

**Todd S. Horowitz, Ph.D.**

Curriculum Vitae, April 6, 2007  
Instructor in Ophthalmology, Harvard Medical School  
Research Associate, Brigham & Women's Hospital

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**Academic Appointments**

- 2000-           Instructor in Ophthalmology, Harvard Medical School, Boston, MA  
                  Research Associate, Brigham and Women's Hospital, Boston, MA
- 1996-2000     Research Fellow in Ophthalmology, Harvard Medical School, Boston, MA  
                  Research Fellow in Surgery, Brigham and Women's Hospital, Boston, MA

**Education**

- University of California, Berkeley**       Ph.D. Cognitive Psychology, 1995  
  Dissertation: Inhibitory traces of attention to  
  locations
- Michigan State University**                B.S. Psychology (with honors), 1990  
  Honors thesis: Inhibition of return in visual  
  search: A failure to replicate

**Publications**

**Peer-Reviewed Journal Articles**

- Fencsik, D. E., Klieger, S. B., & Horowitz, T. S. (in press). The role of location and motion information in the tracking and recovery of moving objects. *Perception & Psychophysics*.
- Horowitz, T. S., Fencsik, D. E., Fine, E. M., Yurgenson, S., & Wolfe, J. M. (in press). Microsaccades and attention: Does a weak correlation make an index? Reply to Laubrock, Engbert, Rolfs, & Kliegl (2007). *Psychological Science*.
- Horowitz, T. S., Fine, E. M., Fencsik, D. E., Yurgenson, S., & Wolfe, J. M. (in press). Fixational eye movements are not an index of covert attention. *Psychological Science*.
- Horowitz, T. S., Klieger, S. B., Fencsik, D. E., Yang, K. K., Alvarez, G. A., & Wolfe, J. M. (in press). Tracking unique objects. *Perception & Psychophysics*.
- Horowitz, T. S. & Thornton, I. M. (in press). Objects or locations in vision for action? Evidence from the MILO task. *Visual Cognition*.

- Horowitz, T. S., Wolfe, J. M., DiMase, J. S., & Klieger, S. B. (in press). Visual search for type of motion is based on simple motion primitives. *Perception*.
- Kunar, M. A., Flusberg, S. J., Horowitz, T. S., & Wolfe, J. M. (in press). Does contextual cueing guide the deployment of attention? *Journal of Experimental Psychology: Human Perception & Performance*.
- Wolfe, J. M., Place, S. S., & Horowitz, T. S. (in press). Multiple Object Juggling: Changing what is tracked during extended multiple object tracking. *Psychonomic Bulletin & Review*
- Wolfe, J. M., Horowitz, T. S., Van Wert, M., Kenner, N., Place, S. S., Kibbi, N. (in press). Low target prevalence is a stubborn source of errors in visual search tasks. *Journal of Experimental Psychology: General*.
- Wolfe, J. M., Horowitz, T. S., & Michod, K. O. (2007). Is visual attention required for robust picture memory? *Vision Research*, **47**, 955–964.
- Fencsik, D. E., Urrea, J., Place, S. S., Wolfe, J. M., & Horowitz, T. S. (2006). Velocity cues improve visual search and multiple object tracking. *Visual Cognition*, **14**(1), 18-21.
- Horowitz, T. S. (2006). Revisiting the variable memory model of visual search. *Visual Cognition*, **14**(4-8), 668-684.
- Horowitz, T. S., Birnkrant, R. S., Fencsik, D. E., Tran, L., & Wolfe, J. M. (2006). How do we track invisible objects? *Psychonomic Bulletin & Review*, **13**(3), 516–523.
- Horowitz, T. S., Horvitz, J., Choi, W. Y., Côté, L. J. & Mangels, J. (2006). Visual search deficits in Parkinson's disease are attenuated by bottom-up target salience and top down information. *Neuropsychologia*, **44**(10), 1962-1977.
- Alvarez, G. A., Horowitz, T. S., Wolfe, J. M. Arsenio, H. C., & DiMase, J. S. (2005). Do multielement visual tracking and visual search draw continuously on the same visual attention resources? *Journal of Experimental Psychology: Human Perception & Performance* **31**(4), 643-667.
- Santhi, N., Duffy, J. F., Horowitz T. S., & Czeisler, C. A. (2005). Scheduling of sleep/darkness affects the circadian phase of night shift workers. *Neuroscience Letters*, **384**(3), 316-320.
- Wolfe, J. M., Birnkrant, R. S., Kunar, M. A., & Horowitz, T. S. (2005). Visual search for transparency and opacity: Attentional guidance by cue combination? *Journal of Vision*, **5**(3), 257-274.
- Wolfe, J. M., Horowitz, T. S., & Kenner, N. (2005). Rare items often missed in visual searches. *Nature*, **435**(7041), 439-440.
- Horowitz, T. S., Holcombe, A. O., Wolfe, J. M., Arsenio, H. C., & DiMase, J. S. (2004). Attentional pursuit is faster than attentional saccade. *Journal of Vision*, **4**(7), 585-603

- Thornton, I. M. & Horowitz, T. S. (2004) The Multi-item localization (MILO) task: Measuring the spatio-temporal context of vision for action. *Perception & Psychophysics*, **66**(1), 38-50.
- Wolfe, J. M. & Horowitz, T. S. (2004). What attributes guide the deployment of visual attention? *Nature Reviews Neuroscience*, **5**, 1-7.
- Wolfe, J. M., Horowitz, T. S., Kenner, N., & Hyle, M. (2004). How fast can you change your mind? The speed of top-down guidance in visual search. *Vision Research*, **44**(12), 1411-1426.
- Horowitz, T. S., Cade, B., Wolfe, J.M., & Czeisler, C. A. (2003) Searching night and day: The influence of circadian phase and sleep deprivation on visual attention. *Psychological Science*, **14**(6), 549-557.
- Horowitz, T. S. & Wolfe, J. M. (2003). Memory for rejected distractors in visual search? *Visual Cognition*, **10**(3), 257-298.
- Horowitz, T. S. & Tanigawa, T. (2002). Circadian-based new technologies for night workers. *Industrial Health*, **40**(3), 223-236.
- Wolfe, J. M., Oliva, A., Horowitz, T. S., Butcher, S. J., Bompas A. (2002). Segmentation of objects from backgrounds in visual search tasks. *Vision Research*, **42**, 2985–3004
- Horowitz, T. S., Cade, B., Wolfe, J.M., & Czeisler, C. A. (2001). Efficacy of bright light and scheduling of sleep/darkness in alleviating circadian maladaptation to night work. *American Journal of Physiology: Endocrinology & Metabolism*, **281**(2), 384-391.
- Horowitz, T. S. & Wolfe, J. M. (2001). Search for multiple targets: remember the targets, forget the search. *Perception & Psychophysics*, **63**(2), 272-285.
- Wolfe, J. M., Alvarez, G. A., & Horowitz, T. S. (2000). Attention is fast but volition is slow. *Nature*, **406**, 691.
- Horowitz, T. S., & Wolfe, J. M. (1998). Visual search has no memory. *Nature*, **394**, 575-577.
- Horowitz, T. S. & Treisman, A. (1994). Attention and apparent motion. *Spatial Vision*, **8**(2), 193-219.

### **Book Chapters**

- Horowitz, T. S., & Wolfe, J. M. (2005). Visual search: the role of memory for rejected distractors. In L. Itti & G. Rees & J. K. Tsotsos (Eds.), *Neurobiology of Attention* (pp. 264-268). San Diego: Elsevier.

### **Articles Submitted for Publication**

- Horowitz, T. S., Wolfe, J. M., Alvarez, G. A. & Kenner, N. The speed of free will. submitted to *Quarterly Journal of Experimental Psychology*.

Intraub, H., Daniels, K., Horowitz, T. S., & Wolfe, J. M. Looking at scenes while searching for numbers: Dividing attention multiples space. submitted to *Perception & Psychophysics*.

Palmer, E. M., Horowitz, T. S., Torralba, A., Wolfe, J. M. Response time distributions constrain models of visual search. submitted to *Journal of Experimental Psychology: Human Perception & Performance*.

Palmer, E. M., Horowitz, T. S., & Wolfe, J. M. Search beyond the mean: Using normalized distributions to test models of visual search. submitted to *Psychological Science*.

Santhi, N., Horowitz, T. S., Duffy, J. F., & Czeisler, C. A. Acute sleep deprivation and circadian misalignment associated with transition onto the first night of work impairs visual selective attention. submitted to *Sleep*.

### **Articles In Preparation**

Horowitz, T. S. & Place, S. S., & Van Wert, M. Directional information in multiple object tracking.

Horowitz, T. S., Wolfe, J. M., Keehn, B., & Joseph, R. M. The absent-minded inspector: What can eye movements tell us about strategies in dynamic search?

### **Selected Conference Abstracts (last two years)**

Fencsik, D. E., Horowitz, T. S., Flusberg, S. J., & Wolfe, J. M. (2006). Change detection has no foresight: Measuring advanced knowledge of changes across displays. *Journal of Vision*, **6**(6), 789a.

Palmer, E. M., Van Wert, M. J., Horowitz, T. S., & Wolfe, J. M. (2006). Measuring the timecourse of guidance in visual search. *Journal of Vision*, **6**(6), 443a.

Horowitz, T. S. & Place, S. S. (2005). Picking up where you left off: The timecourse of target recovery after a gap in multiple object tracking. *Perception*, **35** (supplement).

Santhi, N., Horowitz, T. S., Hilton, M. F., & Shea, S. A. (2005). Efficiency of temporal selective attention is modulated by circadian phase and duration of wakefulness. *Sleep*, **28** (supplement).

### **Invited Talks (last four years)**

April, 2007 "Attention to objects and trajectories." *MIT, Cambridge, MA*

Mar., 2007 "Putting the motion back in MOT." *Harvard University, Cambridge, MA*

Feb., 2007 "New directions in multiple object tracking." *University of Paris, France*

Aug., 2006 "What is the role of attention in scene memory?" *Schepens Eye Research Institute, Boston, MA*

May, 2006 "Attentional time sharing in multiple object tracking." *Vision Sciences Society satellite workshop, Sarasota, FL*

Sept., 2004 "Dynamic attention and predictive tracking." *Princeton University, NJ*

June, 2004 “Tracking unique objects.” *Lomonosov Moscow State University,*  
 June, 2004 “Dynamic attention and predictive tracking.” *Russia*

### **Research Funding Information**

#### **Fellowships and Honors**

1998-1999 National Research Service Award (NIH DK07529-13) “Training Grant in Academic Endocrinology”  
 1996-1998 National Research Service Award (NIH 117662) “Circadian Analysis of Selective Attention.”  
 1991-1994 National Science Foundation Fellowship  
 1990 Dean's Research Award, College of Social Science, MSU, 1990

#### **Grants**

2004 National Academy of Sciences, Collaboration in Basic Science & Engineering.  
 Role: Principle Investigator  
 2003- National Institute of Mental Health, “Control of Dynamic Attention”.  
 Role: Principle Investigator  
 2003- National Institute of Mental Health, “Post-Attentive Vision” (PI: Jeremy M. Wolfe, Ph.D.).  
 Role: Co-Investigator  
 2001-2006 National Heart, Lung, and Blood Institute, “Bright Light Treatment of Shift Rotation Insomnia” (PI: Charles A. Czeisler, Ph.D., M.D.).  
 Role: Co-Investigator, Project Leader  
 1999- Air Force Office of Scientific Research, “The Deployment of visual Attention”, (PI: Jeremy M. Wolfe, Ph.D.).  
 Role: Co-Investigator  
 1999-2002 National Heart, Lung, and Blood Institute, “Circadian Adaptation to Night Work in Older People” (PI: Charles A. Czeisler, Ph.D., M.D.).  
 Role: Co-Investigator, Project Leader

### **Major Extramural Activities**

Consulting Editor: *Perception & Psychophysics*, 1998 - 2003.

Ad hoc reviewer: *Acta Psychologica; Brain, British Journal of Sports Psychology; Cognition; Journal of Biological Rhythms; Industrial Health; Journal of Cognitive Neuroscience; Journal of Experimental Psychology: Human Perception & Performance; Journal of Experimental Psychology: General; Language and Cognitive Processes; Nature Neuroscience; Perception & Psychophysics; Psychological Science; Psychology & Aging; Psychonomic Bulletin & Review; Quarterly Journal of Experimental Psychology; Sleep; Spatial Vision; Trends in Cognitive Sciences; Visual Cognition, Vision Research.*

Conference submission reviewer: Conference on Human Factors in Computing systems (CHI 2005); 27th European Conference on Visual Perception (ECVP 2004);

Grant reviews: National Science Foundation; Netherlands Organisation for Scientific Research; Austrian National Science Foundation.

### **Professional Societies**

Psychonomic Society

Association for Psychological Science

### **Committee Assignments**

- 1999-2001 Co-Chairman: Kleitman Summer Fellowship Committee, Circadian, Neuroendocrine, and Sleep Disorders Section
- 1999-2004 Chair, Performance Committee, Division of Sleep Medicine
- 2000-2004 Shared Drive Management Committee, Division of Sleep Medicine

### **Teaching**

#### **Massachusetts Institute of Technology, Department of Brain & Cognitive Sciences, Teaching Assistant**

1995, Fall “Introduction to Psychology”, Professor Jeremy Wolfe

#### **University of California, Berkeley, Department of Psychology, Graduate Student Instructor**

1994, Spring “Statistics and Experimental Design”, Professor William Meredith

1993, Fall “Statistics and Experimental Design”, Professor Geoffrey Keppel

1991, Spring “Introduction to Cognition”, Professors Anne Treisman and Daniel Kahneman

### **References**

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