

Peter J. Kohler, PhD

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Education

PhD, Cognitive Neuroscience, Dartmouth College, Hanover NH September 2008 – August 2013
Thesis title: "Motion and Position Interact at Both Early and Late Stages of the Human Visual System"
Advisor: Peter U. Tse

B.Sc. in Psychology, University of Copenhagen, Denmark September 2004 – July 2007

Research Experience

Research Associate, Stanford University September 2018 – present

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

Awards & Honors

- **2013 Recipient:** William M. Smith Promise Award in the Brain Sciences.
- **2012 Attended:** Cold Spring Harbor Laboratory: Computational Neuroscience in Vision.
- **2011 Recipient:** Marie Center 1982 Award for Research Excellence.

Media Features

- Focus.de: *Dieser Punkt wird zur Marionette des Gehirns*
- New Scientist: *How to move a dot with your mind*
- Huffington Post: *Research Uncovers How and Where Imagination Occurs in the Brain*
- Popular Science: *How Imagination Works*

Peer-reviewed Publications

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

Sievers, B, Parkinson, C, **Kohler**, PJ, Hughes, J, Fogelson, S & Wheatley, T (in revision). Visual and auditory brain areas share a neural code for perceived emotion. *Nature Neuroscience*.

Kohler, PJ, Cottureau, BR and Norcia, AM (in revision). Image Segmentation Based on Relative Motion and Relative Disparity Cues in Topographically Organized Areas of Human Visual Cortex. *Scientific Reports*.

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

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

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, 200-218.

Kohler, PJ, Cottureau, 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 (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, Part A (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 (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 (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).
- 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

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| 2018 May | “Characterizing late-developing binocular motion mechanisms in human visual cortex”
<i>Vision Sciences Society</i> , St. Petersburg, FL |
| 2017 May | “Neural responses to motion in 2 and 3 dimensions”
<i>Vision Sciences Society</i> , St. Petersburg, FL |
| 2015 May | “Parametric responses to rotation symmetry in mid-level visual cortex”
<i>Vision Sciences Society</i> , St. Petersburg, FL |
| 2012 May | “Neural correlates of perceptually bistable motion-based grouping”
<i>Vision Sciences Society</i> , Naples, FL |

Invited Talks

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| 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

- Kohler**, PJ, Cottureau, 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, Cottureau, 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.

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Posters (continued)

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.

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.

Teaching and Mentoring

Supervision of Student Research | Stanford, CA

- Brandon Davis. Undergraduate student visiting from Washington University, St. Louis
- Nihan Alp. PhD student visiting from University of Leuven, Belgium
- Bethany Hung. Undergraduate student visiting from Brown University
- Daniel Morgan Altman. Stanford undergraduate student in PSYCH-summer program
- Varun Bhadkamkar. Undergraduate student visiting from Williams College

Supervision of Student Research | Dartmouth College, NH

- Dan McCarthy. University of Reno graduate student visiting do to an fMRI project
- Katharine Porter. Dartmouth undergraduate student doing Honor's Thesis
- Caeli Cavanagh. Dartmouth undergraduate student doing Women in Science Project Internship
- Jie Sun. Dartmouth undergraduate student doing Women in Science Project Internship
- Maryam Zafer. Dartmouth undergraduate student doing Women in Science Project Internship

Teaching assistant | Dartmouth College, NH

- Psych 60: Principles of Human Brain Mapping with fMRI (Fall 2011)
- Psych 60: Principles of Human Brain Mapping with fMRI (Winter 2011)
- Psych 64: Sensory Psychology with Laboratory (Winter 2010)
- Psych 21: Perception (Spring 2010)
- Psych 11: Laboratory in Psychological Science (Spring 2009)

Student Instructor | University of Copenhagen, Denmark

- Instructor in Cognitive Psychology (January - June 2007)

Peer Reviewer

Journal of Vision
Vision Research
Perception
3D Research
Psychological Science
Journal of Neuroscience

NeuroImage
Neuropsychologia
Frontiers of Psychology
Communications Biology
Brain Structure and Function