENTATIONS

Aug 2017 *Effect of listening environment on continuous speech processing in older adults*, Sixth Annual Communication Sciences and Disorders Research Blitz, The University of Texas at Austin, Austin, TX.

Dec 2019 *Aging, cognition, and speech processing*, Auditory and Vestibular Neuroscience T32 Seminar, University of Pittsburgh, Pittsburgh, PA.

Mar 2020 *Cortical Tracking of Speech in Older Adults*, Auditory and Vestibular Neuroscience T32 Retreat, University of Pittsburgh, Pittsburgh, PA.

Apr 2020 *Cortical Tracking of Speech in Older Adults*, Department of Communication Science and Disorders Research Round Table Seminar, University of Pittsburgh, Pittsburgh, PA.

Jan 2021 *Working Memory During Non-Native Speech Category Learning*, Auditory and Vestibular Neuroscience T32 Seminar, University of Pittsburgh, Pittsburgh, PA.

Feb 2021 *Influence of Working Memory on Non-Native Speech Category Learning*, Department of Communication Science and Disorders Research Round Table Seminar, University of Pittsburgh, Pittsburgh.

Apr 2021 *Working Memory Influences Speech Category Learning: A Pupillometry Study,* Auditory and Vestibular Neuroscience T32 Annual Retreat, University of Pittsburgh, Pittsburgh, PA.

Nov 2022 *Sensory and Cognitive Factors Underlying Individual Variability in Speech in Noise Perception,* Hearing and Cookies Seminar Series, University of Pittsburgh, Pittsburgh, PA.

MEDIA COVERAGE

- FACETS. (2019). Team-Based Science at its best. [press release]. Retrieved from https://issuu.com/pittshrs/docs/facets_spring_19_pdf/28
- Inverse (2020). Scientists discover brain hack that improves language abilities by 13%. Retrieved from Scientists discover brain hack for language learning (inverse.com)
- Psychology Today. (2020). Can Vagus Nerve Stimulation Improve How We Learn? [press release]. Retrieved from Can Vagus Nerve Stimulation Improve How We Learn? | Psychology Today
- Science Daily. (2020). Non-invasive nerve stimulation boosts learning of foreign language sounds. [press release]. Retrieved from Non-invasive nerve stimulation boosts learning of foreign language sounds -- ScienceDaily

HONORS & AWARDS

2012 Phi Theta Kappa Honor Society
2015 University Honors, The University of Texas at Austin
2015 Psi Chi International Honor Society in Psychology

2022 Society for Neurobiology of Language Travel Award
2022 Gordon Research Conference – Auditory System Travel Funds
2023 Association for Research in Otolaryngology Childcare Grant
2024 Association for Research in Otolaryngology Childcare Grant
2025 ASHA Lessons for Success, Protégé

PROFESSIONAL MEMBERSHIPS

Society for Neurobiology of Language
Association for Research in Otolaryngology
American Auditory Society

AD-HOC JOURNAL REVIEWER

2023 *Journal of Speech, Language, and Hearing Research*
2023 *Brain and Language*
2023 *iScience*
2024 *American Journal of Speech-Language Pathology*
2024 *Journal of Speech, Language, and Hearing Research*
2024 *Brain and Language*
2024 *Journal of Neurolinguistics*
2024 *NeuroImage*
2025 *American Journal of Audiology*
2025 *Brain and Language*
2025 *Neuromodulation: Technology at the Neural Interface*

SERVICE

University of Pittsburgh

2019-2021 **PhD Student Representative**, Communication Science and Disorders
2020-2021 **Organizer,** Communication Science and Disorders Research Round Table Seminar

Northwestern University

2023 **Organizer,** Mini-symposium on Speech processing in challenging listening environments: Towards a multi-dimensional framework
2024 – Present **Member,** Committee for Data Collection of CSD Department Metrics
2024 **Judge,** Undergraduate Research and Creative Arts Exposition
2024 – Present **Reviewer,** Northwestern University Undergraduate Research Grant Committee

Extramural

2024 **Mentor,** Career Development Lunch for Trainees, Advances and Perspectives in Auditory Neuroscience Annual Meeting, Chicago, IL

TEACHING

University of Pittsburgh

2021 **Assistant Instructor,** Neuroscience of Communication (CSD 2110)
2021 **Guest Lecturer**, *A&P of the Auditory System,* Introduction to Neuroscience of Communication (CSD 1237)
2023 **Guest Lecturer,** *Hearing Loss and Cognition,* Neuroscience of Communication (CSD 2110)
2023 **Guest Lecturer,** *Frequency-following Responses,* Advanced Physiological Assessment (CSD 2252)
2024 **Guest Lecturer,** *Frequency-following Responses,* Advanced Physiological Assessment (CSD 2252)

Northwestern University

2024 **Guest Lecturer,** *Coding for Career Growth,* Professional Development for PhD Students (CSD 545)

2025 **Guest Instructor,** *Hands-on Neuroscience Lab Demonstration,* Engaging Audiences: Narrative and Neuroscience (CMN 101)

MENTORSHIP

Postdoctoral Associates

Northwestern University

2023- Zhe-chen Guo, PhD
2023- Ja Young Choi, PhD

PhD Students

Northwestern University

2023- Shengyue Xiong

Doctorate of Audiology Students

University of Pittsburgh

2021-2022 Victoria Cancel
2022-2023 Kimberly Yurasits

Northwestern University

2024- Mollee Feeney
2024- Ishika Choksi
2024- Lauren Preston

Undergraduate Research Assistants

University of Texas at Austin

2016 Karen Lin
2016 Kay Torriente
2016 Isabelle Arseneau Bruneau
2016-2017 Stephen Slaughter
2016-2017 Dominique Arzola
2016-2017 Danielle De La Rosa
2016-2017 Abigail Hall
2016-2017 Megan Burke
2017-2018 Sarina Lieberman
2017-2018 Sarah Campbell
2017-2018 Priyanka Deshmane

University of Pittsburgh

2019-2020 Danielle Wu
2019-2020 Laura Fahs
2019-2020 Olivia Gall
2019-2020 Inca Malik
2019-2020 Santosh Donepudi
2022 Rebecca Kime
2022 Angelina DiNardo
2022 Madison Andreano
2022 Olivia Flemm
2022-2023 Sarah Anthony
2022-2023 Shaina Wasileski
2022-2023 Katie Bergstrom
2022-2023 Megan Hallihan
2022-2023 Miaofang Hu
2022-2023 Jasmine Cardino
2022-2023 Claire Mitchell

Northwestern University

2023- Alexa Nuñez Magaña
2023- Avery Leblanc
2023- Beza Abate
2024- Adelina Jembere
2024- Jaimie Hong
2024- Michelle Sun
2024- Amanda Tepedino
2024- Melissa Yankson Nyarko
2024- Claribel Osei

High School Student Researchers

2016 Emma Green
2021-2022 Karen Linares Mendoza
2022 Marysia Brown
2022 Cassidy Mineo
2022 Zoey Miller
2022 Savitha Thompson

DIVERSITY AND INCLUSION

2021	Hosted virtual lab tour at University of Pittsburgh for Innovative Mentoring and Professional Advancement through Cultural Training (IMPACT) program at Case Western Reserve University in collaboration with Hampton University, a historically black university.
2022	Co-mentor for Karen Linares Mendoza, recipient of a diversity supplement from NIDCD to conduct research through a summer internship.
2022	Mentor for two undergraduate CSD students from the Innovative Mentoring and Professional Advancement through Cultural Training (IMPACT) program through a summer research internship at the University of Pittsburgh.
2024	Faculty sponsor for a student in the Emerging Scholars Program at Northwestern University, a research grant for first year students who identify as first generation, lower income, people of color, and/or marginalized with a focus on providing opportunities for students to get started in research.