

MALINDA J. MCPHERSON

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EDUCATION & ACADEMIC POSITIONS

University of California, San Diego , Department of Psychology Postdoctoral Associate, <i>Advisor: Tim Brady</i>	La Jolla, CA 2022–Present
Massachusetts Institute of Technology , Department of Brain and Cognitive Sciences Postdoctoral Associate, <i>Advisor: Josh H. McDermott</i>	Cambridge, MA 2022
Harvard University , Program in Speech and Hearing Bioscience and Technology PhD, <i>Advisor: Josh H. McDermott</i>	Cambridge, MA 2015–2021
University of Cambridge , Center for Music and Science MPhil, <i>Advisor: Ian Cross</i>	Cambridge, UK 2014–2015
Johns Hopkins University B.A. in Cognitive Science, minor in Music (general and departmental honors) Research Assistant, <i>Advisor: Charles J. Limb</i>	Baltimore, MD 2010–2014 2012–2014

GRANTS & FUNDING

Ruth L. Kirschstein Predoctoral National Research Service Award (F31) National Institute on Deafness and Other Communication Disorders, National Institutes of Health, USA	2019–2022
Mind Brain Behavior Interfaculty Initiative Graduate Student Award Harvard University	2020
Graduate Research Fellowship Program National Science Foundation, USA	2015–2020
Churchill Scholarship , to complete an MPhil at the University of Cambridge Winston Churchill Foundation of the United States	2014–2015
Bander Family Fund Award & the Provost's Undergraduate Research Award Johns Hopkins University	2013

PUBLICATIONS

- McPherson, M. J.**, McDermott, J. H. (2023). Relative pitch representations and invariance to timbre. *Cognition*. 232: 105327.
- McPherson, M. J.**, Grace, R. C., & McDermott, J. H. (2022). Harmonicity aids hearing in noise. *Attention, Perception, & Psychophysics*. 84(3), 1016-1042.
- McPherson, M. J.**, & McDermott, J. H. (2020). Time-dependent discrimination advantages for harmonic sounds suggest efficient coding for memory. *Proceedings of the National Academy of Sciences*, 117(50), 32169-32180.
- McPherson, M. J.**, Dolan, S. E., Durango, A., Ossandon, T., Valdés, J., Undurraga, E. A., Jacoby, N., Godoy, R. A., & McDermott, J. H. (2020). Perceptual fusion of musical notes by native Amazonians suggests universal representations of musical intervals. *Nature Communications*, 11(1), 2786.
- Jacoby, N., Undurraga, E. A., **McPherson, M. J.**, Valdes, J., Ossandon, T., & McDermott, J. H. (2019). Universal and non-universal features of musical pitch perception revealed by singing. *Current Biology*, 29(19), 3229-3243.
- McPherson, M. J.**, & McDermott, J. H. (2018). Diversity in pitch perception revealed by task dependence. *Nature Human Behavior*, 2(1), 52-66.
- McPherson, M. J.**, Barrett, F. S., Lopez-Gonzalez, M., Jiradejvong, P., & Limb, C. J. (2016). Emotional intent modulates the neural substrates of creativity: an fMRI study of emotionally targeted improvisation in Jazz musicians. *Scientific reports*, 6, 18460.

McPherson, M. J., Lopez-Gonzalez, M., Rankin, S. K., & Limb, C. J. (2014). The role of emotion in musical improvisation: an analysis of structural features. *PLoS One*, 9(8), e105144.

McPherson, M.J., & Limb, C. J. (2013). Difficulties in the neuroscience of creativity: Jazz improvisation and the scientific method. *Annals of the New York Academy of Sciences*, 1303(1), 80-83.

PREPRINTS

Jacoby, N. [and 33 others, including **McPherson, M.J.**], (2021), Universality and cross-cultural variation in mental representations of music revealed by global comparison of rhythm priors. *PsyArXiv*. 10.31234/osf.io/b879v. Under Review.

BOOK CHAPTERS

McPherson, M.J., C.J. Limb. *Improvisation: Experimental Considerations, Results, and Future Directions*. Chapter in *Foundations in Music Psychology: Theory and Research*. Eds., D. Levitin and J. Rentfrow. MIT Press, Cambridge, MA. 2019.

McPherson, M.J., C.J. Limb. *Artistic and Aesthetic Production: Progress and Limitations*, Chapter in *Cambridge Handbook of the Neuroscience of Creativity*. Eds., R. Jung and O. Vartanian. Cambridge University Press, Cambridge, UK. 2018.

AWARDS & HONORS

Association for Research in Otolaryngology Postdoctoral Travel Award	2023
Forbes 30 Under 30 - Science	2022
Harvard University Graduate School of Arts and Sciences Commencement Marshal <i>Elected by Graduate Student Council for contributions to student life at Harvard</i>	2022
Harold M. Weintraub Graduate Student Award, Fred Hutch <i>Recognized among 13 awardees (internationally) for achievement during graduate studies in biological sciences</i>	2021
MIT On the Spot Award <i>Organized events to maintain lab morale and build community during COVID-19 shutdown</i>	2020
Advanced Perspectives in Auditory Neuroscience Conference Travel Award	2019
Association for Research in Otolaryngology Graduate Student Travel Award	2019
The Donald Havens Scholarship, Rassias Center Accelerated Language Program (Spanish), Dartmouth College <i>Completed intensive Spanish course to facilitate communication during fieldwork in Bolivia</i>	2019
Society for Education, Music, and Psychology Research (<i>SEMPRE</i>) Conference Award	2015
Award for Excellence in Cognitive Science, Johns Hopkins University <i>Given to the graduating senior with the strongest combination of academic and research excellence</i>	2014

MENTORING

Graduate

Jacob Alappatt: Graduate Rotation Student, Harvard University (Fall 2021)

Steven Meisler: Graduate Rotation Student, Harvard University (Fall 2020)

Sara Simpson: Graduate Rotation Student, MIT (Fall 2019)

Alexander Durango: Postbaccalaureate Student, MIT (Summer 2019)

Undergraduate

River Grace: Undergraduate Research Opportunities Program, MIT (Fall 2018–Summer 2021)

Sophia Dolan: Undergraduate Research Opportunities Program, Wellesley College (Spring 2018–Spring 2020)

Shuang Fan: Undergraduate Research Assistant, Berklee College of Music (Spring 2018)

Crystal Wang: Undergraduate Research Opportunities Program, MIT (Summer 2017)

Mentor, Women in STEM Mentoring Program, Harvard University (Fall 2016–Spring 2020)

TEACHING EXPERIENCE

- Lecturer**, Department of Psychology, University of California, San Diego
Sound and Music Perception Fall 2023
- Instructor of record
 - Developed new syllabus and lecture for class of 115 upper-level undergraduate students
- Teaching Assistant**, Brain and Cognitive Sciences Department, MIT
Perception Spring 2020
- Guest Lecturer**, Berklee College of Music
Human Anatomy and Physiology Fall 2016, Spring 2017, Summer 2017, Fall 2018
- Teaching Assistant**, Department of Cognitive Science, Johns Hopkins University
Topics in Music Cognition I, Topics in Music Cognition II Fall 2013, Spring 2014
- Teaching Assistant**, Department of Neuroscience, Johns Hopkins University
Introduction to Neuroscience Spring 2013, Summer 2013, Fall 2013
The Nervous System I, The Nervous System II Fall 2012, Spring 2013

PROFESSIONAL ACTIVITIES, PUBLIC OUTREACH & POLICY

Diversity, Equity, and Inclusion

- Diversity & Inclusion Badge, University of Rhode Island 2022
- Co-President, Harvard LGBTQ@GSAS Association 2020–2022
- Academic Chair, Harvard LGBTQ@GSAS Association 2019–2020
- Facilitator, Harvard University Division of Medical Sciences Culture and Community Orientation Workshops 2020

Science Policy

- Harvard Medical School Scientific Citizenship Initiative MA State House Science and Technology Fellowship 2021
- Science Advisor, Massachusetts Joint Committee on Mental Health, Substance Use and Recovery

Science Outreach

- Guest, BBC Crowd Science, “How does my radio work?” 2022
- Editor, Science in the News Longform Blog, Harvard University 2018–2021
- Writer, Science in the News Longform Blog, Harvard University 2020
- Conceived of and wrote a six-part special edition, “What does a scientist do?” (<https://tinyurl.com/WhatScientistsDo>)*
- Panelist, Boston Museum of Science, “Ask A Scientist” series, “How do we perceive sounds?” 2020
- Instructor, “Science by the Pint” community outreach series, Harvard University 2018–2020
- Certified Facilitator, Our Whole Lives Sexuality: Lifespan Sexuality Education, The First Church in Belmont 2016–2020
- Taught weekly science-based, secular, inclusive sexual health course for 8th grade students*
- Writer, *The Guardian*, “Making it up as you go along: how your brain improvises” 2016
- Guest, KPCC (NPR news for Southern California), AirTalk, “New study looks at brain activities of jazz musicians to find link between emotions and creativity” 2016
- Instructor, Making Neuroscience Fun, Johns Hopkins University Department of Neuroscience 2014
- Volunteered to teach Pre-K to 5th grade students about the nervous system*
- Instructor, Creating Responsibility in Adolescent Sexual Health, Maryland State Juvenile Justice System 2012–2014
- Taught weekly evidence-based reproductive anatomy and sexual health course for justice-involved youth*

Conferences

- Co-Chair & Presenter, Symposium, “*Online Experimentation in Audition: Recent Advances and Future Directions.*”
Association for Research in Otolaryngology 46th Annual Midwinter Meeting 2023
- Speech & Hearing Bioscience and Technology Distinguished Lecture Series Organizing Committee 2017
- Social Media and Communications Team, Global Scholars Symposium, University of Cambridge 2015

Peer Reviewing

Attention, Perception, & Psychophysics; Auditory Perception and Cognition; Brain Research; eLife; Journal of Experimental Psychology: Learning, Memory, and Cognition; Music Perception; National Science Foundation; Nature Communications; NeuroImage; PLOS Computational Biology; PLOS One; Scientific Reports

INVITED TALKS

Cambridge University Centre for Music and Science Seminar	2023
Cambridge University Medical Research Council Cognitive Brain Unit, Hearing Group	2023
École Normale Supérieure, Laboratoire des systèmes perceptifs	2023
École Normale Supérieure, Département d'Études Cognitives Colloquium	2023
Max Planck Institute for Empirical Aesthetics	2023
Purdue University, Department of Speech, Language, and Hearing Sciences	2022
University of Delaware, Department of Psychology	2022
University of California, San Diego, Cognitive Brown Bag	2022
Boston University, Hearing Research Center Seminar Series	2021
University of California, San Diego, Vision and Memory Lab	2021
MIT Department of Brain and Cognitive Sciences, Cog Lunch	2021
Max Planck Institute for Empirical Aesthetics	2021
Collective Intelligence 2020, Workshop on Digital Experiments on Amazon Mechanical Turk	2020
University of California, Berkeley, The Computation and Language Lab	2020
Boston University, Communication Neuroscience Research Laboratory	2019
Dartmouth College, Department of Psychological and Brain Sciences, Cognitive Brown Bag	2019
MIT Department of Brain and Cognitive Sciences, Cog Lunch	2016
Harvard University Institute of Politics	2016
University of Cambridge, Churchill College Academic Seminar Series	2015
Salzburg Global Seminar, Session 547, The Neuroscience of Art	2015

CONFERENCE TALKS* & POSTERS+

***McPherson, M.J.**, (September 2023). Relative pitch representations and invariance to timbre. *Basic Auditory Science*, London, UK.

+**McPherson, M.J.**, Brady, T. (May 2023). Selective cortical responses to harmonic sounds. *Vision Sciences Society*, St. Pete Beach, FL.

***McPherson, M.J.**, (February 2023). Online Auditory Psychophysics Enables New Psychoacoustic Paradigms. *Association for Research in Otolaryngology, 45th Annual MidWinter Meeting*, Orlando, FL.

+**McPherson, M.J.**, Boebinger, D.L., Kanwisher, N., McDermott, J.H. (February 2023). Selective cortical responses to harmonic sounds. *Association for Research in Otolaryngology, 45th Annual MidWinter Meeting*, Orlando, FL.

+Griffith, I. (presenting author), **McPherson, M.J.**, Saddler, M., McDermott, J.H. (February 2023). Task-Optimized Models of Relative Pitch. *Association for Research in Otolaryngology, 45th Annual MidWinter Meeting*, Orlando, FL.

+**McPherson, M.J.**, Boebinger, D.L., Kanwisher, N., McDermott, J.H. (November 2022). Selective cortical responses to harmonic sounds. *Advanced Perspectives in Auditory Neuroscience*, San Diego, CA.

+**McPherson, M.J.**, McDermott, J.H. (February 2022). Invariance in pitch perception. *Association for Research in Otolaryngology, 45th Annual MidWinter Meeting*, Virtual.

+**McPherson, M.J.**, Grace, R.C., McDermott, J.H. (February 2021). Harmonicity aids hearing in noise. *Association for Research in Otolaryngology, 44th Annual MidWinter Meeting*, Virtual.

+**McPherson, M.J.**, Dolan, S.E., Durango, A., Ossandon, T., Valdez, J., Undurraga, E.A., Jacoby, N., Godoy, R.A., McDermott, J.H. (November 2020). Fusion of musical notes suggests universal representations of dissonance despite culture-dependent aesthetic associations. *16th Annual NeuroMusic Conference*, Virtual.

+**McPherson, M.J.**, Grace, R.C., McDermott, J.H. (October 2020). Harmonicity aids hearing in noise. *Advanced Perspectives in Auditory Neuroscience*, Virtual.

- +**McPherson, M.J.**, McDermott, J.H. (January 2020). Harmonicity aids hearing in noise. *Association for Research in Otolaryngology, 43rd Annual MidWinter Meeting*, San Jose, CA.
- +**McPherson, M.J.**, McDermott, J.H. (October 2019). Pitch provides a compact code for memory storage. *Advanced Perspectives in Auditory Neuroscience*, Chicago, IL.
- +**McPherson, M.J.**, McDermott, J.H. (May 2019). Harmonicity aids detection of speech and other sounds in noise. *177th Meeting of the Acoustical Society of America*, Louisville, KY.
- *“Representation of dissonance is culturally invariant even though aesthetic responses to dissonance are not”. (May 2019). *177th Meeting of the Acoustical Society of America*, Louisville, KY.
- +**McPherson, M.J.**, McDermott, J.H. (February 2019). Assessing pitch perception using sung responses. *Association for Research in Otolaryngology, 42nd Annual MidWinter Meeting*, Baltimore, MD.
- *“Representation of dissonance is culturally invariant even though aesthetic responses to dissonance are not.” (February 2019). Poster Blitz. *Association for Research in Otolaryngology, 42nd Annual MidWinter Meeting*, Baltimore, MD.
- +**McPherson, M.J.**, Dolan, S.E., Ossandon, T., Valdez, J., Undurraga, E.A., Jacoby, N., Godoy, R.A., McDermott, J.H. (February 2019). Representation of dissonance is culturally invariant even though aesthetic responses to dissonance are not. *Association for Research in Otolaryngology, 42nd Annual MidWinter Meeting*, Baltimore, MD.
- +Jacoby, N. (*presenting author*), Undurraga, E.A., **McPherson, M.J.**, Valdez, J., Ossandon, T., McDermott, J.H. (February 2019). Individual differences and cross-cultural variation in pitch perception revealed by sung reproduction. *Association for Research in Otolaryngology, 42nd Annual MidWinter Meeting*, Baltimore, MD.
- *“Perceptual fusion of musical notes suggests universal representations of dissonance despite culture-dependent aesthetic associations.” (February 2019). *Northeast Music Cognition Group (NEMCOG)*, Boston, MA.
- +**McPherson, M.J.**, McDermott, J.H. (May 2018). Multiple mechanisms in pitch perception revealed by individual differences. *175th Meeting of the Acoustical Society of America*, Minneapolis, MN.
- +**McPherson, M.J.**, McDermott, J.H. (May 2018). The function of f₀-based pitch. *175th Meeting of the Acoustical Society of America*, Minneapolis, MN.
- +**McPherson, M.J.**, McDermott, J.H. (February 2018). Multiple mechanisms in pitch perception revealed by individual differences. *Association for Research in Otolaryngology, 41st Annual MidWinter Meeting*, San Diego, CA.
- +**McPherson, M.J.**, McDermott, J.H. (February 2018). The function of f₀-based pitch. *Association for Research in Otolaryngology, 41st Annual MidWinter Meeting*, San Diego, CA.
- +**McPherson, M.J.**, McDermott, J.H. (June 2017). Multiple pitch mechanisms revealed by effects of inharmonicity on pitch perception. *Acoustics '17, Acoustical Society of America*, Boston, MA.
- +**McPherson, M.J.**, McDermott, J.H. (June 2017). Multiple pitch mechanisms revealed by effects of inharmonicity. *Neuromusic VI*, Boston, MA.
- +**McPherson, M.J.**, McDermott, J.H.. (February 2017). Effects of inharmonicity in music and speech suggest multiple pitch mechanisms. Poster. *Association for Research in Otolaryngology, 40th Annual MidWinter Meeting*, Baltimore, MD.
- *“Emotional Expression and Creativity: An fMRI study of jazz improvisation in response to emotional cues”. (August 2015). *2015 Meeting of the Society for Music Perception and Cognition*, Nashville, TN.
- +**McPherson, M.J.**, Cross, I. (August 2015). The Effect of Rhythmic Coordination on the Perception of Emotion in Music. *2015 Meeting of the Society for Music Perception and Cognition*, Nashville, TN.
- *“What is music and why should we study it?” (April 2015). *Churchill College Conference on Everything*, Cambridge, UK.
- *“Emotional expression and creativity: An fMRI study of jazz improvisation in response to emotional cues.” (April 2015). *2nd International Conference on Music and Consciousness*, Oxford, UK.
- +**McPherson, M.J.**, Lopez-Gonzalez, M., Rankin, S. (*presenting author*), Limb, C.J. (February 2015). Musical features of spontaneous improvisation associated with emotional cues. *Association for Research in Otolaryngology 38th Annual Midwinter Meeting*, Baltimore, MD.

+**McPherson, M.J.**, Lopez-Gonzalez, M., Rankin, S., Limb, C.J. (August 2014). Musical features of spontaneous improvisation associated with emotional cues. *The 13th International Conference on Music Perception and Cognition and the 5th Conference for the Asian-Pacific Society for Cognitive Sciences of Music*. Seoul, South Korea.