

## David Alexander Kahn

Center for Autism Research

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Center for Cognitive Neuroscience

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## CURRENT RESEARCH

Graduate Student

January 2009 - Present

Laboratories of Dr. Robert T. Schultz<sup>1</sup> and Dr. Geoffrey K. Aguirre<sup>2</sup>

1. Center for Autism Research, Children's Hospital of Philadelphia, Philadelphia, PA

2. Department of Neurology, University of Pennsylvania, Philadelphia, PA

The aim of my research is to better understand the interaction between visual perception and higher cognition. Specifically, I am investigating the means by which visual representations are encoded in the brain, and how alterations in neural encoding might underlie some of the etiology of autism spectrum disorders (ASD). My current research applies experimental methods predominately utilized in the study of normative vision to test extant, pervasive, & yet unverified theories of ASD.

Specifically I utilize the phenomenon of neural adaptation, a reduction in neural response following repeated stimulus presentations, to probe the relationships between perceptual representations using functional magnetic resonance imaging (fMRI) and event-related potentials (ERP). Applied to cognitive and neural network theories of ASD, these techniques have the potential to offer previously unverified theories of ASD a foothold in neural functioning.

## EDUCATION

University of Pennsylvania, Philadelphia, PA.

Forthcoming

Ph.D., Neuroscience Graduate Group, (Entered Fall 2008)

California Institute of Technology, Pasadena, CA.

June 2006

Bachelor of Science, Biology.

## PUBLICATIONS

**Kahn D.A.**, Aguirre, G.K. (2012). Confounding of norm-based and adaptation effects in brain responses. *Neuroimage*. 60: 2294-9.

**Kahn D.A.**, Harris, A.M., Wolk, D., Aguirre, G.K. (2010). Temporally distinct neural coding of perceptual similarity and prototype bias. *Journal of Vision*. 10: 12.

## PRESENTATIONS

**Kahn D.A.** & Aguirre, G.K. *Neural adaptation is sensitive to the gamut and division of a stimulus space*. Poster presented at the 13th Annual Meeting of the Vision Sciences Society, May 10-15, 2013. Naples, FL.

DeGutis, J., Cohan, S., **Kahn, D.A.**, Aguirre, G.K., & Nakayama, K. *Training facial emotion recognition produces behavioral improvements and changes in neural tuning in a patient with acquired emotion recognition deficits and prosopagnosia*. Poster presented at the 13th Annual Meeting of the Vision Sciences Society, May 10-15, 2013. Naples, FL.

**Kahn, D.A.**, Mattar, M.G., & Aguirre, G.K. *Complexity and Contradiction in Neural Encoding of Face Similarity*. Presentation at the 2012 Annual Meeting of the Society for Neuroscience, October 13-17, 2012. New Orleans, LA.

**Kahn, D.A.** & Aguirre, G.K. *Stimulus Similarity and Dimensionality in the Processing of Non-Face Objects*. Poster presented at the 11th Annual Meeting of the Vision Sciences Society, May 6-11, 2011. Naples, FL.

Aguirre, G.K. & **Kahn, D.A.** *Confounding of prototype and similarity effects in fMRI studies of face and object representations*. Poster presented at the 11th Annual Meeting of the Vision Sciences Society, May 6-11, 2011. Naples, FL.

**Kahn, D.A.**, Harris, A.M., Wolk, D. & Aguirre, G.K. *Dissociable temporal components of similarity in face perception: An ERP study*. Poster presented at the 10th Annual Meeting of the Vision Sciences Society, May 7-12, 2010. Naples, FL.

## PRIOR RESEARCH EXPERIENCE

Rotation Student Sept. 2008 - Dec. 2008  
*Laboratory of Ruben Gur, University of Pennsylvania, Philadelphia, PA.*

- Assisted in fMRI data analysis from an experiment investigating emotion recognition in schizophrenia, including the use of a mass-preserving non-linear image registration program.
- Presented a methods talk on fMRI analysis for a collaborative training group meeting at RWTH Aachen University.

Research Assistant April 2007 - July 2008  
*Laboratory of Ralph Adolphs, California Institute of Technology, Pasadena, CA.*

- Analyzed eye-tracking data from social cognition experiments, including writing a multi-functional MATLAB toolkit for fixation identification and ROI analysis.
- Developed and executed an analysis scheme for the creation of a brain atlas of subjects with agenesis of the corpus callosum.

Undergraduate Researcher June 2004 - Sept. 2005  
*Laboratory of Marianne Bronner, California Institute of Technology, Pasadena, CA.*

- Designed a research project to explore the role of *adenomatous polyposis coli* in the development of avian neural crest cells.
- Selected and cloned RNA probes specific to *adenomatous polyposis coli* for *in situ* hybridizations.
- Identified expression pattern of *adenomatous polyposis coli* in avian embryos through *in situ* hybridizations and whole mount immunostaining.

## TEACHING EXPERIENCE

Teaching Assistant Fall 2010

*Department of Psychology, University of Pennsylvania, Philadelphia, PA.*

Psychology 111-401: Perception.

Course Professor: Alan Stocker

- Team-taught weekly recitation sections for 55 undergraduate students in an introductory psychology class focused on the physiological and perceptual characteristics of human sensation.

## MEMBERSHIPS

Vision Sciences Society (Pre-Doctoral Member). January 2009 - Present

Society for Neuroscience (Pre-Doctoral Member). January 2012 - Present

## VOLUNTEER

Social Coach Spring 2012 - Spring 2013

*Penn Social Skills Seminar, University of Pennsylvania, Philadelphia, PA.*

Program Director: Carol Moog

- Mentored teenagers & young adults with ASD, social anxiety, or other social deficits in weekly sessions to build social skill, confidence, & experience.

Instructor & Mentor Summer 2011, 2012

*Upward Bound Math & Science, Philadelphia, PA.*

- Taught classes introducing basic topics in neuroscience (perception & sensation, the neuron) to high-achieving underprivileged high school students

- Mentored students during a 6 weekly sessions building a research poster (modeled on the scientific method) investigating a topic of their choice.