BIOGRAPHICAL SKETCH

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NAME: Masapollo, Matthew

eRA COMMONS USER NAME (credential, e.g., agency login): MATTHEW.MASAPOLLO

POSITION TITLE: Assistant Professor, Department of Communication Sciences and Disorders, University of Oklahoma Health Sciences

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
University of Michigan, Ann Arbor, MI, USA	BA	05/2010	Cognitive & Linguistic Science
McGill University, Montreal, QC, Canada	PhD	08/2016	Communication Sciences and Disorders
Brown University, Providence, RI, USA	Post-Doc	08/2017	Cognitive, Linguistic, and Psychological Sciences
Boston University, Boston, MA, USA	Post-Doc	12/2019	Speech, Language, and Hearing Sciences

A. Personal Statement

Over the past decade, I have pursued experimental investigations into the nature of the human speech production mechanism, its development, and its neural basis. I have demonstrated a consistent record of productivity (> 20 publications) and scientific impact that has recently been supported with funding from the Hearing Health Foundation and the American Speech-Language-Hearing Foundation. I recently established and direct the Speech Motor Control Laboratory at the University of Oklahoma Health Sciences and lead an interdisciplinary team that is dedicated to studying the neurobiological mechanisms of speech production. The mission of my lab is to: 1) Understand how the human brain produces precise and coordinated speech movements; 2) Understand how humans learn to produce coordinated speech movements early in development; and 3) Understand the contribution of auditory and somatosensory afferent inputs to the control of speech movements. Experimentally, I focus on kinematic (spatial and motion aspects) analyses of speech articulator movements and functional brain imaging of speech production. Results of these investigations will have a sustained impact on the field of speech motor control and hold broad implications for speech production in different patient populations with sensorimotor deficits (e.g., children with cleft lip or palate; oral cavity cancer patients). In addition to carrying out my own research program, I am passionate about training the next generation of communication scientists and clinicians. Students that have carried out thesis research projects in my lab (> 10) have received numerous awards, including the Robert Young Award for Undergraduate Research in Acoustics from the Acoustical Society of America. Former student trainees have also frequently co-authored publications and conference abstracts and gone on to pursue more advanced graduate-level training. Current research projects focus on speech motor control in congenitally deaf cochlear implant recipients and patients with oral cavity cancer and facial nerve paralysis.

B. Positions, Scientific Appointments, and Honors

Positions

2024 – Present Assistant Professor, Department of Communication Sciences and Disorders, University of Oklahoma Health Sciences, Oklahoma City, OK.

2024 – Present Associate Member, OU Health Stephenson Cancer Center, Oklahoma City, OK.

2023 – 2024 Research Associate, Motor Neuroscience Laboratory, Department of Psychology, McGill University, Montreal, QC
2020 – 2023 Assistant Professor, Department of Speech, Language, and Hearing Sciences, University of Florida, Gainesville, FL
2017 – 2019 Post Doctoral Fellow, Department of Speech, Language, and Hearing Sciences, Boston University, Boston, MA
2016 – 2017 Post Doctoral Fellow, Department of Cognitive, Linguistic, and Psychological Sciences, Brown University, Providence, RI

Other Scientific Appointments

2025 – Editorial Board Member, Journal of Speech, Language, and Hearing Research (Speech section)
2025 – Grant reviews (National Institutes of Health, Auditory System study section)
2016 – Ad hoc journal reviewing service (*Journal of Speech, Language, and Hearing Research; Journal of the Acoustical Society of America; Hearing Research*)

Honors

2022 Dean's Citation Award, College of Public Health & Health Professions, University of Florida
2021 Hearing Health Foundation, Emerging Research Grant
2020 American Speech-Language-Hearing Foundation, New Investigators Research Grant
2019 Young Investigator Travel Award, Acoustical Society of America
2014 Community Leader Award, Center for Research on Brain, Language, and Brain, McGill University
2010 Student Commencement Speaker, Department of Linguistics, University of Michigan

C. Contributions to Science (+ = student co-author, * = joint first authors)

Complete List of Published Work in NCBI My Bibliography (> 20 peer-reviewed journal articles):
https://pubmed.ncbi.nlm.nih.gov/?term=Masapollo+M&cauthor_id=29517257

1. *Development of optimal methods to assess the coordination and control of speech movements*. Speech movements are some of the smallest and most precise voluntary movements that humans produce. More complicated still, many speech movements are not directly visible and hidden within the inner reaches of the vocal tract. I have made meaningful methodological contributions for directly observing speech articulator movements. Notably, my lab was the first to demonstrate that electromagnetic articulography can be used to assess speech movements produced by profoundly deaf people who received cochlear implants without signal artifacts. Aspects of this work appeared on the October 2021 issue cover of the *Journal of the Acoustical Society of America, Express Letters*.

a) **Masapollo, M.**, Wayland, R., Goel, J., Sengupta, R., Shamsi, A., & Hegland, K.W. (2022). An investigation of interference between electromagnetic articulography and electroglottography. *Journal of the Acoustical Society of America, Express Letters*, 2(9), 095204-1-8. PMID: 36182347.

b) **Masapollo, M.**, Nittrouer, S., Goel, J., & Oh, Y. (2021). Electromagnetic articulography appears feasible for assessment of speech motor skills in cochlear implant users. *Journal of Acoustical Society of America Express Letters*, doi: https://asa.scitation.org/doi/10.1121/10.0006719. PMID: 36154217.

2. *Advancing fundamental knowledge of the control parameters used by the nervous system to coordinate speech movements*: A central goal of research in speech production has been to characterize how the nervous system coordinates and regulates vocal tract movements in service to speech across scalar transformations in production rate, syllable stress pattern, and phonetic structure. Using state-of-the-art electromagnetic articulography, my work has elucidated the critical control parameters governing speech coordination across these contextual variations in motor execution.

a) **Masapollo, M.**, +Gendron, R., +Wyndham, E., +Marcellus, A., & Maxfield, N. (in press). Inter-articulator timing relations underlie the production of precise and consistent vocal tract constrictions during speech. *Journal of Speech, Language, and Hearing Research*.

b) **Masapollo, M.**, +Rodriguez, A., +Gendron, R., +Kent, K., +Thomas, H., & Nittrouer, S. (2024). Generalization of inter-articulator timing control: evidence from tongue-jaw and lip-jaw kinematics using electromagnetic articulography. *Journal of Speech, Language, and Hearing Research*, 68(1):129-147. doi: 10.1044/2024_JSLHR-24-00323. PMID: 39680804.

c) **Masapollo, M.**, & Nittrouer, S. (2023). Inter-articulator speech coordination: timing is of the essence. *Journal of Speech, Language, and Hearing Research*, 7;66(3):901-915. doi: https://doi.org/10.1044/2022_JSLHR-22-00594. PMID: 36827516.

3. *Increasing knowledge of the role of auditory afferent inputs in the coordination and regulation of speech movements*: Auditory input is essential to the acquisition and maintenance of speech production skills. My studies have characterized the effect of long-term degraded auditory input on speech motor control in profoundly deaf people who received cochlear implants and peers with normal hearing. Using state-of-the-art electromagnetic articulography, this body of work shows that auditory input helps regulate the real-time control of speech movements, both in deaf talkers who received cochlear implants, and peers with normal hearing. This work was recently supported by the Hearing Health Foundation.

a) **Masapollo, M.**, Nittrouer, S., [+]Gendron, R., [+]Wyndham, E., [+]Marcellus, A., [+]Moslemian, D., & Ostry, D.J. (2025). Auditory input regulates the control of vocal tract constriction dynamics in speech production. *Annual Meeting of the Society for the Neural Control of Movement*, Panama City, Panama.

b) **Masapollo, M.**, Nittrouer, S., **[+]**Gendron, R., Ménard, L., & Ostry, D.J. (2025). Differential use of auditory feedback in the real-time control of speech movements by deaf talkers with cochlear implants and peers with normal hearing. *48th Annual MidWinter Meeting of the Association for Research in Otolaryngology,* Orlando, FL.

c) **Masapollo, M.**, & Nittrouer, S. (2024). Immediate auditory feedback regulates inter-articulator speech coordination in service to phonetic structure. *Journal of Acoustical Society of America*, 156(3), DOI: 10.1121/10.0028725.

4. *Increasing knowledge of the roles of visual articulatory information and oral somatosensory inputs in speech processing*: Speech perception is known to be a multimodal process, relying not only on auditory input but also on the visual and somatosensory systems and possibly on the motor system as well. My studies on this topic show that visible articulatory information and orofacial somatosensory inputs associated with speech production affect speech perception.

a) **Masapollo, M.**, & Guenther, F.H. (2019). Engaging the articulators enhances perception of concordant visible speech movements. *Journal of Speech, Language, and Hearing Research*, 62, 3679-3688. PMCID: PMC7201334.

b) **Masapollo, M.**, Polka, L., Ménard, L., Franklin, L., Tiede, M., & Morgan, J.L. (2018). Asymmetries in unimodal visual vowel perception: The roles of oral-facial kinematics, orientation, and configuration. *Journal of Experimental Psychology: Human Perception and Performance*, 44(7), 1103-1118. PMCID: PMC6037555.

c) **Masapollo, M.**, Polka, L., & Ménard, L. (2017). A universal bias in adult vowel perception – By ear or by eye. *Cognition*, 166, 358-370. PMID: 28601721.

5. *Advancing basic knowledge of plasticity in human motor and sensory systems that accompany speech motor learning*. A central goal in speech motor control is to characterize how learning to control the movements of the vocal tract in service to speech production alters motor function and brain architecture. Toward this end, I have used behavioral and modern functional brain imaging techniques to investigate how motor training and practice affects the execution of speech movements and the sensorimotor networks controlling those movements. The ability to quantify training-induced plasticity in the motor and sensory systems may permit a better understanding of the effects of rehabilitation on sensorimotor speech disorders. Imaging the networks of the brain that are associated with speech sensorimotor learning and retention may also lead to better tracking of neuroplasticity during therapy.

a) **Masapollo, M.**, van Vugt, F., & Ostry, D.J. (2025). Persistence of resting-state functional connectivity changes attributable to novel sensorimotor learning and retention. *Annual Meeting of the Society for the Neural Control of Movement*, Panama City, Panama.

b) **Masapollo, M**., [+]Zezas, E., [+]Shamsi, A., Wayland, R., [+]Smith, D.J., & Guenther, F.H. (2023). Disentangling effects of working memory storage and inter-articulator coordination on generalization in speech motor sequence learning. *Journal of Psycholinguistic Research.* DOI: 10.1007/s10936-023-09998-5. PMID: 37488461; PMCID: PMC11034796.

c) **Masapollo, M.**, Segawa, J.A., Beal, D., Tourville, J., Nieto-Castañón, A., Heyne, M., Frankford, S., & Guenther, F.H. (2020). Behavioral and neural correlates of speech motor sequence learning in stuttering

and neurotypical adult speakers: an fMRI investigation. *Neurobiology of Language*. doi: 10.1162/nol_a_00027 PMCID: PMC8294667.

d) *Segawa, J.A., ***Masapollo, M.**, Tong, M., Smith, D.J. & Guenther, F.H. (2019). Chunking of phonological units in speech sequencing. *Brain and Language*, DOI: 10.1016/j.bandl.2019.05.001 PMCID: PMC6686190.