Peter J. Kohler, PhD
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## Employment

**Assistant Professor**, York University, Toronto — *July 2019 – present*

**Research Associate**, Stanford University — *September 2018 – June 2019*

**Post-doctoral Scholar**, Stanford University — *September 2013 – August 2018*

**Doctoral Student,** Dartmouth College — *September 2008 – August 2013*

**Graduate Volunteer Researcher,** Dartmouth College — *October 2007 – June 2008*

## Education

**PhD, Cognitive Neuroscience**, Dartmouth College, Hanover NH — *September 2008 – August 2013*

**BSc in Psychology**, University of Copenhagen, Denmark — *September 2004 – July 2007*

## Funding

**Vista research grant 2023-2025 (PI, awarded $50,000):**
*Marmoset Responses to Mid-level Visual Features investigated with Natural and Artificial Stimuli*

**NSERC RTI 2023 (Co-Investigator, awarded $97,000):**
*Enhanced Neuroimaging Infrastructure for Innovative Visual Neuroscience*

**Catalyzing Interdisciplinary Research Clusters 2022-2025 (Co-Applicant, awarded $450,000):**
*Translating Brain Signals Across Scales, Species, Sex, and Lifespan*

**NSERC Discovery Grant 2020-2025 (PI, awarded $132,500):**
*Symmetry as a cue to object and scene representations in human visual cortex*

**York University Junior Faculty Fund & Minor Research Grant 2020 (PI, awarded $5000):**
*Symmetry in Natural Vision*

**York University Minor Research Grant 2024 (PI, awarded $3000):**
*The Computation of Configural Shape in Human Visual Cortex*

## Service

Center for Vision Research, Member of Steering Committee (director: Rob Allison, 2020-)

Center for Vision Research, Seminar Coordinator (2022-)

Center for Vision Research, Member of Communications Committee (2020-)

Graduate Area Coordinator, Brain, Behaviour and Cognitive Science, Psychology Department (2024-)

Elected Member of Psychology Department Exec Committee (2023-2024)

Faculty recruitment committee member (2022, 2023, 2024)

Faculty of Health Senator (2020-2023)

Contributor to JsPsych, a JavaScript library for running behavioral experiments online (2020-)

External Grant Reviewer, NSERC Discovery Grant Program

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Ad Hoc Reviewer for Peer Reviewed Journals:

Nature Communications • eLife • Psychological Science • Journal of Neuroscience • NeuroImage • Communications Biology • Scientific Reports • Scientific Data • Journal of Vision • Attention, Perception and Psychophysics • Vision Research • Perception • Neuropsychologia • Brain Structure and Function • Cognitive Processing • Frontiers of Psychology • PLOS one • Art and Perception • 3D Research

## *Teaching*

**NRSC 2200**: Neuroscience Laboratory Techniques, Winter 2021, Winter 2022, Winter 2023, Winter 2024

**PSYC 2240**: Biological Bases of Behavior, Fall 2020, Summer 2022

**PSYC 4260**: Seminar in Sensation and Perception, Fall 2021, Fall 2024

**PSYC 6273**: Computer Programming for Experimental Psychology, Winter 2020

## *Mentorship*

**Graduate Supervision**:

S. Ahmari, MSc, Biology, 2023-

Y. Iskandar, MA, Psychology, 2023- [recipient of VISTA Master's Scholarship]

S. Samet, MA, Psychology, 2023- [recipient of VISTA Master's Scholarship]

S. Chaparian, PhD, Biology, 2022-

S. Ragavaloo, MA, Psychology, 2022-2024

R. Moreau, MA, Psychology, 2020-2022 [recipient of VISTA Master's Scholarship]

**Graduate committee membership**:

M. MacDonald-Dale, Psychology, 2023-

Y. Rawat, MA, Psychology, 2023-

N. Pordavoody, MA, Psychology, 2023-

R. Whiley, PhD, Biology, 2021-

R. Gastrock, PhD, Psychology, 2021-

N. Khan, PhD, Psychology, 2019-2024

R. Cohan, MA, Psychology, 2021-2023

J. Patel, MA, Psychology, 2020-2021

R. Gastrock, MA, Psychology, 2019-2021

**Oral Examination Committee Membership**

T. Chosang, MA, Psychology, 2024 [chair]

M. Orlando, MA, Psychology, 2023 [chair]

B. Baltaretu, PhD, Biology, 2021 [chair]

F. Lan, MSc, Computer Science and Engineering, 2021 [external examiner]

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**UG RAs**: Christopher Lee (2020-2022) • Linda Godley (2020-2021) • Rachel Lysenko (2020-2022) • Shaya Samet (2022-2023) • Yara Iskandar (2022-2023) • Amanda Di Pietrantonio (2022-2023) • Nikan Movahedi (2022-) • Jasman Kahlon (2023-) • Arya Bhosale (2023).

**UG Honor's Theses**: Rita Hdaki (Bio, 2022) • Shaya Samet (Psyc, 2022) • Aisha Salifu (Bio, 2024)

**Other mentorship:**

York Stem Fellowship Indicium, supervising 4 BA students (2020-2021)

Research Experiences for Diversity and Inclusion (REDI) program at the Department of Psychology, supervising 2 BA students (2023)

## *Peer-reviewed Publications*

Maechler, MR, Choe, E, Cavanagh, P, **Kohler**, PJ, Tse, PU (under review). Hemifield Specificity of Attention Response Functions During Multiple Object Tracking. *Journal of Neuroscience*.

Moreau, R, Alp, N, Clarke, A, Freud, E & **Kohler**, PJ (under review). Differential processing of reflection and rotation symmetries in visual textures. *Journal of Vision*.

Shams, M, **Kohler**, PJ & Cavanagh, P (under review). Deconstructing the Frame Effect. *Journal of Vision*.

**Kohler**, PJ, Vedak, S & Gilmore, RO (2022). Perceptual Similarities among Wallpaper Group Exemplars. *Symmetry 14*(5)*,* 857.

Boswell, A., **Kohler**, PJ, McCarthy, JD & Caplovitz, GP (2021). Perceived group size is determined by the centroids of the component elements. *Journal of Vision 21*(13), 1.

Sievers, B, Parkinson, C, **Kohler**, PJ, Hughes, J, Fogelson, S & Wheatley, T (2021). Visual and auditory brain areas share a representational geometry for perceiving emotion. *Current Biology*, 31, 1–12

Audurier, P, Héjjà-Brichard, Y, De Castro, V, **Kohler**, PJ, Norcia, AM, Durand, J-B & Cottereau, BR (2021). Symmetry processing in the macaque visual cortex. *Cerebral Cortex*.

**Kohler,** PJ & Clarke, A. (2021). The human visual system preserves the hierarchy of 2-dimensional pattern regularity. *Proceedings of the Royal Society B: Biological Sciences, 288, 20211142.*

Norcia, AM, Lee, A, Meredith, W, **Kohler**, PJ, Pei, F, Ghassan, S, Libove, R, Phillips, J & Hardan, AY (2021). A case-control study of visual, auditory and audio-visual sensory interactions in children with Autism Spectrum Disorder. *Journal of Vision, 21*(4), 5.

Van Rinsveld, A, Guillaume, M, **Kohler**, PJ, Schiltz, C, Gevers, W & Content, A (2020). The neural signature of numerosity by Separating numerical and continuous magnitude extraction in visual cortex with frequency-tagged EEG. *Proceedings of the National Academy of Sciences, 117*(11), 5726-5732*.*

Barzegaran, E, Bosse, S, **Kohler**, PJ & Norcia, AM (2019). EEGSourceSim: A framework for realistic simulation of EEG scalp data using MRI-based forward models and biologically plausible signals and noise. *Journal of Neuroscience Methods, 328,* 108377*.*

**Kohler**, PJ, Cottereau, BR & Norcia, AM (2019). Image Segmentation Based on Relative Motion and Relative Disparity Cues in Topographically Organized Areas of Human Visual Cortex. *Scientific Reports, 9*(1), 9308.

Manning C, Kaneshiro B, **Kohler** PJ, Duta M, Scerif G & Norcia AM (2019) Neural dynamics underlying coherent motion perception in children and adults. *Developmental Cognitive Neuroscience, 38,* 100670*.*

**Kohler**, PJ, Meredith, WJ and Norcia, AM (2018). Revisiting the functional significance of binocular cues for perceiving motion in depth. *Nature Communications, 9*(1), 3511.

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Alp, N, **Kohler**, PJ, Kogo, N, Wagemans, J and Norcia, AM (2018). Measuring Integration Processes in Visual Symmetry with Frequency-Tagged EEG. *Scientific Reports 8*(1), 6969.

Kanayet, F, Mattarella-Micke, A, **Kohler**, PJ, Norcia, AM, McCandliss, B and McClelland, JM (2018). Distinct representations of magnitude and spatial position within parietal cortex during number-space mapping. *Journal of Cognitive Neuroscience, 30*(2), 200-218.

**Kohler**, PJ, Cottereau, BR and Norcia, AM (2018). Dynamics of Perceptual Decisions About Symmetry in Visual Cortex. *NeuroImage, 167,* 316-330.

Norcia, AM, Pei, F & **Kohler**, PJ (2017). Evidence for long-range spatio-temporal interactions in infant and adult visual cortex. *Journal of Vision, 17*(6), 12.

**Kohler**, PJ, Cavanagh, P, & Tse, PU (2017). Motion-induced position shifts activate early visual cortex. *Frontiers in Neuroscience, 11*(168).

**Kohler**, PJ, Clarke, A, Yakovleva, A, Liu, Y & Norcia, AM (2016). Representation of maximally regular textures in human visual cortex. *Journal of Neuroscience, 36*(3), 714 –729.

McCarthy, JD, **Kohler**, PJ, Tse, PU & Caplovitz, GP (2015). Extrastriate Visual Areas Integrate Form Features over Space and Time to Construct Representations of Stationary and Rigidly Rotating Objects. *Journal of Cognitive Neuroscience, 27*(11), 2158-2173.

**Kohler**, PJ, Cavanagh, P, & Tse, PU (2015). Motion-induced position shifts are influenced by global motion, but dominated by component motion. *Vision Research, 110*, 93-99.

Schlegel, A, Alexander, P, Fogelson, SV, Li, X, Lu, Z, **Kohler**, PJ, Riley, E, Tse, PU, & Meng, M (2015). The artist emerges: Visual art learning alters neural structure and function. *NeuroImage, 105*, 440-451.

**Kohler**, PJ, Caplovitz, GP & Tse, PU (2014). The global slowdown effect: Why does perceptual grouping reduce perceived speed? *Attention, Perception and Psychophysics, 76*(3), 780-792.

Fogelson, SV, **Kohler**, PJ, Miller, KJ, Granger, R, and Tse, PU (2014). Unconscious neural processing differs with method used to render stimuli invisible. *Frontiers in Psychology, 5*(601).

Schlegel, AS, **Kohler**, PJ, Fogelson, SV, Alexander, P, Konuthula, D & Tse, PU (2013). Network structure and dynamics of the mental workspace. *Proceedings of the National Academy of Sciences, 110*(40), 16277-16282.

**Kohler**, PJ, Fogelson, SV Reavis, EA, Meng, M, Guntupalli, JS, Hanke, M, Halchenko, YO, Connolly, AC, Haxby, JV & Tse, PU (2013). Pattern classification precedes regional-average hemodynamic response in early visual cortex. *NeuroImage, 78,* 249–260.

Reavis, EA, **Kohler**, PJ, Caplovitz, CP, Wheatley, T & Tse, PU (2013). Effects of attention on visual experience during monocular rivalry. *Vision Research, 83,* 76-81.

Parkinson, C, **Kohler**, PJ, Sievers, B & Wheatley, T (2012). Associations between auditory pitch and visual elevation do not depend on language: Evidence from a remote population. *Perception, 47*(7), 854-861.

Porter, KB, Caplovitz, GP, **Kohler**, PJ, Ackerman, CM & Tse, PU (2011). Rotational and translational motion interact independently with form. *Vision Research, 51*(23), 2478-2487.

**Kohler**, PJ, Caplovitz, GP, Hsieh, P-J, Sun, J & Tse, PU (2010). Motion fading is driven by perceived, not actual angular velocity. *Vision Research, 50*(11), 1086–1094.

**Kohler**, PJ, Caplovitz, GP & Tse, PU (2009). The whole moves less than the spin of its parts. *Attention, Perception & Psychophysics, 71*(4), 675-679.

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Mala, H, Castro, MR, Knippel, J, **Kohler**, PJ, Lassen, P & Mogensen, J (2008). Therapeutic effects of a restraint procedure on posttraumatic place learning in fimbria-fornix transected rats. *Brain Research, 1217,* 221-231.

## *Book Chapters*

Caplovitz, GP Hsieh, P-J, **Kohler**, PJ & Porter, KB (2017). The Spinning Ellipse Speed Illusion. In *Oxford Compendium of Visual Illusions* (pp. 170-173): Oxford University Press.

Tse, PU, Reavis, EA, **Kohler**, PJ, Caplovitz, GP, & Wheatley, T (2013). How Attention can Alter Appearances. In *Handbook of Experimental Phenomenology* (pp. 291-315): John Wiley & Sons, Ltd.

## *Presentations*

### Conference Talks

2024 May
"Does perspective-distortion modulate the temporal tuning of symmetry responses?"
**student-led talk** *Vision Sciences Society*, St. Petersburg, FL

2024 January
"Investigating local and configural shape processing with steady-state visual evoked potentials"
*Annual Interdisciplinary Conference*, Jackson Hole, WY

2023 May "Spatial Mechanisms Mediating Visual Responses to Symmetries in Textures"
**student-led talk** *Vision Sciences Society*, St. Petersburg, FL
*Recipient of the VSS travel award*

2021 May "Differential processing of reflection and rotation symmetries in visual textures"
**student-led talk** *Vision Sciences Society*, St. Petersburg, FL

2018 May "Characterizing late-developing binocular motion mechanisms in human visual cortex"
*Vision Sciences Society*, St. Petersburg, FL

2017 May "Neural responses to motion in 2 and 3 dimensions"
*Vision Sciences Society*, St. Petersburg, FL

2015 May "Parametric responses to rotation symmetry in mid-level visual cortex"
*Vision Sciences Society*, St. Petersburg, FL

2012 May "Neural correlates of perceptually bistable motion-based grouping"
*Vision Sciences Society*, Naples, FL

### Invited Talks

2023 June "Visual Responses to Symmetries in Objects and Textures"
Iranian Neuroscience Society

2022 July "Visual Neuroscience: Symmetry as a case study"
CVR Summer School 2022, York University, Toronto

2021 July "Symmetry and Visual Perception"
CVR Summer School 2021, York University, Toronto

2021 April "Symmetries in Visual Textures"
keynote, *Visual Properties Driving Visual Preference* workshop, University of Liverpool, UK

2019 March "The role of motion in organizing visual perception"

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Department of Psychology, York University, Toronto

2019 February — "Exploring perceptual organization with steady-state EEG"
Department of Neuroscience, Psychology and Behaviour, University of Leicester, UK

2018 February — "Symmetry as a fundamental feature dimension in mid-level vision"
Department of Psychology, York University, Toronto

2017 July — "Steady-state visual evoked potentials in EEG experiments"
Core Outreach Workshop, University of Lincoln, Nebraska

2016 February — "Texture regularity processing in human visual cortex"
NASA Ames Research Center, Moffett Field, CA

2015 December — "Perceptual organization at multiple stages of cortical processing"
Danish Centre For Magnetic Resonance, Hvidovre, Denmark

2015 August — "Perceptual organization at multiple stages of cortical processing"
Cognitive Neuroscience Research Unit, Aalborg, Denmark

2015 August — "Perceptual organization at multiple stages of cortical processing"
Department of Psychology, Lund University, Sweden

2015 August — "Perceptual organization at multiple stages of cortical processing"
Fraunhofer Heinrich Hertz Institute, Berlin, Germany

2014 January — "The Influence of Local and Global Motion on Shifts in Perceived position"
Institut de Neurosciences de la Timone, Marseille, France

2014 January — "Probing the neural underpinnings of Motion-induced Position Shifts"
Université Paris Descartes, France

**Posters**

Iskandar, S, Lee, C, Bosse, S & **Kohler**, PJ (2024). Spatial Tuning of Visual Responses to Symmetries in Textures. Poster at *Vision Sciences Society*, St. Petersburg, FL.

Ragavaloo, S, Movahedi, N & **Kohler**, PJ (2024). Brain Responses to Symmetries in Naturalistic Novel Three-Dimensional Objects. Poster at *Vision Sciences Society*, St. Petersburg, FL.

Samet, S, Kahlon, J, Elder, JH, Baker, N, Freud, E & **Kohler**, PJ (2024). Investigating Configural and Local Shape Processing with Steady State Visual Evoked Potentials. Poster at *Vision Sciences Society*, St. Petersburg, FL.

Shams, M, Maloh, A, **Kohler**, PJ & Cavanagh, P (2024). Attentional Effect in Motion-Induced Position Shift. Poster at *Vision Sciences Society*, St. Petersburg, FL.

Chaparian, S, Schall, J & **Kohler**, PJ (2024). Relating Variability in Scalp EEG to Variability in Cortical Morphology. Poster at *Lake Ontario Visionary Establishment*, Niagara Falls, Ontario.

Movahedi, N, Ragavaloo, S & **Kohler**, PJ (2024). Does perspective-distortion modulate the temporal tuning of symmetry responses? Poster at *Lake Ontario Visionary Establishment*, Niagara Falls, Ontario.

Ragavaloo, S, Movahedi, N & **Kohler**, PJ (2024). Brain Responses to Symmetries in Naturalistic Novel Three-Dimensional Objects. Poster at *Lake Ontario Visionary Establishment*, Niagara Falls, Ontario.

Samet, S, Khalon, J, Elder, JH, Baker, N, Freud, E & **Kohler**, PJ (2024). Investigating Configural Processing with SSVEPs. Poster at *Lake Ontario Visionary Establishment*, Niagara Falls, Ontario.

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Ragavaloo, S & **Kohler**, PJ (2023). Brain Responses to Symmetries in Naturalistic Novel Three-Dimensional Objects. Poster at *Neuroscience*, Washington, DC.

**Kohler**, PJ, Samet, S, Iskandar, Y & Pierce, L (2023). Brain Responses to Symmetry during Early Infancy. Poster at *Vision Sciences Society*, St. Petersburg, FL.

Samet, S, Iskandar, Y, Fukuda, K, Freud, E & **Kohler**, PJ (2023). Symmetry Benefits Working Memory Representations of Object Orientation. Poster at *Vision Sciences Society*, St. Petersburg, FL.

Shams, M, Di Pietrantonio, A, Hatton, M, **Kohler**, PJ & Cavanagh, P (2023). Object-based Attention Measured with SSVEPs. Poster at *Vision Sciences Society*, St. Petersburg, FL.

Iskandar, Y, Samet, S, Lee, C, Bosse, S & **Kohler**, PJ (2023). Spatial Mechanisms Mediating Visual Responses to Symmetries in Textures. Poster at *Lake Ontario Visionary Establishment*, Niagara Falls, Ontario.

Ragavaloo, S & **Kohler**, PJ (2023). Brain Responses to Symmetries in Naturalistic Novel Three-Dimensional Objects. Poster at *Lake Ontario Visionary Establishment*, Niagara Falls, Ontario.

Samet, S, Iskandar, Y, Freud, E & **Kohler**, PJ (2023). Symmetry Benefits Working Memory Representations of Object Orientation. Poster at *Lake Ontario Visionary Establishment*, Niagara Falls, Ontario. *Winner of the 2nd best poster prize at the LOVE conference 2023!*

Padilla, D, Stajduhar, A, & **Kohler**, PJ (2023). Similarity Sorting of Novel 2-D and 3-D Objects. Poster at *Lake Ontario Visionary Establishment*, Niagara Falls, Ontario.

Shams, M, **Kohler**, PJ & Cavanagh, P (2022). Flash Localization in the Vicinity of a Moving Object. Poster at *European Conference on Visual Perception*, Nijmegen, Netherlands.

**Kohler**, PJ, Norcia, AM & McCandliss, B (2019). Steady-state visual evoked potentials reveal parietal contributions to abstract numerosity. Poster at *Neuroscience*, Chicago, IL.

**Kohler**, PJ, Barzegaran, E, Davis, BE & Norcia, AM (2019). Encoding- and decision-related brain activity during a motion judgment task. Poster at *Vision Sciences Society,* St. Petersburg, FL.

**Kohler**, PJ, Norcia, AM & McCandliss, B (2019). Assessing Parietal Contributions to Abstract Numerosity with Steady State Visual Evoked Potentials (SSVEPs). Poster at *Cognitive Neuroscience Society*, San Francisco, CA.

**Kohler**, PJ, Cottereau, BR & Norcia, AM (2016). Cortical areas encoding visual segmentation cues from relative motion and relative disparity. Poster at *FENS Forum of Neuroscience*, Copenhagen, Denmark.

**Kohler**, PJ, Cottereau, BR & Norcia, AM (2016). Identifying cortical areas involved in perceptual decisions about symmetry. Poster at *Vision Sciences Society*, St. Petersburg, FL.

**Kohler**, PJ & Norcia, AM (2015). Does SNR of visually evoked BOLD responses change with rapid multiplexed fMRI? Poster at *Cognitive Neuroscience Society*, San Francisco, CA.

**Kohler**, PJ, Harder, LH, & Tse, PU (2013). The influence of local and global motion on perceived position. Poster at *Vision Sciences Society*, Naples, FL.

**Kohler**, PJ, Cavanagh, CEP, & Tse, PU (2012). The influence of motion integration on shifts in perceived position. Poster at *European Conference on Visual Perception*, Alghero, Italy.

**Kohler**, PJ, Fogelson, SF, Reavis, EA & Tse, PU (2011). The neural basis of lightness constancy in the visual system. Poster at *Vision Sciences Society,* Naples, FL.

**Kohler**, PJ, Zafer, M, Reavis, EA, & Tse, PU (2010). The Ebbinghaus illusion requires consciousness of the inducers. Poster at *Association for the Scientific Study of Consciousness 14*, Toronto, Canada.

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**Kohler**, PJ, Fogelson, SV, Reavis, EA, Guntupalli, JS & Tse, PU (2010). The Relationship Between Multivariate Pattern Classification Accuracy and Hemodynamic Response Level in Visual Cortical Areas. Poster at *Vision Sciences Society*, Naples, FL.

**Kohler**, PJ, Caplovitz, GP & Tse, PU (2009). The whole moves less than the spin of its parts. Poster at *Vision Sciences Society*, Naples, FL.