

Sarah R. Allred

Curriculum Vitae

Contact Information

Department of Psychology
Rutgers–Camden
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Academic Positions

- 2016- Associate Professor and Associate Chair, Psychology, Rutgers-Camden
- 2009-2016 Assistant Professor, Psychology, Rutgers–Camden
- 2006-2009 Postdoctoral Researcher, Psychology, University of Pennsylvania, with David Brainard.

Education

- 2006 Ph.D., Neurobiology and Behavior, University of Washington. Dissertation: *The neural basis of visual object perception*. Lab of Bharathi Jagadeesh.
- 1999 B.S., Applied Physics: Neuroscience Emphasis, Minors: Mathematics, Philosophy, Brigham Young University.

Extramural Support

- 2010-2018 NSF Career Award: Novel Approaches to Integrating Color Perception and Color Memory. NSF-BCS 0954749. \$ 487,155.

Professional Service

- 2015 Guest Editor, Journal of Vision special issue on "the dress"
- 2013 Organizer, Vision Sciences Society Symposium: "Does appearance matter?"
- 2009 Co-organizer, with Gary Hatfield (University of Pennsylvania), Institute for Research on Cognitive Science interdisciplinary workshop on cognitive and developmental factors in perceptual constancy

Peer-Reviewed Publications

- Olkkonen, M., Saarela, T.P. and **Allred, Sarah R.** (2016). Perception-memory interactions reveal a computational strategy for perceptual constancy. *Journal of Vision*, 16(3):38. doi: 10.1167/16.3.38. [PDF](#)
- Allred, S.R.**, Duffy, E.S., and Smith, J. (2016). Cognitive load and strategic sophistication. *Journal of Economic Behavior & Organization*, 125, 162-178. [PDF](#)
- Allred, S.R.**, Crawford, L. E., Duffy, E.S., and Smith, J. (2016). Working memory and spatial judgments: Cognitive load increases the central tendency bias. *Psychonomic Bulletin & Review* doi:10.3758/s13423-016-1039-0 [PDF](#)
- Bae, G. Y., Olkkonen, M., **Allred, S.R.** and Flombaum, J. I. (2015). Why some colors appear more memorable than others: A model combining categories and particulars in color working memory. *Journal of Experimental Psychology: General*. doi:10.1037/xge0000076. [PDF](#)
- Allred, S. R.** and Olkkonen, M. (2015). The effect of memory and context changes on color matches to real objects. *Attention, Perception & Psychophysics*. doi:10.3758/s13414-014-0810-4. [PDF](#)

- Allred, S. R.** and Flombaum, J. I. (2014). Relating color working memory and color perception. *Trends in Cognitive Science*, 18, 562-5. doi:10.1016/j.tics.2014.06.002. [PDF](#)
- Olkkonen, M., McCarthy, P. and **Allred, S.R.** (2014). The central tendency bias in color perception: effects of internal and external noise. *Journal of Vision*, 14(11):5. doi:10.1167/14.11.5. [PDF](#)
- Bae, G. Y., Olkkonen, M., **Allred, S. R.**, Wilson, C., and Flombaum, J. I. (2014). Stimulus specific variability in color working memory with delayed estimation. *Journal of Vision*, 14(4):7. doi:10.1167/14.4.7 [PDF](#)
- Olkkonen, M. and **Allred, S. R.** (2014). Short-term memory affects color perception in context. *PLoS ONE* 9(1): e86488. [PDF](#)
- Allred, S. R.** and Olkkonen, M. (2013). The effect of background and illumination on color identification of real, 3D objects. *Frontiers in Psychology*, 4:821. doi:10.3389/fpsyg.00821 [PDF](#)
- Allred, S. R.**, and Brainard, D.H. (2013). A Bayesian model of lightness perception that incorporates spatial variation in the illumination. *Journal of Vision*, 13(7):18. doi:10.1167/13.7.18 [PDF](#)
- Allred, S.R.**, Radonjić, A., Gilchrist, A., and Brainard, D.H. (2012). Lightness perception in high-dynamic range images: local and remote luminance effects. *Journal of Vision*, 12(2):17. doi:10.1167/12.2.7 [PDF](#)
- Radonjić, A., **Allred, S.R.**, Gilchrist, A., and Brainard, D.H. (2011). The dynamic range of human lightness perception. *Current Biology*, 21(22), 1931-6. doi:10.1016/j.cub.2011.10.013. [PDF](#)
- Allred, S.R.**, Brainard, D.H. (2009). Contrast, constancy, and measurements of perceived lightness under parametric manipulation of surface slant and surface reflectance. *Journal of the Optical Society of America A*, 26(4), 949-961. doi: 102157 [PDF](#)
- Allred, S. R.**, Jagadeesh, B. (2007). Quantitative comparison between neural response in macaque inferotemporal cortex and behavioral discrimination of photographic images. *Journal of Neurophysiology*, 98: 1263-1277. doi:10.1152/jn.00016.2007. [PDF](#)
- Allred, S.R.**, Liu, Y., and Jagadeesh, B. (2005). Selectivity of inferior temporal neurons for realistic pictures predicted by algorithms for image database navigation. *Journal of Neurophysiology*, 94:4068-4081. doi:10.1152/jn.00130.2005. [PDF](#)

Books and Chapters

- Hatfield, G. and **Allred, S. R.** (Eds.) (2012). *Visual experience: Sensation, cognition and constancy*. Oxford, UK: Oxford University Press.
- Allred, S. R.** (2012). Approaching color with Bayesian algorithms. In G. Hatfield & **S. R. Allred** (Eds.), *Visual experience: Sensation, cognition, and constancy* (pp. 212-231). Oxford: UK, Oxford University Press.
- Hatfield, G. and **Allred, S. R.** (2012). Introduction: Visual experience. In G. Hatfield & **S. R. Allred** (Eds.), *Visual experience: Sensation, cognition, and constancy* (pp. 1-10). Oxford: UK, Oxford University Press.

Honors and Awards

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| 2016 | Presidential Award for Excellence in Teaching, Rutgers, New Brunswick |
| 2015 | Chancellor's Teaching Award, Rutgers-Camden |
| 2014 | Rutgers University Digital Teaching Fellow |
| 2001-2004 | Vision Training Grant. NEI-UW. Tuition and stipend |
| 1999-2001 | ARCS Graduate Fellowship. Seattle, WA. University of Washington |

1996-1999	Department of Physics Dean's List. Brigham Young University
1995-1999	Howard W. Hunter Presidential Scholar. Tuition and stipend. Brigham Young University
1995-1999	IBM Thomas J. Watson Scholarship
1995	National Merit Semi-Finalist

Conference Presentations

Sims, C.R., Ma, Z., **Allred, S.R.**, Lerch, R.A., and Flombaum, J.I. (2016). Exploring the Cost Function in Color Perception and Memory: An Information-Theoretic Model of Categorical Effects in Color Matching. Cognitive Sciences, August 11-13, Philadelphia, PA.

Allred, S.R., Bae, G.Y, Olkkonen, M., and Flombaum, J.I. (2015). A new model for the contents of visual working memory, Vision Sciences Society, May 15-20, St Pete's Beach, FL.

Olkkonen, M., Saarela, T., and **Allred, S.R.** (2014). Probabilistic estimation of surface lightness. OSA Fall Vision Meeting, October 10-12, Philadelphia, PA.

Olkkonen, M., Saarela, T., and **Allred, S.R.** (2014). The role of memory in surface color perception. European Conference on Visual Perception, August 24-28, Belgrade, Serbia.

Bae, G. Y., Olkkonen, M., **Allred, S. R.**, Wilson, C., and Flombaum, J. I. (2014). Models of color working memory with color perception as a variable. Vision Sciences Society, May 16-21, St Pete's Beach, FL.

Olkkonen, M., McCarthy, P. and **Allred, S.R.** (2014). Biases in perceived color are related to threshold increases for external, but not internal noise manipulations. Vision Sciences Society, May 16-21, St Pete's Beach, FL.

McCarthy, P., Olkkonen, M. and **Allred, S.R.** (2013). Color constancy and palette complexity in real scenes. Vision Sciences Society, May 10-15, St Pete's Beach, FL.

Olkkonen, M. and **Allred, S.R.** (2013). Effect of short-term memory on perceived hue. Vision Sciences Society, May 10-15, Naples, FL.

Iannetti, N.A. and **Allred, S.R.** (2013). Comparing memory for colored patches, image textures, and photographs. Vision Science Society, May 10-15, Naples, FL.

McLaren, J., Bell, J.R. and **Allred, S.R.** (2013). Remembering colors: Bias and variability. Vision Science Society, May 10-15, Naples, FL.

Olkkonen, M. **Allred, S.R.** (2012). Relationship between constancy and memory for stimulus hue and lightness. 35th European Conference on Visual Perception Alghero, Italy, September 2-6, *Perception*, 41, 45-45.

Olkkonen, M., **Allred, S.R.** (2012). Bias and precision in the perception and memory for stimulus lightness. Vision Sciences Society, May 11-16, Naples, FL. *Journal of Vision*, 12(9), 1209.

Bell, J. R., **Allred, S.R.** (2012). Color memory and perception for real illuminated objects. Vision Sciences Society, May 11-16, Naples, FL. *Journal of Vision*, 12(9): 67.

Allred, S. R., Wood, M., Gambino, A., and Brining, E. (2011). Color constancy in perception and memory for real illuminated objects. Vision Sciences Society, May 6-11, Naples, FL. *Journal of Vision*, 11(11): 381.

Radonjić, A., Gilchrist, A., **Allred, S.R.**, and Brainard, D.H. (2011). Lightness perception in high-dynamic range contexts. Vision Sciences Society, May 6-11, Naples, FL. *Journal of Vision*, 11(11): 375.

Allred, S. R., Troiani, V., Lohnas, L. J., Jiang, L., Radonjic, A., Gilchrist, A., and Brainard, D. H. (2009). An ideal observer model predicts lightness matches. Vision Sciences Society, May 8-13, Naples, FL. *Journal of Vision*, 9(8):345.

Allred, S. R., Lohnas, L. J., and Brainard, D. H. (2008). Bayesian model of lightness perception. GRC conference on sensory coding and the natural environment, July 28-Aug 1, 2008, Italy.

Allred, S. R., Lohnas, L. J., and Brainard, D. H. (2008). Bayesian model of the staircase Gelb effect. Vision Sciences Society, May 9-14, Naples, FL. *Journal of Vision*, 8(6):283.

Allred, S. R. and Brainard, D. H. (2007). Scene complexity affects lightness constancy with respect to changes in object slant and surround reflectance. OSA Fall Vision Meeting, Sept 16-19, Berkeley, CA.

Allred, S.R. and Brainard, D. H. (2007). Parametric measurements of lightness in the context of real illuminated objects. Vision Sciences Society, May 11-16, Sarasota, FL. *Journal of Vision*, 7(9):234.

Allred, S.R. and Jagadeesh, B. (2005). Selectivity of inferotemporal neurons for realistic images predicts behavioral choice. Program No. 362.7. 2005 Abstract Viewer. Washington, DC: Society for Neuroscience.

Allred, S.R. and Jagadeesh, B. (2004). Discrimination performance with realistic images is correlated with selectivity of macaque inferior temporal (IT) neurons. Program No. 751.10. 2004 Abstract Viewer. Washington, DC: Society for Neuroscience.

Liu, Y., **Allred, S.R.**, and Jagadeesh, B. (2004). Dynamics of target selection in stimulus arrays by inferotemporal (IT) neurons during presentation of static choice stimuli. Program No. 751.9. 2004 Abstract Viewer. Washington, DC: Society for Neuroscience.

Allred, S.R., Liu, Y., and Jagadeesh, B. (2004). Algorithms for image database navigation and tuning of object selective neurons in the non-human primate. In *Proceedings of the ACM SIGGRAPH 1st Symposium on Applied Graphics and Visualization*, Los Angeles, CA August 7-8.

Allred, S.R., Thompson, J. Y. S., and Jagadeesh, B. (2003). Color-based estimates of stimulus similarity predict perceptual similarity of image pairs to monkeys. *Journal of Vision*, 3(9):511a. doi:10.1167/3.9.511.

Allred, S.R., Erickson, C. A. and Jagadeesh, B. (2002). Characteristics of pictures that evoke equivalent neural responses in macaque perirhinal cortex. Program No. 160.8. 2002 Abstract Viewer. Washington, DC: Society for Neuroscience.

Chien, S. H. L. **Allred, S.R.**, Teller, D. Y., and Palmer, J. (2000). Young infants' perception of surface lightness. The XX Annual Meeting of Optical Society of America (OSA): Color and Vision Division. Providence, Rhode Island.

Invited Talks

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| 2013 | Johns Hopkins, Vision Sciences Colloquium |
| 2012 | University of Washington, Seattle, Seminar in Cognitive Psychology, <i>Remembering colors: Bias and variability</i> |
| 2012 | University of Chicago, Color Group, <i>Remembering colors: Bias and variability</i> |
| 2011 | Rutgers University, New Brunswick, IGERT Series in Perceptual Science, <i>Shades of gray in high-dynamic range images</i> |
| 2008 | Invited Lecturer, IRCS Undergraduate Summer Workshop in Cognitive Science and Cognitive Neuroscience |
| 2007 | Rutgers University – Newark, <i>Contrast, constancy and perceived lightness</i> |

- 2007 Brigham Young University, Psychology Colloquium, *Visual perception*
- 2007 University of Pennsylvania, Penn Vision Seminar, *Perception and the visual world*
- 2004 University of Washington, Neurobiology and Behavior Retreat, *Perceptual similarity and neural selectivity in extrastriate visual cortex*

Teaching Experience

- 2016 Digitally Enhanced Perception (Psych 467). Rutgers–Camden
- 2015 Digitally Enhanced Experimental Psychology (Psych 381). Rutgers–Camden
- 2014 Digitally Enhanced Research Methods (Psych 256). Rutgers–Camden
- 2013, 2011 Evolutionary Psychology (Psych 677). Rutgers–Camden
- 2011 Color: Psychology, Philosophy, physics and Art (Honors 120). Rutgers–Camden
- 2012, 2010 Perception (Psych 467). Rutgers–Camden
- 2009-14 Method and Theory in Psychology (Psych 255). Rutgers–Camden
- 2010 - Thesis Research. Rutgers–Camden
- 2009 - Undergraduate Independent Study (Psych 495, 494). Rutgers–Camden
- 2009 Psychology, Philosophy and Poetry of Color (Psych 460). Rutgers–Camden
- 2008 Perception (Psych 111). University of Pennsylvania
- 2003 Co-Instructor, Seminar in Psychophysics (Psych 551), University of Washington
- 2001 Teaching Assistant, Vision (Physiology 424), University of Washington
- 1998-1999 Teaching Assistant, Electricity and Magnetism (Physics 122), Brigham Young University
- 1997 TA Lab, Mechanics, Electricity and Magnetism, Thermodynamics, Waves (Physics 121, 122, 221). Brigham Young University

Postdoctoral Associates

- 2011-2013 Maria Olkkonen

MA Students Supervised

- 2014 - Daniel Markoff
- 2012-2014 Patrice McCarthy
- 2012-2014 Nickolas Iannetti

MA Thesis Committees

2015-2016	Brianna Soreth, Rutgers-Camden
2014-2015	Arturo Calderon, Rutgers-Camden
2013-2014	Gianna Bowler, Rutgers-Camden
2012-2013	Suyeon Noh, Rutgers-Camden
2011-2013	Phillip Loatman, Rutgers-Camden

Undergraduate Students Supervised

2016	Jessica Rumer (volunteer, Rutgers-Camden)
2016	Corey Williams (independent study, Rutgers-Camden)
2014	Jeremy Hausman (independent study, Rutgers-Camden)
2014	Diana Esparragoza (independent study, Rutgers-Camden)
2014	Nancy Essandoh (independent study, Rutgers-Camden)
2013	Jeremy Bell (Independent study, Rutgers-Camden, Dean's Undergraduate Travel Award)
2013	Constance Bienkowski (independent study, Rutgers-Camden)
2013	Patrice McCarthy (independent study, Rutgers-Camden)
2012	Katherine Quintero (independent study, Rutgers-Camden)
2012	Dana McNellis (independent study, Rutgers-Camden)
2012	Christina Ohlsen (independent study, Rutgers-Camden)
2012	Theresa Crisostomo (independent study, Rutgers-Camden)
2012	Jenna Cotton (Independent study, Rutgers-Camden)
2011	Nickolas Iannetti (independent study, Rutgers-Camden)
2011	Salima Mostafa (independent, study, Rutgers-Camden)
2011	Ashley McDonald (independent, study, Rutgers-Camden)
2011	Jade Iannocone (independent, study, Rutgers-Camden)
2011	Omayra Lambert (independent study, Rutgers-Camden)
2011	Christopher Taylor (summer paid student, Rutgers-Camden)
2011	Monica Bennett (independent study, Rutgers-Camden)
2010	Erin Brining (independent study, Rutgers- Camden)
2010	Anthony Gambino (independent study, Rutgers-Camden, Dean's Undergraduate Travel Award)
2010	Yvonne Pynne-Bailey (independent study, Rutgers-Camden)
2010	Michael Wood (independent study, Rutgers-Camden, Dean's Undergraduate Travel Award)
2010	Jenna Norton (independent study, Rutgers-Camden)

2009	Elizabeth Meegas (independent study, University of Pennsylvania, with David Brainard)
2008	Li Jiang (graduate rotation in neuroscience, University of Pennsylvania, with David Brainard)
2008	Vanessa Troiani (graduate rotation in neuroscience, University of Pennsylvania, with David Brainard)
2007	Lynn Lohnas (graduate rotation in neuroscience, University of Pennsylvania, with David Brainard)
2007	David Harwood (summer intern, University of Pennsylvania, with David Brainard)

Memberships (Past and Present)

Society for Neuroscience
 ACM
 Vision Sciences Society
 Optical Society of America

Ad hoc reviewer

Cengage Learning (textbook review)
 Developmental Science
 Journal of the Optical Society of America, A
 Journal of the Royal Society
 Journal of Vision
 National Science Foundation
 Oxford University Press
 Philosophical Psychology
 TOPOI: An International Review of Philosophy
 Transactions on Graphics
 Vision Research

Department and University Service (Rutgers - Camden)

2015	presentation at Rutgers-Camden e-Learning Conference
2014 -	TA/GA grievance committee
2013 -	curriculum committee
2013 -	general education committee for college, experiential learning subcommittee
2013 -	graduate committee
2011-2012	department committee
2011	presentation at Chancellor's Faculty Research Day
2010	CCIB presentation, <i>Perception and computation</i>

2011	QSTEP presentation, <i>Color memory</i>
2009-2011	faculty senate, CCAS
2010	search committee, position in cognitive psychology
2010-2011	faculty advisor, Psi Chi Club
2009-2010	faculty advisor, Psychology Club

Other Experience

2010	Abstract committee for COSYNE (Computational and Systems Neuroscience)
2003	Edmonds Community College, Expanding Your Horizons. Career program for inner-city high school students
2002-2003	Organizing committee, "What to do with a PhD in the Biological Sciences" student-run seminar series
2002-2003	Mentor, Seattle Girl's School. Private middle school for inner-city girls focused on math and science
2002	Short course in computational neurobiology: vision at Cold Spring Harbor Laboratories
2000	Graduate rotation: infant lightness perception with Davida Teller, University of Washington
1999	Graduate rotation: computational vision with Michael Shadlen, University of Washington
1997-1999	Undergraduate research: neuroendocrinology with George Bloch, Brigham Young University
1998	Undergraduate research: thin films and x-ray diffraction with Steven Turley, Brigham Young University
1998	Data analyst. Western Wats Company