

MATTHEW P SCHROEDER

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D.O.B. 1st December 1982

EDUCATION

- 2009 –Present **NORTHWESTERN UNIVERSITY** **CHICAGO, IL**
(Graduate) **Ph.D. Student- Neuroscience**
Supervisors: John Disterhoft *Ph.D.*, Lei Wang *Ph.D.*
- **Thesis:** “Prestimulus theta activity and the consolidation of memory in rabbits”
“Development of a Calcium-sensitive MRI probe to measure neuronal activity”
 - Key courses: Fundamentals of Neuroscience; Neuroanatomy; Neurobiology of Learning and Memory
 - Presenting eyeblink conditioning trials based upon levels of hippocampal theta activity to allow for a greater understanding of hippocampal to neocortical consolidation in rabbits
- 2007 – 2009 **NATIONAL INSTITUTE ON DRUG ABUSE** **BALTIMORE, MD**
(Postbaccalaureate) **Intramural Research Training Award Fellow**
Supervisor: Elliot Stein *Ph.D.*
- Two year internship at the National Institute on Drug Abuse (National Institutes of Health)
 - Responsible for the implementation and administration of research studies employing functional magnetic resonance imaging (fMRI) to investigate the neurological correlates of addiction and substance use disorders
- 2005 – 2006 **KING’S COLLEGE LONDON, INSTITUTE OF PSYCHIATRY** **LONDON, UK**
(Graduate) **MSc (Master of Science)- Forensic Mental Health Science**
Research Mentor: Thomas Fahy *MPhil M.D. FRCPsych*
- Dissertation focus: “Mental health, burnout, and job satisfaction in personality disorder and forensic services: A comparative study of inpatient and community teams”
 - Key modules: Advanced Research Methodology & Statistics; Risk Management/Assessment of Criminal Offending Among Mental Disorder Patients; Treatments/Services to Prevent Violent/Antisocial Behaviors
 - Focused on violence, crime, and substance abuse among people with antisocial behavior and mental disorders
- 2002 – 2005 **UNIVERSITY OF MINNESOTA** **MINNEAPOLIS, MN**
(Undergraduate) **BA Degree- Psychology**
Minor- Sociology: Law/Criminology/Deviance
Supervisor: Paul van den Broek *Ph.D.*
- 3.55 Overall GPA (3.5 Major-specific GPA)
 - Thesis focus: “The effects of scientific text structure on reading comprehension and recall processes”
 - Key courses: Neurobiology of Behavior; Research Methods and Statistics; Clinical Psychology; Abnormal Psychology; Adolescent Psychology; Criminal Behavior & Social Control; Issues in Crime Control
 - Assisted research projects founded within counseling, educational, & industrial/organizational psychology
- 2001 – 2002 **NORTH DAKOTA STATE UNIVERSITY** **FARGO, ND**
(Undergraduate)
- 3.71 Freshman GPA; Transferred in good standing to pursue a degree within a stronger psychology program
 - Key courses: Intro to Psychology; Intro to Biology; Introduction to Chemistry I & II; Calculus I & II

REFERENCES

- John Disterhoft, Ph.D.* Professor, Dept. of Physiology
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Tel: 312 503 7982
- Lei Wang, Ph.D.* Asst. Professor, Dept. of Psychiatry & Behavioral Sciences
Northwestern University
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- Elliot A Stein, Ph. D.* Chief, Neuroimaging Research Branch
National Institute on Drug Abuse (NIH)
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PUBLICATIONS • Hong, LE, **Schroeder, M**, Ross, TJ, Buchholz, B, Salmeron, BJ, Wonodi, I, Thaker, GK, and Stein, EA (2009) Nicotine enhances but does not normalize visual sustained attention and the associated brain network in schizophrenia. *Schizophrenia Bulletin*.

ORAL PRESENTATIONS • “Unraveling a web of dysfunction: Neuroimaging and applied computational anatomy”
Northwestern University Interdepartmental Neuroscience Annual Retreat (Oak Brook, IL—Sept 2010)

• “The Effect of Substance Abuse on Grey Matter Density in Schizophrenia”
Cognitive Brain Mapping Group Weekly Meeting (Chicago, IL—Jan 2010)

• “Scrooge-like? fMRI and altruism in heroin treatment seekers”
NIH Postbaccalaureate Seminar (Bethesda, MD—Dec 2008)

• “A Question of Blur: fMRI spatial blurring using optimal FWHM”
Research in Progress Seminar (Baltimore, MD—Apr 2008)

CONFERENCE POSTERS • **Schroeder, M., Wang, L., Csernansky, J., and Dunaif, A.**
“Hypothalamic functional connectivity in Polycystic Ovary Syndrome versus obese and lean controls”
Human Brain Mapping (Quebec, Canada—June 2011)

• **Gallen, C., Schroeder, M.P., Ross, T.J., Enoch, M.-A., Hodgkinson, C., Goldman, D., Stein, E., and Lee, M.R.**
“Nicotine and COMT Val158Met genotype regulate activation to rewarding stimuli in a cortico-striatal network”
Society for Neuroscience (San Diego, CA—Nov 2010)

• **Gallen, C., Schroeder, M.P., Ross, T., Kurup, P., Stein, E., and Lee, M.**
“Loss aversion in smokers is indexed by inverse responses to monetary gains and losses”
Human Brain Mapping (Barcelona, Spain—June 2010)

• **Schroeder, M., Smith, M., Wang, L., and Csernansky, J.**
“Effects of substance use on structural abnormalities in schizophrenia as measured by VBM”
Human Brain Mapping (Barcelona, Spain—June 2010)

• **Wang, X., Schroeder, M., Gitelman, D., and Parrish, T.**
“Chewing gum affects on functional connectivity: A resting-state fMRI study”
International Society for Magnetic Resonance in Medicine (Stockholm, Sweden—May 2010)

• **Schroeder, M.P., Ross, T.J., Stein, E.A., and Lee, M.R.**
“Tis better to take than give? Greater putamen activation when restricting monetary donations compared to giving among opiate users”
Society for Neuroscience (Chicago, IL—Oct 2009)

• **Cobia, D., Reiter, K., Alpert, K., Schroeder, M., Csernansky, J., Wang, L.**
“Longitudinal progression of cortical thickness changes in schizophrenia”
Society for Neuroscience (Chicago, IL—Oct 2009)

• **Schroeder, M.P., Lee, M.R., Kurup, P.K., Ross, T.J., and Stein, E.A.**
“Enhanced mesocorticolimbic connectivity influenced by nicotine but not its injection rate”
Human Brain Mapping (San Francisco, CA—June 2009)

• **Salmeron, B.J., Schroeder, M.P., Ross, T.J., and Stein, E.A.**
“Rating affective stimuli: Multiple regression analysis and amygdala seed-based connectivity analysis”
Wisconsin Symposium on Emotion (Madison, WI—Apr 2009)
American College of Neuropsychopharmacology (Scottsdale, AZ—Dec 2008)

• **Schroeder, M.P., Salmeron, B.J., Ross, T.J., Kurup, P.K., and Stein, E.A.**
“Dorsal versus ventral striatum: Conscious and unconscious reward processing using olfactory cues”
Society for Neuroscience (Washington, DC—Nov 2008)

• **Hong, L.E., Ross, T.J., Schroeder, M.P., Buchholz, B., Salmeron, B.J., Thaker, G.K., and Stein, E.A.**
“Neural mechanism of nicotinic enhancement of visual sustained attention in schizophrenia”
Organization for Human Brain Mapping (Melbourne, Australia—June 2008)

• **Schroeder, M.P., Salmeron, B.J., Ross, T.J., Kurup, P.K., and Stein, E.A.**
“Temporal shift of reward reactivity brought on by olfactory stimuli elicits differential changes in striatum based upon timing method” (interim findings)
National Institutes of Health Spring Research Festival (Bethesda, MD—May 2008)
Johns Hopkins University Dissemination of Student Research on Addictions, Infectious Disease, and Public Health (Baltimore, MD—Apr 2008)

• **Schroeder, M.P. and Fahy, T.**
“Mental health, burnout, and job satisfaction in personality disordered and forensic services: A comparative study of inpatient and community teams”
RCP Faculty of Forensic Psychiatry Annual Residential Conference (Prague, Czech Republic—Feb 2007)
Fourth Annual National Conference of Research in Medium Secure Units (London, England—Jan 2007)

SUMMARY OF RESEARCH PROJECTS

Graduate

Prestimulus theta activity and the consolidation of memory in rabbits

- Examining the effect of prestimulus theta activity within the hippocampus on the acquisition and consolidation of eyeblink conditioning in rabbits. Employing manganese-enhanced MRI to visualize the transition from hippocampal to neocortical storage of memory.

Development of a Calcium-sensitive MRI probe to measure neuronal activity

- Using a newly developed chemical MRI contrast agent to directly measure changes in neuronal calcium concentration levels after the induction of CA3 hippocampal injury (via kainic acid) in living rats.

Hypothalamic connectivity in Polycystic Ovary Syndrome compared to obese and lean controls

- Examining resting-state connectivity differences between obese PCOS women and lean/obese controls. By using the hypothalamus as a seed region, hypothalamic connectivity among PCOS women was more similar to lean controls suggesting a different mechanism leading to their obesity.

Impact of cannabis use on schizophrenia-related disease processes

- Employing a multi-modality approach to integrate resting-state functional data and anatomical brain measures to determine the effects of cannabis use in a schizophrenic population.

Empathic responses in schizophrenic patients

- Using three tasks aimed at emotional recognition, affective responses, and empathic perspective taking in schizophrenia patients, this project elucidated emotional processing abnormalities using fMRI.

Progression of Cortical Change in Schizophrenics and Controls Mediated by Drug Use

- Preprocessed and analyzed anatomical MRI scans of schizophrenic and control subjects. This study examined the cortical deterioration among the two populations and attempted to see if past drug use effected the cortical volume and thickness.

Postbaccalaureate

Oxytocin and Cognitive-Behavioral Therapy in Drug Dependence

- Developing and piloting the fMRI tasks to be used in the study (charitable donation and cue-induced craving) as well as task administration and functional data analysis. This study employed a double-blind design to determine the effects of oxytocin administration on therapeutic alliance and brain activation at baseline and six months.

fMRI Study of Nicotinic Effect on Neurophysiology of Schizophrenia

- Conducted the primary analysis of fMRI data on this study determined to measure the differences in attentional task performance in healthy and schizophrenic subjects.

The Effects of Expectation on Natural and Drug-Induced Rewards

- Task development, piloting, and analysis of an olfactory-cued Pavlovian conditioning task to examine neural differences between natural rewards (i.e. juice) and drug-induced rewards (i.e. methylphenidate).

Effect of Functional Genetic Polymorphisms on Brain Morphology and Function

- Conducted the behavioral data analysis with SPSS to examine the correlation between reward bias and genetic markers implicated in childhood neglect.

Masters Degree

Mental health, burnout, and job satisfaction among staff in personality disorder and forensic services at community and inpatient settings

- Responsible for facilitating all aspects of a study examining differences on a number of psychological measures between staff members in two distinct psychiatric services. Characterized the stress inherent in working with difficult client populations.

Psychotic-like experiences and other antecedents of schizophrenia in children aged 9-12 years

- Aided colleagues with the distribution of surveys examining psychopathic and conduct disorder traits in classroom children aged 9-11 in southeast London.

Undergraduate

The effects of prior knowledge and text structure on comprehension processes during reading of scientific texts

- Recruited 80 subjects to determine the effects of text structure on reading comprehension and memory. My additional roles included transcribing and parsing the coherence of free recall data from university students.

Evidence of 12-Year predictive and concurrent validity for SII occupational scale scores

- Collaborated with Professor Jo-Ida Hansen in a follow-up of a 30-year cohort study testing the long-term validity of the Strong Interest Inventory. Also interviewed cohort subjects to ascertain the correlation between occupational interests of thirty years past to current work roles.

SKILLS PROFILE *Research/Teaching Skills*

- Protocol design and preparation for research approval from both ethics and scientific committees
- Data analysis (behavioral and functional imaging data), participant recruitment, and HIPAA training
- Written/oral presentation skills and teaching experience with “Correlations and Relationships”
- Chaired journal club discussions on papers pertaining to striatal dopamine transmission, self-control and addiction, independent component analysis in fMRI, and psychiatric morbidity
- Presented personal research findings to colleagues on disparities in FWHM values and reward processing
- Trained to administer and score various psychological measures: Beck Depression Inventory (BDI); Maslach Burnout Inventory; Wechsler Adult Intelligence Scale-Revised (WAIS-R); Historical, Clinical, and Risk Management-20 (HCR-20)

Computer skills

- Operating systems: Windows, Apple, Unix
- Applications:
 - Brain Imaging Specific -- AFNI; SPM; FSL; JIM; FreeSurfer
 - MRI Platforms – Bruker; Siemens
 - General – SPSS; Eprime; Matlab

**OFFICES/
LEADERSHIP/
VOLUNTEER**

- Participated in Brain Awareness Week activities at Nettelhorst Elementary School and Museum of Science and Industry. Gave a 30 minute lecture regarding the brain and performed experiments with students (March 2011)
- Nominated to the Northwestern NUIN Student Advisory Committee (Winter 2010-Present)
- Served as a science fair judge at Whitney Young High School in Chicago, IL (Dec 2009)
- Volunteer for the ‘Triumph Over Phobia’ group in London which aimed to alleviate the experienced anxiety of those with phobias and obsessive-compulsive disorder through weekly self-exposure programs (Spring 2006)
- Member of Tau Kappa Epsilon fraternity (Spring 2001-Spring 2005)
 - Served as academic advisor and Chairperson of Charitable Activities Committee which raised funds for the Special Olympics and Alzheimer’s Foundation through local concerts/benefits
 - Appointed member of the twelve-person Intra-Fraternity Council at the University of Minnesota which facilitated beneficial change in the community through volunteer and goodwill activities (Fall 2003)
- Elected student government representative of Seim Hall dormitory at North Dakota State University (Fall 2001)

**ACADEMIC
HONORS**

- Accepted onto National Institutes of Health Postbaccalaureate Intramural Research Training Award Program
- Placed on ‘A’ Honor Roll at the University of Minnesota during Fall 2004 and Spring 2005 semesters
- Placed on Dean’s List at North Dakota State University during Fall 2001 and Spring 2002 semester
- Attained highest GPA among Tau Kappa Epsilon-Theta Chapter fraternity members in Fall 2004 semester
- Awarded the H & H Blodgett Scholarship at the University of Minnesota in September 2003
- Inducted into Phi Eta Sigma Honor Society recognizing scholastic achievement among freshmen in spring 2002