

NICOLE ROVEN GIULIANI

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Education

2003 B.A. University of Pennsylvania, College of Arts & Sciences
Psychology, *with Honors*
Biological Basis of Behavior
Overall GPA: 3.65, GPA in Majors: 3.73

Academic Honors and Special Recognitions

2003 Phi Beta Kappa
2003 Graduated *magna cum laude*, University of Pennsylvania
2001 – 2003 Dean's List, University of Pennsylvania
2002 Millstein Family Undergraduate Research Grant
University of Pennsylvania
Award Amount: \$1,000 (for project details, see pg. 2)
Advisor: Dr. Amishi P. Jha
1999 – 2003 Psi Chi, National Psychology Honor Society, University of Pennsylvania

Research Positions Held

Research Assistant: 2003 – current, co-employed by Drs. Godfrey Pearlson and Vince Calhoun
Olin Neuropsychiatry Research Center, Institute of Living at Hartford Hospital, Hartford, CT

Work with Dr. Pearlson:

- Analysis of structural MRI data using voxel-based morphometry: seven data sets analyzed, including the largest comparison of gray matter differences in schizophrenia patients versus healthy controls to date (200 each group)
- Correlational analyses of structural MRI, fMRI task activation, cognitive, genetic data
- Lab presentations of papers, data and methodologies
- Preparation and presentation of scientific posters at four research conferences
- Mentoring/supervising undergraduate students
- Teaching data analysis methods to collaborating researchers
- Trained in MRI clinical safety protocol: handling and scanning of patients

Work with Dr. Calhoun:

- fMRI paradigm design in e-prime, including a visual-auditory-motor task, a task designed to measure movement artifact due to overt speech, an auditory oddball task
- Collection and analysis of fMRI data from paradigms including the Penn Conditional Exclusion Task, the auditory oddball task, the visual-auditory-motor task and the Sternberg Working Memory Task
- Aiding in the development of a new software package that uses independent component analysis (ICA) to analyze fMRI data
- Analysis of fMRI data using ICA and the Statistical Parametric Mapping (SPM) software package, both Matlab-based
- Preparing, editing and maintaining Internal Review Board materials, including consent forms and protocols
- Trained in assessment of the Positive And Negative Symptom Scale (PANSS) and the Hopkins Adult Reading Test (HART)

Thesis Research: 2002 – 2003, Advisor: Dr. Amishi P. Jha

Center for Cognitive Neuroscience, University of Pennsylvania, Department of Psychology

Title: “Dissociating Mnemonic and Response Functions in the Prefrontal Cortex During a Mental Calculation Task”

- Design of the experiment and programming of stimuli in e-prime
- Recruiting, training and running subjects
- Behavioral and fMRI data analysis
- Preparation and presentation of poster to fellow students and faculty
- Oral defense of results to faculty (15 minute presentation)
- Preparation of text in journal article format

Publications

Giuliani, N.R., Calhoun, V.D., Pearlson, G.D., Francis, A., Buchanan, R.W. (2005) Voxel-Based Morphometry versus Region of Interest: A Comparison of Two Methods For Analyzing Gray Matter Disturbances in Schizophrenia. *Schizophrenia Research*, 74(2-3), 135-147.

Calhoun, V.D., Adali, T., **Giuliani, N.R.**, Pekar, J.J., Pearlson, G.D., Kiehl, K.A. (in press) Multimodal Analysis of Independent Source Differences in Schizophrenia: Combining Gray Matter Structural and Auditory Oddball Functional Data. *Human Brain Mapping*.

Assaf, M., Benios, T., **Giuliani, N.R.**, Groth, K.M., Pearlson, G.D. (in preparation) The Effects of COMT and BDNF polymorphisms on encoding and retrieval during an fMRI figural memory task.

Jha, A.P., Ranucci, M.B., **Giuliani, N.R.** (in preparation) Dissociating Mnemonic and Response Functions in the Prefrontal Cortex During a Mental Calculation Task. *Journal of Neuroscience*.

Giuliani, N. R., Pearlson, G. D., Dean, D. L., Calhoun, V. D. (in preparation) THC Intoxication Effects on Visual Perception: An fMRI Study Analyzed Using SPM and ICA.

Abstracts and Conference Presentations

Giuliani, N.R., Calhoun, V.D., Cunningham, W.A. (accepted for presentation in 2005). Similarities between evaluative and non-evaluative judgments: a pluralistic fMRI analysis using SPM and semi-blind ICA. *Cognitive Neuroscience Society Abstracts*, New York, NY.

Benios, T., Assaf, M., **Giuliani, N.R.**, Groth, K.M., Pearlson, G.D. (accepted for presentation in 2005). The effect of aging on brain activity during an fMRI figural memory task. *Cognitive Neuroscience Society Abstracts*, New York, NY.

Giuliani, N.R., Groth, K.M., Johnson, M.R., Gelernter, J., Covault, J., Pearlson, G.D. (accepted for presentation in 2005). CB1 receptor genotype mediates working memory performance and fMRI activation in schizophrenia. *International Congress on Schizophrenia Research Abstracts*. Savannah, GA.

Giuliani, N.R., Calhoun, V.D., Buchanan, R.W., Pearlson, G.D. (2004). VBM vs. ROI: A Comparison of Two Methods For Analyzing Gray Matter Disturbances in Schizophrenia. *Cognitive Neuroscience Society Abstracts*, San Francisco, CA.

Giuliani, N.R., Calhoun, V.D., Pearlson, G.D. (2004). Alcohol Versus Marinol Intoxication Effects on Visual Perception: An fMRI Study. *ICANA Abstracts*, New Haven, CT.

Giuliani, N.R., Calhoun, V.D., Buchanan, R.W., Pearlson, G.D. (2003). A Voxel-Based Morphometric Analysis of Schizophrenia. *BEACON Abstracts*, Hartford, CT.

Jha, A.P., Ranucci, M.B., **Giuliani, N.R.** (2003). Dissociating Mnemonic and Response Functions in the Prefrontal Cortex During a Mental Calculation Task. *Cognitive Neuroscience Society Abstracts*, New York, NY.

Invited Talks

2004 Neuroscience Rounds, Institute of Living at Hartford Hospital. "Cortical Gray Matter Abnormalities in Schizophrenia: How Do We Measure Them?"

Society Memberships

Cognitive Neuroscience Society
International Congress on Schizophrenia Research

Teaching Experience

- 6 and 11/04 Course: “Voxel-Based Morphometry,” *Institute of Living at Hartford Hospital*
Organized and taught a detailed course on the theory and application of voxel-based morphometry as a means of analyzing group differences in gray matter concentration from structural MRI images. Students included researchers from Johns Hopkins University, Yale University and within the ONRC.
- 10/04 Course: “Group ICA of fMRI,” *Institute of Living at Hartford Hospital*
Assisted in instruction and practical application of a new Matlab-based toolbox used to ease analyses of fMRI data using independent components analysis (ICA).
Instructor: Dr. Vince Calhoun
- 6/04 – 9/04 Lisa Knopf, Amherst College, Hartford Hospital Summer Student Fellow
Mentored Project: “A Voxel-Based Morphometric Analysis of Schizophrenia.”

Workshops and Seminars Attended

- 8/03 – 9/03 **Statistical Parametric Mapping Workshop**, *Olin Neuropsychiatry Research Center – Institute of Living, Hartford Hospital*
An introduction to the Statistical Parametric Mapping (SPM2) software package: a description of the SPM procedures used in the lab, familiarity with the image processing pipeline, and how to apply basic univariate statistics to an fMRI data set.
Instructor: Dr. Kent A. Kiehl
- 8/02 **Introduction to UNIX Workshop**, *University of Pennsylvania*
An introduction to the basic commands of Unix and the Linux interface to aid in learning the fMRI analysis software, Voxbo.
Instructor: Mr. Kosh Banerjee
- 9/01 and 8/02 **fMRI Design & Analysis Workshop I & II**, *University of Pennsylvania*
An introduction to the principles of experimental design and analysis in fMRI: basics of hypothesis testing, blocked vs. event-related designs, and BOLD fMRI data analyses.
Instructor: Dr. Geoffrey K. Aguirre

Relevant Computer Skills

Windows, Unix, Microsoft Office (advanced knowledge of Excel, Word, PowerPoint), Adobe Products, SPSS, EndNote, E-Prime, Matlab, SPM2.