

# Tyler Santander

## Curriculum Vitae

Department of Psychological & Brain Sciences  
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## Education

- 2012–2017 **University of Virginia.**  
Cognitive Psychology, Ph.D.
- 2007–2011 **University of California, Santa Barbara.**  
Psychology, B.A. | Political Science, B.A.  
Honors & Distinction in Major.

## Research Experience

- 2017–Present **Postdoctoral Scholar**, UCSB INSTITUTE FOR COLLABORATIVE BIOTECHNOLOGIES.  
**Supervisor:** Michael B. Miller, Ph.D.
- 2012–2017 **Graduate Student Researcher**, UNIVERSITY OF VIRGINIA.  
**Dissertation committee:** James P. Morris, Ph.D. (*Chair*) | Jessica J. Connelly, Ph.D. | Chad Dodson, Ph.D. | T. Jason Druzgal, M.D., Ph.D.
- 2011–2012 **Research Staff**, UCSB INSTITUTE FOR COLLABORATIVE BIOTECHNOLOGIES.  
**Supervisor:** Michael B. Miller, Ph.D.
- 2010–2011 **Research Assistant**, UCSB HUMAN MEMORY & NEUROIMAGING LAB.  
**Advisor:** Michael B. Miller, Ph.D.
- 2010–2011 **Research Assistant**, UCSB LABORATORY FOR COMPUTATIONAL COGNITIVE NEUROSCIENCE.  
**Advisor:** F. Gregory Ashby, Ph.D.
- 2010–2011 **Honors Thesis**, UCSB DEPARTMENT OF POLITICAL SCIENCE.  
**Advisor:** Garrett Glasgow, Ph.D.
- 2009–2010 **Intern**, MACARTHUR LAW & NEUROSCIENCE PROJECT.  
**Supervisor:** Andrew Mansfield, J.D., Executive Director (2007–2010).

## Publications

**Santander, T.**, Puglia, M.H., Connelly, J.J., & Morris, J.P. (*under review*). Decoding epigenetic variability in the oxytocin receptor gene through patterned network architectures.

Floyd, B., **Santander, T.**, & Weimer, W. (2017). Decoding the representation of code in the brain: An fMRI study of code review and expertise. In *Proceedings of the 39th International Conference on Software Engineering*. doi: 10.1109/ICSE.2017.24

Turner, B.O., Lopez, B.A., **Santander, T.**, & Miller, M.B. (2015). One dataset, many conclusions: BOLD variability's complex relationship with age and motion artifacts. *Brain Imaging & Behavior*, 9, 115–127. doi: 10.1007/s11682-014-9351-7

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## Invited Talks

### **The entropic brain: Towards a unifying endophenotype between genes and behavior.**

International Max Planck Research School on the Life Course, Ann Arbor, MI (May 2017).

### **Reverse engineering brain systems: Decoding epigenotypes & behavioral phenotypes through patterned network architectures.**

International Max Planck Research School on the Life Course, Berlin, Germany (October 2016).

### **The structure of variability in the brain: Decoding epigenotypes and behavioral phenotypes through patterned network dynamics.**

16th Annual Robert J. Huskey Graduate Research Exhibition, University of Virginia (March 2016)

### **The social (neural) network: Data-driven approaches to uncovering the molecular and neural indices of social behavior.**

Department of Psychology Students' Choice Colloquium, University of Virginia (December 2015).

### **The social (neural) network: A data-driven, multivariate approach to decoding epigenetic variability in the oxytocin receptor gene.**

15th Annual Robert J. Huskey Graduate Research Exhibition, University of Virginia (March 2015); Annual Meeting of the Social & Affective Neuroscience Society, Boston, MA (April 2015); Clinical Psychology Brown Bag Series, George Mason University (April 2015).

### **Memory as decision-making: The successful retrieval effect tells us almost nothing about memory accuracy.**

Annual Meeting of the Cognitive Neuroscience Society, San Francisco, CA (March 2015).

### **Decoding the social brain and its epigenome using multivariate pattern analyses.**

14th Annual Robert J. Huskey Graduate Research Exhibition, University of Virginia (March 2014).

### **"His brain made him do it:" The limits of folk psychology in legal judgments & decision-making.**

Department of Political Science Honors Symposium & Awards Ceremony, University of California, Santa Barbara (June 2011).

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## First Author Posters

**Santander, T.**, Puglia, M.H., Connelly, J.J., & Morris, J.P. (2017). The entropic brain: Towards a unifying endophenotype between genes and behavior. Presented at the 17th Annual Robert J. Huskey Graduate Research Exhibition, University of Virginia, Charlottesville, VA.

**Santander, T.**, Puglia, M.H., Connelly, J.J., & Morris, J.P. (2016). The structure of variability in the brain: Decoding epigenotypes and behavioral phenotypes through patterned network dynamics. Presented at the International Max Planck Research School on the Life Course, Charlottesville, VA.

**Santander, T.**, Puglia, M.H., Connelly, J.J., & Morris, J.P. (2016). The noisy, social brain: Macroscale system dynamics predict autism spectrum phenotypes and epigenetic variability in the oxytocin receptor gene. Presented at the Annual Meeting of the Social & Affective Neuroscience Society, New York, NY.

**Santander, T.**, Connelly, J.J., & Morris, J.P. (2016). The noisy, social brain: Multivariate patterns of BOLD variance predict autism spectrum phenotypes and epigenetic variability in the oxytocin receptor gene. Presented at the Annual Meeting of the Cognitive Neuroscience Society, New York, NY.

**Santander, T.**, Puglia, M.H., Connelly, J.J., & Morris, J.P. (2016). The structure of variability in the brain: Decoding epigenotypes and behavioral phenotypes through patterned network dynamics. Presented at the Annual Meeting of the Central Virginia Chapter of the Society for Neuroscience, Charlottesville, VA.

**Santander, T.**, Connelly, J.J., & Morris, J.P. (2015). The social (neural) network: A data-driven, multivariate approach to decoding epigenetic variability in the oxytocin receptor gene. Presented at the 2nd Annual University of Virginia Public Day, Charlottesville, VA.

**Santander, T.**, Connelly, J.J., & Morris, J.P. (2014). Teasing apart social perception and epigenetic variability using multivariate pattern analyses. Presented at the Annual Meeting of the Social and Affective Neuroscience Society, Denver, CO.

**Santander, T.**, Lopez, B.A., Schubert, M., Bennett, C., & Miller, M.B. (2014). Age-related compensatory over-recruitment during recognition memory: Evidence from support vector machine pattern classification. Presented at the Annual Meeting of the Cognitive Neuroscience Society, Boston, MA.

**Santander, T.**, Lopez, B.A., Schubert, M., Bennett, C., & Miller, M. B. (2013). Lifespan changes in the neural network architecture underlying criterion shifting during recognition memory. Presented at the Annual Meeting of the Society for Neuroscience, San Diego, CA.

**Santander, T.** (2011). Perceptions of criminal offenders: Their influences & correlates in legal judgments & decision-making. Presented at the Undergraduate Research & Creative Activities Colloquium, University of California, Santa Barbara.

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## Teaching Experience

- Spring 2017 **Instructor**, BRAIN MAPPING: AN INTRODUCTION TO FUNCTIONAL MRI.  
*Distinguished Teaching Fellowship course.*
- Fall 2016 **Lab Instructor**, QUANTITATIVE METHODS I: PROBABILITY & STATISTICAL INFERENCE.  
*Graduate course.*
- Spring 2016 **Lab Instructor**, QUANTITATIVE METHODS II: EXPERIMENTAL DESIGN.  
*Graduate course.*
- Fall 2015 **Lab Instructor**, QUANTITATIVE METHODS I: PROBABILITY & STATISTICAL INFERENCE.  
*Graduate course.*
- Summer 2015 **Organizer | Instructor**, SUMMER COURSE ON MULTIVARIATE PATTERN ANALYSES (MVPA) FOR NEUROIMAGING DATA.  
*Sponsored by the University of Virginia, Department of Psychology.*
- Spring 2015 **Teaching Assistant**, RESEARCH METHODS & DATA ANALYSIS I.
- Fall 2014 **Lab Instructor**, RESEARCH METHODS & DATA ANALYSIS II.
- Spring 2014 **Lab Instructor**, RESEARCH METHODS & DATA ANALYSIS II.
- Fall 2013 **Lab Instructor**, RESEARCH METHODS & DATA ANALYSIS I.
- Spring 2013 **Teaching Assistant**, INTRODUCTION TO LEARNING.
- Fall 2012 **Teaching Assistant**, INTRODUCTION TO LEARNING.

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## Professional Membership

- 2015–2017 **International Max Planck Research School on the Life Course.**
- 2013–Present **Social & Affective Neuroscience Society.**
- 2013–Present **Society for Neuroscience.**
- 2012–Present **Cognitive Neuroscience Society.**

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## Academic Honors & Awards

- 2017 **Association of Computing Machinery Distinguished Paper Award.**  
39th International Conference on Software Engineering.
- 2016 **Robert J. Huskey Graduate Research Exhibition: Oral Presentation Award.**  
Models & Representations (1st place).
- 2016 **Distinguished Teaching Fellowship.**  
University of Virginia, Department of Psychology.
- 2016 **Cognitive Neuroscience Society Graduate Student Award.**
- 2015 **Social & Affective Neuroscience Society Oral Presentation Award.**
- 2015 **Robert J. Huskey Graduate Research Exhibition: Oral Presentation Award.**  
Biological & Biomedical Sciences (2nd place).
- 2014 **Social & Affective Neuroscience Society Travel Award.**
- 2010 **UCSB Undergraduate Research & Creative Activities Grant.**

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## Technical Skills

### **fMRI data acquisition, processing, and analysis.**

*Hardware:* 3T Siemens Magnetom Trio Tim | 3T Siemens Magnetom Prisma | Cedrus Lumina response system.

*Software & techniques:* SPM | FSL | multivariate pattern analysis (MVPA) | independent component analysis (ICA) | psychophysiological interactions (PPI) | partial least squares (PLS) | dynamic causal modeling (DCM) | functional connectivity analysis | graph theory | latent feature decomposition (LFD).

### **Structural MRI analysis.**

*Software & techniques:* Computational Anatomy Toolbox (CAT) | Freesurfer | Advanced Normalization Tools (ANTs) | voxel-based morphometry (VBM) | cortical thickness.

### **Molecular genetics/epigenetics.**

*Hardware:* NanoDrop Spectrophotometer | Bio-Rad C1000 Thermal Cycler | Qiagen PyroMark.

*Techniques:* blood processing & cell preparation | bisulfite conversion | quantitative polymerase chain reactions (qPCR) | pyrosequencing | RNA-seq.

### **Additional computer programming & data analysis.**

*Software & techniques:* Matlab | Psychophysics Toolbox | R | SPSS | Python | structural equation modeling (SEM) | coupled latent differential equations (LDE) | multivariate statistics | machine learning.

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## Research Interests

fMRI | cognitive neuroscience | social neuroscience | epigenetics | cognitive aging | individual differences | dynamical systems | complex networks | machine learning.