

Department of Brain and Cognitive Sciences  
Massachusetts Institute of Technology  
77 Massachusetts Ave. 46-4078  
Cambridge, MA 02139

(617) 258-9675  
tkonkle@mit.edu  
web.mit.edu/~tkonkle/www/

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**Education**

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- 2005-present Doctoral Program in Brain and Cognitive Sciences  
Massachusetts Institute of Technology in Cambridge, MA  
Advisors: Professors Aude Oliva & Christopher Moore
- 2000-2004 B.A. Applied Mathematics, B.A. Cognitive Science  
University of California, Berkeley  
Advisor: Professor Richard Ivry

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**Research Interests**

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**Optimal Real-world Viewing**

- Is there an optimal place to position yourself in a three-dimensional world to put the visual information of interest (an object, a scene) in your visual field for subsequent processing?
- How does the size of physical objects in the world constrain the distribution of experience over viewpoint and scale with object categories?

**Memory Capacity and Experience**

- How does experience with objects shape our ability to remember them? How does conceptual structure of object categories and perceptual features of visual objects contribute to memory representations?

**Motion Processing across the Modalities**

- Are the neural representations of visual and tactile motion independent or shared? How does adaptation modify the neural system?

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**Grants, Fellowships, and Honors**

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- 2009 International Multisensory Research Forum Graduate Student Fellowship  
2008 MIT Health Science and Technology Catalyst fund (50 fMRI hours)  
2008 European Conference for Visual Perception Travel Award  
2008 Angus MacDonald Award for Excellence in Undergraduate Teaching  
2006 - 2009 National Defense Science and Engineering Graduate Fellowship  
2006 - 2010 National Science Foundation Scholarship  
2007 Cognitive Science Society Travel Award  
2005 Singleton Presidential Scholar, Massachusetts Institute of Technology  
2004 Cognitive Science Departmental Citation, University of California Berkeley  
2000-2004 National Merit Scholar  
2000-2004 Robert C. Byrd Scholarship  
2003, 2004 Biology Fellows Program, University of California Berkeley

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**Publications**

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- Konkle, T. & Moore, C. I. (*in press*). What can crossmodal aftereffects reveal about neural representation and dynamics? *Communicative and Integrative Biology*.
- Brady, T. F., Konkle, T., & Alvarez, G. A. (*in press*). Compression in visual short-term memory: using statistical regularities to form more efficient memory representations. *Journal of Experimental Psychology: General*.

- Konkle, T., Wang, Q., Hayward, V., & Moore, C. I. (2009). Motion Aftereffects Transfer Between Touch and Vision. *Current Biology*, 19 (1), 1-6.
- Brady, T. F., Konkle, T., Oliva, A., and Alvarez, G. (2009). Detecting changes in real-world objects: The relationship between visual long-term memory and change blindness. *Communicative and Integrative Biology* 2:1, 1-3.
- Brady, T. F., Konkle, T., Alvarez, G. A. and Oliva, A. (2008). Visual long-term memory has a massive storage capacity for object details. *Proceedings of the National Academy of Sciences, USA*, 105 (38), 14325-14329.
- Carter, O. L., Konkle, T., Wang, Q., Hayward, V., & Moore, C. I. (2008). Tactile Rivalry Demonstrated with an Ambiguous Apparent-Motion Quartet. *Current Biology*. doi:10.1016/j.cub.2008.06.027.
- Konkle, T., & Oliva, A. (2007). Normative representation of objects: Evidence for an ecological bias in perception and memory. In D. S. McNamara & J. G. Trafton (Eds.), *Proceedings of the 29<sup>th</sup> Annual Cognitive Science Society*, (pp. 407-413), Austin, TX: Cognitive Science Society.
- Alvarez, G. A., Konkle, T., & Oliva, A. (2007). Searching in Dynamic Displays: Effects of configural predictability and spatio-temporal continuity. *Journal of Vision*, 7(14):12, 1-12.
- Verstynen, T. D., Spencer, R., Stinear, C. M., Konkle, T., Diedrichsen, J., Byblow, W. D., Ivry, R. B. (2007). Bilateral Pathways Do Not Predict Mirror Movements: A Case Report. *Neuropsychologia*, 45(4), 844-852.
- Verstynen, T. D., Konkle, T., & Ivry, R. B. (2006). Two types of TMS-induced Movement Variability After Stimulation of the Primary Motor Cortex. *Journal of Neurophysiology*. 96, 1018-1029.

## Manuscripts

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- Konkle, T., & Oliva, A. (*submitted*). Canonical visual size for real-world objects: Evidence from reconstructive memory, imagery, and perceptual preferences.
- Konkle, T., Brady, T. F., Alvarez, G. A., & Oliva, A. (*submitted*). Conceptual distinctiveness supports detailed visual long-term memory.

## Conference Presentations

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- Konkle, T., Wang, Q., Hayward, V., & Moore, C. I. (2009). Motion aftereffects transfer between vision and touch. Talk presented at the annual *International Multisensory Research Forum*, June 29 – July 2, 2009, New York, NY.
- Konkle, T., & Oliva, A. (2009). Canonical visual sizes for real-world objects. Poster presented at the annual meeting of the *Vision Sciences Society*, May 8-13, Naples, FL.
- Konkle, T., & Oliva, A. (2009). Canonical visual sizes for real-world objects. Poster presented at the annual meeting of the *Vision Sciences Society*, May 8-13, Naples, FL.
- Alvarez, G. A., Konkle, T., Brady, T. F., Gill, J., & Oliva, A. Comparing the Fidelity of Perception, Short-term Memory, and Long-term Memory: Evidence for Highly Detailed Long-term Memory Representations. Talk presented at the annual meeting of the *Vision Sciences Society*, May 8-13, Naples, FL.
- Brady, T. F., Konkle, T., & Oliva, A. Examining object representation via object memory: exemplar and state-level object properties are supported by the same underlying features. Poster to be presented at the annual meeting of the *Vision Sciences Society*, May 8-13, Naples, FL.

- Oliva, A., Konkle, T., Brady, T. F., & Alvarez, G. A. The high fidelity of scene representation in visual long-term memory. Talk presented at the annual meeting of the *Vision Sciences Society*, May 8-13, Naples, FL.
- Konkle, T., Bedny, M., Saxe, R., Moore, C. I., Motion-selective recruitment of MT+ by tactile apparent motion stimuli. Poster presented at the annual meeting of the *Society for Neuroscience*, November 15-19, Washington, D.C.
- Carter, O., Konkle, T., Wang, Q., Hayward, V. & Moore, C. (2008) Tactile rivalry demonstrated with ambiguous apparent motion quartet. Poster presented at the annual meeting of the *Society for Neuroscience*, November 15-19, Washington, D.C.
- Konkle, T., & Oliva, A. Objects, Big and Small: Evidence for canonical visual size in object representation. Talk presented at the *European Conference for Visual Perception*, August 24-28, Utrecht, Netherlands.
- Konkle, T., Brady, T. F., Alvarez, G. A. and Oliva, A. (2008). Remembering Thousands of Objects with High Fidelity. Poster presented at the Second Annual *Tufts University Conference on Emerging Trends in Behavioral, Affective, Social, and Cognitive Neurosciences*, Medford, MA.
- Konkle, T., Brady, T. F., Alvarez, G. A., & Oliva, A. (2008). Remembering Thousands of Objects with High Fidelity. Talk presented at the annual meeting of the *Vision Sciences Society*, May 9-14, Naples, FL.
- Brady, T. F., Konkle, T., & Alvarez, G. A. (2008). Efficient Coding in Visual Short-Term Memory: Evidence for an Information-Limited Capacity. In B. C. Love, K. McRae, & V. M. Sloutsky (Eds.), *Proceedings of the 30th Annual Conference of the Cognitive Science Society* (pp. 887-892). Austin, TX: Cognitive Science Society.
- Konkle, T. A., Wang, Q., Hayward, V., & Moore, C. I. (2007). Visual motion adaptation induces a tactile motion after effect. Talk presented at the annual meeting of the *Society for Neuroscience*, November 3-7, San Diego, CA.
- Carter, O., Konkle, T., Snyder, J., Wang, Q., Hayward, V., Moore, C., & Nakayama, K. (2007). Bi-stable tactile stimulus shows perceptual rivalry exists across the senses. Poster presented at the 8<sup>th</sup> *International Multisensory Research Forum*, July 5-7, Sydney, Australia.
- Konkle, T., & Oliva, A. (2007). Normative representation of objects and scenes: Evidence from predictable biases in perception and memory. Poster presented at the annual meeting of the *Vision Sciences Society*, May 11-16, Sarasota, FL.
- Konkle, T., McDaniel, E., Greene, M., & Oliva, A. (2006). Constructing depth information in briefly presented scenes. Poster presented at the annual meeting of the *Vision Sciences Society*, May 5-10, Sarasota, FL.
- Oliva, A., Konkle, T., Greene, M., & Torralba, A. (2006). Not all Scene Categories are Created Equal: The role of object and layout diagnosticity in scene gist understanding. Poster presented at the annual meeting of the *Vision Sciences Society*, May 5-10, Sarasota, FL.
- Vul, E., Konkle, T., Love, A., Williams, A., & Nieuwenstein, M. (2006). Quantitative prediction errors in RSVP: modeling the time course of suppression during the attentional blink. Poster presented at the annual meeting of the *European Conference of Visual Perception*, August 20-25, St Petersburg, Russia.
- Konkle, T., Marchant, N., Verstynen, T., Diedrichsen, J., & Ivry, R. B. (2005). Selection of action: Can transcranial magnetic stimulation bias hand choice in reaching? Poster presented at the annual meeting of the *Society for Neuroscience*, November 12-16, Washington, D.C.

Konkle, T., Verstynen, T. D., & Ivry, R. B. (2004). Response variability in a rhythmic tapping task during sub- and suprathreshold TMS over motor cortex. Poster presented at the annual meeting of the *Society for Neuroscience*, October 23-27, San Diego, CA.

Verstynen, T. D., Stinear, C. M., Konkle, T., Ivry, R. B., & Byblow, W. (2004). Asymmetries in motor cortex inhibition during bimanual isometric muscle activation. Poster presented at the annual meeting of the *Society for Neuroscience*, October 23-27, San Diego, CA.

Konkle, T., Jiang, N., Zhang, J., Gurel, F., Scheper, C., & Craciun, G. (2004). Image segmentation using neural oscillators. Technical Report No. 26. The Ohio State University: *Mathematical Biosciences Institute Technical Report Series*. Online.

Konkle, T., Verstynen, T. D., Diedrichsen, J., & Ivry, R. B. (2003). Sources of increased timing variability following TMS over motor cortex. Poster presented at the annual meeting of the *Society for Neuroscience*, November 8-12, New Orleans, LA.

### **Ad Hoc Reviewer**

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Experimental Psychology, Cerebral Cortex, Journal of Experimental Psychology: Human Perception and Performance, Journal of Motor Behavior, Journal of Vision, PlosOne

### **Teaching, Guest Lectures & Invited Talks**

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#### *Teaching Assistantships*

- Lab in High-Level Cognition, Professor Rebecca Saxe, Spring 2009
- fMRI of High Level Vision, Professor Nancy Kanwisher, Fall 2007
- Introduction to Psychology, Professor John Gabrieli, Spring 2007

#### *SPLASH Educational Studies Program for high school students*

- Introduction to Neuroanatomy, Co-instructor, 1 day class, Fall 2006, 2007, 2008, <http://hebb.mit.edu/splash/>
- Graphical Excellence, Instructor, 1 day class, Fall 2006
- Marketing, Marriage, and Electrocutation: how the choices you make are not your own, Co-instructor, 1 day class, Fall 2005.

#### *MIT Independent Activities Period:*

- MatLab for Brain and Cognitive Scientists. Co-instructor. 1 week course. Jan 2007, Jan 2008, Jan 2009.

#### *Guest Lectures & Invited Talks*

- The role of conceptual knowledge in memory capacity and perceptual preferences. Harvard University, 12 Mar 2009.
- Visual long-term memory has a massive capacity for object details. Liege, Belgium, 22 Aug 2008.
- Visual cognition applied to the visual display of quantitative information. Lab in Visual Cognition, MIT, 12 Dec 2008.
- How to give a presentation on scientific research. Lab in High Level Cognition, MIT, 7 Feb 2009 & 8 Feb 2009; Research Methods Course, Harvard University, 15 Apr 2009.

### **Service**

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2007-2009	Chair of Interview Weekend Committee, Massachusetts Institute of Technology
2006-2007	Interview Weekend Committee member, Massachusetts Institute of Technology
2003-2004	Cognitive Science Peer Advising Coordinator, University of California, Berkeley