MATTHEW XAVIER LOWE, PhD

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Academic Appointments and Education

Postdoctoral Research Associate *2017-*
Massachusetts Institute of Technology
Computer Science and Artificial Intelligence Lab (CSAIL)
Supervisor: Dr. Aude Oliva

Ph.D. Cognitive Neuroscience
University of Toronto *2014-2017*
Advisors: Dr. Jonathan S. Cant and Dr. Susanne Ferber

M.A. Cognitive Neuroscience *2013-2014*
University of Toronto
Principle Research Scientists: Dr. Jonathan S. Cant and Dr. Susanne Ferber

B.Sc. Psychology *2008-2010*
University of Cape Town

Research

Publications

[1] **Lowe, M.X**., Stevenson, R.A., Barense, M.D., Cant, J.S., and Ferber, S. (2018). Relating the perception of visual ensemble statistics to individual levels of autistic traits, *Attention, Perception, & Psychophysics*, 80 (7), 1667-1674

[2] **Lowe, M.X.,** Rajsic, Ferber, S., and Walther, D.B. (2018). Discriminating scene categories from brain activity within 100ms, *Cortex*, 106, 275-287*
***Featured on the journal cover**

[3] **Lowe, M.X.,** Rajsic, J., Gallivan, J.P., Ferber, S., and Cant, J.S. (2017). Neural representation of geometry and surface properties in object and scene perception, *NeuroImage,* 157, 586-597*
***Featured on the journal cover**

[4] Robin, J., **Lowe, M.X.,** Pishdadian, S., Rivest, J., Cant, J.S., & Moscovitch, M. (2017). Selective scene perception deficits in a case of topographical disorientation, *Cortex*, 92, 70-80

[5] **Lowe, M.X.,** Gallivan, J.P., Ferber, S., and Cant, J.S. (2016). Feature diagnosticity and task context shape activity in human scene-selective cortex, *NeuroImage,* 125, 681-692*
***Featured on the journal cover**

[6] **Lowe, M.X**., Stevenson, R.A., Wilson, K.E., Ouslis, N.E., Barense, M.D., Cant, J.S., and Ferber, S. (2016). Sensory processing patterns predict the integration of information held in visual working

memory, *Journal of Experimental Psychology: Human Perception and Performance,* 42(2), 294-301

[7] Wilson, K.E., **Lowe, M.X**., Ruppel, J., Pratt, J., and Ferber, S. (2016). The scope of no return: Openness predicts the spatial distribution of Inhibition of Return, *Attention, Perception, & Psychophysics,* 78, 209-217

[8] **Lowe, M.X.,** Ferber, S., and Cant, J.S. (2015). Processing context: Asymmetric interference of visual form and texture in object and scene interactions, *Vision Research,* 117, 34-40*
***Featured on the journal cover**

Submitted Manuscripts

[9] Assaf, H., Mzozoyana, M., Noesen, B., **Lowe, M.X.**, and Cant, J.S. (under review). Artificially-generates scenes demonstrate the importance of global scene properties for scene perception.

[10] Wilson, K., Sun, S.Z., Emrich, S., **Lowe, M.X**., Kosnik, R., Ruppel. J., and Ferber, S. (under review) Individual differences in visual attention: Conscientiousness and selective attention.

Manuscripts in Preparation for Submission

[11] **Lowe, M.X.,** Mohsenzadeh, Y., Lahner, B., Teng, S., Charest, I., and Oliva, A. Spatiotemporal dynamics of sound representations in the human brain.

[12] **Lowe, M.X.,** Mohsenzadeh, Y. A neural time signature of visual imagery in the human brain.

Conference Presentations

2019

[1] **Lowe, M.X.,** Mohsenzadeh, Y., Lahner, B., Teng, S., Charest, I., and Oliva, A. Spatiotemporal dynamics of sound representations in the human brain. Poster to be presented at the Society for Neuroscience Annual Meeting, Chicago, IL.

[2] **Lowe, M.X.,** Mohsenzadeh, Y., Lahner, B., Teng, S., Charest, I., and Oliva, A. Neural dynamics of human auditory perception across space and time. Poster presented at the Cognitive Neuroscience Society Annual Meeting, San Francisco, CA. *
***Abstract awarded the Postdoctoral Fellow Award**

[3] **Lowe, M.X.,** Mohsenzadeh, Y., Lahner, B., Teng, S., Charest, I., and Oliva, A. Spatiotemporal neural representations in high-level visual cortex evoked from sounds. Talk presented at the Vision Science Society Annual Meeting, St. Petersburg, FL.

2018

[4] **Lowe, M.X.,** Teng, S., Mohsenzadeh, Y., Charest, I., Pantazis, D., and Oliva, A. Temporal dynamics underlying sound discrimination in the human brain. Abstract presented at the Conference on Cognitive Computational Neuroscience, Philidephia, PA.

2017

[5] **Lowe, M.X.,** Rajsic, J., Cant, J.S., and Ferber, S. Efficient encoding of ensemble statistics in the visual periphery. Talk presented at the Society for Neuroscience Annual Meeting, Washing, D.C.

[6] **Lowe, M.X.,** Rajsic, J., Gallivan, J.P., Ferber, S., and Cant, J.S. Making a scene: Neural representation of visual features in object and scene perception. Poster presented at the Organization for Human Brain Mapping Annual Meeting, Vancouver, BC.

[7] **Lowe, M.X.**, Rajsic, J., Ferber, S., and Walther, D.B. Category discrimination of early electrophysiological responses reveals the time course of natural scene perception. Poster presented at the Vision Sciences Society Annual Meeting, St. Petersburg, FL. *
*__Abstract awarded the Elsevier Travel Award__

[8] Mzozoyana, M. W., **Lowe, M.X**., Groen, I.I.A., Cant, J.S., and Harel, A. Artificially-generated scenes demonstrate the importance of global scene properties for scene perception. Poster presented at the Vision Sciences Society Annual Meeting, St. Petersburg, FL.

2017

[9] Cant, J.S., **Lowe, M.X**., Rajsic, J., Gallivan, J.P. Are scene-shape and scene-texture processing mediated by shared or distinct neuronal mechanisms in the parahippocampal place area? Talk presented at the Society for Neuroscience Annual Meeting, Chicago, IL

[10] **Lowe, M.X**., Ferber, S, and Cant, J.S. Dynamic representation of texture and spatial layout in human scene-selective cortex. Poster presented at the Organization of Human Brain Mapping Annual Meeting, Honolulu, HI

[11] **Lowe, M.X**., Ferber, S, and Cant, J.S. Texture and spatial layout converge in human scene-selective cortex. Poster presented at the Vision Sciences Society Annual Meeting, St. Petersburg, FL

[12] **Lowe, M.X.,** Stevenson, R.A., Wilson, K.E., Ouslis, N.E., Barense, M.D., Cant, J.S., and Ferber, S. Sensory processing patterns predict the bias of ensemble statistics for items held in visual working memory. Poster presented at the Cognitive Neuroscience Society Annual Meeting, San Francisco, CA.

Pre 2014

[13] **Lowe, M.X**., and Cant, J.S. Revealing a global-processing bias for texture in scene perception. Poster presented at the Canadian Society for Brain, Behaviour, and Cognitive Science Annual Meeting, Toronto, ON.

[14] **Lowe, M.X.,** and Cant, J.S. Perceiving the global: The role of surface texture consistency in object and background perception. Poster presented at the Vision Sciences Society Annual Meeting, St. Petersburg, FL

[15] Wilson, K.E., Ruppel, J., **Lowe, M.X**., Shaw, M., Kosnik, R., Pratt, J., and Ferber, S. Individual differences in the scope of spatial attention. Poster presented at Vision Sciences Society Annual Meeting, Naples, FL

Neuroimaging Techniques

Functional Magnetic Resonance Imaging (Univariate analysis; multivoxel pattern analysis (MPVA) including representational similarity analysis (RSA); fMR-adaptation); Electroencephalography (EEG); Magnetoencephalography (MEG)

Scholarly Awards & Honours

Ontario Graduate Scholarship (OGS),	*2017*
Elsevier Travel Award (VSS Student Travel Award)	*2017*
Ontario Graduate Scholarship (OGS)	*2016*
Travel Award from the Faculty of Arts & Sciences, University of Toronto	*2015*
Travel Award from the Faculty of Arts & Sciences, University of Toronto	*2014*
University of Toronto Fellowship	*2013-2016*
Dean's Award for Academic Excellence, University of Cape Town	*2009*
Academic Scholarship, University of Cape Town	*2007-2008*

Invited Lectures

Neural representations of the visual world across time and space *2017*
University of Toronto Scarborough

Sensation and Perception *2017*
University of Toronto

Scene Perception, *2015*
University of Toronto

Introduction to experimental design and data analysis *2014-2016*
University of Toronto

Teaching

Teaching Assistant

Cognitive Neuroscience	*2017*
Cognitive Psychology Laboratory	*2014-2016*
Cognitive Neuroscience of Vision	*2014, 2015*
Perception and Cognition	*2014, 2016*
Psychological Research Laboratory	*2013*

Service

Volunteer, CVPR 2018 & CVPR 2018 Area Chair Workshop *2018*

fMRI Project Planning Committee Member University of Toronto	*2014 - 2016*
University of Toronto Scarborough Campus Representative, PGSA	*2014-2015*
Master of Arts Student Representative, PGSA	*2013-2014*

Ad-Hoc Peer Reviewer

Attention, Perception, & Psychophysics
Cortex
Human Brain Mapping
Journal of Cognitive Neuroscience
Journal of Experimental Psychology: General
Experimental Brain Research

Extra-curricular Achievements

Mountaineering

Summit of Mafadi Peak, South Africa, highest mountain in South Africa (11,319ft)	2017
Summit of Mt. Aconcagua, Andes Mountain range; Argentina, highest mountain in the Western and Southern Hemispheres (22, 838ft)	2016
Summit of Mt. Elbrus, Caucasus Mountain Range, Russia, highest Mountain in Europe (18, 510ft)	2013
Mt. Kilimanjaro, Tanzania, highest mountain in Africa (19, 341 ft)	2005

References

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Aude Oliva, Ph.D.
Executive Director, MIT-IBM Watson AI Lab; Quest MIT
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