

# Desmond C. Ong

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Last Updated: July 2018

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## Research Interests

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My core research interests are in Computational Affective Cognition: building computational models of how humans reason about emotions. At a basic level, I distill insights from affective science and cognitive psychology into formal and precise models of reasoning about emotions. I aim to apply these models to build computational agents that reason about emotions (affective computing/robotics) and in studying disordered affective cognition (i.e., in mental disorders).

In my research, I take an interdisciplinary approach, theoretically grounded in cognitive science and affective science, along with tools from computer science (probabilistic modeling and programming; machine learning; natural language processing; social network analyses) and behavioral economics (economic games and analyses). I also apply modeling to study empathy, Theory of Mind (i.e., reasoning about others' mental states), and prosocial behavior.

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## Education

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- 2017 Ph.D., Psychology (Cognitive Psychology and Affective Science), Stanford University  
Advisors: Noah D. Goodman, Jamil Zaki
- 2017 M.S., Computer Science (Specialization in Artificial Intelligence), Stanford University
- 2014 M.A., Psychology, Stanford University
- 2011 B.A., Economics (*summa cum laude*; top in class),  
and Physics (*magna cum laude*; top three in class),  
with minors in Cognitive Studies; and in Information Science,  
Cornell University

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## Professional Appointments

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- 2017 – present Research Scientist  
A\*STAR Artificial Intelligence Initiative (A\*AI),  
Agency for Science, Technology and Research (A\*STAR), Singapore  
and  
Institute for High Performance Computing (IHPC),  
Agency for Science, Technology and Research (A\*STAR), Singapore
- 2011 – 2012 Research Engineer  
Data Storage Institute (DSI),  
Agency for Science, Technology and Research (A\*STAR), Singapore

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## Awards, Honors, Fellowships

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- 2015 Computational Social Science Fellowship, Institute for Research in the Social Sciences, Stanford
- 2014 Society for Personality and Social Psychology Graduate Student Travel Award
- 2012 National Science Scholarship: PhD (NSS-PhD)  
Agency for Science, Technology and Research (A\*STAR), Singapore  
Funding period: 2012 – 2017

## Desmond C. Ong, Ph.D.

*Full tuition and stipend support for graduate studies.*

- 2011 Paul Hartman Prize in Applied Physics, Cornell  
*Awarded for outstanding work in experimental physics by an undergraduate in Physics or Applied Physics.*
- 2011 Omicron Delta Epsilon  
*International Honor Society in Economics*
- 2011 Phi Beta Kappa  
*Honor Society in the Arts and Sciences*
- 2011 A\*STAR Chairman's Honours List  
*For outstanding academic performance*
- 2009 Hunter R. Rawlings III Cornell Presidential Research Scholarship  
Funding period: 2009 – 2011  
*Undergraduate research scholarship with a research grant of \$5,000.*
- 2006 National Science Scholarship: B.S. (NSS-BS)  
Agency for Science, Technology and Research (A\*STAR), Singapore  
Funding period: 2008 – 2011  
*Full tuition and stipend support for undergraduate studies.*

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## Research Grants

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8. "Human-Centric AI (CHEEM) Research Project"  
A\*STAR Science and Engineering Research Council  
(to Programme Managers K. Kwok, C. Tan)  
2017 – 2020. Role: Work Package Lead
7. "Computational and brain predictors of emotion cue integration"  
National Institutes of Health 1R01MH112560-01 (to PI: J. Zaki)  
2017 – 2022. Role: Other Significant Contributor (key personnel)
6. "Annotating a corpus of emotional narratives"  
Dissertation Research Funds, Department of Psychology, Stanford,  
2015 – 2016, US\$4,000. Role: PI
5. "Continuous Multimodal Emotion Inference"  
Computational Social Science Fellowship Grant,  
Institute for Research in the Social Sciences, Stanford  
2015 – 2016, US\$10,000. Role: PI
4. "Studying the determinants of paying it forward"  
Norman H. Anderson Research Grant, Department of Psychology, Stanford,  
2012 – 2013, US\$1,000. Role: PI
3. "Serial Reciprocity: What makes us want to 'pass it on'?"  
Einhorn Discovery Grant, College of Arts and Sciences, Cornell,  
2010 – 2011, US\$870. Role: PI
2. "Serial Reciprocity: What makes us want to 'pass it on'?"  
College of Arts and Sciences Undergraduate Research Grant, Cornell,  
2010 – 2011, US\$300. Role: PI
1. "Studying packing in asymmetric dimer particles"  
Hunter R. Rawlings III Cornell Presidential Research Scholarship, Cornell,  
2009 – 2011, US\$5,000. Role: PI

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## Publications

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Links to publications, code, and data can be found on my website

18. **Ong, D. C.**, Zaki, J., & Goodman, N. D. (in press). Computational models of emotion inference in Theory of Mind: A review and roadmap. *Topics in Cognitive Science*.
17. Williams, W. C., Morelli, S. A., **Ong, D. C.**, & Zaki, J. (in press). Interpersonal emotion regulation: Implications for affiliation, perceived support, relationships, and well-being. *Journal of Personality and Social Psychology*.
16. **Ong, D. C.**, Goodman, N. D., & Zaki, J. (2018). Happier than thou? A self-enhancement bias in emotion attribution. *Emotion*, 18(1), 116-126.
15. Morelli, S. A., **Ong, D. C.**, Makati, R., Jackson, M. O., & Zaki, J. (2017). Empathy and well-being correlate with centrality in different social networks. *Proceedings of the National Academy of Sciences*, 114(37), 9843-9847.
14. **Ong, D. C.**, Zaki, J., & Gruber, J. (2017). Increased cooperative behavior across remitted bipolar I disorder and major depression: Insights utilizing a behavioral economic trust game. *Journal of Abnormal Psychology*, 126(1), 1-7.
13. Chen, P., Chavez, O., **Ong, D. C.**, & Gunderson, B. (2017). Strategic Resource Use for Learning: A Self-administered Intervention that Guides Effective Resource Use Enhances Academic Performance. *Psychological Science*, 28(6), 774-785.
12. **Ong, D. C.\***, Asaba, M.\*, & Gweon, H. (2016). Young children and adults integrate past expectations and current outcomes to reason about others' emotions. In *Proceedings of the 38th Annual Meeting of the Cognitive Science Society*, 135-140.  
\* equal contribution
11. **Ong, D. C.**, Zaki, J., & Goodman, N. D. (2016). Emotions in lay explanations of behavior. In *Proceedings of the 38th Annual Meeting of the Cognitive Science Society*, 360-365.
10. Devlin, H. C., Zaki, J., **Ong, D. C.**, & Gruber, J. (2016). Tracking the emotional highs, but missing the lows: Hypomania Risk is associated with positively biased empathic accuracy inference. *Cognitive Therapy and Research*, 40(1), 72-79.
9. Nook, E., **Ong, D. C.**, Morelli, S. A., Mitchell, J. P., & Zaki, J. (2016). Prosocial Conformity: Social norms motivate broad generosity and empathy. *Personality and Social Psychology Bulletin*, 42(8), 1045-1062.
8. **Ong, D. C.**, Zaki, J., & Goodman, N. D. (2015) Affective Cognition: Modeling reasoning about emotion. *Cognition*, 143. 141-162
7. **Ong, D. C.**, Goodman, N. D., & Zaki, J. (2015). Near-misses sting even when they are uncontrollable. In *Proceedings of the 37th Annual Meeting of the Cognitive Science Society*, 1775-1780.
6. Phillips, J.\*, **Ong, D. C.\***, Surtees, A. D. R., Xin, Y., Williams, S., Saxe, R., & Frank, M. C. (2015). A second look at automatic false belief representation: reconsidering Kovács, Téglás, and Endress (2010). *Psychological Science*, 26(9), 1353-1367.  
\* equal contribution
5. Devlin, H. C., Zaki, J., **Ong, D. C.**, & Gruber, J. (2014). Not as Good as You Think? Trait Positive Emotion is Associated with Increased Self-Reported Empathy but Decreased Empathic Performance. *PLOS ONE*, 9 (10), e110470

## Previous work in physics and optics

4. Leahy, B. D., Cheng, X., **Ong, D. C.**, Liddell-Watson, C., & Cohen, I. (2013) Enhancing rotational

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diffusion using oscillatory shear. *Physical Review Letters*, **110**, 228301.

3. **Ong, D. C.**, Solanki, S., Liang, X., & Xu, X. W. (2012). Analysis of laser speckle severity, granularity, and anisotropy using the power spectral density in polar-coordinate representation. *Optical Engineering*, **51**, 054301.
2. Gerbode, S. J., **Ong, D. C.**, Liddell, C. M., & Cohen, I. (2010). Dislocations and vacancies in two-dimensional mixed crystals of spheres and dimers. *Physical Review E*, **82**, 041404.
1. Gerbode, S. J., Agarwal, U., **Ong, D. C.**, Liddell, C. M., Escobedo, F., & Cohen, I. (2010). Glassy dislocation dynamics in 2-D colloidal dimer crystals. *Physical Review Letters*, **105**, 078301.

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## Conference Symposia and Talks

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### *Chaired Conference Symposia*

6. Symposium: How people think they're better than others and why it matters: consequences for social relationships, emotions, the courtroom, and online romance.  
Chairs: **Ong, D. C.**, & Hughes, B. L.  
Contributed symposium at the Seventeenth Annual Meeting of the Society for Personality and Social Psychology, San Diego, CA, January 2016.  
Speakers: Clayton Critcher, **Desmond Ong**, Mark Alicke, Emily Yeh  
  
**Ong, D. C.**, Goodman, N. D., & Zaki, J. (January 2016). Happier than thou: an egocentric positivity bias in emotion attribution. Talk given at the Seventeenth Annual Meeting of the Society for Personality and Social Psychology, San Diego, CA.
5. Symposium: Understanding Affective Cognition: Frontiers in modeling reasoning about others' emotions.  
Chairs: **Ong, D. C.**, Zaki, J., & Goodman, N. D.  
Contributed symposium at the 36<sup>th</sup> Annual Meeting of the Cognitive Science Society, Quebec City, QC, Canada, July 2014.  
Speakers: Amy Skerry, **Desmond Ong**, Yang Wu, Andrew Meltzoff  
  
**Ong, D. C.**, Zaki, J., & Goodman, N. D. (July 2014). Modeling lay theories of emotion attribution. Talk given at the 36<sup>th</sup> Annual Meeting of the Cognitive Science Society, Quebec City, QC, Canada.

### *Contributed Conference Talks*

5. Chen, P. C., Chavez, O., **Ong, D. C.**, & Gunderson, B. (May 2018). Strategically-Directed Effort: Self-Reflective Resource Use Promotes Better Academic Outcomes. Talk given by D. C. Ong at the 11<sup>th</sup> Meeting of the Society for the Science of Motivation, San Francisco, CA.
4. **Ong, D. C.**, Zaki, J., & Goodman, N. D. (April 2017). Towards studying affective cognition in naturalistic contexts. Talk given at the Affective Computing Pre-Conference, at the Society for Affective Science Annual Conference, Boston, MA.
3. **Ong, D. C.**, Goodman, N. D., & Zaki, J. (July 2015). Near-misses sting even when they are uncontrollable. Talk given at the 37<sup>th</sup> Annual Meeting of the Cognitive Science Society, Pasadena, CA.
2. **Ong, D. C.**, Zaki, J., & Goodman, N. D. (February 2015). Modeling lay theories of emotion attribution. Talk in symposium ("Beliefs About Emotion: Outcomes at the Individual, Interpersonal, and Cultural Levels") at the Sixteenth Annual Meeting of the Society for Personality and Social Psychology, Long Beach, CA.
1. **Ong, D. C.**, Goodman, N. D., & Zaki, J. (February 2014). Differences in intuitive theories of emotion

along psychological distance. Talk given at the Emotion Preconference of the Fifteenth Annual Meeting of the Society for Personality and Social Psychology, Austin, TX.

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### **Contributed Posters and other presentations**

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25. Asaba, M., **Ong, D. C.**, & Gweon, H. (April 2017). Young children and adults integrate past expectations and current outcomes to reason about others' emotions. Poster presented by M. Asaba at the 2017 Biennial Meeting of the Society for Research in Child Development, Austin, TX.
24. Makati, R., Morelli, S., **Ong, D. C.**, Jackson, M. O., & Zaki, J. (January 2016). Empathy and Extraversion: Key Predictors of Connectedness and Wellbeing in Social Networks. Poster presented by R. Makati at the Seventeenth Annual Meeting of the Society for Personality and Social Psychology, San Diego, CA.
23. Nook, E. C., **Ong, D. C.**, Morelli, S. A., Mitchell, J. P., & Zaki, J. (May 2014). Prosocial conformity: Persistence, generalization, and boundary conditions. Poster presented by E. Nook at the 26<sup>th</sup> Annual Convention of the Association for Psychological Science (APS), San Francisco, CA.
22. **Ong, D. C.**, Goodman, N. D., & Zaki, J. (April 2014). First and Third Person Intuitive Theories of Emotion. Poster presented at the Inaugural Meeting of the Society for Affective Science, Bethesda, MD.
21. Devlin, H. C., Zaki, J., **Ong, D. C.**, & Gruber, J. (February 2014). Not as Good as You Think? Trait Positive Emotion is Associated with Increased Empathic Confidence but Decreased Empathic Performance. Poster presented by H. C. Devlin at the Fifteenth Annual Meeting of the Society for Personality and Social Psychology, Austin, TX.
20. **Ong, D. C.**, Goodman, N. D., & Zaki, J. (February 2014). Bayesian Integration of Emotional Cues. Poster presented at the Fifteenth Annual Meeting of the Society for Personality and Social Psychology, Austin, TX.  
**SPSP Graduate Student Travel Award**
19. **Ong, D. C.**, Zaki, J., & Goodman, N.D. (October 2013). Computational Affective Cognition: Modeling reasoning about emotions. Poster presented at Computational Psychiatry 2013, Miami, FL.
18. **Ong, D. C.**, Zaki, J., & Goodman, N. D. (January 2013). Building a computational model of emotion inference. Poster presented at the Emotion Preconference of the Fourteenth Annual Meeting of the Society for Personality and Social Psychology, New Orleans, LA.

#### *Previous work in physics and vision*

17. Leahy, B., Cheng, X., **Ong, D. C.**, Liddell-Watson, C. & Cohen, I. (October 2013). Enhancing rotational diffusion using oscillatory shear. Presented by B. Leahy at the 85<sup>th</sup> Annual Meeting of the Society of Rheology, Montréal, QC.
16. Leahy, B., **Ong, D.**, Cheng, X., & Cohen, I. (March 2013). Revisiting Taylor Dispersion: Differential enhancement of rotational and translational diffusion under oscillatory shear. Presented by B. Leahy at the American Physical Society March Meeting 2013, Baltimore, MD.
15. **Ong, D. C.**, Hayes, A., & Field, D. J. (May 2012). Contour change detection in the periphery: threshold as a function of temporal interval. Poster presented at the 12<sup>th</sup> Annual Meeting of the Vision Sciences Society, Naples, FL.  
**Travel Grant awarded by the Cognitive Science Program @ Cornell**
14. Field, D. J., **Ong, D. C.**, & Hayes, A. (May 2012). Translation invariance with a contour integration task. Poster presented at the 12<sup>th</sup> Annual Meeting of the Vision Sciences Society, Naples, FL.  
\* Co-presenter  
**Travel Grant awarded by the Cognitive Science Program @ Cornell**

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13. Leahy, B., **Ong, D.**, Cheng, X., & Cohen, I. (March 2012). Anisotropic Diffusion of Colloidal Particles in a Shear Flow. Presented by B. Leahy at the American Physical Society March Meeting 2012, Boston, MA.
12. **Ong, D. C.**, Cheng, X., & Cohen, I. (June 2011). Enhanced and diminished diffusion of dimer particles by oscillatory shear. Talk given at the 11<sup>th</sup> New York Complex Matter Workshop, Syracuse University, Syracuse, NY.
11. **Ong, D. C.** (April 2011). Serial Reciprocity: What makes us want to “Pass It On”? Poster presented at the 26<sup>th</sup> Annual Spring Undergraduate Research Forum, Cornell Undergraduate Research Board, Ithaca, NY.
10. **Ong, D. C.**, Cheng, X., & Cohen, I. (April 2011). Tumbling Motion of Brownian Dimer Particles under Shear. Poster presented at the 26<sup>th</sup> Annual Spring Undergraduate Research Forum, Cornell Undergraduate Research Board, Ithaca, NY.
9. **Ong, D. C.**, (April 2011). Serial Reciprocity: What makes us want to “Pass It On”? Talk given at the Hunter R. Rawlings III Cornell Presidential Research Scholars Senior Expo, Ithaca, NY.
8. **Ong, D. C.** (April 2011). Serial Reciprocity: What makes us want to “Pass It On”? Talk given at the National Conference on Undergraduate Research 2011, Ithaca College, Ithaca, NY.
7. **Ong, D. C.**, Cheng, X., & Cohen, I. (April 2011). Tumbling motion of Brownian Symmetric-Dimer Colloidal Particles under Shear. Talk given at the National Conference on Undergraduate Research 2011, Ithaca College, Ithaca, NY.
6. **Ong, D. C.**, Gerbode, S., & Cohen, I. (June 2010). Of Zippers and Restricted Dislocations in colloidal crystals of spheres and dimers. Talk given at the 10<sup>th</sup> New York Complex Matter Workshop, Cornell University, Ithaca, NY.
5. **Ong, D. C.**, Gerbode, S., & Cohen, I. (April 2010). Peanuts and Oranges: Dislocation Dynamics in mixed crystals of dimers and spheres. Talk and poster presentation at the 25<sup>th</sup> Annual Spring Undergraduate Research Forum, Cornell Undergraduate Research Board, Ithaca, NY.
4. Gerbode, S., **Ong, D.**, Agarwal, U., Liddell, C., Escobedo, F., & Cohen, I. (March 2010). Glassy Dislocation Relaxation in Colloidal Peanut Crystals. Presented by S. Gerbode at the American Physical Society March Meeting 2010, Portland, OR.
3. **Ong, D. C.**, Gerbode, S., & Cohen, I. (May 2009). From Oranges to Peanuts to Pears: Packing in asymmetric dimer colloids. Talk given at the ICAM-I2CAM Soft Active Matter Workshop / 8<sup>th</sup> New York Complex Matter Workshop, Syracuse University, Syracuse, NY.
2. **Ong, D. C.**, Gerbode, S., & Cohen, I. (April 2009). Spheres, Pears and Peanuts: Packing in asymmetric dimer colloids. Talk and poster presentation given at the 24<sup>th</sup> Annual Spring Undergraduate Research Forum, Cornell Undergraduate Research Board, Ithaca, NY.
1. **Ong, D. C.**, Gerbode, S., & Cohen, I. (Dec 2008). Dislocations in Colloidal Dimer Crystals. Talk given at the 7<sup>th</sup> New York Complex Matter Workshop, Cornell University, Ithaca, NY.

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### Invited Talks

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9. April 2017. Computational Cognitive Neuroscience/Moral Psychology Research Lab Meeting, Department of Psychology, Harvard University
8. April 2016. Affective Area Seminar, Department of Psychology, Stanford University
7. March 2016. Cognition and Neuroscience Area Seminar, Department of Psychology, Stanford University
6. March 2016, Humanities Arts and Social Sciences Seminar, Singapore University of Technology and Design

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5. February 2015. Affective Area Seminar, Department of Psychology, Stanford University
4. January 2015. Affective Area Seminar, Department of Psychology, Stanford University
3. October 2013. Affective Area Seminar, Department of Psychology, Stanford University
2. August 2013. Positive Emotion and Psychopathology Lab Meeting, Department of Psychology, Yale University
1. April 2013. Cognition and Neuroscience Area Seminar, Department of Psychology, Stanford University

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### Teaching Experience

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7. Teaching Assistant, Psych 204: Computation and Cognition: The Probabilistic Approach (Graduate) Stanford University, Spring, 2015. Instructor: Noah D. Goodman
6. Teaching Assistant, Psych 254: Lab in Experimental Methods (Graduate) Stanford University, Winter, 2015. Instructor: Michael C. Frank
5. Teaching Assistant, Psych 90: Intro to Clinical Psychology (Undergraduate) Stanford University, Fall 2014. Instructor: Ian Gotlib
4. Teaching Assistant, Psych 80: Intro to Personality and Affective Science (Undergraduate) Stanford University, Spring 2014. Instructor: Jeanne Tsai
3. Teaching Fellow, Psych 1: Intro to Psychology (Undergraduate) Stanford University, Winter 2014. Instructors: Jamil Zaki, Bridgette Hard
2. Teaching Fellow, Psych 1: Intro to Psychology (Undergraduate) Stanford University, Fall 2013. Instructors: James Gross, Bridgette Hard
1. Physics Tutor, Physics Learning Strategies Center, Cornell University, 2010-2011  
*Provided supplementary help for students taking freshman and sophomore-level physics classes*

Guest Lectures:

“Computational Cognitive Modeling” (Feb 2018), in CS 6281: Human-Centric AI, National University of Singapore

“Emotions in the workplace” (Feb 2018), in PL 3239: Industrial/Organizational Psychology, National University of Singapore

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### Training and Courses attended

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5. *Brains, Minds and Machines Summer Course, August 2018*  
*Organized by the Center for Brains, Minds and Machines, and held at Marine Biological Laboratory, Woods Hole, MA*  
*All costs (tuition, room, board) and a Travel Award generously provided by an NSF award to the Center for Brains, Minds and Machines.*
4. Facial Action Coding Systems (FACS) Workshop, Berkeley CA, March 2017  
Passed FACS certification
3. Learning by Design: Designing Courses for Effective Student Learning, September 2016  
Stanford Graduate Summer Institute; Organized by the Office of the Vice Provost for Graduate Education, taught and sponsored by the Office of the Vice Provost for Teaching & Learning, Stanford
2. Summer Workshop in Computational Social Science, September 2013  
Organized by the Institute for Research in the Social Sciences (IRiSS), Stanford University

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1. RIKEN Brain Sciences Institute Summer Programme, in Saitama, Japan, July 2012  
Travel Grant awarded by the A\*Star Graduate Academy

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## Professional Services

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Faculty Search Committee, Stanford University Department of Psychology,  
Cognitive Area, 2014-2015

Graduate Admissions Committee, Stanford University Department of Psychology,  
Affective Science Area, 2013-2014

Area Seminar Committee, Stanford University Department of Psychology,  
Cognitive Area, 2014-2015  
Affective Science Area, 2013-2014

Ad-hoc reviewer.

Journals: *Psychological Science*, *Cognition*, *Perspectives on Psychological Science*, *Scandinavian Journal of Psychology*, *Optical Engineering*

Conferences: *Cognitive Science Society (CogSci)*, *Society for Philosophy and Psychology (SPP)*, *Empirical Methods in Natural Language Processing (EMNLP)*

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## Professional Memberships

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2014 - Cognitive Science Society

2013 - Society for Personality and Social Psychology (SPSP)

2014 - Society for Affective Science (SAS)

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## References

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Associate Professor of Psychology and Computer Science, and Linguistics (by courtesy)  
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