

Curriculum Vitae
David J. Crowley, A.L.M



Date Prepared: February 22, 2017
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Place of Birth: Boston, Massachusetts

Education

1993	BA	Philosophy & Psychology	Hampshire College, Amherst MA
2013	ALM (Master's)	Extension Studies with a Concentration in Psychology	Harvard University, Cambridge MA

Research Appointments

2010-	Research Associate	Psychiatry	Harvard Medical School, Boston MA
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Positions at Hospitals/Affiliated Institutions

2006-2008	Research Assistant	Genetics Laboratory (Dennis Kinney, Ph.D.)	McLean Hospital
2008-2010	Technical Research Assistant II	Brain Imaging Center (Constance Moore, Ph.D.)	McLean Hospital
2010-2013	Senior Clinical Research Assistant	Brain Imaging Center (Marisa M. Silveri, Ph.D.)	McLean Hospital
2013-2017	Senior Research Project Manager	Laboratory for Affective and Translational Neuroscience (Diego A. Pizzagalli, Ph.D.)	McLean Hospital
2017-	Research Associate	Laboratory for Affective and Translational Neuroscience (Diego A. Pizzagalli, Ph.D.)	McLean Hospital

Other Professional Positions

1978-1987	Senior Principal Systems Analyst	Engineering Operations	Digital Equipment Corp.
1987-1998	Senior Manager of Engineering Operations	Office of the Chief Engineer	Digital Equipment Corp.

1998–2000	Global Sales System Program Manager	Global Sales Operations	EMC Corporation
2000–2007	Independent Systems Consultant	Principal	Crowley Consulting

Report of Technological and Other Scientific Innovations

EEG Training and Certification procedure (2015)	The training and certification program I developed for our EEG system is a required course for research assistants who are conducting EEG experiments. The training covers an introduction to experimental techniques, cap placement, data quality testing and equipment maintenance. It includes a multi-step certification process that must be completed before running EEG experiments.
Redesign of subject recruiting processes and tools (2014)	Based on my novel analysis of recruiting metrics, I created a new recruiting methodology and web-based survey application for the lab. We now receive approximately 300 candidate surveys per month, and these improvements have reduced the time spent on recruiting by 50% and increased monthly enrollment by 46% across the lab.
Procedure for MRS voxel placement on the hippocampus to exclude the amygdala (2011)	In MRS studies of GABA in the hippocampus, it is crucial to exclude the amygdala from the region of interest. I developed a standard reference map and voxel positioning procedure that assured the consistent placement of hippocampal voxels across multiple MRS studies.
Product Managers' Workbench (1995)	As a manager of software engineering, I led the development of a unique web-based workbench that integrates the complex tools, data, and processes needed by 5000 engineering and product management professionals at a major international computer manufacturer. The system was subsequently adopted by other major computer manufacturers.
Uniform Product Data Architecture (1992)	I designed and codified a uniform product data architecture that met the combined needs of engineering, manufacturing, sales, and service databases for a major international corporation. In an independent benchmarking assessment by Booz-Allen Hamilton, this system was rated as Best-In-Class compared to other major manufacturers including General Electric, Ford Motor Co., and IBM.

Honors and Prizes

2007	Training Stipend. Division of Developmental Medicine, Children's Hospital Boston, Boston MA. (\$1000 to support research on the causes of autism)
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2013 Poster Award for “Common Patterns of Social Drinking Influence Brain GABA Levels Measured using Magnetic Resonance Spectroscopy.” Presented at the International Conference on the Applications of Neuroimaging to Alcoholism, New Haven CT. (\$500 award)

Report of Funded and Unfunded Projects

Current

2016- Sex, Hormones and GABA in Stress-Induced Anhedonia in Depression, PI: Diego A. Pizzagalli, Ph.D.
Role: Senior Research Project Manager

2015 - Novel Cross-Species Neurophysiological Assays of Reward and Cognitive Domains, PI: Diego A. Pizzagalli, Ph.D.
Role: Senior Research Project Manager

2015 - Neurobiological Underpinnings of Placebo Response in Major Depressive Disorder, Site PI: Diego A. Pizzagalli, Ph.D.
Role: Site Research Project Manager

2013 - Neuroimaging Studies of Reward Processing in Depression, PI: Diego A. Pizzagalli, Ph.D.
Role: Senior Research Project Manager

Past

2014 - 2016 EMBARC: Establishing Moderators and Biosignatures of Antidepressant Response for Clinical Care, Site PI: Diego A. Pizzagalli, Ph.D.
Role: Site Research Coordinator

2013 - 2016 Neuroimaging Studies of Reward Processing in Depression, PI: Diego A. Pizzagalli, Ph.D.
Role: Research Project Manager

2010 - 2014 Neurobiological Consequences of Binge Alcohol Consumption in Young Adults, PI: Marisa M. Silveri, Ph.D.
Role: Senior Clinical Research Assistant

2010 - 2014 Brain Chemistry of Post-Traumatic Stress Disorder, PI: Isabelle M. Rosso, Ph.D.
Role: Senior Clinical Research Assistant

2010 - 2012 Sex Differences and Alcohol Dependence: Hippocampal Neurochemistry and Function, PI: Marisa M. Silveri, Ph.D.
Role: Senior Clinical Research Assistant

2010 - 2011 Neurocognition, Brain GABA Levels, and Adolescent Alcohol Use, PI: Marisa M. Silveri, Ph.D.
Role: Senior Clinical Research Assistant

2009 - 2011 Pilot Study of Glutamate/Glutamine in Amygdalae of Adolescents with Autism Spectrum Disorder PI: Gagan Joshi, M.D.
Role: Clinical Research Assistant II

- 2008 – 2011 Lithium Magnetic Resonance Spectroscopy of Children and Adolescents with Bipolar Disorder, PI: Constance M. Moore, Ph.D.
Role: Technical Research Assistant II
- 2006 – 2008 Prenatal Stress Following Natural Disasters as a Risk Factor for Autism, PI: Dennis Kinney, Ph.D.
Role: Volunteer Research Assistant

Report of Teaching and Training

Harvard University Division of Continuing Education, Cambridge MA

- 2010 – 2011 Head Teaching Assistant, Abnormal Psychology
- 2010 – 2013 Head Teaching Assistant, Introduction to Statistics
- 2007 – 2010 Teaching Assistant, Introduction to Statistics

Report of Scholarship

Peer-Reviewed Publications

1. Kinney DK, Miller AM, **Crowley DJ**, Huang E, Gerber E. Autism prevalence following prenatal exposure to hurricanes and tropical storms in Louisiana. *Journal of Autism and Developmental Disorders* 308(3):474-480, 2008.
2. Kinney DK, Munir K, **Crowley DJ**, Miller AM. Prenatal stress and risk for autism. *Neuroscience and Biobehavioral Reviews* 32:1519-1532, 2008.
3. Kinney DK, Teixeira P, Hsu D, Napoleon SC, **Crowley DJ**, Miller A, Hyman W, Huang E. Relation of schizophrenia prevalence to latitude, climate, fish consumption, infant mortality, and skin color: a role for prenatal vitamin D deficiency and infections? *Schizophrenia Bulletin* 35(3):582-95, 2009.
4. Gönenç A, Frazier JA, **Crowley DJ**, Moore CM. Combined diffusion tensor imaging and T2 relaxometry in early onset bipolar disorder. *The Journal of the American Academy of Child and Adolescent Psychiatry* 49(12):1260-8, 2010.
5. Sneider JT, Cohen-Gilbert JE, **Crowley DJ**, Paul MD, Silveri MM. Differential effects of binge drinking on learning and memory in emerging adults. *Journal of Addiction Research & Therapy* S7:006, 2013.
6. Joshi G, Biederman J, Wozniak J, Goldin RL, **Crowley DJ**, Furtak S, Lukas SE, Gönenç A. Magnetic resonance spectroscopy study of the glutamatergic system in adolescent males with high-functioning autistic disorder: a pilot study at 4T. *European Archives of Psychiatry and Clinical Neuroscience* 263(5):379-384, 2012.
7. Silveri MM, Sneider JT, **Crowley DJ**, Covell MJ, Acharya D, Rosso IM, Jensen JE. Frontal lobe γ -aminobutyric acid levels during adolescence: Associations with impulsivity and response inhibition. *Biological Psychiatry* 74(4):296-304, 2013.
8. Rosso IM, Weiner MR, **Crowley DJ**, Silveri MM, Rauch SL, Jensen JE. Insula and anterior cingulate GABA levels in posttraumatic stress disorder: Preliminary findings using magnetic resonance spectroscopy. *Depression and Anxiety*, 31(2):115-23. 2013.
9. Cohen-Gilbert JE, Killgore WDS, White CN, Schwab ZJ, **Crowley DJ**, Covell MJ, ... Silveri MM. Differential influence of safe versus threatening facial expressions on decision-

making during an inhibitory control task in adolescence and adulthood. *Developmental Science* 17(2):12-23, 2014.

10. Silveri MM, Cohen-Gilbert JE, **Crowley DJ**, Rosso IM, Jensen JE, Sneider JT. Altered anterior cingulate neurochemistry in emerging adult binge drinkers with a history of alcohol-induced blackouts. *Alcoholism: Clinical and Experimental Research*, 38(4):969-79, 2014.
11. Mashhoon Y, Czerkawski C, **Crowley DJ**, Cohen-Gilbert JE, Sneider JT, Silveri MM. Binge alcohol consumption in emerging adults: anterior cingulate cortical 'thinness' is associated with alcohol use patterns. *Alcoholism: Clinical and Experimental Research*, 38(7):1955-64, 2014.
12. Sneider JT, Hamilton DH, Cohen-Gilbert JE, **Crowley DJ**, Rosso IM, Silveri MM. Sex differences in spatial navigation and perception in human adolescents and emerging adults. *Behavioural Processes*, 111:42-50, 2015.
13. Mashhoon Y, Czerkawski C, **Crowley DJ**, Cohen-Gilbert JE, Sneider JT, Silveri MM. Binge alcohol consumption in emerging adults: altered anterior cingulate cortical thickness is associated with alcohol use consequences. *Drug & Alcohol Dependence*, 140:e135-6. 2014.
14. Demers LA, Olson EA, **Crowley DJ**, Rauch SL, Rosso IM. Dorsal anterior cingulate thickness is related to alexithymia in childhood trauma-related PTSD. *PLoS ONE*, 10(10):e0139807, 2015
15. Cohen-Gilbert JE, Sneider JT, **Crowley DJ**, Rosso IM, Jensen JE, Silveri MM. Impact of family history of alcoholism on glutamine/glutamate ratios in anterior cingulate cortex in substance naïve adolescents. *Developmental Cognitive Neuroscience*, 16: 147-156. 2015.
16. Whitton AE, Kakani P, Foti D, Van't Veer A, Haile A, **Crowley DJ**, Pizzagalli DA. Blunted neural responses to reward in remitted major depression: a high-density event-related potential study. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 1(1):87-95, 2016.
17. Whitton AE, Van't Veer A, Kakani P, Dillon DG, Ironside ML, Haile A, **Crowley DJ**, Pizzagalli DA. Acute stress impairs frontocingulate activation during error monitoring in remitted depression. *Psychoneuroendocrinology*, 75:164-172. 2017.
18. Rosso IR, **Crowley DJ**, Silveri MM, Rauch SL, Jensen JE. Hippocampus glutamate and N-acetyl aspartate markers of excitotoxic neuronal compromise in posttraumatic stress disorder. *Neuropsychopharmacology*, 42:1698-1705. 2017.

Master's Thesis

Effects of Binge Drinking on γ -Aminobutyric Acid and Impulse Control in Young Adults. 2013. Harvard University Extension School, Cambridge, MA. Advisor: Marisa Silveri, Ph.D.

Poster Presentations

1. **Crowley DJ**, Covell MJ, Killgore WDS, Schwab ZJ, Weiner M, Acharya D, et al. Differential influence of facial expression on inhibitory capacity in adolescents versus adults. Poster presented at: International Neuropsychological Society; 2011; Boston.

2. Cohen-Gilbert JE, Sneider JT, **Crowley DJ**, Covell MJ, Acharya D, Rosso IM, et al. Anterior cingulate glutamate and glutamine linked to impulsivity and cognitive control in healthy adolescents. Poster presented at: Society for the Study of Human Development; 2011; Providence, RI.
3. Joshi G, Gönenç A, Wozniak J, Lukas SE, Goldin RL, **Crowley DJ**, et al. Magnetic resonance spectroscopy study of the glutamatergic system in adolescents with high-functioning autism spectrum disorder: a pilot study at 4T. Poster presented at: AACAP/CACAP Joint Annual Meeting; 2011; Toronto, ON.
4. Silveri MM, **Crowley DJ**, Covell MT, Acharya D, Sneider JT, Rosso IM, et al. Developmental differences in impulsivity are related to frontal lobe neurochemistry during adolescence. Poster presented at: Society for Research in Child Development; 2011; Montreal, QC.
5. Silveri MM, **Crowley DJ**, Covell MT, Acharya D, Sneider JT, Rosso IM, et al. In vivo brain GABA levels in the adolescent frontal lobe: implications for understanding ontogenetic changes in alcohol sensitivity. Poster presented at: Research Society on Alcoholism; 2011; Atlanta, GA.
6. Sneider JT, Acharya D, Cohen-Gilbert JE, Covell MJ, **Crowley DJ**, Rosso IM, et al. Age and sex differences on spatial and verbal memory performance: Evidence from the Morris Water Maze and California Verbal Learning Tasks. Poster presented at: Society for the Study of Human Development; 2011; Providence, RI.
7. Cohen-Gilbert JE, Killgore WDS, Schwab ZJ, **Crowley DJ**, Covell MJ, Acharya D, et al. Differential influence of safe versus threatening facial expressions on inhibitory control across adolescence and adulthood. Poster presented at: Society for Neuroscience; 2012; New Orleans, LA.
8. Rosso IM, Weiner M, **Crowley DJ**, Silveri MM, Rauch SL, Jensen JE. Anterior cingulate and insular cortex GABA levels in PTSD: a proton magnetic resonance spectroscopy study. Poster presented at: Society of Biological Psychiatry; 2012; Philadelphia, PA.
9. Sneider J, Killgore W, Schwab Z, **Crowley DJ**, Covell M, Cohen-Gilbert J, et al. Inhibitory capacity in emerging adult binge drinkers: Influence of facial cues. Poster presented at: Research Society on Alcoholism; 2012; San Francisco, CA.
10. **Crowley DJ**, Covell MJ, Jensen JE, Cohen-Gilbert JE, Sneider JT, Silveri MM. Common Patterns of Social Drinking Influence Brain GABA Levels Measured using Magnetic Resonance Spectroscopy. Poster presented at: International Conference on the Applications of Neuroimaging to Alcoholism (ICANA-3); 2013; New Haven, CT. ***Poster Award.**
11. Cohen-Gilbert JE, Schwab ZJ, Killgore WDS, **Crowley DJ**, Silveri MM. Influence of binge drinking on the neural correlates of inhibitory control during emotional distraction in young adults. Poster presented at: International Conference on Applications of Neuroimaging (ICANA-3); 2013; New Haven, CT.
12. Mashhoon Y, Czerkawski C, **Crowley DJ**, Cohen-Gilbert JE, Sneider JT, Silveri MM. Binge alcohol consumption in emerging adults: Altered anterior cingulate cortical thickness is associated with alcohol use consequences. Poster presented at: College on Problems of Drug Dependence; 2013; San Diego, CA.
13. Gogel H, **Crowley DJ**, Rauch SL, Rosso IM, Tkachenko O. Individual Differences in Alexithymia and Dissociation in PTSD. Poster presented at: American College of Neuropsychopharmacology; 2013; Hollywood, FL.

14. Rosso IM, **Crowley DJ**, Preer LA, Silveri MM, Jensen JE. Hippocampus NAA and glutamate as biological markers of anhedonia in PTSD and trauma-exposed adults. Poster presented at: American College of Neuropsychopharmacology; 2013; Hollywood, FL.
15. Rosso IM, **Crowley DJ**, Silveri MM, Rauch SL, Jensen JE. Glutamate levels in the hippocampus of adults with PTSD: Associations with clinical symptoms, anxiety and stress. Poster presented at: Society of Biological Psychiatry; 2013; San Francisco, CA.
16. Sneider J, **Crowley DJ**, Cohen-Gilbert J, Jensen J, Silveri M. Effects of alcohol-induced blackouts on brain chemistry in emerging adult binge drinkers. Poster presented at: Research Society on Alcoholism; 2013; Orlando, FL.
17. **Crowley DJ**, Jensen JE, Sneider JT, Cohen-Gilbert JE, Silveri MM. Evidence of alterations in brain metabolites indicating neuroinflammatory responses in emerging adult binge drinkers. Poster presented at: McLean Hospital Annual Research Day; 2014; Belmont, MA.
18. Lee AHY, Cohen-Gilbert JE, Czerkawski C, Sternberg A, **Crowley DJ**, Sneider JT, et al. White-matter differences between binge-drinking and light-drinking emerging adults. Poster presented at: Society of Biological Psychiatry; 2014; New York, NY.
19. Mashhoon Y, Jensen J, Cohen-Gilbert J, **Crowley DJ**, Rosso I, Sneider J, et al. Evidence of Alterations in Brain Metabolites Indicating Neuroinflammatory Responses in Emerging Adult Binge Drinkers. Poster presented at: American College of Neuropsychopharmacology; 2014; Phoenix, AZ.
20. Olson EA, Weber M, **Crowley DJ**, Rosso IM. Increased Right Inferior Temporal Lobe Gray Matter Volume is Associated with Greater Alexithymia in PTSD. Poster presented at: Society of Biological Psychiatry; 2014; New York, NY.
21. Rosso IM, **Crowley DJ**, Preer LA, Silveri MM, Jensen JE. Relationships of neuronal integrity and glutamate metabolism with diagnosis, trauma history, and anhedonia in PTSD. Poster presented at: Society of Biological Psychiatry; 2014; New York, NY.
22. Sneider JT, Rosso IM, Cohen-Gilbert JE, **Crowley DJ**, Paul MD, Sternberg A, et al. Hippocampal GABA levels vary as a function of menstrual cycle phase in healthy adults. Poster presented at: Society of Biological Psychiatry; 2014; New York, NY.
23. Sneider J, Mashhoon Y, Anderson C, Czerkawski C, **Crowley DJ**, Cohen-Gilbert J, et al. Family history of alcoholism effects on hippocampal volume in emerging adult binge drinkers. Poster presented at: Research Society on Alcoholism; 2014; Bellevue, WA.
24. Silveri MM, Jensen JE, Cohen-Gilbert JE, **Crowley DJ**, Sneider JT. Influence of alcohol-induced blackouts on frontal lobe brain chemistry in emerging adults. RSA Symposium, What Happened and Why? Predictors and Consequences of Alcohol-Induced Blackouts. Poster presented at: Research Society on Alcoholism; 2015; San Antonio, TX.

Certifications

- 2008–current CITI certifications in Biomedical Research, Good Clinical Practice
- 2008–current CPR/AED; MRI Safety; Human Research Subjects Protection; HIPAA Compliance. McLean Hospital, Belmont, MA.
- 2002–2008 Microsoft Certified Professional (MCP) in Systems Analysis and Design. Microsoft, Redmond, WA.

2001–2004 Teaching License for High School Mathematics. Massachusetts Department of Education, Boston, MA.

Narrative Report

I am a professional project manager, engaged in academic research on the functions and dysfunctions of the human brain. To make the transition from my background in the computer industry into academic research I began volunteering as a research assistant in the Genetics Laboratory at McLean Hospital in Belmont, MA, where I utilized my software skills to analyze public health data to explore potential risk factors for autism. Based on this work I co-authored two articles published in top-tier research journals, which continue to be cited frequently. At the same time, I returned to school and earned a Master's degree at Harvard University Extension School, concentrating in neuroscience and psychology.

Subsequently I was hired as a full-time research assistant at the McLean Imaging Center. With my first lab, I participated in studies of children with psychological disorders using magnetic resonance imaging and magnetic resonance spectroscopy (MRI and MRS). In these studies I successfully conducted hour-long imaging sessions with over 150 children, as young as 4 years old. In my second lab at the Imaging Center I had the opportunity to launch three new studies exploring the effect of heavy drinking on neurochemistry in adolescents and young adults. Using my skills in project planning and my new knowledge of the research process I was able to accelerate our data collection so much that the principal investigator was able to begin publishing results after just one year of a five year program. I have subsequently co-authored 11 more papers based this research. In this case my contribution to the quality and richness of the data came from spending the extra time before the study started to establish concrete definitions and rationale for the data being collected, and by modeling and testing our procedures before we enrolled our first subject.

Following the work at the McLean Imaging Center, I transferred to the Center for Depression, Anxiety and Stress Research at McLean as a senior research project manager. In this role focus was on the procedures and infrastructure required to support multiple simultaneous studies. I oversee the work of multiple RAs (currently $N = 6$), as well as managing departmental expenses, research equipment, computer systems, and regulatory compliance (e.g., clinicaltrials.gov, NIH Data Sharing, IRB). Focusing on specific departmental needs, I developed an EEG training and certification processes; identified and implemented techniques and tools to improve recruitment and overall lab procedures; and created lab-wide and center-wide database repositories. For example, to improve recruitment procedures I conducted an evidence-based operations analysis of the recruiting and enrollment process, and identified the critical choke-points. Based on this analysis I designed a new recruiting methodology and a web-based recruiting application, which after three months resulted in a 46% increase in the monthly enrollment of subjects and a 25% reduction in the time RAs spent doing phone interviews. Moreover, I have implemented a uniform EEG training and certification program, to ensure that all new research assistants have demonstrated proficiency before they can conduct experiments on their own. I also established standard procedures for testing the EEG electrode nets and tracking their performance, with a regular schedule for refurbishment. This has been particularly effective for holding the vendor accountable for defects in manufacturing and repair, resulting in over \$19,000 savings on replacement nets.

In my Master's thesis I studied the effects of alcohol on gamma-aminobutyric acid (GABA), which is the most abundant inhibitory neurotransmitter. During my deep dive into the GABA literature, I began to understand its role in controlling the patterns of activation and oscillation in neural signals throughout the cortex. This topic has since become my central interest in neuroscience. It is widely recognized that synchronized low-frequency oscillations are a marker for functional connectivity networks. Strong evidence indicates that higher-frequency oscillations are the brain's vehicle for representing space and movement. In parallel there is emerging evidence that disturbance of oscillatory control is a key feature of schizophrenia and psychosis. Ongoing research suggests that these controlled recursive oscillations are a foundation of memory and cognition, and may serve as the medium for language and thought. I am particularly interested in continuing to explore and contribute to this evolving theoretical framework.