

Contact (until Dec 31, 2020)

2075 Bayview Avenue
 Toronto, Ontario M4N 3M5
 Canada

1 (416) 480-6100 x 7771
 brandontylerpaul.com
 brandon.paul@utoronto.ca

Academic Employment

Assistant Professor, Department of Psychology Ryerson University	Jan 2021 –
Postdoctoral Fellow, Evaluative Clinical Sciences Platform Sunnybrook Research Institute, Sunnybrook Health Sciences Centre	Nov 2017 – Dec 2020
Postdoctoral Associate, School of Speech Therapy and Audiology University of Montreal	Sep 2016 – Oct 2017

Education

McMaster University PhD, Psychology, Neuroscience, & Behaviour	Sep 2012 – Aug 2016
Ohio State University M.A., Speech and Hearing Science B.Mus. Music Theory; Minor, Psychology	Sep 2010 – Aug 2012 Sep 2005 – Jun 2010

Consulting

External Academic Consultant, <i>Decibel Therapeutics</i> , Boston, MA, USA Description: Recommend subjective and psychophysical measurements of hearing disorders	May 2018 – Mar 2019
--	---------------------

Grants and Funding*Awarded*

American Tinnitus Association Research Grant, co-investigator (50k USD) Title: <i>Validating the gap-startle model of tinnitus detection in humans</i>	2018–2019
McMaster University LIVE Lab Grant, co-investigator (2.6k CAD) Title: <i>Examining the relationship between coupled oscillations and motor trajectories in a synchronization task</i>	2015–2016

Fellowships and Scholarships

Harry Barberian Memorial Scholarship (8.6k CAD)	2019–2020
McMaster Institute of Aging Research Fellowship (declined; 50k CAD)	2017–2018
NSERC-CREATE Fellowship, Auditory Cognitive Neuroscience (20k CAD)	2014–2015
NSERC-CREATE Fellowship, Auditory Cognitive Neuroscience (21k CAD)	2013–2014
McMaster Graduate Scholarship (24k CAD)	2012, 2016
The Patrick-McConnell Buckeye Foundation Scholarship (60k USD)	2005–2009

Awards

<i>Ecole d'Orthophonie et d'Audiologie</i> Junior Researcher Award	2016
Medical Research Council Institute of Hearing Research Early Career Award (UK)	2016
McMaster International Excellence Award	2015
Society for Music Perception and Cognition Student Award	2013

Peer-Reviewed Publications [10]

- Paul, B. T.**, Uzelac, M., Chan, E., & Dimitrijevic, A. (2020). Poor early cortical differentiation of speech predicts perceptual difficulties of severely hearing-impaired listeners in multi-talker environments. *Scientific Reports*, 10:6141. doi:10.1038/s41598-020-63103-7
- Paul, B. T.**, Schoenwiesner, M., & Hébert, S. (2018). Towards an objective test of chronic tinnitus: Properties of auditory cortical potentials evoked by silent gaps in tinnitus-like sounds. *Hearing Research*, 366, 90–98.
- Paul, B. T.**, Waheed, S., Bruce, I. C., & Roberts, L. E. (2017). Subcortical amplitude modulation encoding deficits suggest evidence of cochlear synaptopathy in normal-hearing 18–19 year olds with higher lifetime noise exposure. *Journal of the Acoustical Society of America, Express Letters*, 142 (5), November 2017.
- Paul, B. T.**, Bruce, I. C., & Roberts, L. E. (2017). Evidence that hidden hearing loss underlies amplitude modulation encoding deficits in individuals with and without tinnitus. *Hearing Research*, 344, 170–82.
- Roberts, L. E., Bosnyak, D. J., Bruce, I. C., Gander, P. E., & **Paul, B. T.** (2015). Evidence for differential modulation of primary and nonprimary auditory cortex by forward masking in tinnitus. *Hearing Research*, 327, 9–27.
- Paul, B. T.**, Sederberg, P. B., & Feth, L. L. (2015). Imagined temporal groupings tune oscillatory neural activity for processing rhythmic sounds. *Timing & Time Perception*, 3, 172–88.
- Paul, B. T.**, Bruce, I. C., Bosnyak, D. J., Thompson, D. C., & Roberts, L. E. (2014). Modulation of electrocortical brain activity by attention in individuals with and without tinnitus. *Neural Plasticity*, Vol. 2014, Article ID 127824.
- Broze, Y., **Paul, B. T.**, Allen, E., & Guarna, K. (2014). Polyphonic Voice Multiplicity, Numerosity, and Musical Emotion Perception. *Music Perception*, 32 (2), 143–159.
- Paul, B.**, & Huron, D. (2010). An association between breaking voice and grief-related lyrics in Country Music. *Empirical Musicology Review*, 5 (2), 27–35.

Paul, B., (2008). Bilateral Keyboard Symmetry in the Music of Einojuhani Rautavaara. *The Ohio State University Online Music Journal*, 1 (2).

Manuscripts Under Review [3]

Prince, P., **Paul, B. T.**, Chen, J., Le., T., Lin, V. & Dimitrijevic, A. (Submitted to NeuroImage). Neural Correlates of Visual Working Memory in Cochlear Implant Users are Related to Speech Perception in Noise.

Paul, B. T., Chen, J., Le., T., Lin, V. & Dimitrijevic, A. (Submitted to NeuroImage: Clinical). Cortical alpha oscillations in individuals with severe hearing loss reflect subjective ratings of listening effort during speech-in-noise perception.

Mukherjee S., Kuroiwa M., Oakden W., **Paul, B. T.**, Noman, A., Chen, J., Lin, V., Stanisiz, G., & Le, T. (Submitted to eLife). Local magnetic delivery of Brain-derived neurotrophic factor prevents noise-induced hearing loss.

Conference Proceedings [2]

Broze, Y., & **Paul, B.** (2012). Voice Multiplicity Influences the Perception of Musical Emotions. Cambouropoulos, E., Tsougras, C., Mavromatis, P., Pasteriadis, K., eds. Proceedings of the 12th International Conference on Music Perception and Cognition, 166–170 Thessaloniki, Greece.

Paul, B. (2010). Nostalgia-inducing music and perceived social support satisfaction. Demorest, S. ed. Proceedings of the 11th International Conference on Music Perception and Cognition, 790–793, Seattle, WA.

Magazine Articles [4]

Paul, B. T. (Forthcoming). Tinnitus with a normal audiogram: is hearing damaged missed by conventional testing? (**Cover Story**) *Canadian Audiologist*.

Paul, B. T. (September 2019). In memory of Larry Roberts. *Canadian Audiologist*, Volume 6 Issue 5.

Paul, B. T. (July 2019). Why is tinnitus so hard to measure? *Canadian Audiologist*, Volume 6 Issue 4.

Hébert, S. & **Paul, B. T.** (August 2018). Using electroencephalography (EEG) to track brain responses to gaps embedded in soft sounds: A stepping stone towards an objective measure of tinnitus. *Tinnitus Today*, Summer 2018 Edition, 30-32.

Invited Talks [6]

Auditory attention and stream segregation in cochlear implant users. (July 11, 2021). 2021 Conference on Implantable Auditory Prostheses (CIAP), virtual.

Measures of tinnitus-related plasticity in humans. (January 28, 2020) Symposium, *Neuroplasticity and Tinnitus - In memory of Dr. Larry E. Roberts*; the 43rd Annual MidWinter Meeting for the Association for Research in Otolaryngology, San Jose, USA.

Hidden hearing loss in individuals with tinnitus and normal audiograms. (September 10, 2017). *Jos Eggermont Tinnitus Symposium ("JosFest")*, 6th International Conference on Auditory Cortex, Banff, Canada.

Electrophysiology for detecting "hidden" hearing loss: methods, applications, and challenges in research and clinical use. (January 18, 2017). Beaux-Midis Conference Series, University of Montreal, Canada.

Hidden Hearing Loss in Tinnitus Subjects with Normal Hearing Thresholds. (May 24, 2016). Invited Session: "*Acoustics Outreach to Budding Scientists: Planting Seeds for Future Clinical and Physiological Collaborations.*" 171st meeting of the Acoustical Society of America, Salt Lake City, USA.

Cochlear damage related to tinnitus. (February 22, 2016). Invited Session: "*Active auditory processing: Basic mechanisms, individual differences and clinical applications.*" Young Investigators Symposium; the 37th Annual MidWinter Meeting for the Association for Research in Otolaryngology, San Diego, USA.

Symposium Organization

"Advancements in human brain measurements to continuous speech and music stimuli". Accepted for the 44th Annual MidWinter Meeting of the Association for Research in Otolaryngology, (Virtual Meeting). Co-organized with Dr. Melissa Polonenko.

"The Neuroscience of Tinnitus in Humans: A Symposium in Memory of Dr. Larry E. Roberts". May 23, 2020. 13th International Meeting of the Tinnitus Research Initiative, Vancouver, Canada. Co-organized with Dr. Phil Gander. *This symposium was accepted, but the meeting was cancelled due to the 2020 pandemic.*

Conference Talks [10]

Paul, B. T., Uzelac, M., Chan, E., & Dimitrijevic A. Poor early cortical differentiation of speech explains perceptual difficulties of bilateral cochlear implant users in multi-talker environments. 2020 Percy Ireland Academic Day, University of Toronto, Toronto, ON, Canada. *This meeting was cancelled due to the 2020 pandemic.*

Paul, B. T., Srikanthanathan, A., & Dimitrijevic, A. (January 26, 2020). Hearing loss is associated with modified brain oscillations during non-auditory verbal working memory. The 43rd Annual MidWinter Meeting for the Association for Research in Otolaryngology, San Jose, CA.

Paul, B. T., Chen, J., Lin, V., Le, T., & Dimitrijevic, A. (July 16, 2019). Neural correlates of selective attention predict speech streaming performance in bilateral CI users. 2019 Conference on Implantable Auditory Prostheses (CIAP), Lake Tahoe, CA.

Paul, B. T., Chen, J., Lin, V., Le, T., & Dimitrijevic, A. (June 30, 2018). EEG Alpha Activity as a Neural Marker of Listening Effort during speech-in-noise perception in cochlear implant users. 15th International Conference on Cochlear Implants, Antwerp, Belgium.

Paul, B. T. & Dimitrijevic, A. (May 23, 2018). Single-Trial EEG Alpha Activity as a Correlate of Listening Effort During Speech-In-Noise Perception in Cochlear Implant Users. 2018 Auditory EEG Signal Processing symposium, KU Leuven, Leuven, Belgium.

Paul, B. T., Bruce, I. C., & Roberts, L. E. (November 15, 2016). Evidence for Hidden Hearing Loss in Tinnitus Subjects with Normal Hearing Thresholds. 60th Congress on Speech Therapy and Audiology Montreal, Canada

Paul, B. T., Bruce, I. C., & Roberts, L. E. (March 17, 2016). Evidence for Hidden Hearing Loss in Tinnitus Subjects with Normal Hearing Thresholds. 10th annual meeting of the Tinnitus Research Initiative, Nottingham, UK.

Paul, B. T., Roberts, L. E., Bruce, I. C., Bosnyak, D. J., & Thompson, D. C. (June 8, 2015). Cochlear Neuropathy in Tinnitus. 9th annual meeting of the Tinnitus Research Initiative, Ann Arbor, USA.

Paul, B. T., Roberts, L. E., Bruce, I. C., Bosnyak, D. J., & Thompson, D. C. (August 8, 2014) Modulation of auditory evoked potentials by top-down auditory attention is modified in tinnitus. 2014 Annual NSERC-Create Auditory Cognitive Neuroscience Workshop, Montreal, Canada.

Paul, B. T., Sederberg, P. B., & Feth, L. L. (August 09, 2013). Patterns of neural activation and suppression that underlie musical meter. Society for Music Perception and Cognition 2013. Ryerson University, Toronto, Canada.

Selected posters, as presenting author (22 total)

Paul, B. T., Chen, J., Lin, V., Le, T., & Dimitrijevic, A (May 6, 2019). Brain correlates of speech streaming in bilateral cochlear implant users predict selective attention performance. International Hearing Loss Conference, Niagara-on-the-Lake, Canada.

Paul, B. T., Chen, J., Lin, V., Le, T., & Dimitrijevic, A. (February 10, 2019). Intra-Individual Correlations Between EEG Alpha Oscillations and Self-Reported Listening Effort Ratings During a Speech-in-Noise Task in Cochlear Implant Users. The 42nd Annual MidWinter Meeting for the Association for Research in Otolaryngology, Baltimore, MD.

Paul, B. T., Hébert, S, & Schoenwiesner, M. (February 11, 2018). Towards human validation of gap detection for objective tinnitus measurement: Estimating acoustical properties of tinnitus and recording gap-evoked potentials in tinnitus-like sounds. The 41st Annual MidWinter Meeting for the Association for Research in Otolaryngology, San Diego, CA.

Paul, B. T., Bruce, I. C., Waheed, S., & Roberts L. E. (February 13, 2018). Subcortical Amplitude Modulation Encoding Deficits in Young Adults with Greater Noise Exposure History Suggest Evidence of Cochlear Synaptopathy, The 41st Annual MidWinter Meeting for the Association for Research in Otolaryngology, San Diego, CA.

Paul, B. T., Roberts, L. E., Bruce, I. C., Bosnyak, D. J., & Thompson, D. C. (April 25, 2014) Modulation of auditory cortical representations by top-down auditory attention is modified in tinnitus. The Erasmus Mundus Symposium on Auditory Cognitive Neuroscience, Leipzig, Germany.

Paul, B., Sederberg, P. B., & Feth, L. (July 25, 2012). The Influence of Imposed Meter on Temporal Order Perception in Rhythmic Sequences. 12th International Conference on Music Perception and Cognition. Aristotle University of Thessaloniki, Thessaloniki, Greece.

Paul, B. (August 26, 2010). Nostalgia-Inducing Music and Social Support Satisfaction. 11th International Conference on Music Perception and Cognition. University of Washington, Seattle, Washington.

Seminars [3]

Tinnitus with a Normal Audiogram: Is there Undetected Hearing Loss? (February 22, 2020). 31st Seminar on Audition, "Assessment and Management of the Tinnitus Patient," organized by the Western University, Toronto, ON, Canada. (Invited)

Finding hidden hearing loss: research approaches and evidence for cochlear damage in humans with normal hearing. (January 26, 2017). Brain, Music and Sound (BRAMS) 3rd Scientific Social, Montreal, Canada.

Ringling Ears: hidden hearing loss and the role of attention in tinnitus. (September 23, 2016). Cognition and Perception Seminar, McMaster University, Hamilton, Canada.

Educational Workshops [2]

Advanced techniques in EEG analysis: temporal response functions. June 29, 2019. Workshop preceding the 2019 *International Evoked Response Audiometry Study Group* in Sydney, Australia.

Using envelope following responses to find evidence of hidden hearing loss. February 24, 2017. Methods lecture during the *Frequency Following Response Workshop* for the Centre for Research on Brain, Language, and Music in Montreal, Canada.

Educational Webinars

Understanding Cases of Tinnitus with a Normal Audiogram: Is hearing loss undetected? Webinar Presented to the Canadian Academy of Audiology on June 09, 2020. Invited. Attendees: 56 (highest attended CAA science webinar to date).

Public Outreach

Music cognition and emotion. June 5, 2012 Public lecture hosted by *The Columbus Science Pub*, Columbus, Ohio USA.

Teaching Activities

<i>Course Instruction, Ryerson University</i> Sensory and Perceptual Processes	Winter 2021
<i>Teaching Assistantships, McMaster University</i> Basic and Clinical Neuroscience	Winter 2016
Audition	Autumn 2015
Human Behaviour and Evolution	Winter 2015
Audition	Autumn 2014
Cognitive Neuroscience Laboratory	Winter 2014
Cognitive Neuroscience	Autumn 2013
Integrative Psychology, Neuroscience, & Behaviour (Scientific writing course)	Winter 2013
Cognitive Neuroscience	Autumn 2012

Professional Memberships

Association for Research in Otolaryngology	2012–Present
Acoustical Society of America	2011–Present
Society for Music Perception and Cognition	2009–2015
Society for Music Theory	2007–2009

Peer Reviewing *articles reviewed: 24*

<i>Scientific Reports</i>	<i>NeuroImage</i>
<i>Journal of Neurophysiology</i>	<i>Neuroscience</i>
<i>European Journal of Neuroscience</i>	<i>Frontiers in Neuroscience/Psychology</i>
<i>Ear and Hearing</i>	<i>Trends in Hearing</i>
<i>Hearing Research</i>	<i>PLOS ONE</i>
<i>Brain & Behavior</i>	<i>International Journal of Audiology</i>
<i>Journal of Speech, Language, and Hearing Research</i>	<i>Journal of Clinical Medicine</i>
<i>IEEE Transactions in Neural Systems & Rehabilitation</i>	