SHANAATHANAN MODCHALINGAM

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EDUCATION

In Progress | PhD | Sensorimotor Neuroscience - Kinesiology and Health Science | York University

2018 | MSc| Sensorimotor Neuroscience - Kinesiology and Health Science | York University

2018 | Neuroscience Graduate Diploma Program | York University

2014 | Bachelor of Science with Honours | Biology (Biomedical Science) | York University

2009 | Enriched Math, Science and Computers | W.L. Mackenzie C.I.

AWARDS AND SCHOLARSHIPS

2020 – 2022 | NSERC	$23000/year
2018 – 2022 | VISTA Graduate Scholarship	$10000/year
2018 - 2021 | NSERC CREATE IRTG 'Brain in Action' Program	$15000/year
2020 | Ontario Graduate Scholarship	declined
2018, 2019| Ontario Graduate Scholarship	$15000/year
2018 | NSERC CREATE IRTG 'Brain in Action' Program	$5000
2018 | Professional Development Fund	$420
2017 | Health Graduate Student Conference Travel Fund	$1000

2010, 2011, 2014 | Member of Dean’s Honour Roll

2009, 2010 | York University Renewable Entrance Scholarship

TEACHING EXPERIENCE

Fall 2019 | Course Director | Principles of Neuro-motor Learning

Winter 2021 - 2022 | Teaching Assistant | Analysis of Data in Kinesiology

Winter 2018 | Teaching Assistant | Principles of Neuro-motor Learning

Winter 2017 - 2022 | Teaching Assistant | Human Physiology II

Fall 2016 - 2020| Teaching Assistant | Human Physiology I

PUBLICATIONS AND PRESENTATIONS

Peer-reviewed articles:

Albert ST, Jang J, **Modchalingam S,** 't Hart BM, Henriques DYP, Lerner G, Della-Maggiore V, Haith AM, Krakauer JW, Shadmehr R. Competition between parallel sensorimotor learning systems. eLife. 2022;11. https://doi.org/10.7554/eLife.65361

Gastrock RQ, **Modchalingam S**, 't Hart BM, Henriques DYP. External error attribution dampens efferent-based predictions but not proprioceptive changes in hand localization. Scientific Reports. 2020;10. https://doi.org/10.1038/s41598-020-76940-3

Vachon CM, **Modchalingam S**, 't Hart BM, Henriques DYP. The effect of age on visuomotor learning processes. PLOS ONE. 2020;15(9). https://doi.org/10.1371/journal.pone.0239032

Modchalingam S, Vachon CM, 't Hart BM, Henriques DYP. 2019. The effects of awareness of the perturbation during motor adaptation on hand localization. PLOS ONE. 2019;14(8). https://doi.org/10.1371/journal.pone.0220884

Abstracts and Presentations:

Modchalingam S, and Henriques DYP. 2021. Factors affecting implicit motor learning. Virtual Vision Futures, Online Conference, Talk

Albert ST, Jang J, **Modchalingam S**, 't Hart BM, Henriques D, Lerner G, Della-Maggiore V, Haith AM, Krakauer JW, Shadmehr R. 2021. Adaptation as a competition between two distinct sensorimotor learning systems. Neural Control of Movement, poster.

Modchalingam S, Ciccone M, 't Hart, BM, and Henriques DYP. 2020. Unbounded implicit motor adaptation. Neuromatch 2, Online Conference, Poster

Modchalingam S, Ciccone M, 't Hart, BM, and Henriques DYP. 2020. Unbounded implicit motor adaptation. VISTA Annual Research Retreat, Toronto, ON, Poster

Modchalingam S, Ciccone M, 't Hart BM, and Henriques DYP. 2019. Unbounded implicit motor learning. Society for Neuroscience Annual Meeting. Chicago IL

Modchalingam, S, and Henriques, DYP. 2019. Attribution of error: adapting in virtual reality. International Conference on Predictive Vision. Toronto ON

Modchalingam S, Ciccone M, 't Hart BM, Henriques DYP. 2019. Implicit motor learning. Canadian Action and Perception Network Satellite – Canadian Association of Neuroscience Annual Meeting. Toronto, ON

Gastrock, RQ, **Modchalingam, S,** Vachon, C, 't Hart, BM, & Henriques, DYP. 2018. Proprioceptive recalibration and updating predicted sensory consequences are neither exclusively implicit nor explicit. Journal of Exercise, Movement, and Sport (SCAPPS refereed abstracts repository), 50(1)

Modchalingam S, Vachon C, 't Hart BM, Henriques DYP. 2017. Explicit awareness of a perturbation during training does not affect predicted and perceived sensory consequences of hand motion. Society for Neuroscience Annual Meeting. Washington DC

Vachon C, **Modchalingam S**, ’t Hart BM, Henriques DYP. 2017. Older adults benefit less from explicit instruction but show a larger change in perceived but not predicted estimate of hand position following visuomotor training. Society for Neuroscience. Washington DC

Modchalingam S, Vachon C, ’t Hart BM, Henriques DYP. Explicit instruction and a large perturbation have equivalent effects on rate of motor learning. CVR-VISTA, 2017, Toronto, ON

Vachon C, **Modchalingam S**, ’t Hart BM, Henriques DYP. The Roles of Sensory Prediction and Explicit Strategies for Motor Learning in Older Adults. CVR-VISTA, 2017, Toronto, ON

Modchalingam S, Vachon C, ’t Hart BM, Henriques DYP. Explicit instruction and a large perturbation have equivalent effects on rate of motor learning. CAN, 2017, Montreal, QC

Vachon C, **Modchalingam S**, ’t Hart BM, Henriques DYP. The Roles of Sensory Prediction and Explicit Strategies for Motor Learning in Older Adults. CAN, 2017, Montreal, QC

Henriques DYP, Vachon C, **Modchalingam S**, ’t Hart BM. 2017. Proprioceptive Recalibration and Updating Predicted Sensory Consequences are not Affected by Explicit Instruction. Society for Neural Control of Movement Meeting. Dublin, Ireland

’t Hart BM, **Modchalingam S**, Echlin H, Vachon C, Henriques DYP. 2016. Proprioceptive Recalibration is a Purely Implicit Process. Journal of Exercise, Movement, and Sport (SCAPPS refereed abstracts repository), 8(1)

COMMITTEES AND SERVICE

‘Brain in Action’ International Research Training Group Directorate – Canada Representative	Sep 2021 - present
Organizing committee – Participant Repository for Virtual Reality Research	Sep 2020 – present
Vision, Science to Application Leadership Committee: Trainee Representative	Jun 2020 – present
Centre for Vision Research (CVR) Steering Committee: Trainee Representative	May 2020 – Dec 2021
CVR Communications Committee	May 2020 – April 2021
Neuromatch Academy – Volunteer Organizer – Support	Jul 2021
Virtual Vision Futures (VVF) Conference Organization Committee	Sep 2020 – Jun 2021
Chair of talk session for VVF conference	June2020
CVR Director Hiring committee – Graduate student representative	Mar 2020
Moderator for the CVR summer school	Jun 2020
Chair of talk session for IRTG 2019 retreat	Jun 2019
Neuroscience at York – Events Coordinator	2018 - 2019

TRAINING AND WORKSHOPS

2020 | Implicit Bias + EDI training

2020 | Computational Neuroscience – Neuromatch Academy

2018 | EEG Workshop | *University of Marburg*

2018, 2019 | Virtual Reality workshop | *York University*

2016 | Brain and Mind Institute EEG Workshop | *University of Western Ontario*

EXPERIENCE

2021 – Present | Visiting Researcher (Remote) Group for Theoretical Neuroscience, The Philipps University of Marburg – *Dr. Dominik Endres*

- Developed, optimized, and compared neuroscience-informed machine learning models of contextual inference during human motor learning
- Focus: Non-parametric Bayesian models and time-series analysis of motor performance and perceptual input

2016 – Present | Graduate Student Researcher | *Sensorimotor Control Lab – Dr. Denise Henriques*
Centre for Vision Research at York University

- Conducted motor learning experiments with elderly and undergraduate participants
- Led a research program overseeing multiple projects and employees
- Conducted statistical analysis using Python and R

Jul – Aug 2016 | Brain and Motor Learning Instructor | *Science Exploration Summer Camp*
York University

- Led a workshop with children and adolescents
- Conducted a motor learning experiment as part of the workshop

2015 – 2016 | Research Assistant | *Sensorimotor Control Lab*
Centre for Vision Research at York University

- Conducted motor learning experiments independently with undergraduate participants
- Helped test and troubleshoot experiments
- Trained volunteers to perform quality control on robot generated data

2012 – 2013 | President | *Cerebral Palsy Association at York University*

- Oversaw the smooth execution of biweekly events as well as various other activities with the goal of fundraising for and raising awareness about cerebral palsy
- Worked closely with executive members and delegated tasks to maximize efficiency

2012 – 2013 | Vice President | *E-sports at York University*

- Organized and lead weekly executive meetings
- Responsible for the smooth execution of multiple events and tournaments

2010 – 2012 | Clinical Assistant | *Grace Health Centre* under Dr. T. Y. Wong

- Kept records of various tests including MRIs, X-rays, EEGs and ECGS
- Administered vaccines under supervision of doctors
- Shadowed doctors and observed various procedures and consultations

2011- 2012 | Events and Promotions Director | *Cerebral Palsy Association at York University*

- Organized and oversaw the execution of various biweekly events
- Created various promotional items such as pamphlets, posters, booklets and brochures

OTHER ACTIVITIES

2014 – 2016 | Postal Clerk | *Canada Post*

2015 | Toured Hospitals in Rural Sri Lanka | Northern Province

2012 – 2014 | Team Member | *York University Dragon Boat Club*

2013 – 2014 | Math, Science and English Tutor | *Brilliant Tutor*

2012 – 2013 | Team Coordinator | *Team York University in the Collegiate Star League*

2011 – 2013 | Peer Mentor for First Year Students | *Bethune College, York University*

2011 | Visited Healthcare Centers in Urban and Rural China | Beijing, Shanghai, Xi'an

2010 – 2011 | Undergraduate Biology Tutor | *Bethune College, York University*