DANIEL R. McCLOY

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OVERVIEW

I am a developer of open-source scientific software, and a scientist trained in acoustic phonetics, speech perception, and auditory neuroscience. My interest broadly centers on the perception and representation of speech sounds. I am also a certified Software Carpentry instructor.

Current position: Research Scientist at the University of Washington's Institute for Learning & Brain Sciences, where I lead the development of MNE-Python neuroscience analysis software, and occasionally analyze infant and adult magnetoencephalography (MEG) data.

Structured bibliographic information for my research products is available in this BibTeX file.

ACADEMIC DEGREES

- PhD in Linguistics (UW, 2013): "Prosody, intelligibility and familiarity in speech perception" (PDF).
- MA in Linguistics (UW, 2009): "The semantics of implicitly relational predicates" (PDF).
- BS in Neurobiology, BA in Philosophy (UW, 2002).

OTHER EDUCATION

- Community Engagement Fundamentals (CSCCE, 2023).
- Postdoctoral training in psychophysics and auditory neuroscience (LABS^N, 2013-2018).
- Kavli Summer Institute in Cognitive Neuroscience (UC Santa Barbara, 2017).
- Machine Learning (Stanford University / Coursera, 2016).
- International Chinese Language Program (National Taiwan University, 2008).

TEACHING EXPERIENCE

- **Instructor**: Software Carpentry Workshops "The Unix shell", "Version control with git", "Programming with Python", "R for reproducible scientific analysis" (UW eScience Institute: 2016, 2017, 2018, 2019; Benaroya Research Institute: 2020; U. Minnesota: 2022, 2023, 2024).
- **Instructor**: Introduction to Phonetics (UW: 2010, 2011).
- **Teaching Assistant**: Introduction to Linguistics, four sections (UW: 2008–2009).
- **Co-instructor**: "New Majors" proseminar for incoming Philosophy students (UW: 2001, 2002).

TECHNICAL SKILLS

- **Programming**: Python, R, JavaScript, praat, Bash, GNU Make, Octave/MATLAB.
- **Scientific computing**: git/GitHub, cloud deployment, machine learning, data visualization.
- **Research hardware**: Pupillometry, eye tracking, EEG, MEG, microphones, audio processors.
- **Document generation**: Sphinx, Jupyter, Pandoc, Markdown, R Markdown, reStructuredText, LaTeX, Beamer, HTML, (S)CSS.

SOFTWARE & CORPORA

- **Leader (BDFL)** of MNE-Python: human neurophysiology analysis. (repo)
- **Maintainer** of PyData Sphinx Theme: theme for software documentation websites. (repo)
- **Co-creator** of PHOIBLE: a database of over 3000 phonological inventories. (repo)
- **Co-creator** of UW/NU Corpus: a 2-dialect, 20-talker corpus of 200 parallel sentences of English.
- **Co-creator** of expyfun: run psychophysics experiments in Python. (repo)
- **Creator** of phonR: analyze & visualize vowels in R. (repo | CRAN)
- **Creator** of "Praat Semi-Auto": scripts to streamline manual measurements in acoustic phonetics, when automated methods are not good enough. (repo)

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PEER-REVIEWED ARTICLES (14 TOTAL, 6 FIRST-AUTHORED)

- Clarke, Larson, Peterson, **McCloy**, Bosseler & Taulu (2022). Improving localization accuracy of neural sources by pre-processing: Demonstration with infant MEG data. *Frontiers in Neurology*, *13*. (DOI)
- Emmons, Lee, Estes, Dager, Larson, **McCloy**, St. John & Lau (2022). Auditory attention deployment in young adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *52*(4), 1752–1761. (DOI | preprint)
- O'Brien, **McCloy** & Yeatman (2019). Categorical phoneme labeling in children with dyslexia does not depend on stimulus duration. *The Journal of the Acoustical Society of America*, *146*(1), 245–255. (DOI | preprint | repo)
- **McCloy** & Lee (2019). Investigating the fit between phonological feature systems and brain responses to speech using EEG. *Language, Cognition and Neuroscience*, *34*(5), 662–676. (DOI | supplement | preprint | repo)
- **McCloy**, Larson & Lee (2018). Auditory attention switching with listening difficulty: Behavioral and pupillometric measures. *The Journal of the Acoustical Society of America*, *144*(5), 2764–2771. (DOI | supplement | preprint | repo)
- O'Brien, **McCloy**, Kubota & Yeatman (2018). Reading ability and phoneme categorization. *Scientific Reports*, *8*(1), 16842. (DOI | preprint | repo)
- **McCloy**, Lau, Larson, Pratt & Lee (2017). Pupillometry shows the effort of auditory attention switching. *The Journal of the Acoustical Society of America*, *141*(4), 2440–2451. (DOI | supplement | preprint | repo)
- Hasegawa-Johnson, Jyothi, **McCloy**, Mirbagheri, di Liberto, Das, Ekin, Liu, Manohar, Tang, Lalor, Chen, Hager, Kekona, Sloan & Lee (2017). ASR for under-resourced languages from probabilistic transcription. *IEEE/ACM Transactions on Audio, Speech and Language Processing*, *25*(1), 46–59. (DOI | preprint | repo)
- **McCloy**, Larson, Lau & Lee (2016). Temporal alignment of pupillary response with stimulus events via deconvolution. *The Journal of the Acoustical Society of America*, *139*(3), EL57–EL62. (DOI | preprint | repo)
- **McCloy** & Lee (2015). Auditory attention strategy depends on target linguistic properties and spatial configuration. *The Journal of the Acoustical Society of America*, *138*(1), 97–114. (DOI | preprint | repo)
- **McCloy**, Wright & Souza (2015). Talker versus dialect effects on speech intelligibility: A symmetrical study. *Language and Speech*, *58*(3), 371–386. (DOI | preprint)
- Barrack, **McCloy** & Wright (2014). Did murmur spread in Pre-Proto-Indo-European? *Indogermanische Forschungen: Zeitschrift für Indogermanistik und historische Sprachwissenschaft*, *119*(1), 149–158. (DOI | preprint)
- Souza, Gehani, Wright & **McCloy** (2013). The advantage of knowing the talker. *Journal of the American Academy of Audiology*, *24*, 689–700. (DOI | preprint)
- Moran, **McCloy** & Wright (2012). Revisiting population size vs. phoneme inventory size. *Language*, *88*(4), 877–893. (DOI | preprint | repo)

INVITED TALKS (3)

- **McCloy** (2018). Evaluating phonological feature theories against EEG measures of speech perception. Talk at the UBC Linguistics Department, Vancouver, BC.

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- **McCloy** (2017). Pupillometry and auditory attention switching: Methods and interpretations. Talk at the Pupillometry in Neuroscience Workshop, Boston University Center for Research in Sensory Communication and Emerging Neural Technology, Boston, MA. (slides)
- **McCloy** (2016). What pupillometry can do for linguistic research. Talk at the UCSB Linguistics Department, Santa Barbara, CA.

CONFERENCE PROCEEDINGS, WORKING PAPERS & TECHNICAL REPORTS ()

- **McCloy**, Wright & Souza (2014). Modeling intrinsic intelligibility variation: Vowel-space size and structure. *Proceedings of Meetings on Acoustics*, *18*, 060007. (DOI)
- **McCloy** (2014). Phonetic effects of morphological structure in Indonesian vowel reduction. *Proceedings of Meetings on Acoustics*, *12*, 060009. (DOI | preprint)
- **McCloy** (2013). Corpus-based productivity measures of English -er agentives and instrumentals. *UW Working Papers in Linguistics*, *31*. (paper)
- **McCloy** (2012). Vowel normalization and plotting with the phonR package. Technical Report 2012-01, UW Linguistic Phonetics Laboratory, Seattle, WA. (report | updated HTML version)
- **McCloy** (2010). The semantics of implicitly relational predicates. In *Proceedings of the 26th Northwest Linguistics Conference*. Burnaby, BC: Simon Fraser University. (proceedings)

CONFERENCE PRESENTATIONS (14)

- **McCloy**, Panfili, John, Winn & Wright (2018). Gender, the individual, and intelligibility. Poster at the 176th Meeting of the Acoustical Society of America, Victoria, BC. (DOI | poster)
- **McCloy** & Lee (2016). Modeling native phonology and non-native speech perception using EEG signals. Poster at the 172nd Meeting of the Acoustical Society of America, Honolulu, HI. (DOI | poster)
- **McCloy** & Lee (2016). Estimating speech sound categorization from electrophysiological responses. Poster at the Northwest Auditory and Vestibular Research Meeting, Portland, OR. (poster)
- **McCloy**, Yurong & Puthuval (2016). Phonetically-conditioned vowel devoicing in Chahar Mongolian. Poster at the 90th Annual Meeting of the Linguistic Society of America, Washington, DC. (poster)
- **McCloy**, Kishline & Lee (2014). Listener strategy and performance in linguistic and non-linguistic auditory divided attention tasks. Poster at the Gordon Research Conference on the Auditory System — Encoding Hearing: From Genes to Behavior, Lewiston, ME. (poster)
- **McCloy** & Lee (2014). Effects of cognitive load on selective and divided auditory spatial attention. Poster at the 167th Meeting of the Acoustical Society of America, Providence, RI. (DOI | poster)
- Kishline, **McCloy**, Larson & Lee (2014). Can you divide attention across two streams or are you rapidly switching between them? Poster at the 37th Annual MidWinter Meeting of the Association for Research in Otolaryngology, San Diego, CA. (poster)
- **McCloy** & Lee (2013). Effects of auditory spatial attention in a semantic classification task. Poster at the 166th Meeting of the Acoustical Society of America, San Francisco, CA. (DOI | poster)
- **McCloy** (2013). Separating segmental and prosodic contributions to intelligibility. Poster at the 4th International Summer School on Speech Production and Perception: Speaker-Specific Behavior, Aix-en-Provence, FR. (poster)
- **McCloy**, Moran & Wright (2013). Revisiting 'The role of features in phonological inventories'. Talk at the CUNY Conference on the Feature in Phonology and Phonetics, New York, NY. (slides)
- **McCloy**, Wright & McGrath (2012). Modelling talker intelligibility variation in a dialect-controlled corpus. Poster at the 164th Meeting of the Acoustical Society of America, Kansas City, MO. (DOI | poster)

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- Moran, **McCloy** & Wright (2012). Revisiting the population vs phoneme-inventory correlation. Talk at the 86th Meeting of the Linguistic Society of America, Portland, OR. (DOI | slides)
- **McCloy** (2011). Vowel laxing in Indonesian as a test case for interaction of morphological and syllabic structure. Poster at the 161st Meeting of the Acoustical Society of America, Seattle, WA. (DOI | poster)
- **McCloy** (2010). The semantics of implicitly relational predicates. Talk at the 26th Northwest Linguistics Conference, Burnaby, BC.

ACADEMIC SERVICE: PANELS, CONFERENCES & COMMITTEES

- **Review Panelist**: NSF POSE (2022).
- **Member**: LSA Committee on Scholarly Communication in Linguistics (2014–2018).
- **Session organizer**: "Quantitative Methodology in Physiological and Psychophysical Data Analysis," 171st Meeting of the Acoustical Society of America, Salt Lake City (2016).
- **Member**: LSA Technology Advisory Committee (2013–2014).
- **Conference chair**: 24th Northwest Linguistics Conference, Seattle (2008).
- **Referee**: LSA Annual meeting (2014, 2016), Northwest Linguistics Conference (2008, 2012).

ACADEMIC SERVICE: JOURNAL REVIEWS

The Journal of the Acoustical Society of America (5), *JASA Express Letters* (3), *Phonology* (3), *Nature* (1), *Journal of Phonetics* (1), *Psychophysiology* (1), *Linguistics Vanguard* (1), *Journal of Speech, Language, and Hearing Research* (1), *Language Development Research* (1), *UW Working Papers in Linguistics* (2).

ACADEMIC SERVICE: MENTORSHIP & OUTREACH

- **Organizer**: MNE-Python New Developers Sprint (2021, 2022) and Intermediate Training (2023).
- **Mentor**: 2 graduate students, 1 undergraduate, and 3 high school students (2011-2019).
- **Volunteer**: Pacific Science Center's Paws On Science Weekend (2016).

GRANTS, FELLOWSHIPS, AND AWARDS

- "Building Pediatric and Clinical Data Pipelines for MNE-Python", CZI Essential Open Source Software for Science (2021-2023).
- "Improving Usability of Core Neuroscience Analysis Tools with MNE-Python", CZI Essential Open Source Software for Science (2020-2021).
- Postdoctoral fellowship (NIH T32), UW Auditory Neuroscience Training Program (2016–2018).
- NIH LRP award (2014–2016).
- Postdoctoral fellowship (NIH T32), UW Department of Speech and Hearing Sciences (2013–2014).
- "Research Excellence Award," UW Department of Linguistics (2013).
- FLAS fellowship, Modern Standard Chinese, U.S. Department of Education (2007–2008).

PROFESSIONAL AND SCHOLARLY AFFILIATIONS

International Phonetic Association (2014–present), Acoustical Society of America (2011–present), Linguistic Society of America (2009–present), Association for Research in Otolaryngology (2014–2018), *Phi Beta Kappa* (2002–present).

LANGUAGES

English (native), Modern Standard Chinese (intermediate), Spanish (reading knowledge).