

Michel Belyk Ph.D.

Curriculum Vitae

AFFILIATIONS

EDGE HILL UNIVERSITY

2021-PRESENT | SENIOR LECTURER

UNIVERSITY COLLEGE LONDON

2019-2021 | POST-DOC.

Supervisor Dr. Carolyn McGettigan

UNIVERSITY OF TORONTO

2017-2019 | POST-DOC.

Supervisor Dr. Deryk Beal

MAASTRICHT UNIVERSITY

2016-2017 | POST-DOC.

Supervisor Dr. Sonja Kotz

MCMASTER UNIVERSITY

2010-2015 | PH.D.

Supervisor Dr. Steven Brown

METRICS

TOTAL PUBLICATIONS | 35

CITATIONS | 800+

H-INDEX | 15

LANGUAGES

ENGLISH | NATIVE

FRENCH | TOUT PETIT PEU

CONTACT

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 St Helens Road
 Ormskirk, L39 4QP
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RESEARCH INTERESTS

PRIMARY SCOPE EVOLUTIONARY NEUROSCIENCE OF THE VOICE

I study the human voice, all the things that it says, and how it is able to say them. Using magnetic resonance imaging, transcranial magnetic stimulation, and meta-analytic approaches I study how the recently evolved neural system for controlling the voice supports this distinctly human power of speech. And how for some people it doesn't.

COLLABORATIVE SCOPE

I approach science with a spirit of collegiality that has allowed me to enjoy collaborations with researchers from a diversity of disciplines including genetics, evolutionary psychology, comparative neuroscience, speech pathology, linguistics, interpersonal coordination, and music-psychology. If you think you might like to collaborate, please do get in touch.

AWARDS

SCHOLARSHIPS

Total	\$ 262 371 CAD	(£158 681 GBP)
2017 - 2019	\$ 90 000 CAD	NSERC PDF
2017 - 2019	\$ 50 000 CAD	Kimel Family Opportunities Grant
2015 - 2016	€30 350 EUR	Erasmus Mundus ACN Mobility Award
2014 - 2015	\$ 15 000 CAD	Ontario Graduate Scholarship
2013 - 2014	\$ 15 000 CAD	Ontario Graduate Scholarship
2012 - 2013	\$ 15 000 CAD	Ontario Graduate Scholarship
2011 - 2012	\$ 15 000 CAD	Ontario Graduate Scholarship
2010	\$ 5 500 CAD	Social Sciences Research Award
2010	\$ 6 500 CAD	NSERC Research Award [Declined]
2009	\$ 5 500 CAD	Social Sciences Research Award

RESEARCH FUNDING

Total	\$ 27 798 CAD	(£17 263 GBP)
2017	€14 520	FPN-MBIC MRI research funding
2016	€2 541	FPN-MBIC MRI research funding
2014 - 2015	\$ 2 000	McMaster SGS Aid of Research Travel Award
2014 - 2015	\$ 1 000	James and Helen Harvey Field Study Scholarship
2012	\$ 500	McMaster GSA Travel Award

HONOURS

2014 - 2015	Margo Wilson & Martin Daly Scholar
2013 - 2014	Susan Morag McNeil Cameron Memorial Scholar
2012 - 2013	Dr. Jane McCracken Scholar
2006 - 2010	McMaster Honour Award

PEER REVIEWED PUBLICATIONS

36. **Belyk, M.**, McGettigan, C. (2022). Real-time magnetic resonance imaging reveals distinct vocal tract configurations during spontaneous and volitional laughter. *Philosophical Transactions of the Royal Society B : Biological Sciences*, 377(1863), 20210511.
35. Bono, D., **Belyk, M.**, Longo, M. & Dick, F. (In Press). Beyond language : The unspoken sensory-motor representation of the tongue in non-primates, non-human and human primates. *Neuroscience & Biobehavioural Reviews*.
34. **Belyk, M.** & McGettigan, C. (In Press). Real-time magnetic resonance imaging reveals distinct vocal tract configurations during spontaneous and volitional laughter. *Philosophical Transactions of the Royal Society B*.
33. Johnson, J.F., **Belyk, M.**, Schwartze, M., Pinheiro, A.P. & Kotz, S.A. (2022). Hypersensitivity to passive voice hearing in hallucination proneness. *Frontiers in Human Neuroscience*, 16, 859731.
32. Duggirala, S.X., **Belyk, M.**, Schwartze, M., Kanske, P. & Kotz, S.A. (2022) Emotional salience but not valence impacts anterior cingulate cortex conflict processing. *Cognitive, Affective, & Behavioral Neuroscience*, 1-14.
31. **Belyk, M.**, Waters, S., Kanber, E., Miquel, E.M. & McGettigan, C. (2022). Individual differences in vocal size exaggeration. *Scientific Reports*, 12, 2611.
30. Zhang, Z., McGettigan, C. & **Belyk, M.** (2022). Speech timing cues reveal deceptive speech : an acoustic analysis of communication in social deduction board games. *PLoS ONE*, 17(2), e0263852.
29. **Belyk, M.**, Eichert, N. & McGettigan, C. (2021). A dual larynx motor networks hypothesis. *Philosophical Transactions of the Royal Society B*, 376, 20200392
28. Waters, S., Kanber, E., Lavan, N., **Belyk, M.**, Carey, D., Cartei, V., Lally, C., Miquel, M. & McGettigan, C. (2021). Singers show enhanced performance and neural representation of vocal imitation. *Philosophical Transactions of the Royal Society B : Biological Sciences*, 376, 20200399.
27. **Belyk, M.**, Banks, R., Tendra, A., Chen, R. & Beal D.S. (2021). Paradoxical facilitation alongside interhemispheric inhibition. *Experimental Brain Research*, 239, 3303-3313.
26. **Belyk, M.**, Brown, R., Beal, D.S., Roebroek, A., McGettigan, C., Guldner, S. & Kots, S.A. (2021). Human larynx motor cortices coordinate respiration for vocal-motor control. *NeuroImage*, 239, 118326.
25. Johnson, J., **Belyk, M.**, Schwartze, M., Pinheiro, A. & Kotz, S. (2021). Expectancy changes the self-monitoring of voice identity. *European Journal of Neuroscience*, 53, 2681-2695. doi : 10.1111/ejn.15162
24. Brown, S., Yuan, Y. & **Belyk, M.** (2021). Evolution of the speech-ready brain : The voice/jaw connection in the human motor cortex. *Journal of Comparative Neurology*, 529, 1018-1028. doi : 10.1002/cne.24997
23. Tendra, A., Wells, R., **Belyk, M.**, Varyvoda, D., Boliek, C. & Beal, D. S. (2020). Motor sequence learning in children with recovered and persistent developmental stuttering : preliminary findings. *Journal of Fluency Disorders*. 105800. doi : 10.1016/j.jfludis.2020.105800
22. Brown, S., Howe, M. & **Belyk, M.** (2020). Music enhances empathic engagement with characters in films *Music and Arts in Action*, 7, 3-16.
21. **Belyk, M.**, Schultz, B.G., Correia, J., Beal, D.S. & Kotz, S.A. (2019). Whistling shares a common tongue with speech : Bioacoustics from real-time MRI of the human vocal tract. *Proceedings of the Royal Society B*, 286, 20191116.
20. Johnson J.F., **Belyk, M.**, Schwartze, M., Pinheiro, A.P. & Kotz, S.A. (2019). The role of the cerebellum in adaptation : ALE meta-analyses on sensory feedback error in Human Brain Mapping. *Human Brain Mapping*, 40, 3966-3981.
19. **Belyk, M.**, Murphy, B.K. & Beal, D.S. (2019). Accessory to dissipate heat from transcranial magnetic stimulation coils *Journal of Neuroscience Methods*, 314, 28-30.

ACADEMIC SERVICE

EDGE HILL UNIVERSITY

OPEN SCIENCE LEAD
REF COMMITTEE
RESEARCH ETHICS BOARD
HEAD OF YEAR

JOURNAL REVIEWER

PHILOSOPH. TRANSACTIONS B
NATURE COMMUNICATIONS
SCIENTIFIC REPORTS
HUMAN BRAIN MAPPING
CEREBRAL CORTEX
NEUROIMAGE
NEUROIMAGE REPORTS
NEUROPSYCHOPHARMACOLOGY
MUSIC PERCEPTION
PLOS ONE
JOVE
ANZ J PSYCHIATRY
J APPLIED PHYSIOLOGY
JASA
JSLHR
BRAIN AND LANGUAGE
BRAIN COMMUNICATIONS
FRONTIERS IN NEUROSCIENCE

BOOK REVIEWER

THE TALKING SPECIES
ROUTELEDGE INTERDISCIPLINARY
STUDIES IN SINGING

GRANT REVIEWER

BRI GRADUATE STUDENT GRANTS
SWISS NAT. SCI. FOUNDATION

CONFERENCES REVIEWER

SOC. NEURO. LANGUAGE, 2020, 2021

18. **Belyk, M.**, Lee Y.S. & Brown, S. (2018). How does human motor cortex regulate vocal pitch in singers? *Royal Society Open Science*, 5, 172208.
17. **Belyk, M.**, Johnson J.F. & Kotz, S.A. (2018). Poor neuro-motor tuning of the human larynx : A comparison of sung and whistled pitch production. *Royal Society Open Science*, 5, 171544.
16. Chauvigné, L., **Belyk, M.** & Brown, S. (2018). Taking two to tango : fMRI analysis of improvised joint action with physical contact. *PLoS ONE*, 13, e0191098.
15. **Belyk, M.**, Brown, S., Lim, J. & Kotz, S.A. (2017). Convergence of semantics and emotional expression within the IFG pars orbitalis. *Neuroimage*, 156, 240-248.
14. **Belyk, M.**, Brown, S. & Kotz, S.A. (2017). Demonstration and validation of kernel density estimation for spatial meta-analyses of neuroimaging data. *Data in Brief*, 13, 346-352.
13. Chauvigné, L., **Belyk, M.** & Brown, S. (2017). Responding to force cues during joint action engages MT+V5. *Journal of Integrative Neuroscience*, 16, 307-318.
12. **Belyk, M.** & Brown, S. (2017). The origins of the vocal brain in humans. *Neuroscience & Biobehavioral Reviews*, 77, 177-193.
11. **Belyk, M.**, Kraft, S.J. & Brown, S. (2017). Stuttering as a trait or a state revisited : Motor system involvement in developmental stuttering. *European Journal of Neuroscience*, 45, 622-624.
10. Bonin, T.L., Trainor, L.J., **Belyk, M.** & Andrews, P. (2016). The source dilemma hypothesis : Perceptual uncertainty contributes to musical emotion. *Cognition*, 154, 174-181.
9. **Belyk, M.** & Brown, S. (2016). Pitch underlies activation of the vocal system during affective vocalization. *Social Cognitive and Affective Neuroscience*, 11, 1078-1088 .
8. **Belyk, M.**, Pfordresher, P.Q., Liotti, M. & Brown, S. (2016). The neural basis of vocal imitation in humans. *Journal of Cognitive Neuroscience*, 24, 621-635.
7. **Belyk, M.**, Kraft, S.J. & Brown, S. (2015). PlexinA polymorphisms mediate the developmental trajectory of human corpus callosum microstructure. *Journal of Human Genetics*, 60, 147-150.
6. **Belyk, M.**, Kraft, S.J. & Brown, S. (2015). Stuttering as a trait or state : An ALE meta-analysis of neuroimaging studies. *European Journal of Neuroscience*, 41, 275-284.
5. Chow, I.V., **Belyk, M.**, Tran, V. & Brown, S. (2014). Syllable synchronization and the P-center in Cantonese. *Journal of Phonetics*, 49, 55-66.
4. **Belyk, M.** & Brown, S. (2014). Somatotopy of the extrinsic laryngeal muscles in the human sensorimotor cortex. *Behavioural Brain Research*, 270, 364-371.
3. **Belyk, M.** & Brown, S. (2014). Perception of affective and linguistic prosody : An ALE meta-analysis of neuroimaging studies. *Social Cognitive and Affective Neuroscience*, 9, 1395-1403.
2. **Belyk, M.** & Brown, S. (2014). The acoustic correlates of valence depend on emotion family. *Journal of Voice*, 28, 523e9-523e18.
1. Pfordresher, P.Q., Brown, S., Meier, K.M., **Belyk, M.** & Liotti, M. (2010). Imprecise singing is widespread. *Journal of the Acoustical Society of America*, 128, 2182-2190.

TEACHING QUALIFICATIONS

FELLOW OF HEA

STUDENT (CO)SUPERVISION
GRADUATES | 13
UNDERGRADUATES | 18

MODULE LEAD
2021- | MSc BIOPSYCHOLOGY
Edge Hill University

TEACHING
2021- | BIOPSYCHOLOGY
Edge Hill University
2021- | RESEARCH METHODS
Edge Hill University
2021- | SPEAKING LAY
Edge Hill University
2021 | NEUROSCIENCE OF SONG
Voice Workshop
2018 | DEV. NEUROPSYCH.
University of Toronto
2015 | INFERENCE STATISTICS
McMaster University
2013 | THE ARTS AND THE BRAIN
McMaster University
2011 | AUDITION
McMaster University

WORKSHOPS
2018 | POWER OF AN HOUR
University of Toronto, Toronto
Academic writing workshop
2014, 2016 | R WORKSHOP
Maastricht University, The Netherlands
Rotman Research Institute, Toronto
Introduction statistical computing in R.
Materials openly available from
michelbelyk.com/resources
2010- | TECHNICAL MANUALS
Advanced methods for fMRI, TMS,
meta-analyses. Materials openly
available from
michelbelyk.com/resources

SCIENTIFIC COMMUNICATION

INVITED TALKS

Belyk, M. (February, 2022). *Evolutionary neuroscience of voice motor control*. Queen Mary University of London, UK.

Belyk, M. (March, 2020). *Evolutionary neuroscience of speech motor control*. Oxford University, UK.

Belyk, M. (September, 2019). *Evolutionary neuroscience of speech motor control*. University College London, UK.

Belyk, M. (August, 2018). *Vocal-motor control in humans*. The Rockefeller University, New York, NY, USA.

Belyk, M. (June, 2018). *Due diligence neuroscience ahead of neuro-stimulation*. Concussion Centre, Holland Bloorview Rehabilitation, Canada.

Belyk, M. (September, 2017). *Comparative neuroscience of laryngeal-motor control*. Colloquium for the Department of Speech-Language Pathology. University of Toronto, Canada.

Belyk, M. (February, 2016). *What to say? The neural control of the voice and vocal response conflict*. Colloquium for the Department of Neuropsychology. Maastricht University, Netherlands.

Belyk, M. (April, 2015). *The Vocal Brain*. Colloquium for the Department of Psychology, Neuroscience & Behaviour. McMaster University, Canada.

MEDIA COVERAGE & OUTREACH

The Psychology of ASMR. *BBC Lancashire*, 2023.

Brains that Stammer : A very accessible overview. *STAMMAfest*, 2022.

Voices and Brains that Stammer. *Willy Russell Centre*, 2021.

Voice Neuroscience. *British Voice Association*, 2020.

[Why you're better at whistling than singing](#). *TheConversation.com*, 2018.

[If singing's tough, try whistling](#). *Scientific American* : 60-second science, 2018.

[Struggling to sing in tune? Give a little whistle instead](#). *Daily Mail*, 2018.

[For the birds : Our surprising shared singing circuitry](#). *CNS*, 2016.

[Research glimpse : Brain imaging on stuttering](#). *Understanding Dysfluency*, 2016.

CONFERENCE PRESENTATIONS

- Belyk, M.** & McGettigan, C. (January, 2023). *Vocal Allometry : Real-time MRI videography of apparent vocal size and the true size of speakers' bodies*. Presentation for the Experimental Psychology Society Conference, UK.
- Belyk, M.** & McGettigan, C. (July, 2022). *Practical analyses for real-time magnetic resonance (rtMRI) of voice production*. Poster presented at Voice Identity, Switzerland.
- Belyk, M.** (July, 2022). *The diverse neurobiology of stammering*. Talk presented at Liverpool Neuroscience Day , UK.
- Belyk, M.**, Carignan, C. & McGettigan, C. (June, 2021). *Semi-automatic method for analysing vocal tract morphology from real-time magnetic resonance images*. Poster presented at the Boston Speech Motor Conference, USA.
- Belyk, M.**, & McGettigan, C. (April, 2021). *Voices of social manipulation : Real-time MRI videography of vocal size exaggeration*. Presentation for the Experimental Psychology Society Conference, UK.
- Belyk, M.**, & McGettigan, C. (October, 2020). *Voices of social manipulation : Real-time MRI videography of vocal tract lengthening*. Poster presented at the Society for Neuroscience of Language Conference, UK.
- Belyk, M.**, Shultz, B.G., Correia, J, Beal, S.D. & Kotz, S.A. (June, 2019). *The role of larynx motor areas in respiratory function*. Poster presented at the Boston Speech Motor Conference, USA.
- Belyk, M.**, Shultz, B.G., Correia, J, Beal, S.D. & Kotz, S.A. (November, 2018). *Bioacoustics of whistling*. Poster presented at Neuromusic, Canada.
- Belyk, M.**, Murphy, B. & Beal, S.D. (August, 2018). *Optimal parameters for neurostimulation experiments of interhemispheric inhibition*. Conference abstract in Brain Stimulation.
- Belyk, M.** (April, 2017). *Probing the motor corpus callosum with TMS*. Oral presentation for the Faculty of Neuropsychology and Psychopharmacology Research Day. The Netherlands.
- Belyk, M.**, Lim, J. & Brown, S. (November, 2015). *Multi-modal emotion perception in the opercular IFG pars orbital*. Poster presented at NeuroMusic. Canada.
- Chauvigné, L., **Belyk, M.** & Brown, S. (November, 2013). *It takes two to tango : The neural basis of dance partnering*. Poster presented at NeuroMusic. Canada.
- Belyk, M.** & Brown, S. (October, 2012). *Speech prosody perception : An ALE meta-analysis*. Poster presented at NeuroMusic. Canada.
- Belyk, M.** & Brown, S. (April, 2012). *The vocal expression of emotion*. Poster presented at CNS. USA.
- Belyk, M.** & Brown, S. (August, 2011). *The melody of emotions*. Poster presented at the Society for Music Perception Conference. USA.
- Belyk, M.** & Brown, S. (August, 2010). *Neural basis of vocal imitation in humans*. Poster Presented at the ACN NSERC-Create annual workshop. Canada.