**Alexandra L. Decker**

*Curriculum Vitae*

**Employment**

**Post-doctoral Fellow, Massachusetts Institute of Technology** 2022-

Department of Brain and Cognitive Sciences

Advisor: John D.E. Gabrieli

**Education**

**Ph.D., University of Toronto**  2022

Department of Psychology

Advisors: Katherine Duncan, Amy Finn

Committee: Keisuke Fukuda, Lynn Hasher, Michael Esterman, Jay Pratt

**M.A., University of Toronto, and the Hospital for Sick Children**  2016

Department of Psychology

Advisor: Donald Mabbott

Committee: Morgan Barense, Amy Finn

**B.A., McGill University** 2013

Major: Psychology and Behavioural Science

**Research Interests**

Learning and memory, sustained and selective attention, cognitive and brain development, neural plasticity, neuromodulators (acetylcholine, norepinephrine), effort, academic outcomes, socioeconomic status

**Awards, Scholarships and Grants**

Natural Sciences and Engineering Research Council of Canada ($90,000) 2022-2024

*Proposal designated as outstanding (among the top 20% of those awarded)*

William Line Memorial Graduate Scholarship, University of Toronto ($8000) 2020-2021

Doctoral Completion Award ($8000), University of Toronto 2020-2021

Ontario Graduate Scholarship ($15,000), Ontario, Canada 2020-2021

Dataquest Underrepresented Genders Scholarship 2020

Ontario Graduate Scholarship ($15,000), Ontario, Canada 2019-2020

Canadian Institutes of Health Research Project Grant ($1,147,500) 2018-2022

Brain Canada-Kids Brain Health Network Training Award ($70,000) 2018-2020

School of Graduate Studies Conference Grant ($450), University of Toronto 2017

School of Graduate Studies Conference Grant ($1,100), University of Toronto 2016

**Peer-Reviewed Publications**

+equal contributions

**Decker, A. L**., Meisler, S. L., Hubbard, N. A., Bauer, C. C. C., Leonard, J., Grotzinger, H., Giebler, M. A., Torres, Y. C., Imhof, A., Romeo, R., & Gabrieli, J. D. E. (2024). Striatal and Behavioral Responses to Reward Vary by Socioeconomic Status in Adolescents. *Journal of Neuroscience*. <https://doi.org/10.1523/JNEUROSCI.1633-23.2023>

Hurtado, H., Hansen, M., Strack, J., Vainik, U., **Decker, A. L**., Khundrakpam, B., Duncan, K., Finn, A. S., Mabbott, D. J., & Merz, E. C. (2024). Polygenic risk for depression and anterior and posterior hippocampal volume in children and adolescents. *Journal of Affective Disorders*, *344*, 619–627. <https://doi.org/10.1016/j.jad.2023.10.068>

**Decker, A. L**., Duncan, K., & Finn, A. S. (2023). Fluctuations in Sustained Attention Explain Moment-to-Moment Shifts in Children’s Memory Formation. *Psychological Science*, *34*(12), 1377–1389. <https://doi.org/10.1177/09567976231206767>

**Decker, A**., Dubois, M., Duncan, K., & Finn, A. S. (2023). Pay attention and you might miss it: Greater learning during attentional lapses. *Psychonomic Bulletin & Review*, *30*(3), 1041–1052. <https://doi.org/10.3758/s13423-022-02226-6>

**Decker, A**., Duncan, K.+, Finn, A. S.+, & Mabbott, D. J.+ (2020). Children’s family income is associated with cognitive function and volume of anterior not posterior hippocampus. *Nature Communications*, *11*(1), 4040. <https://doi.org/10.1038/s41467-020-17854-6>

**Decker, A**., Finn, A.+, & Duncan, K.+ (2020). Errors lead to transient impairments in memory formation. *Cognition*, *204*, 104338. <https://doi.org/10.1016/j.cognition.2020.104338>

**Decker, A**., & Duncan, K. (2020). Acetylcholine and the complex interdependence of memory and attention. *Current Opinion in Behavioral Sciences*, *32*, 21–28. <https://doi.org/10.1016/j.cobeha.2020.01.013>

Medeiros, C. B. de, Moxon‐Emre, I., Scantlebury, N., Malkin, D., Ramaswamy, V., **Decker, A**., Law, N., Kumabe, T., Leonard, J., Rubin, J., Jung, S., Kim, S.-K., Gupta, N., Weiss, W., Faria, C. C., Vibhakar, R., Lafay‐Cousin, L., Chan, J., Kros, J. M., … Mabbott, D. J. (accepted). Medulloblastoma has a global impact on health related quality of life: Findings from an international cohort. *Cancer Medicine*. <https://doi.org/10.1002/cam4.2701>

Sekeres, M. J., Riggs, L., **Decker, A.**, Medeiros, C. B. de, Bacopulos, A., Skocic, J., … Frankland, P. W. (2018). Impaired recent, but preserved remote, autobiographical memory in pediatric brain tumor patients. *Journal of Neuroscience*, 1056–18. <https://doi.org/10.1523/JNEUROSCI.1056-18.2018>

**Decker, A**., Szulc, K. U., Bouffet, E., Laughlin, S., Chakravarty, M. M., Skocic, J., … Mabbott, D. J. (2017). Smaller hippocampal subfield volumes predict verbal associative memory in pediatric brain tumor survivors. *Hippocampus*. <https://doi.org/10.1002/hipo.22758>

Oyefiade, A. A., Ameis, S., Lerch, J. P., Rockel, C., Szulc, K. U., Scantlebury, N., **Decker, A.**, Jefferson, J., Spichak, S., & Mabbott, D. J. (2018). Development of short-range white matter in healthy children and adolescents. *Human Brain Mapping*, 39(1), 204–217. <https://doi.org/10.1002/hbm.23836>

**Manuscripts in preparation or under review**

Biba, T., **Decker, A**., Herrmann, B., Fukuda, K., Katz, C., Valiante, T., Duncan, K.

Memory’s pulse: episodic memory formation is theta rhythmic. (*In preparation*)

**Decker A**., Duncan, K.+, Finn, A.S.+ The costs of selective attention: Children’s poorer selective attention boosts memory for less relevant information. (*In Preparation*)

**Decker, A. L**., Leonard, J., Hubbard, N. A., Bauer, C. C. C., Grotzinger, H., Giebler, M. A., Torres, Y. C., Imhof, A., Romeo, R., & Gabrieli, J. D. E. (2024). Socioeconomic disadvantage reduces exploratory risk-taking and learning in adolescents (*In Preparation*)

Treves, I., Marusak, H., **Decker, A**., Calhoun, V., Gabrieli, J.E.D. ­­­Dynamic functional connectivity correlates of trait mindfulness in early adolescence. (*Submitted*)

**Decker A**., Gabrieli, J.D.E.., Chai., X., Ofen, N. The costs of cognitive control: Task switching impairs memory more in children than adults. (*In Preparation*)

**Talks**

**Decker, A.L.**, Gabrieli, J.G. (May 2023). Socioeconomic status and the development of the reward system. Environmental and Social Determinants of Child Mental Health Symposium. The Picower Institute of Learning and Memory, Massachusetts Institute of Technology, Cambridge, MA.

Biba, T., **Decker, A**., Herrmann, B., Fukuda, K., Katz, C., Valiante, T., Duncan, K. (2022). Memory’s pulse: theta rhythmic sampling underlies episodic memory formation. Columbia Memory Group meeting, New York, NY.

Biba, T., **Decker, A**., Herrmann, B., Fukuda, K., Katz, C., Valiante, T., Duncan, K. (2022). Memory’s pulse: theta rhythmic sampling underlies episodic memory formation. Temple Memory Group meeting, Philadelphia, PA.

**Decker, A.L.**, Duncan, K+., Finn, A+. (March 2021) How do spontaneous attentional fluctuations influence learning and memory in children and adults? Columbia University, New York, NY.

**Decker, A.L.**, Duncan, K+., Finn, A+. (March 2021) The costs and benefits of attentional lapses on learning and memory in children and adults. Haskins Laboratories, New Haven, CT

**Decker, A.L**., Duncan, K.+, Finn, A.+, (February 2020) How do attentional fluctuations influence memory encoding? Developmental Interest Group meeting, University of Toronto, Toronto

**Decker, A.L**., Duncan, K.+, Finn, A.+, Mabbott, D.J.+, (March 2019) Parental income alters development of anterior, but not posterior hippocampus. Society for Research in Child Development, Baltimore, MD

**Decker, A.L.**, Duncan, K.+, Finn, A.+, Mabbott, D.J.+, (March 2019) Socioeconomic status

and the anterior hippocampus. Developmental interest group meeting, University of Toronto, Toronto

**Decker, A.L.**, Finn, A.S.+, Duncan, K.+, (May 2018). Attentional states influence memory encoding. Research presented at the 2018 Annual Toronto Area Memory Group Meeting, Toronto, Canada

**Decker, A.L.**, Szulc, K. U., Bouffet, E., Laughlin, S., Chakravarty, M. M., Skocic, J.,…Mabbott, D. J. (April 2017). The development of hippocampal subfields in healthy children and adolescents. 2017 Annual Neuroimaging round data blitz meeting at the Hospital for Sick Children, Toronto, Canada.

**Decker, A.L**., Szulc, K. U., de Medieros, C. B., Skocic, J., Mabbott, D. J., (May 2016). Hippocampal subfield volumes in pediatric brain tumor survivors. Research presented at the Annual Collaborative Program in Neuroscience Research Day, University of Toronto, Canada

**Posters**

**Decker, A**., Meisler, S.L., Gabrieli, J.D.E. Reward responses in behavior and the striatum vary in relation to socioeconomic status in adolescents. Reinforcement Learning at Harvard Meeting, Cambridge, MA (August, 2023)

**Decker, A**., Meisler, S.L., Gabrieli, J.D.E\*., Ofen, N.\*, Chai, X\*. Costs of cognitive control: Task switching impairs memory more in children than adults. Organization for Human Brain Mapping, Montreal, Quebec, Canada (July, 2023)

**Decker, A**., Tandoc, M., Cho, H., Rebello, G., Duncan, K.\*, Finn, S. A.\*. Shifting focus: The advantage of children’s poor selective attention for learning. Brain and Cognitive Sciences Retreat, Cape Cod, Massachusetts (June, 2023).

Dubois, M\*, **Decker A\***, Duncan K, Finn AS. Lapses in attention facilitate peripheral learning.

Poster presented at 2021 Workshop on Mental Effort, 2021. [virtual]. [co-lead author]

**Decker, A**., Finn, S. A.\*, Duncan, K.\* How we learn from our mistakes: Errors lead to transient impairments and then enhancements in memory formation. Virtual Vision Sciences Society Meeting (June, 2020).

Dubois M, **Decker A**, Duncan K, Finn AS. Learning more when attending less: Poor attentional

states enhance peripheral learning. Poster presented at: Cognitive Neuroscience

Society Annual Meeting, 2020, Boston.

**Decker, A.**, Duncan, K.\*, Finn, S. A.\*, Attention Matters More: In Kids, Attentional State Predicts Memory Better Than in Adults. Context and Episodic Memory Symposium, Philadelphia, PA (May 2019).

**Decker, A.**, Duncan, K.\*, Finn, S. A.\*, Attention Matters More: In Kids, Attentional State Predicts Memory Better Than in Adults. Biennial meeting for Research in Child Development, Baltimore, MD (March 2019).

**Decker, A**., Finn, S. A.\*, Duncan, K.\*, How do developmental shifts in attentional control influence memory encoding? Cognitive Neuroscience Society Conference, Boston MA (April 2018).

**Decker A.**, Skocic J, Finn A, Mabbott DJ., Age-related changes in hippocampal subfields and white matter across childhood and adolescence. Annual Meeting of the Organization for Human Brain Mapping, Vancouver, BC. (June 2017).

**Decker A.**, Skocic J, Finn A, Mabbott DJ. Age-related changes in hippocampal subfields and white matter across childhood and adolescence. 11th Annual Canadian Association for Neuroscience Meeting, Montreal, QC. (May 2017).

**Decker, A.**, Szulc, K., Skocic, J., de Medeiros, C., Riggs, L., Bouffet, E., … Mabbott, D. (2016). Impact of cranial radiation therapy on hippocampal subfield volumes and declarative memory in pediatric brain tumor survivors. Neuro-Oncology, 18(suppl\_3), iii158–iii158. https://doi.org/10.1093/neuonc/now081.58

**Decker A.**, Szulc K, Skocic J, de Medeiros C, Riggs L, Bouffet E, Dockstader C, Laughlin S, Mabbott D. Hippocampal subfield volume loss in children and adolescent survivors of pediatric brain tumors. Canadian Association for Neuroscience Conference, Toronto, ON (May 2016).

**Decker A.**, Szulc K, Skocic J, de Medeiros C, Riggs L, Bouffet E, Dockstader C, Laughlin S, Mabbott D. Hippocampal subfield volume loss in children and adolescent survivors of pediatric brain tumors. Centre for Brain and Mental Health Day, Toronto, ON (April 2016).

Oyefiade A, Ameis S, Scantlebury N, **Decker A.**, Szulc K, Mabbott DJ. Developmental characterization of sub-cortical white matter tracts. 23rd International Society for Magnetic Resonance Imaging in Medicine, Toronto, ON (June 1, 2015).

Moxon-Emre, I., Scantlebury, N., Taylor, M.D., Bouffet, E., Malkin, D., Laughlin, S., Law, N., Kumabe, T., Leonard, J., Rubin, J., Jung, S., Kim, S., Gupta, N., Weiss, W., Faria, C., Vibhakar, R., Spiegler, B., Janzen, L., Liu, F., **Decker, A.**, Mabbott, D. Long-term outcome in subgroups of medulloblastoma. 16th International Symposium on Pediatric Neuro-Oncology (ISPNO), Singapore. Neuro-Oncology 2014: 16(Suppl 1): i99-i104.

**Mentees**

Joseph Itiat

Natasha Dalziel

Kailana Baker-Matsuoka

Vivi Wickersham, Brandeis University

Hannah Cho, Ph.D. student, The University of Toronto

Zekai Huang

Yiqi Shen

Enri Boshti, Neuroscience, The University of Toronto

Carissa DeMarinis, Psychology, The University of Toronto

Jiin Kim, Psychology, The University of Toronto

**Teaching Experience**

Teaching Assistant, Introduction to Psychology (Psy100), University of Toronto 2021

Teaching Assistant, Cognitive Psychology (PSY270), University of Toronto 2020

Teaching Assistant, Introduction to Psychology (PSY100), University of Toronto 2019

Teaching Assistant, Introduction to Development (PSY210), University of Toronto 2018

Teaching Assistant, Learning and Plasticity (PSY260), University of Toronto 2017

Guest Lecturer, Learning and Plasticity (PSY260), University of Toronto 2017

Teaching Assistant, Psychology, and the Law (PSY328), University of Toronto 2017

Teaching Assistant, Human Memory (PSY372), University of Toronto 2016

Teaching Assistant, Health Psychology (PSY333), University of Toronto 2015

Guest Lecturer, Health Psychology (PSY333), University of Toronto 2015

**Volunteer Experience and Academic Service**

Tour Guide, Mock Scanning Room at Martinos Imaging Center 2024

Workshop Leader, Evaluating Scientific Evidence for Kids 2023

Science Mentor, Frontiers for Young Minds 2023

Student Voice Survey Organizer, Psychology Graduate Student’s Association 2021

Vice President of the Psychology Graduate Student’s Association 2020-2021

Volunteer Analytics Consultant 2019-2021

Census Committee Coordinator, University of Toronto Student’s Association 2019-2020

Graduate student Mentor, University of Toronto Peer Mentorship Program 2019-2020

Let’s Talk Science Volunteer, Let’s Talk Science 2017

International Conference of Cognitive Neuroscience Volunteer Committee Member 2017

Volunteer, Toronto Rehabilitation Institute 2013

Volunteer, Toronto Western, Geriatric Mental Health Outreach Program 2012-2013

Big Brothers Big Sisters, Montreal 2009-2012

**Work Experience**

Clinical Project Research Assistant, The Hospital for Sick Children 2013-2015

Sales Representative, Toronto Dominion Bank 2012-2013

Server, Jack Astor’s Bar and Grill 2012

Server and Caterer, Polson Pier 2011

Art Teacher, Bayview Glen Day Camp 2010-2011

Sales representative, Abercrombie and Fitch 2006-2008

**Skills**

Experimental design, time series analyses, multi-level modelling, statistics, Psychopy experiment builder, R, Python (pandas, numpy, nilearn), EyeLink Software (eye tracking and pupillometry), functional resonance imaging data

**Ad Hoc Reviewer**

Journal of Cognitive Neuroscience

Neuroimage

Psychonomic Bulletin and Review