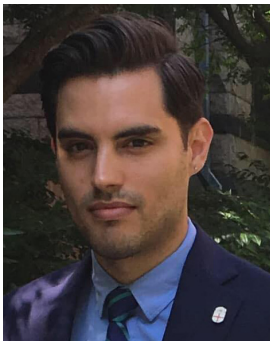
Hearing Health Foundation ERG Emerging Research Grants

Meet the Researcher



Matthew Masapollo, Ph.D.

University of Florida

Masapollo received his doctorate in communication sciences and disorders from McGill University and completed two postdoctoral fellowships, one in cognitive, linguistic, and psychological sciences at Brown University, and one in speech and hearing science at Boston University. He is the director and principal investigator of the University of Florida's Laboratory for the Study of Cognition, Action, and Perception of Speech, which was established in 2020.

I'M SEEKING TO UNDERSTAND the role of auditory input on the development of speech motor control. Auditory feedback has long been recognized as crucial for achieving intelligible speech—even the earliest human cultures had clear evidence that the ability to speak depends on the ability to hear. As congenital deafness changes the nature of infant babbling, restoring hearing through cochlear implants (CIs) at an early age allows many individuals who were born deaf the chance to speak intelligibly.

TO LEARN TO SPEAK, infants and young children must effectively monitor and refine their own self-generated vocalizations using auditory feedback. When that feedback system is incapacitated due to congenital deafness, they cannot learn the mappings between vocal tract shapes/configurations and their acoustic consequences. This project aims to help circumvent this problem.

WE WANT TO KNOW how these individuals time, sequence, and coordinate vocal tract movements. And now, tracking the motions of speech articulators (tongue tip, tongue body, lips, jaw) can be done in our lab with the use of electromagnetic articulography. This new technology directly records speech movements within the inner reaches of the vocal tract on a millisecond-by-millisecond basis and localizes where the movements occur.

A COLLEAGUE DISCOVERED producing speech is one of the strongest predictors of future phonological skills. This led us to formulate a new theoretical model, termed MIPA (motor involvement in phonological acquisition). We are testing its predictions to investigate the co-emergence of speech production and phonological sensitivity in early childhood, using electromagnetic articulography.

I ALWAYS KNEW I was going to be some kind of scientist. I started out in biochemistry, and then a course on linguistic phonetics caught my attention. Now I invest a great deal of time training and mentoring students from historically marginalized groups. I want to see more individuals with a similar identity as mine represented in science.

I LOVE TO COOK and host dinner parties with friends and colleagues. It is a fun way to stay connected. I find progress in research often comes from these types of conversations.

WITHIN THE NEXT DECADE or so, I think our work will lay the foundation for further research into developing novel, mechanistically driven rehabilitation protocols to optimize speech motor instruction for children born profoundly deaf. By combining principles and tools from engineering and computer science with cognitive and linguistic science, we ultimately envision developing robotic devices to deliver somatosensory input to the vocal tracts of children who use CIs as they learn to listen to speech sounds through their CI processor.

Matthew Masapollo, Ph.D., is funded by donors to Hearing Health Foundation who designated their gifts for the most promising research. HHF sincerely thanks our community for supporting the full range of hearing and balance science.

We need your help** funding the exciting work of hearing and balance scientists. Please consider donating today to Hearing Health Foundation to support groundbreaking research.* ***Visit hhf.org/how-to-help.