

Phillip M. Gilley
Assistant Professor
University of Colorado at Boulder
Department of Speech, Language, & Hearing Sciences
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EDUCATION

University of Colorado at Boulder, Boulder, Colorado
Department of Speech, Language, & Hearing Sciences
Brain & Behavior Laboratory

Post-doctorate in cross-modal plasticity and functional brain imaging,
December 2007

University of Texas at Dallas, Dallas, Texas
School of Behavioral & Brain Sciences

Ph.D. in Communication Sciences and Disorders

Minor Field: Neuroscience

Dissertation: "Effects of Sensory Deprivation on Reorganization of the Central
Auditory Pathways"

M.S. in Communication Disorders, May 2002

Major Field: Audiology

University of Texas at Austin, Austin, Texas
School of Communications

B.S. in Communication Sciences and Disorders, May 1999

Major Field: Audiology

RESEARCH

Neurodynamics Laboratory

University of Colorado at Boulder, Boulder, Colorado
Department of Speech, Language, & Hearing Sciences

Role: Principal investigator

Summary of research activities

The Neurodynamics Laboratory is focused on research pertaining to the physiology and pathophysiology of multimodal sensory perception. Our aim is to develop and/or refine mathematical and statistical methods for detecting, describing, and defining functional brain processes involved in sensory perception. Further, we aim to apply such methods to experimental research examining sensory function in both typical and clinical populations.

Website

<http://spot.colorado.edu/~gilley>

PUBLICATIONS

Submitted Manuscripts

Pollard R and **Gilley PM** (submitted). Electrophysiological correlates of motor preparation preceding stuttered and nonstuttered speech. Submitted to: *Exp Brain Res*.

Walker N and **Gilley PM** (submitted). Classification of words and syllables: a P3 ERP study. Submitted to: *Brain & Language*.

Gilley PM, Sharma M, and Purdy S (submitted). Beta decoupling in the central auditory system differentiates auditory encoding deficits in children with listening problems. Submitted to: *Nature Neuroscience*.

Manuscripts in Revision

Gilley PM., McClain K, Archart K, Muralimanohar R, and Harvey, Jr. LO. (in revision). The effects of audio-visual noise on the detection of unimodal and multimodal stimuli during divided attention. Submitted to: *Attention, Perception, and Psychophysics*.

Manuscripts in Press

Gilley PM, Walker NK, and Sharma A (in press). Abnormal oscillatory neural coupling in children with language-learning problems and auditory processing disorder. Submitted to: *Seminars in Hearing*.

Nash A, **Gilley PM**, and Sharma A (in press). Cortical organization and variability in unilateral auditory neuropathy spectrum disorder: a case study. Submitted to: *J Am Acad Audiol*.

Peer Reviewed Publications

Kim, A. E., & **Gilley, P. M.** (2013). Neural mechanisms of rapid sensitivity to syntactic anomaly. *Frontiers in psychology*, 4, 45. doi:10.3389/fpsyg.2013.00045

A. Hilger, **P. Gilley**, G. Ramsberger, A. Kong, L. Menn, P. Kan (2012). Capturing Sound Errors in Aphasic Narration: A Supplement to Existing Measures of Narrative Quality Original Research Article. *Procedia - Social and Behavioral Sciences, Volume 61, 18 October 2012, Pages 232-233*

Halpern AE, Ramig LO, Matos CEC, Petska-Cable JA, Spielman JL, Pogoda JM, **Gilley PM**, Sapir S, Bennett JK, and McFarland (2012). Innovative Technology for the Assisted Delivery of Intensive Voice Treatment (LSVT®LOUD) for Parkinson Disease. *Am J Speech Lang Pathol*. 21:354-367.

Spielman, J., Mahler, L., Halpern, A., **Gilley, P.**, Klepitskaya, O., and Ramig, L. (2011). Intensive Voice Treatment (LSVT®LOUD) for Parkinson's disease following Deep Brain Stimulation of the Subthalamic Nucleus. *Journal of Communication Disorders* (2011), doi:10.1016/j.jcomdis.2011.05.003

Gilley PM, Sharma A and Walker N (2011). Sources of experimental error in analysis of the cortical auditory evoked potentials. *Front. Hum. Neurosci. Conference Abstract: XI International Conference on Cognitive Neuroscience (ICON XI)*. doi: 10.3389/conf.fnhum.2011.207.00177

Gilley PM, Sharma A, Mitchell T, Dorman MF (2010) The influence of a sensitive period for auditory-visual integration in children with cochlear implants. *Restorative Neurology and Neuroscience*. Apr;28:207-218.

Gilley PM and Sharma A. (2010) Functional brain dynamics of evoked and event-related potentials from the central auditory system. *Perspectives on Hearing and Hearing Disorders: Research and Diagnostics*. Feb; 14:12-20.

Gilley PM, Sharma A, Dorman MF. (2008) Cortical reorganization in children with cochlear implants. *Brain Res*. Nov;1239:56-65.

Dorman MF, Sharma A, **Gilley PM**, Martin K, Roland P. (2007) Central auditory development: evidence from CAEP measurements in children fit with cochlear implants. *J Commun Disord*. Jul-Aug;40(4):284-94. Epub 2007 Mar 14.

Sharma A, **Gilley PM**, Dorman MF, Baldwin R. (2007) Deprivation-induced cortical reorganization in children with cochlear implants. *Int J Audiol*. Sep;46(9):494-9. Review.

Gilley PM, Sharma A, Dorman M, and Martin K. (2006). Abnormalities in central auditory maturation in children with language based learning problems. *Clinical Neurophysiology*, 117(9):1949-56.

Gilley PM, Sharma A, Dorman M, Finley CC, Panch A, and Martin K. (2006). Minimization of cochlear implant stimulus artifact in the cortical auditory evoked potential. *Clinical Neurophysiology*, 117(8):1772-82.

Sharma A, Martin K, Roland P, Bauer P, Sweeney MH, **Gilley PM**, Dorman M. (2005). P1 latency as a biomarker for central auditory development in children with hearing impairment. *Journal of the American Academy of Audiology*, 16(8):564-73.

Gilley PM, Sharma A, Dorman M, and Martin K. (2004). Developmental changes in refractoriness of the cortical auditory evoked potential. *Clinical Neurophysiology*, 116(3), 648-657.

Sharma A, Tobey E, Dorman M, Bharadwaj S, Martin K, **Gilley PM**, Kunkel F. (2004). Central auditory maturation and babbling development in infants with cochlear implants.

Archives of Otolaryngology-Head and Neck Surgery. 130(5):511-6.

Professional Conference Abstracts and Proceedings

Gilley PM. (2013). Mechanisms of selective attention: implications for children with language-learning impairments. Inaugural Conference of the Australian Hearing Hub; Sydney Australia.

Gilley PM. (2013). Dynamical modeling and brain source analysis of auditory evoked potentials. Invited talk to the National Acoustics Laboratory; Sydney Australia.

Gilley PM. (2013). Minimization of cochlear implant stimulus artifact in the scalp recorded EEG. Invited talk to the Cochlear Corporation; Sydney, Australia.

Gilley PM and Walker NK (2013). Neural mechanisms of selective attention. Invited talk to the Department of Communication Disorders, University of Pittsburgh; Pittsburgh, PA.

Gilley PM. (2013). Selective attention in children with language-based learning impairments. Ultimate Colorado Mid-Winter Meeting & Colorado Otology – Audiology Conference. Vail, Colorado.

Gyldenkerne P, Sharma M, **Gilley P**, Purdy SC, Dillon H. (2012). Complementing visual cues assist children with APD in listening in background noise – an EEG/MEG study. Paper presented at the 18th International Conference on Biomagnetism; Paris, France.

Cochell, J and **Gilley PM.** Effects of Stimulus Predictability on Cortical Auditory Evoked Responses. AudiologyNow 2012; annual meeting of the American Academy of Audiology. Boston, MA.

Gilley PM. Mechanisms of Attention in Auditory Processing Disorders; 2012 Ultimate Colorado Mid-Winter Meeting & Colorado Otology – Audiology Conference. Vail, Colorado.

Walker NK and **Gilley PM** (2012). Classification of words and syllables: A P3 ERP study. 2012 Annual meeting of the Cognitive Neuroscience Society. Mar 31-Apr 3, 2012. Chicago, IL.

Gilley PM, and Walker N. (2011). Coincident sources of gamma activity during auditory-visual integration. XXII Biennial Symposium of the International Evoked Response Audiometry Study Group. Moscow, Russia.

Gilley PM, Sharma A., and Walker N. (2011). Sources of experimental and statistical error in analysis of the cortical auditory evoked potentials. XXII Biennial Symposium of the International Evoked Response Audiometry Study Group. Moscow, Russia.

Gilley PM. (2010). Dynamic cortical interactions during auditory-visual integration. 50th Annual Meeting of the Society for Psychophysiological Research. Portland, Oregon.

Gilley PM. (2010). Evidence for mediation of the redundant signal effect by early gamma enhancement during simultaneous auditory-visual stimulation. 11th International Multisensory Research Forum. Liverpool, UK.

Sharma A, Dorman M, Martin K, Nash A, **Gilley P** and Campbell J. A sensitive period for sequential bilateral implantation. Association for Research in Otolaryngology 2010 Midwinter Meeting, Anaheim, CA.

Sharma A, Cardon G, Nash A, **Gilley P** and Martin K. Central auditory maturation in children with auditory neuropathy/dys-synchrony. Association for Research in Otolaryngology 2010 Midwinter Meeting, Anaheim, CA.

Spielman J, **Gilley PM**, Halpern A, and Ramig LO (2010). Relationship of the Modified Communicative Effectiveness Index (CETI-M) to Voice Handicap, Acoustics, and Behavioral Characteristics in People with Parkinson Disease. 2010 American Speech-Language-Hearing Association Convention, Philadelphia, PA.

Spielman J, Halpern A, **Gilley PM**, Ramig LO (2010). Relationship of Communicative Effectiveness to Voice Handicap, Acoustics, and Behavioral Characteristics in People with Parkinson Disease. 2010 Motor Speech Conference, Savannah, GA.

Halpern A, Spielman J, Ramig L, **Gilley PM.** (2010) Speech Treatment for Individuals with IPD Post Deep Brain Stimulation: LSVT-DBS. 2010 Motor Speech Conference, Savannah, GA.

Halpern A, Spielman J, Ramig L, **Gilley PM.** (2010) Speech Treatment for PD Individuals Post Deep Brain Stimulation: LSVT-DBS. 2010 American Speech-Language-Hearing Association Convention, Philadelphia, PA.

Spielman J., Halpern A, **Gilley PM**, Ramig L (2010). Communication and participation in Parkinson's disease: Reliability of significant other ratings. 2010 American Speech-Language-Hearing Association Convention, Philadelphia, PA.

Gilley, PM. (2010). Anatomy and physiology of the non-classical auditory pathways. *Frontiers in Hearing: Beyond Newborn Hearing Screening*, Marion Downs Hearing Center, Aurora, CO.

Finan, D., Archart, K., & **Gilley, P.M.** (2009). A Content and Recruiting Course: The Science of Human Communication. 2009 American Speech-Language-Hearing Association Convention, New Orleans, LA.

Hannon, E., Spielman, J., Halpern, A., Ramig, L., & **Gilley, PM.** Laryngeal behavior following intensive speech treatments in Parkinson's disease. 2009 American Speech-Language-Hearing Association Convention, New Orleans, LA.

Nash, A., **Gilley, P.M.** and Sharma, A. (2008). Auditory cortical mapping in a pediatric patient with auditory neuropathy/dys-synchrony. 2008 Annual Meeting of the Colorado Academy of Audiology.

Campbell, J., Sharma, A., **Gilley, P.M.**, et al. (2008). 2008 Annual Meeting of the Colorado Academy of Audiology.

Sharma, A., **Gilley, P.**, Dorman, M., & Campbell, J. (2008). The Clinical Applications of Cortical Evoked Potentials. 2008 Annual Meeting of the Alaska Speech, Language and Hearing Association.

White, T., Gabbard, A., Nash, A., Campbell, J., **Gilley, P.**, & Sharma, A. (2008, September). Cortical Changes with high-frequency hearing loss. 2008 Annual Meeting of The Colorado Academy of Audiology, Estes Park, CO.

Gilley PM, Dorman MF, and Sharma A. (2008). Brain activity in response to sound: Cross-validation of brain source localization using three brain imaging techniques. National Academies Keck Futures Initiative, Cleveland, OH.

Gilley PM. (2007). Cortical reorganization during sensory deprivation. Institute for Cognitive Sciences, Boulder, CO.

Gilley PM, Sharma A, and Dorman MF (2006). Consequences of cortical reorganization during sensory deprivation. 2nd International Symposium for Biophysics, Shanghai, China.

Gilley PM and Sharma A. (2006). Maturation of the central auditory system in children with cochlear implants. ONH-Dagarna (Swedish Society for Otolaryngology – Head & Neck Surgery), Norkoping, Sweden.

Gilley PM, Sharma A, Mitchell T, and Dorman M. (2006) Auditory-Visual Integration in Children with Cochlear Implants. Cognitive Neuroscience Society, 2006 Annual CNS Meeting, San Francisco, California.

Gilley PM, Panch AS, Sharma A, Finley CC, Dorman M, and Martin K. (2005). Minimization of stimulus artifact in cortical auditory evoked potentials. 10th Symposium on Cochlear Implants in Children, Dallas, Texas.

Martin K, Agung K, Sharma A, Dorman M, Roland P, Bauer P, Sweeney M, and **Gilley PM.** (2005). Cortical maturation in children with auditory neuropathy before and after implantation. 10th Symposium on Cochlear Implants in Children, Dallas, Texas.

Gilley PM, Sharma A, Dorman M, Todd NW, Martin K, & Fainberg J. (2004). Assessing development of the auditory system in normal-hearing children and children with cochlear implants by use of a stimulus train with decreasing inter-stimulus intervals. Abstract #844. Association for Research in Otolaryngology 2004 Midwinter Meeting, Daytona Beach, Florida.

Gilley PM & Sharma A. (2004). Maturation of the auditory evoked potentials: implications for auditory processing disorders. Texas Speech Language & Hearing Association 2004 Annual Convention, San Antonio, Texas.

Sharma A, Dorman M, Todd NW, Fainberg J, **Gilley P**, Martin K and Spahr A. (2003). Central auditory system development and plasticity in children with cochlear implants who are implanted later in childhood. American Otological Society, Nashville, Tennessee, May 2003.

Sharma A, Dorman, M, Todd NW, Martin, K, Fainberg J, **Gilley P**, and Spahr A. (2003). Age of cochlear implantation affects central auditory development. American Academy of Audiology, San Antonio, Texas, April 2003.

Gilley P, Sharma A, Martin K. (2003). Development of refractoriness in the central auditory system. American Academy of Audiology, San Antonio, Texas, April 2003.

Sharma A, Dorman M, Martin K and **Gilley P** and Spahr A. (2003). Relationship between central auditory development and speech perception ability in cochlear implanted children. 9th Symposium on Cochlear Implants in Children. Washington DC, April 2003

Sharma A, Dorman M, Todd NW, **Gilley P**, Fainberg J and Martin K. (2003). Central auditory system development in children with hearing impairment. Association for Research in Otolaryngology, Florida, February 2003.

Sharma A, Dorman M, Todd NW, Martin K, Fainberg J, **Gilley P**, Martin K and Spahr A. (2003). A sensitive period for the Development of the Central Auditory System in Children with Cochlear Implants. Association for Research in Otolaryngology, Florida, February 2003.

Gilley P, Sharma A, Martin K, and Dorman MF. (2003). Developmental changes in refractoriness of the cortical auditory evoked potential. Association for Research in Otolaryngology, Florida, February 2003.

Gilley P, Roeser R. (2001). Physiology and diagnosis of auditory neuropathy. Pan-American Audiology Society, San Jose, Costa Rica, June 2001.

TEACHING EXPERIENCE

University of Colorado at Boulder

Courses taught on regular rotation, 2007-present

Introduction to the Science of Human Communication. SLHS 2010. Undergraduate course meeting the CORE science requirements in the College of Arts & Sciences.

Hearing Science. SLHS 3106. Undergraduate course.

Communication Neuroscience. SLHS 5576. Graduate course.

Occupational and Noise Induced Hearing Loss. SLHS 7750. Graduate course.

Applied Functional Neurodynamics. SLHS 6000. Graduate course.

University of Colorado at Boulder

Courses taught on ad hoc basis, 2007-present

Introduction to Diagnostic Audiology. SLHS 4704, Fall 2010. Undergraduate, upper-division course.

The University of Texas at Dallas, Dallas, Texas

Guest Lecturer, 2002-2006

“Multisensory Integration” given to Anu Sharma’s *Clinical Electrophysiology* class, April 2006.

“Introduction to Auditory Evoked Potentials in Diagnostic Audiology” given to Erin Schafer’s *Introduction to Clinical Audiology* class, The University of North Texas, June 2005.

“Characteristics and Effects of Hardware Issues on the Recording of Evoked Potentials” given to Anu Sharma’s *Clinical Electrophysiology* class, April 2005.

“Anatomy and Physiology of Hearing” given to Dianne Altuna’s *Craniofacial Disorders* class. This 2 part lecture was given four times for this class from 2002-2005.

“Stimulus Effects on the Recording of Evoked Potentials” given to Anu Sharma’s Auditory Processing Disorders Class, November 2004.

Teaching Assistant, 2002-2004

Assisted Professor Anu Sharma in her course, *Clinical Electrophysiology*. Helped choose readings for weekly discussion, helped lead weekly discussion sections, Spring 2004.

Assisted Professor Anu Sharma in her course, *Auditory Processing Disorders*. Helped create curriculum, gave weekly class lectures, led discussion sections, graded all written work and determined final grades. Fall 2003.

Assisted Instructor Dianne Altuna in her course, *Anatomy and Physiology of Speech and Hearing*. Created curriculum for section on hearing, gave course lectures, helped compose exams, directed final group projects, graded all written work. Spring 2003.

Assisted Professor Pamela Rollins in her course, *Research Methods I*. Administered and graded exams, gave some lectures. Spring 2002 and Fall 2002.

Laboratory Instructor, 2003-2006

Taught the laboratory section for Anu Sharma's *Clinical Electrophysiology* class. Created laboratory curriculum, gave laboratory instruction, supervised evoked potential recordings. Spring 2006, Spring 2004.

Taught the laboratory section for Anu Sharma's *Auditory Processing Disorders* class. Created laboratory curriculum, gave laboratory instruction, supervised full APD testing battery on clinical patients. Fall 2005, Fall 2004, Fall 2003.

PROFESSIONAL TRAINING

Graduate Research Assistant, "Central Auditory System Plasticity in Implanted Children", NIDCD R01, P.I.: Anu Sharma and "Central Auditory System Development in Hearing Impaired Infants", NIDCD R01, P.I.: Anu Sharma. Fall 2003 – Spring 2006.

Invited participant to the 1st EEGLAB workshop on Event Related Brain Dynamics, The University of California at San Diego, La Jolla, CA, October 2004.

Multi-Modal Imaging & PCA/ICA Source Analysis, Compumedics / Neuroscan, London, England, November 2003.

EEG/ERP Acquisition and Analysis, Neuroscan, El Paso, Texas, May 2002.

EEG Source Localization, Neuroscan, El Paso, Texas, May 2002.

Advanced fMRI Training Course, The University of Texas Southwestern Medical Center, Dallas, Texas, January 2002.

MEMBERSHIPS

International Multisensory Research Forum
Society for Psychophysiological Research
Cognitive Neuroscience Society
International Evoked Response Audiometry Study Group
American Association for the Advancement of Science
American Speech-Language-Hearing Association

CERTIFICATIONS

Certification of Clinical Competency in Audiology (CCC-A), American Speech-Language-Hearing Association, *Application Pending*.

Clinical Fellowship Year in Audiology (CFY-A), American Speech-Language-Hearing Association, Completed in April 2006.

Licensed Audiology Intern, Texas State Board of Examiners in Speech-Language Pathology and Audiology, Completed in April 2006.

AWARDS

Journal of Speech-Language Pathology, Editor's choice award (2013) for: Halpern AE, Ramig LO, Matos CEC, Petska-Cable JA, Spielman JL, Pogoda JM, **Gilley PM**, Sapir S, Bennett JK, and McFarland (2012). Innovative Technology for the Assisted Delivery of Intensive Voice Treatment (LSVT®LOUD) for Parkinson Disease. *Am J Speech Lang Pathol.* 21:354-367.

Best of 2005 - All-Round Favorites for: Sharma A, Martin K, Roland P, Bauer P, Sweeney MH, **Gilley PM**, Dorman M. (2005). P1 latency as a biomarker for central auditory development in children with hearing impairment. *Journal of the American Academy of Audiology*, 16(8):564-73. Cited in: The Best of Audiology Literature, *The Hearing Journal*, 59(6):32-46.

Research Scientist, "A Portable Research Interface for Cochlear Implants", National Institutes of Health, competing contract awarded to Principal Investigator: Philipos Loizou, May 2006-Present.

Student Research Forum Award, American Academy of Audiology, April 2003

Student Investigator Research Grant, "Development of Refractoriness in the Central Auditory System", \$1500.00. American Academy of Audiology, April 2002

"Dr Pedro Berruecos Tellez" Lecture Award, IV Conference of the Pan-American Audiology Society, San Jose, Costa Rica , July 2001