

Curriculum Vitae

Chad C. Williams

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Neuroscientist | Statistician | Educator |
Professional Writer | Analyst | Programmer

Current Positions:

PhD Candidate, University of Victoria
Neuroscience Program

Research Associate
Divergence Neuro Technologies Inc.

Contact Information:

Website: www.chadcwilliams.com

Additional Links:

[Google Scholar](#)

[Research Gate](#)

[GitHub](#)

[OSF](#)

[YouTube](#)

Career Highlights:

H Index:	8
i10 Index:	7
Citations:	373
Research Gate Score:	24.09
Published Papers:	18 (7 first author)
Presentations:	43
Awards & Distinctions:	\$214,213
Research Grants:	\$60,000

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EDUCATION

University of Victoria, Victoria PhD – Neuroscience , GPA: 9.0/9.0 <i>Dissertation</i> : The Neurocognition of Effortful Reasoning: Investigations of Neural Rhythms <i>Supervisor</i> : Dr. Olav Krigolson <i>Committee Members</i> : Dr. Michael Inzlicht Dr. Bruce Wright	2022*
University of Victoria, Victoria M.Sc. – Neuroscience , GPA: 8.8/9.0 <i>Thesis</i> : Neurocognitive Mechanisms of Type 1 and Type 2 Decision Making Processes <i>Supervisor</i> : Dr. Olav Krigolson <i>Committee Members</i> : Dr. Bruce Wright	2018
University of Victoria, Victoria B.Sc. – Psychology (Honours with distinction) , GPA: 8.8/9.0 <i>Thesis</i> : Reward Processing when Evaluating Goals: Insight into Hierarchical Reinforcement Learning <i>Supervisors</i> : Dr. Clay Holroyd Dr. Olav Krigolson	2016
University of Victoria, Victoria Certificate in Learning and Teaching in Higher Education , GPA: 9.0/9.0	2022
Coursera Certificate of Diversity and Inclusion in the Workplace , GPA: 9.0/9.0	2020
University of Amsterdam, Amsterdam Model-Based Neuroscience Summer School , GPA: N/A	2019

*In progress

AWARDS AND DISTINCTIONS (Total: 19, \$214,213)

Canada Graduate Scholarship – Doctoral (CGS D), NSERC - \$105,000	2018
Research Scholarship (x2), Neuroeducation Network - \$40,000 total	2015 & 2017
Canada Graduate Scholarship – Master’s (CGS M), NSERC - \$17,500	2016
President's Research Scholarship (x6), University of Victoria - \$12,000 total	2016-2021
Research Scholarship, Howard E. Petch - \$7,500	2018
Undergraduate Student Research Award (x2), NSERC - \$9,000 total	2015 & 2016
Graduate Scholarship, Jarmila Vlasta Von Drak Thouvenelle - \$4,000	2019
Memorial Award, Jean Downie Dey - \$2,175	2020
Cameron Memorial Trust Scholarship - \$1,138	2021
Community & Scholarship Fund, University of Victoria - \$1,000	2016
Poster Award, Society for Psychophysiological Research - \$400	2018
Certificate of Academic Excellence, Canadian Psychological Association	2016

GRANTS (Total: 1; \$60,000)

Alliance Grant, NSERC-Mitacs - \$60,000	2021
<i>Written with:</i> Dr. Olav Krigolson	

RESEARCH EXPERIENCE

Neuroscientist & PhD Candidate	2015 – Present
<i>Theoretical and Applied Neuroscience Laboratory, University of Victoria</i>	
<i>Supervisor:</i> Dr. Olav Krigolson	
Scientist for Industrial Collaborations (2016 – Present).	2016 – Present
<i>Theoretical and Applied Neuroscience Laboratory, University of Victoria</i>	
<i>Collaborations:</i> Canadian Sports Institute Pacific Society	
Divergence Neuro Technologies Inc.	
L3Harris Technologies Inc.	
InteraXon Inc.	
Avertus Inc.	
Research Associate	2021 – Present
<i>Divergence Neuro Technologies Inc.</i>	
Statistics Consultant	2018 – Present
<i>Chad C. Williams Consulting</i>	

Academic Peer-Reviewer <i>Biological Psychology, Computational Brain and Behaviour, Experimental Brain Research, Frontiers in Human Neuroscience, International Journal of Psychophysiology, Journal of Neuroscience Methods, Neuroscience Letters</i>	2019 – Present
Laboratory Manager <i>Neuroeconomics Laboratory, University of Victoria</i> Supervisor: Dr. Olav Krigolson	2015 – 2017
Senior Researcher <i>Learning and Cognitive Control Laboratory & Neuroeconomics Laboratory, University of Victoria</i> Supervisors: Dr. Clay Holroyd Dr. Olav Krigolson	2015 – 2016
Research Assistant <i>Human Electrophysiology Laboratory, Simon Fraser University</i> Supervisor: Dr. John McDonald	2012 – 2014

TEACHING EXPERIENCE

Sessional Lecturer <i>University of Victoria, Victoria</i> PSYC 300A – Statistical Methods in Psychology (Summer, 2021) Median Course Evaluations: 5.0/5.0 on all questions PSYC 351C – Cognitive Neuroscience (Spring, 2021) Median Course Evaluations: 5.0/5.0 on all questions MEDS 487 – Advanced Topics in Cognitive Neuroscience (Spring, 2020) Median Course Evaluations: None available	2020 – Present
Online Educator: Practical Statistics with R <i>Virtual, Victoria</i> www.youtube.com/chadcwilliams	2020 – Present
Mentor of Honours Students <i>Theoretical and Applied Neuroscience Laboratory, University of Victoria</i> Honours Students: Completed (3): Mathew Hammerstrom (2019) Marie Schulze (2018) Talise Lindenbach (2017)	2016 – Present

<p>Guest Lecturer <i>University of Victoria, Victoria</i> <i>Psychometrics (PSYC 401)</i> <i>Design Project (ECE 399)</i> <i>Personal Health, Wellness and Potential (EPHE 142)</i> <i>Multidisciplinary Foundations of Physical Activity (EPHE 143)</i> <i>Motor Control (EPHE 380)</i> <i>Motor Learning (EPHE 245)</i></p>	2016 – Present
<p>Private Statistics Tutor for Introduction and Advanced Statistics <i>Chad C. Williams Consulting</i></p>	2018 – Present
<p>Teaching Assistant <i>University of Victoria, Victoria</i> <i>Advanced Statistics (PSYC 400A)</i> <i>Statistics (PSYC 300A & PSYC 300B)</i> <i>Psychometrics (PSYC 401)</i> <i>Research Methods (PSYC 201)</i> <i>Motor Learning (EPHE 245 & 380)</i> <i>Ergonomics (EPHE 456)</i></p>	2016 – Present
<p>Electroencephalography Methods Instructor <i>Theoretical and Applied Neuroscience Laboratory, University of Victoria</i></p>	2015 – Present
<p>Neuroeducation Instructor at Elementary Schools <i>Neuroeconomics Laboratory, University of Victoria</i></p>	2016 – 2017
<p>Life Skills Educator for Individuals with Disabilities <i>Garth Homer Society</i> <i>Lifetime Networks</i> <i>Ridge Meadows Association for Community Living</i> <i>Various Private Practices</i></p>	2007 – 2015

ADDITIONAL PROFESSIONAL EXPERIENCE

<p>Society Member <i>Society for Psychophysiological Research</i> <i>Cognitive Neuroscience Society</i> <i>Canadian Psychological Association</i></p>	2015 – Present
<p>Neuroscience Representative in the Graduate Student Society's Graduate Representative Council <i>University of Victoria</i></p>	2017 – 2020

Council Member of Student Affairs Committee 2017 – 2020
University of Victoria

EPHE Representative in the Neuroscience Graduate Student Association 2017 – 2020
University of Victoria

ORAL PRESENTATIONS (Total: 17, Presenting: 13)

Williams, C. C. A Window into the Rational Mind: Partnering Neuroimaging with Classical Reasoning Problems. *Cognition and Brain Sciences Seminar*, Victoria, BC. 2021

Williams, C. C. Response Conflict and Uncertainty Demonstrate Unique Neural Patterns When Engaging Cognitive Control. *Cognition and Brain Sciences Seminar*, Victoria, BC. 2020

Ciechanski P., Kirton A., Wilson B., **Williams C. C.**, Anderson S. J., Cheng A., Lopushinsky S., & Hecker K. G. Transcranial direct-current stimulation enhances surgical skill learning by altering sensorimotor electrical activity. *CITAC Annual General Meeting 2019*, Banff, AB. 2019

Williams, C. C. It Takes 21 Lines of Code to Control a Robot with Your Mind: Interdisciplinary Collaborations as the Key to Advancing Science. *Neuroscience Graduate Program Seminar Series*. Victoria, BC. 2019

Williams, C. C. The Causes and Consequences for Difficult Decisions in Clinicians. *Neuroscience Kickoff*, Victoria, BC. 2019

Williams, C. C. From the Laboratory to the Real-World: The Versatility in Mobile EEG. *Neuroscience Kickoff*, Victoria, BC. 2018

Williams, C. C., Ferguson, T. D., Hammerstrom, M., Colino, F. L., Wright, B., & Krigolson, O. E. Putting the Learning Back into Neural Learning Systems. *Northwest Cognition and Memory 2018*, Richmond, BC. 2018

Ferguson, T. D., **Williams, C. C.**, Colino, F. L., Wright, B., & Krigolson, O. E. More attention, greater control: Acute and chronic stress correlate with differences in alpha and theta oscillations. *Northwest Cognition and Memory 2018*, Richmond, BC. 2018

- Middleton, J., **Williams, C. C.**, Wright, B., & Krigolson, O. E. Midfrontal Theta: Real World Applications in Medical Education. *Northwest Cognition and Memory 2018*, Richmond, BC. 2018
- Trska, R., **Williams, C. C.**, Hassall, C. D., Holroyd, C., & Krigolson, O. E. Motor Learning: The Effect of Expectancy on Reward Positivity and Readiness Potential. *Northwest Cognition and Memory 2018*, Richmond, BC. 2018
- Williams, C. C.** Thinking, Alpha and Theta: Neural Indicators of System 1 and System 2. *Cognition and Brain Sciences Seminar*, Victoria, BC. 2018
- Krigolson, O. E., **Williams, C. C.**, & Colino, F. L. Using Portable EEG to Assess Human Visual Attention. *Human-Computer Interaction International Conference 2017*, Vancouver, BC. 2017
- Williams, C. C.**, Lindenbach, T., Wright, B., & Krigolson, O. E. Rapid Language Acquisition in a Reinforcement Learning Paradigm. *Northwest Cognition and Memory 2017*, Burnaby, BC. 2017
- Williams, C. C.** Learning Pathology with Reinforcements: A Neural Investigation. *Cognition and Brain Sciences Seminars*, Victoria, BC. 2016
- Williams, C. C.**, Saffer, B. Y., McCulloch, R. B., & Krigolson, O. E. One is the loneliest number, but also the most valuable. *Cognitive Science Association for Interdisciplinary Learning*, Hood River, OR. 2016
- Williams, C. C.**, Paget, M., Coderre, S., Burak, K., Wright, B., & Krigolson, O. E. Indicators of System I and System II Decision Making when Diagnosing Clinical Cases. *Northwest Cognition and Memory 2016*, Vancouver, BC. 2016
- Williams, C. C.**, Paget, M., Coderre, S., Burak, K., Wright, B., & Krigolson, O. E. A Reinforcement Learning Approach to Medical Education. *University of Victoria's Making Waves*, Victoria, BC. 2016

POSTER PRESENTATIONS (Total: 26, Presenting: 11)

- Williams, C. C.**, Ferguson, T. D., Hassall, C. D., Abimbola, W., & Krigolson, O. E. The Reward Positivity, Delta, and Theta in a Sample of 500 Participants. *Society for Psychophysiology Research Meeting*, Virtual. 2020

- Williams, C. C.**, & Krigolson, O. E. The Power Curve of the Brain: Reward Prediction Errors Follow Learning Curves. *Cognitive Neuroscience Society Annual Meeting*, San Francisco, CA. 2019
- Middleton, J., **Williams, C. C.**, Wright, B., & Krigolson, O. E. Tonic Frontal Theta as an Assessment of Medical Decision Making in the Context of Medical Education. *Cognitive Neuroscience Society Annual Meeting*, San Francisco, CA. 2019
- Williams, C. C.**, Kappen, M., Hassall, C. D., Wright, B., & Krigolson, O. E. Cognitive Control and Attention: Neurocognitive Mechanisms of System 1 and System 2 Thinking. *Society for Psychophysiology Research Meeting*, Quebec City, QC. 2018
- Berman, T., **Williams, C. C.**, & Krigolson, O. E. Neural Correlates of Feedback Congruency: Top-Down Modulation of the Reward Positivity. *Canadian Neuroscience Annual Meeting*, Vancouver, BC. 2018
- Hammerstrom, M., **Williams, C. C.**, Ferguson, T. D., Colino, F. L., Wright, B., & Krigolson, O. E. Neural Learning Signals Reflect Task Performance in a Medical Context. *Northwest Cognition and Memory 2018*, Richmond, BC. 2018
- Walther, L., **Williams, C. C.**, & Krigolson, O. E. Early bird vs. night owl: Using EEG to measure your attention fluctuations throughout the day. *Northwest Cognition and Memory 2018*, Richmond, BC. 2018
- Gagliardi, G., **Williams, C. C.**, Abimbola, W., & Krigolson, O. E. Using a Pair of Glasses to See Your Brainwaves. *Northwest Cognition and Memory 2018*, Richmond, BC. 2018
- Walther, L., **Williams, C. C.**, & Krigolson, O. E. Morning person vs. night owl: Using EEG to measure your attention fluctuations throughout the day. *Jamie Cassels Undergraduate Research Awards Research Fair*, Victoria, BC. 2018
- Foster, C., **Williams, C. C.**, Krigolson, O. E., & Fyshe, A. Decoding Word Semantics and Learning in EEG Data via an Artificial Language. *Cognitive Computational Neuroscience*, New York, NY. 2017
- Williams, C.**, Schulze, M., Wright, B., & Krigolson, O. E. Neural correlates of system I and system II judgements when diagnosing diseases. *Society for Psychophysiological Research Meeting*, Vienna, Austria. 2017

- Norton, A., Colino, F., **Williams, C. C.**, Hassall, C., & Krigolson, O. E. Finding a MUSE: Validation of a low-cost, portable system, for EEG research. *Society for Psychophysiological Research Meeting*, Vienna, Austria. 2017
- Williams, C. C.**, Lindenbach, T., Colino, F., Wright, B., & Krigolson, O. E. Learning a Novel Language with Reinforcements: A Preliminary Neural Investigation. *Organization for Human Brain Mapping Meeting*, Vancouver, BC. 2017
- Hassall, C. D., **Williams, C. C.**, & Krigolson, O. E. P300 scaling: Value, average reward, and the framing effect. *Organization of Human Brain Mapping Conference*, Vancouver, BC. 2017
- Norton, A., **Williams, C. C.**, Hassall, C. D., Colino, F. L., Krigolson, O. E. A Validation of a Low-Cost Portable EEG System. *Organization for Human Brain Mapping Conference*, Vancouver, BC. 2017
- Schulze, M., **Williams, C. C.**, Wright, B., Krigolson, O. E. System I and System II Decision Making in a Medical Context. *Northwest Cognition and Memory*, Vancouver, BC. 2017
- Fitzpatrick, S., Fisher, S., **Williams, C. C.**, and Krigolson, O. E. Neurophysiological Assessment of Concussion: Variability in Reward Positivity. *Jamie Cassels Undergraduate Research Awards Research Fair*, Victoria, BC. 2017
- Williams, C. C.**, Paget, M., Coderre, S., Burak, K., Wright, B., and Krigolson, O. E. The Neural Basis of Clinical Decision Making. *77th Annual Convention for the Canadian Psychological Association (CPA)*, Victoria, BC. 2016
- Hassall, C. D., **Williams, C. C.**, & Krigolson, O. E. Good, better, best: Electroencephalographic responses scale to reward value. *77th Annual Convention for the Canadian Psychological Association (CPA)*, Victoria, BC. 2016
- McCulloch, R. B., **Williams, C. C.**, Saffer, B. Y., & Krigolson, O. E. I lost all of my marbles, but I only care about the white ones. *77th Annual Convention for the Canadian Psychological Association (CPA)*, Victoria, BC. 2016

- Lindenbach, T. N., **Williams, C. C.**, and Krigolson, O. E. Rapid Learning of a Novel Language: An Electroencephalographic Investigation. *Northwest Cognition and Memory 2016*, Vancouver, BC. 2016
- Pluta, A. J., **Williams, C. C.**, and Krigolson, O. E. The Effects of Background Alpha on Baseball Performance. *Northwest Cognition and Memory*, Vancouver, BC. 2016
- Williams, C. C.**, Paget, M., Coderre, S., Burak, K., Wright, B., and Krigolson, O. E. Neural Systems That Underlie Clinical Decision Making: An Electroencephalographic Investigation. *Cognitive Neuroscience Society Annual Meeting*, New York, NY. 2016
- Williams, C. C.**, Holroyd, C. B., & Krigolson, O. E. Reward Processing when Evaluating Goals: Insight into Hierarchical Reinforcement Learning. *Psychology Students of Vancouver Island Poster Session*, Victoria, BC. 2016
- Williams, C. C.**, Hassall, C. D., & Krigolson, O. E. Reward Expectancy and the Reward Positivity: A Non-Linear Trend. *Society for Psychophysiological Research 55th Annual Meeting*, Seattle, WA. 2015
- Williams, C. C.**, Hassall, C. D., & Krigolson, O. E. Reward Expectancy and the Reward Positivity: A Non-Linear Trend. *Northwest Cognition and Memory 2015*, Bellingham, OR. 2015

PUBLICATIONS (Total: 18, First Author: 7)

- Williams, C. C.**, Ferguson, T. D., Hassall, C. D., Wright, B., & Krigolson, O. E. (2021). Dissociated Neural Signals of Conflict and Surprise in Effortful Decision Making: Theta Activity Reflects Surprise while Alpha and Beta Activity Reflect Conflict. *Neuropsychologia*, 107793. [\(PDF\)](#)
- Williams, C. C.**, Ferguson, T. D., Hassall, C. D., Abimbola, W., & Krigolson, O. E. (2021). The ERP, Frequency, and Time-Frequency Correlates of Feedback Processing: Insights from a Large Sample Study. *Psychophysiology*, e13722, 1-26. [\(PDF\)](#)
- Redden, R. J., Gagliardi, G. A., **Williams, C. C.**, Hassall, C. D., & Krigolson, O. E. (2021). Champ versus Chump: Viewing an Opponent's Face Engages Attention but Not Reward Systems. *Games*, 12(3): 1-20. [\(PDF\)](#)

- Foster, C. **Williams, C. C.**, Krigolson, O. E., & Fyshe, A. (2021). Using EEG to Decode Semantics During an Artificial Language Learning Task. *Brain and Behavior* 2021, 1-11. <https://doi.org/10.1002/brb3.2234>. [\(PDF\)](#)
- Hammerstrom, M. R., Ferguson, T. D., **Williams, C. C.**, & Krigolson, O. E. (2021). What happens when right means wrong? The impact of conflict arising from competing feedback responses. *Brain Research*, 147393. [\(PDF\)](#)
- Williams, C. C.**, Hassall, C. D., Lindenbach, T., & Krigolson, O. E. (2020). Reward Prediction Errors Reflect an Underlying Learning Process that Parallels Behavioural Adaptations: A Trial-to-Trial Analysis. *Computational Brain and Behaviour*, 3, 189-199. [\(PDF\)](#)
- Colino, F. L., **Williams, C. C.**, Hassall, C. D., Binsted, G., and Krigolson, O. E. (2020). The Impact of Wellness on Neural Learning Systems. *Neuroscience Letters*, 714, 134537. [\(PDF\)](#)
- Williams, C. C.**, Kappen, M., Wright, B., & Krigolson, O. E. (2019). Thinking Theta and Alpha: Mechanisms of Intuitive and Analytical Reasoning. *NeuroImage*, 189: 574-580. [\(PDF\)](#)
- Ciechanski, P., Hecker, K., Wilson, B., **Williams, C. C.**, Anderson, S., Cheng, A., Lopushinsky, S., & Kirton, A. (2019). Electroencephalography correlates of transcranial direct-current stimulation enhanced surgical skill learning: a replication and extension study. *Brain Research*, 146445. [\(PDF\)](#)
- Ferguson, T., **Williams, C. C.**, Skelton, R. W., & Krigolson, O. E. (2019). Passively Learned Spatial Navigation Cues Evoke Reinforcement Learning Reward Signals. *Cognition*, 189: 65-75. [\(PDF\)](#)
- Williams, C. C.**, Hecker, K. G., Paget, M. K., Coderre, S. P., Burak, K. W., Wright, B., & Krigolson, O. E. (2018). The Application of Reward Learning in the Real-World: Changes in the Reward Positivity Amplitude Reflect Learning in a Medical Education Context. *International Journal for Psychophysiology*, 132: 236-242. [\(PDF\)](#)
- Pluta, A., **Williams, C. C.**, Binsted, G., Hecker, K. G., & Krigolson, O. E. (2018). Chasing the zone: Reduced beta power predicts baseball batting performance. *Neuroscience Letters*, 868: 150-154. [\(PDF\)](#)
- Howse, A., Hassall, C. D., **Williams, C. C.**, Hajcak, G., & Krigolson, O. E. (2018). Alcohol Hangover Impacts Learning and Reward Processing Within the Medial-Frontal Cortex. *Psychophysiology*, e13081. [\(PDF\)](#)

- Williams, C. C.**, Hassall, C. D., Trska, R., Holroyd, C. B., & Krigolson, O. E. (2017). When Theory and Biology Differ: The Relationship Between Reward Prediction Errors and Expectancy. *Biological Psychology*, *129*: 265-272. [\(PDF\)](#)
- Krigolson, O. E., **Williams, C. C.**, & Colino, F. L. (2017). Using Portable EEG to Assess Human Visual Attention. In *International Conference on Augmented Cognition* (pp. 56-65). [\(PDF\)](#)
- Krigolson, O. E., **Williams, C. C.**, Norton, A., Hassall, C. D., & Colino, F. L. (2017). Choosing MUSE: Validation of a Low-Cost, Portable EEG System for ERP Research. *Frontiers in Neuroscience*, *11*. [\(PDF\)](#)
- Hassall, C. D., & **Williams, C. C.** (2017). The Role of the Amygdala in Value-Based Learning. *Journal of Neuroscience (Journal Club, non-refereed)*, *37*(28): 6601-6602. [\(PDF\)](#)
- Williams, C. C.**, Saffer, B. Y., McCulloch, R. B., & Krigolson, O. E. (2016). The Scarcity Heuristic Impacts Reward Processing Within Medial-Frontal Cortex. *NeuroReport*, *27*(7). [\(PDF\)](#)

SUBMITTED & PREPRINTS (Total: 2, First Author: 2)

- Williams, C. C.**, Van Oorschot, F., & Krigolson, O. E. (submitted & preprint). A Window into the Rational Mind: The Neural Underpinnings of Human Reasoning. *PsyArXiv*. <https://psyarxiv.com/gc6u9/> [\(PDF\)](#)
- Williams, C. C.** (preprint). Publish-or-Perish Propagates Scientific Malpractice and Neglect. *PsyArXiv*. <https://psyarxiv.com/v4pjb/> [\(PDF\)](#)

REFERENCES

References will be provided upon request