

Curriculum Vitae

Suchismita Ray, Ph.D.
2090 Raritan Road
Scotch Plains, NJ 07076, USA
732-266-4553 (cell)
shmita@rutgers.edu

Positions Held

- September 1, 2018 – Present Associate Professor, Department of Health Informatics,
School of Health Professions, Rutgers Biomedical Health Sciences, RBHS
- 8-1-2019 – Present Affiliate, Rutgers Center of Alcohol & Substance Use Studies
- 2007 (July) – August 31, 2018 Assistant Research Professor, Center of Alcohol Studies,
Rutgers, The State University of New Jersey, Piscataway, NJ, USA
- 2014 - 2017 Faculty, Rutgers Summer School of Addiction Studies
- 2002 - 2007 (June) Research Associate, Center of Alcohol Studies, Rutgers, The
State University of New Jersey, Piscataway, NJ, USA
- 2005 - 2012 Faculty, Rutgers Summer School of Alcohol and Drug
Studies
- 2000 - 2002 Post-doctoral Research Fellow, Center of Alcohol Studies,
Rutgers, The State University of New Jersey, Piscataway, NJ, USA
- 1994 - 1995 Volunteer Substance Abuse Counselor, La Casa De Don Pedro,
Newark, NJ, USA
- 1991 - 1993 Substance Abuse Counselor, Indian Chamber of Commerce,
Calcutta, India

Education

- 2000, October Ph.D., Cognitive Psychology, Rutgers – The State University of
New Jersey, Newark, NJ, USA. (Advisor: Dr. Benjamin Martin Bly)
- 1991 M.S., Clinical Psychology (Masters' thesis on Schizophrenia),
Science College, Calcutta University, Calcutta, West Bengal, India
- 1989 B.S. (Major: Psychology, Minor: Mathematics and Chemistry)
Gokhale Memorial College, Calcutta, West Bengal, India

Professional Memberships and Activities

American Psychological Association

APA Division 50 (Society of Addiction Psychology)

Reviewer, *Pharmacology, Biochemistry and Behavior* (2005 - present)

Reviewer, *Experimental and Clinical Psychopharmacology* (2004 - present)

Reviewer, *Addiction* (2003 – present)

Reviewer, Alcoholic Beverage Medical Research Foundation (2007 - 2012)

Reviewer, *Neurocase* (2008 - present)

Reviewer, *Applied Psychophysiology and Biofeedback* (2008 - present)

Reviewer, *Memory* (2009 - present)

Reviewer, *Psychology of Addictive Behaviors* (2011- present)

Reviewer, *Brain Connectivity* (2012 - present)

Reviewer, *Journal of Studies on Alcohol and Drugs* (2014 - present)

Editorial Board Member, *Journal of Alcoholism and Drug Dependence* (2012 - present)

University Committees

September 2018 – Present Rutgers University Opioid Symposium Planning Committee

September 2018- Present SHP Dean's Research Advisory Committee (DRAC)

January 2019- Present Rutgers University Opioid Steering Committee (Representing Rutgers School of Health Professions, SHP)

March 2019 – Present Department of Psychiatric Rehabilitation and Counseling Task force

April 2019 Served as a judge to select student oral research presenters for the SHP Research and Scholarship Symposium

Current Research Projects

- Prescription opiates, drug-cue processing network, and neural connectivity
- Negative affect mechanisms underlying opioid use in lab and daily life

Research Interests

- Understanding the neurobiological basis of opioid, cocaine, marijuana and tobacco addiction
- Examining cognitive processing and brain structure and function in opioid, tobacco, cocaine, and marijuana users utilizing cognitive experimental tasks and brain imaging techniques (MRI, fMRI, DTI)
- To promote the basic education as how chronic use of drugs can alter an individual's brain biochemistry, structure and function that promote compulsive drug seeking behavior

- Based on my research findings, develop cognitive (e.g., cognitive restructuring), neurological (e.g., brain stimulation), behavioral (meditation, yoga), and pharmacological interventional approaches that may promote drug relapse prevention and support abstinence
- Utilize Machine Learning computational tools to predict which drug users would benefit from particular interventions. Develop personalized intervention and treatment strategies

Refereed Journal Articles

Ray, S. (2019). Adverse childhood experiences in a group of inpatient treatment-seeking individuals with prescription opioid use disorder. *American Journal of Biomedical Science & Research*, 5(6). AJBSR.MS.ID.000975.
DOI:10.34297/AJBSR.2019.05.000975.

Yan, L., Lu, W., Gao, N., & **Ray, S.** (2019). Effects of electro-acupuncture in reducing depression and anxiety during heroin withdrawal: A randomized controlled trial. *Journal of Complementary Medicine and Alternative Healthcare*, 8(5): 555747.
DOI: 10.19080/JCMAH.2019.08.555747.

Ray, S. & Reich, W. (2018). Prescription opioid and stress (editorial). *Journal of Alcoholism and Drug Dependence* 6: e146. doi:10.4172/2329-6488.1000e146.

Ray, S. & Haney, M. (2018). An fMRI study to examine recognition memory for appetitive cocaine picture stimuli in non-treatment seeking cocaine smokers. *Drugs and Alcohol Addiction*, 1, 1-8.

Ray, S., Biswal, B.B., Aya, A., Gohel, S., Srinagesh, A., Hanson, C., & Hanson, S. J. (2017). Modeling causal relationships among brain areas in the mesocorticolimbic system during resting-state in cocaine users utilizing a graph theoretic approach. *Journal of Alcoholism & Drug Dependence*, 5(4). pii: 279. doi: 10.4172/2329-6488.1000279.

Ray, S. (2017). Examining brain networks in prescription opioid users. *Journal of Alcoholism & Drug Dependence*, 5(2). pii: e137. doi: 10.4172/2329-6488.1000e137

Ray, S., Di, X., & Biswal, B. B. (2016). Effective connectivity within the mesocorticolimbic system during resting-state in cocaine users. *Frontiers in Human Neuroscience*, 10: 563.

Ray, S. (2016). Brain structural and functional changes in cocaine users during abstinence. *Journal of Alcoholism & Drug Dependence*, 4:5 DOI: 10.4172/2329-6488.1000e134

- Nguyen-Louie, T. T., Buckman, J. F., **Ray, S.**, & Bates, M. E. (2016). Drinkers' memory bias for alcohol picture cues in explicit and implicit memory tasks. *Drug and Alcohol Dependence*, *160*, 90-6. doi: 10.1016/j.drugalcdep.2015.12.033.
- Ray, S.**, Gohel, S., & Biswal, B. B. (2015). Altered functional connectivity strength in abstinent chronic cocaine smokers compared to healthy controls. *Brain Connectivity*, *5*, 476-86.
- Ray, S.**, Haney, M., Hanson, C., Biswal, B., & Hanson, S. J. (2015). Modeling causal relationship between brain regions within the drug-cue processing network in chronic cocaine smokers. *Neuropsychopharmacology*, *40*, 2960-8.
- Ray, S.**, Hanson, C., & Hanson, S. J. (2014) Enhanced cue reactivity to cocaine cues in non-treatment seeking cocaine smokers. *Journal of Alcoholism and Drug Dependence*, *2*:169. doi: 10.4172/2329-6488.1000169
- Ray, S.**, Pandina, R., & Bates, M. E. (2014). Memory for drug related visual stimuli in young adults, cocaine dependent polydrug users. *The American Journal of Drug and Alcohol Abuse*, *40*, 170-175.
- Lehrer, P., Buckman, J. F., Mun, E. Y., Vaschillo, E. G., Vaschillo, B., **Ray, S.**, Udo, T., Nguyen, T., Bates, M. E. (2013). Negative mood and alcohol problems are related to respiratory dynamics in young adults. *Applied Psychophysiology and Biofeedback*, *38*, 273-83. doi:10.1007/s10484-013-9230-9. (in erratum).
- Ray, S.** (2013). Neurocognitive mechanisms in cocaine users. *Journal of Alcoholism and Drug Dependence*. *1*: e102. doi: 10.4172/2329-6488.1000e102
- Ray, S.** (2012). Cocaine, appetitive memory, and neural connectivity. *Journal of Clinical Toxicology*, *3*, 1-7. doi: 10.4172/2161-0495.S7-003
- Ray, S.**, Mun, E. Y., Buckman, J., Udo, T., & Bates, M. E. (2012). Memory for emotional picture cues during acute alcohol intoxication. *Journal of Studies on Alcohol and Drugs*, *73*, 718-725.
- Ray, S.**, Pandina, R. J., & Reich, W. A. (2010). Semantic structure of alcohol and marijuana categories in memory. *International Journal on Disability and Human Development*, *9*, 343 – 347.
- Ray, S.**, Hanson, C., Hanson, S. J., & Bates, M. E. (2010). fMRI BOLD response in high-risk college students (Part 1): During exposure to alcohol, marijuana, polydrug and emotional picture cues. *Alcohol and Alcoholism*, *45*, 437 – 443.
- Ray, S.**, Hanson, C., Hanson, S. J., Rahman, R. M., & Bates, M. E. (2010). fMRI BOLD response in high-risk college students (Part 2): During memory priming of

- alcohol, marijuana and polydrug picture cues. *Alcohol and Alcoholism*, 45, 444 – 448.
- Ray, S.**, & Bates, M. E. (2009). Explicit memory under acute alcohol challenge. (In L. Sher, I. Kandel & J. Merrick (Eds.), *Alcohol Related Cognitive Disorders: Research and Clinical Perspectives*. Nova Science Publishers.
- Udo, T., Bates, M. E., Vaschillo, E., Vaschillo, B., Lehrer, P., Mun E. Y., & **Ray, S.** (2009). Gender differences in acute alcohol effects on self-regulation of arousal in response to emotional and alcohol-related picture cues. *Psychology of Addictive Behaviors*, 23, 196-204.
- Vaschillo, E., Bates, M. E., Vaschillo, B., Lehrer, P., Udo, T., Mun, E. Y., & **Ray, S.** (2008). Heart rate variability response to alcohol, placebo, and emotional picture cue challenges: Effects of 0.1 Hz stimulation. *Psychophysiology*, 45, 847 – 858.
- Ray, S.** (2008). Two routes for activation in the priming of categorical co-ordinates. *The Journal of General Psychology*, 135, 65 – 83.
- Ray, S.** (2008). An investigation of time course of category and semantic priming. *The Journal of General Psychology*, 135, 133-148.
- Ray, S.**, & Bates, M. E. (2007). Acute effects of alcohol on intrusion errors in free recall tasks. *International Journal on Disability and Human Development*, 6, 201 – 205.
- Ray, S.**, & Bly, B. M. (2007). Investigating long-term semantic priming of middle- and low-familiarity category exemplars. *The Journal of General Psychology*, 134, 453 – 466.
- Reich, W. A., & **Ray, S.** (2006). Domain specific effects of central traits in impression formation. *Psychological Reports*, 98, 885 – 891.
- Ray, S.**, & Bates, M. E. (2006). Acute alcohol effects on repetition priming and word recognition memory with equivalent memory cues. *Brain and Cognition*, 60, 118 – 127.
- Ray, S.**, Bates, M. E., & Bly, B. M. (2004). Alcohol's Dissociation of Implicit and Explicit Memory Processes: Implications of a Parallel Distributed Processing Model of Semantic Priming. *Experimental and Clinical Psychopharmacology*, 12, 118 – 125.
- Ceraso, J., Kourtzi, Z., & **Ray, S.** (1998). Integration of object properties. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 24, 1152 – 1161.

Dissertation

Ray, S. Category priming and its relation to semantic priming in semantic memory. [Dissertation Abstract] Dissertation Abstracts International: Section B: the Sciences & Engineering. Vol 61(10 - B), May 2001, 5590, US: Univ Microfilms International.

Manuscripts in preparation

Bhanji, J., Delgado, M., & **Ray, S.** Neural correlates of decreased persistence behavior in treatment-seeking individuals with prescription opioid use disorder.

Ray, S., Mill, R., & Cole, M. Brain structural and functional alterations in drug cue processing network in treatment-seeking individuals with prescription opioid use disorder.

Moya, A., & **Ray, S.** Trends in substance use-related emergency room visits in the U.S., 2004-2011.

Published Abstracts

Ray, S., Mill, R. D. & Cole, M. W. (2019). A large-scale reward-related brain network abnormality in treatment-seeking prescription opioid dependent individuals. *Drug and Alcohol Dependence*, 2019.

Bhanji, J., Delgado, M., & **Ray, S.** Neural correlates of decreased persistence behavior in treatment-seeking prescription opioid dependent individuals. *Drug and Alcohol Dependence*, 2019.

Ray, S., Hanson, C., Haney, M., Biswal, B., Hanson, S. J. (2015). Modeling causal relationship between memory and craving-related brain networks in non-treatment seeking cocaine smokers using IMaGES, a Graph theoretic approach. *Drug and Alcohol Dependence*, 146, page e77.

Ray, S., Gohel, S., Haney, M., Biswal, B., Hanson, S. J. (2014). Resting-state brain networks are related to cocaine use in chronic cocaine smokers. *Drug and Alcohol Dependence*, 140, page e184.

Nguyen, T.T., Buckman, J.F., **Ray, S.**, Bates, M.E. (2013). Alcohol intoxication does not interrupt emotional facilitation of explicit or implicit memory. *Alcoholism: Clinical and Experimental Research*. 37(2), 30A.

Ray, S., & Bates, M. E. (2012). Binge drinking college students show enhanced implicit and explicit memory for alcohol compared to neutral word cues. *Alcoholism: Clinical and Experimental Research*, 36 (*s1 supplement*), 233A.

- Ray, S.,** Bates, M. E., Jan, I., & Padela, M. (2011). Binge drinking college students show enhanced implicit and explicit memory for alcohol compared to emotional category word cues. *Alcoholism: Clinical and Experimental Research, 35*, (*6 supplement*), 827A.
- Ray, S.,** Hanson, C., Hanson, S. J., Rahman, R. M., & Bates, M. E. (2010). High-risk college drinkers show evidence of implicit memory priming and neural craving responses to alcohol picture cues. *Alcoholism: Clinical and Experimental Research, 34* (*6 supplement*), 26A.
- Ray, S.,** Bates, M. E., Vaschillo, E., Vaschillo, B., Lehrer, P., Mun, E. Y., & Udo, T. (2009). Baroreflex activity is linked to enhanced explicit memory for alcohol and polydrug related picture cues among mandated college students. *Alcoholism: Clinical and Experimental Research, 33* (*6 supplement*), 254A.
- Ray, S.,** Bates, M. E., Vaschillo, E., Vaschillo, B., Lehrer, P., and Udo, T. (2008, Abstract) Heart rate variability predicts explicit and implicit memory for negative emotional cues. *Alcoholism: Clinical and Experimental Research, 32*, 667A.
- Vaschillo, E., Vaschillo, B., Bates, M.E., Lehrer, P., Udo, T., **Ray, S.,** and Pandina, R. (2006, Abstract). Heart Rate Parameters to Evaluate Alcohol Challenge and Placebo Effects. **/Psychophysiology /43/, Suppl. 1, 101.**
- Bates, M. E., Lehrer, P., Vaschillo, E., Udo, T., **Ray, S.,** Vaschillo, B., Pandina, R., & Weissman, A. (2005, Abstract). Alcohol and Self-Regulation. *Alcoholism: Clinical and Experimental Research, 29*, 66A.
- Ray, S.,** & Bates, M. E. (2005, Abstract). Effects of alcohol on intrusion errors in free recall tasks. *Alcoholism: Clinical and Experimental Research, 29*, 68A.
- Ray, S.,** Bates, M. E., & Bly, B. (2004, Abstract). Roles of alcohol and word frequency in free recall and retroactive interference tasks. *Journal of the International Neuropsychological Society, 10*, 229.
- Ray, S.,** Bates, M. E., & Bly, B. M. (2004, Abstract). Effects of alcohol on implicit and explicit word recognition memory tasks. *Alcoholism: Clinical and Experimental Research, 28*, 148A.
- Ray, S.,** Bates, M. E., & Bly, B. M. (2002, Abstract). Further evidence that alcohol dissociates implicit and explicit memory processes. *Alcoholism: Clinical and Experimental Research, 26*, 34A.

Grants and Awards

7/1/2019–6/30/2021 **Co-Principal Investigator** (Rutgers University-Newark Initiative

- for Multidisciplinary Research Teams Award, IMRT award). Negative affect mechanisms underlying opioid use in lab and daily life. PI (Delgado). \$103,000.
- 09/01/2017 - 08/31/2020 (NCE). **Principal Investigator**, National Institutes of Health, National Institute on Drug Abuse (NIH/NIDA: I/START-Imaging Science Track Award for Research Transition). Prescription opiates, drug-cue processing network, and neural connectivity. \$245,924.
- 07/01/2020 – 06/30/2025 **Principal Investigator** (R01, NIH/NIDA). Neural representations of stress and opioid use inform individual recovery trajectories (**Submitted on October 7, 2019**). \$2,526,404.
- 06/01/2020 – 5/31/2022 **Co-Investigator** (R21, NIH/NIDA). Using combined EEG and non-invasive brain stimulation to examine and improve cognitive control functioning in opioid use disorder. (Ist submission **Impact Score 35**). \$400,000. PI (Baker).
- 05/31/2018 – 5/30/2019 **Co-Investigator**, Rutgers Opioid IRG funding. Developing a trauma-informed technology based psychosocial adjunct to MAT treatment for female opioid users in primary care: A formative study (Principal Investigator, Hien). \$20,000.
- 2/1/2018 - 12/31/2018 **Principal Investigator**, Rutgers-Graduate School of Applied and Professional Psychology (214:205740). Trauma related neurobiological predictors of adverse child outcomes: Secondary analysis of the Healthy Brain Network database. \$ 9,312 (Co-PI: Hien)
- 04/01/11 -3/31/2018 **Principal Investigator**, National Institutes of Health/National Institute on Drug Abuse (NIH/NIDA K01DA029047A). **Career Development Award** (K01). Mentors: Dr. Stephen J. Hanson (Rutgers Brain Imaging Center-Newark; Dr. Margaret Haney (Columbia University). Cocaine, Appetitive Memory, and Neural connectivity. \$661,025.
- 02/01/2014 - 01/31/2017 **Co-Investigator**, National Institutes of Health, National Institute on Alcohol Abuse and Alcoholism (NIH/NIAAA, R21AA022748). fMRI and Integrated Neurocardiac Control of Alcohol Cue Reactivity. \$406,876 (PI: Marsha E. Bates).
- 07/01/11- 6/30/2014 **Co-Investigator**, National Institutes of Health, National Institute on Drug Abuse (NIH/NIDA, R03 DA031060). Marijuana Cues, Arousal and the Central Autonomic Network. \$227,652 (PI: Marsha E. Bates).

7/1/04 - 6/30/2010 **Co- Investigator**, National Institute on Alcohol Abuse and Alcoholism (NIAAA/NIH R01 AA0 15248-05). Alcohol, Memory, and Affective Regulation (PI: Marsha E. Bates). \$1,000,000.

7/1/04 - 9/30/2009 **Co-Investigator**, National Institute on Drug Abuse (NIDA/NIH; P20 DA017552). Rutgers University Transdisciplinary Prevention Research Center Grant (Co-Investigator, Project 3. PI: Robert J. Pandina). \$6,000,000.

2009 Who's Who Recognition

01/2008 Received a travel award to attend and present at the 2nd International Conference on Applications of NeuroImaging in Alcoholism. Sponsored by NIAAA and Yale Center for the Translational Neuroscience of Alcoholism, held at Yale University School of Medicine, January 19-20, New Haven, CT.

2008 Faculty Academic Service Increment Program (Merit Award)

05/2007 Received a National Institute on Drug Abuse (NIDA/NIH) Early Career Investigator Travel Award to attend the pre-conference and annual meeting of The Society for Prevention Research held at Washington, D.C. May 29-June 1.

2004 Faculty Academic Service Increment Program (Merit Award)

2/1/01 - 1/31/03 (**Co-Principal Investigator**) Alcoholic Beverage Medical Research Foundation. Alcohol's Dissociation of Implicit and Explicit Memory Processes (PI: Benjamin Martin Bly). \$78,000.

07/2002 Awarded a fellowship to the 2002 Summer Workshop in fMRI Informatics at the fMRI Data Center, Dartmouth College, New Hampshire, USA.

Conference presentations

Moya, A., & **Ray, S.** Emergency room visits in the U.S. due to substance related problems. Endocrine conference, Busch Student Center, Piscataway, NJ. October 14, 2019.

Ray, S., Mill, R. D. & Cole, M. W. A large-scale reward-related brain network abnormality in treatment-seeking prescription opioid dependent individuals. **Dr. Ray** gave an oral presentation on this topic on June 16 under the "Late Breaking Research" category at The College on Problems of Drug Dependence (CPDD) 81st Annual Scientific Meeting that is going to be held at San Antonio, Texas, June 15 to June 19, 2019.

Bhanji, J., Delgado, M., & **Ray, S.** Neural correlates of decreased persistence behavior in treatment-seeking prescription opioid dependent individuals. **Dr. Ray** gave an oral presentation on this topic under "Imaging" category on June 18 at The

College on Problems of Drug Dependence (CPDD) 81st Annual Scientific Meeting that is going to be held at San Antonio, Texas, June 15 to June 19, 2019.

- Ray, S.** & Moya, A. Trends in substance use-related emergency room visits in the U.S., 2004-2011. Presented at Rutgers Robert Wood Johnson University Hospital Global Health Conference. December 5, 2018.
- Ray, S.**, & Srinagesh, A. BOLD Response to cocaine-related visual stimuli in individuals with cocaine use disorder. Poster presented at the Endocrinology Conference, September 17, 2018, Rutgers University Busch Campus Center.
- Banu, L.M., Helton, S., Peyser, D. S., **Ray, S.**, Buckman, J. F., & Bates, M. E. Effect of resonance frequency breathing on alcohol cue reactivity in individuals with alcohol use disorders: An fMRI study. Poster presented at the Collaborative Perspectives on Addiction (CPA) Annual Meeting, March 24-25, 2017, Albuquerque, NM.
- Ray, S.**, Bates, M. E., Haney, M., Srinagesh, A., & Aya, A. An fMRI study to examine recognition memory for cocaine picture stimuli in cocaine smokers. Poster presented at the 79th annual meeting of the College on Problems of Drug Dependence (CPDD), June 17-22, 2017, Montreal, Canada.
- Ray, S.**, Srinagesh, A., Haney, M., Aya, A., Gohel, S., Biswal, B., Hanson, C., & Hanson, S. J. (2016, September 14). Modeling causal relationships between brain regions within the mesocorticolimbic system during the resting state in chronic cocaine smokers. Poster presented at the 9th Annual Pioneers in Endocrinology Workshop, Rutgers, The State University of New Jersey, Busch Campus Center, Piscataway, NJ.
- Ray, S.**, Haney, M., Hanson, C., Biswal, B., & Hanson, S. J. (2015, September 16). Modeling causal relationship between brain regions within the drug-cue processing network in chronic cocaine smokers. Poster presented at the 8th Annual Pioneers in Endocrinology Workshop, Rutgers, The State University of New Jersey, Cook Student Center, New Brunswick, NJ.
- Banu, L.M., Peyser, D., Buckman, J. F., **Ray, S.**, & Bates, M. E. (2015, September 16). Marijuana cue reactivity in marijuana users and non-using controls: An fMRI study using an event related block design. Poster presented at the 8th Annual Pioneers in Endocrinology Workshop, Rutgers, The State University of New Jersey, Cook Student Center, New Brunswick, NJ.
- Banu, L.M., Buckman, J. F., Puhalla, A., Hanson, C., Hanson, S., Barnas, P., **Ray, S.**, Heiss, S., & Bates, M. E. (2015). Marijuana cue reactivity in heavy marijuana users and controls: An fMRI study. Poster presented at the 3rd Annual Collaborative Perspectives on Addiction Conference, Baltimore, MD.

- Buckman, J. F., Puhalla, A., **Ray, S.**, Hanson, S. J., Hanson, C., Deo, P., Banu, L., Barnas, P., Heiss, S., Peyser, D., Bates, M. E. (2014, November). Collecting high-quality ECG data within the fMRI environment: Physiologic and neural reactions to a high-load respiratory task. Poster presented at the 44th Annual Meeting of the Society for Neuroscience, Washington, DC.
- Vaschillo, E., Biswal, B., Buckman, J. F., Peyser, D., Heiss, S., Barnas, P., Banu, L., Puhalla, A., Vaschillo, B., Eddie, D., **Ray, S.**, Hanson, S. J., Hanson, C., & Bates, M. E. (2014, September 20). Resonance breathing affects hemodynamic oscillations in the brain at 0.1 Hz. Paper presented at the Annual Meeting of the International Society for the Advancement of Respiratory Psychophysiology Conference, New Brunswick, NJ.
- Ray, S.**, Gohel, S., & Biswal, B. (2014, September 11-13). Functional connectivity between occipital-limbic brain area is positively related to years of cocaine use in abstinent cocaine users. Presented at the 4th Biennial Conference on Resting State/Brain Connectivity, Boston/Cambridge, Massachusetts.
- Ray, S.**, Gohel, S., & Biswal, B. (2014, June 8-12). Reduced intra- and inter-hemispheric resting state functional connectivity in cocaine users. Presented at the 20th Annual Meeting of the Organization for Human Brain Mapping, Hamburg, Germany.
- Puhalla, A., Buckman, J. F., **Ray, S.**, Hanson, S. J., Hanson, C., Peyser, D., Deo, P., Banu, L., Barnas, P., Heiss, S., & Bates, M. E. (2014, June). Simultaneous high quality recording of ECG and fMRI data: Neural and Physiologic reactions to a high load respiratory task. Poster presented at the Rutgers Neuroscience Symposium, Piscataway, NJ.
- Ray, S.**, Hanson, C., Haney, M., Biswal, B. B., & Hanson, S. J. (2014, June 14-19). Modeling causal relationship between memory and craving related brain networks in non-treatment seeking cocaine smokers using IMAGES, a Graph theoretic approach. Presented at the 76th annual meeting of the College on Problems of Drug Dependence (CPDD), San Juan, Puerto Rico.
- Nguyen, T.T., Buckman, J. F., **Ray, S.**, & Bates, M. E. (2013). Alcohol intoxication does not interrupt emotional facilitation of explicit or implicit memory. Poster presented at the 36th Annual Meeting of the Research Society on Alcoholism, Orlando, FL.
- Ray, S.**, Gohel, S., Haney, M., Biswal, B., & Hanson, S. J. (2013, June 15-20). Resting state brain networks are related to cocaine use in chronic cocaine smokers. Presented at the 75th annual meeting of the College on Problems of Drug Dependence (CPDD), San Diego, CA.

- Ray, S.,** Gohel, S., Biswal, B., Hanson, S. J., & Hanson, C. (2013, June 16-20). Increased functional connectivity in resting state networks in cocaine users compared to controls. Presented at the 19th Annual Meeting of the Organization for Human Brain Mapping, Seattle, WA.
- Ray, S.,** & Bates, M. E. (2012, June 23-27). Binge drinking college students show enhanced implicit and explicit memory for alcohol compared to neutral word cues. Presented at the 35th Annual Scientific Meeting of the Research Society on Alcoholism, San Francisco, CA.
- Ray, S.,** Bates, M. E., & Pandina, R. (2012, June 9-14). Explicit and implicit memory of drug-related and neutral visual cues in cocaine abusers and college athletes. Presented at the 74th annual meeting of the College on Problems of Drug Dependence (CPDD), Palm Spring, CA.
- Ray, S.,** Bates, M. E., Jan, I., & Padela, M. (2011, June 24-28). Binge drinking college students show enhanced implicit and explicit memory for alcohol compared to emotional category word cues. Presented at the 34th Annual Scientific Meeting of the Research Society on Alcoholism, Atlanta, GA.
- Ray, S.,** Hanson, C., Hanson, S. J., Rahman, R. M., & Bates, M. E. (2010, June 25-29). High-risk college drinkers show evidence of implicit memory priming and neural craving responses to alcohol picture cues. Presented at the 33rd Annual Scientific Meeting of the Research Society on Alcoholism, San Antonio, Texas.
- Ray, S.,** Bates, M. E., Vaschillo, E., Vaschillo, B., Lehrer, P., Mun, E. Y., and Udo, T. (2009, June 20-24). Baroreflex activity is linked to enhanced explicit memory for alcohol and poly-drug picture cues among mandated college students. Presented at the Annual Scientific Meeting of the Research Society on Alcoholism, San Diego, California.
- Ray, S.,** Bates, M. E., Vaschillo, E., Vaschillo, B., Lehrer, P., and Udo, T. (2008, June 26-30). Heart rate variability predicts explicit and implicit memory for negative emotional cues. Presented at the Annual Scientific Meeting of the Research Society on Alcoholism, Washington, D.C.
- Ray, S.,** Hanson, C., Bates, M. E., and Hanson, S. J. (2008, January 19-20). fMRI BOLD response to emotional, alcohol, marijuana, and drug related picture cues in mandated college students. Presented at the 2nd International Conference on Applications of NeuroImaging in Alcoholism. Sponsored by NIAAA and Yale Center for the Translational Neuroscience of Alcoholism, Yale University School of Medicine, New Haven, CT.
- Udo, T., Bates, M. E., Vaschillo, E., Vaschillo, B., Mun, E. Y., Lehrer, P., and **Ray, S.** (2008, June 27-July 3). Gender differences in the acute dampening effects of

- alcohol on emotional response. Presented at the Annual Scientific Meeting of the Research Society on Alcoholism. Washington, DC.
- Mun, E. Y., Von Eye, A., Bates, M. E., Vaschillo, E., Vaschillo, B., Udo, T., **Ray, S.**, and Lehrer, P. (2008, March 6-9). Finding groups using model-based cluster analysis: Heterogeneous emotional self-regulatory processes and heavy alcohol use risk. Presented at the Society for Research on Adolescence (SRA) 2008 Biennial Meeting. Chicago, IL.
- Bates, M. E., Vaschillo, E., Vaschillo, B., Udo, T., Lehrer, P., Mun, E. Y., and **Ray, S.** (2007, July 6). Neurobiological regulatory mechanisms and diminished cognitive control. Presented at the 3rd Annual NIAAA sponsored pre-conference workshop "Mechanisms of Behavior Change (MOBC) in Behavioral Treatment: Current knowledge and new perspectives," at the Annual Meeting of the Research Society on Alcoholism (RSA). Chicago, IL.
- Bates, M. E., Vaschillo, E., Vaschillo, B., Udo, T., Lehrer, P., and **Ray, S.** (2007, May 26). Physiological mechanisms that support behavioral flexibility: Alcohol and placebo effects on emotional regulation. Presented in NIAAA sponsored symposium "Social Neuroscience and Mechanisms of Behavior Change," at the Annual Meeting of the Association of Psychological Science.
- Udo, T., Bates, M.E., Vaschillo, E., Vaschillo, B., **Ray, S.**, and Mun, E.Y. (2007, June 16-21). Gender differences in the effects of alcohol on emotional responses in social drinkers: skin conductance and sympathetic nervous system activation. Presented for the 69th annual meeting of the College on Problems of Drug Dependence (CPDD), Quebec City, Canada.
- Udo, T., Bates, M.E., Vaschillo, E., Vaschillo, B., **Ray, S.**, and Mun, E.Y. (2007, May 30-June 1). Gender differences in the effects of alcohol on emotional response in social drinkers. Presented for the 15th annual meeting of the Society for Prevention Research (SPR), Washington, D.C., 2007.
- Vaschillo, E., Vaschillo, B., Bates, M. E., Lehrer, P., Pandina, R. J., **Ray, S.**, & Udo, T. (2005, September). Heart rate resonance features do not depend on respiration. Presented at the ISARP conference in Hamburg, Germany.
- Vaschillo, E., Vaschillo, B., Lehrer, P., Bates, M. E., **Ray, S.**, Udo, T., & Pandina, R. J. (2005, September). Using heart rate variability to evaluate response to drug related stimuli: A new approach. Presented at the SPR conference in Lisbon, Portugal.
- Ray, S.**, & Bates, M. E. (2005, June). Effects of Alcohol on Intrusion Errors in Free Recall Tasks. Presented at the 28th Annual RSA Scientific Meeting, Santa Barbara, California.

- Bates, M. E., Lehrer, P., Vaschillo, E., Vaschillo, B., Pandina, R., **Ray, S.**, & Buckman, J. (2005, May). Heart Rate and Skin Conductance Variability: New Measures of Psychophysiological Reactivity to Emotional and Drug Related Stimuli. Paper presented at the 13th Annual Meeting of the Society for Prevention Research, Washington, D.C.
- Bates, M. E., Vaschillo, E., **Ray, S.**, Vaschillo, B., Udo, T., Lehrer, P., & Pandina, R. J. (2005, April). Autonomic Reactivity and Memory for Emotional and Drug Related Stimuli. Presented at the 2nd East-West Conference on Tobacco and Alcohol: Culture, Environment, and Genes, Pasadena, California.
- Ray, S.**, Bates, M. E., & Bly, B. M. (2004, June). Effects of Alcohol on Implicit and Explicit Word Recognition Memory Tasks. Presented at the 26th Annual RSA Scientific Meeting, Vancouver, Canada.
- Ray, S.**, Bates, M. E., & Bly, B. M. (2004, February). The Roles of Alcohol and Word Frequency in Explicit Memory Tasks. Presented at the International Neuropsychological Society Meeting, Baltimore, MD.
- Ray, S.**, Bates, M. E., & Bly, B. M. (2002, June). Further Evidence that Alcohol Dissociates Implicit and Explicit Memory Processes. Presented at the 25th Annual Scientific Meeting of the Research Society On Alcoholism, San Francisco, CA.
- Ray, S.**, & Bly, B. M. (1998, April). Category Priming Revisited. Presented at the Psychology Mini-symposium, Department of Psychology, Rutgers-The State University of New Jersey, Newark, NJ.
- Ray, S.**, & Bly, B. M. (1998, October). Activation of Conceptual Representations in Human Brain. Presented at the Annual Meeting of the New Jersey Psychological Association, Woodbridge, NJ.

Academic Honors

- 1989 Graduated with Honors, Calcutta University, Calcutta, India.
Graduated with First Class, Calcutta University, Calcutta, India
- 1995 Rutgers University Fellowship
- 1996-1997 Lehrman Fellowship, Rutgers-The State University of New Jersey,
Newark, NJ, USA
- 1998-2000 Teaching Assistantship, Rutgers-The State University of New Jersey,
Newark, NJ, USA.
- 2000 Dean's University Fellowship, Rutgers-The State University of New Jersey,
Newark, NJ, USA.

Teaching Experience

- Spring 2019 - Present Health Research Methods (BINF754001/E00W: Graduate level

course), Department of Health Informatics, School of Health Professions, Rutgers Biomedical and Health Sciences (Both Online and In-class).

2014 - 2017 Faculty, Rutgers Summer School of Addiction Studies (Course offered: Cocaine)

2005 - 2012 Faculty, Rutgers School of Alcohol and Drug Studies (Courses offered: Alcohol and Memory Processes: Theory, Research, and Application; Cognitive Processes in Alcohol/Substance Use)

2001 - 2002 Lecturer, Psychology Department, Rutgers-The State University of New Jersey, New Brunswick, NJ, USA (Cognition)

1998 - 2000 Teaching Assistant, Psychology Department, Rutgers, The State University of New Jersey, Newark, NJ, USA (Statistical Methods in Psychology).

Ph.D. Students

Currently directing 4 Ph.D. students' dissertations (Mr. Anthony Mayo, Ms. Jennifer McMaster, Mr. Daniel Brown, Timothy Bristol) in the Department of Health Informatics, School of Health Professions, Rutgers Biomedical and Health Sciences.

Was On Ph.D. Dissertation Committee: Ms. Memory Ndanga (2019).

Workshop Attended

05-22-2019: "How to be an Effective Mentee" a workshop sponsored by the Vice Chancellor for Faculty Development for RBHS faculty.

11/27/2018: The Opioid Addiction Workshop held at Rutgers Inn and Conference Center, New Brunswick, NJ.

Undergraduate/Graduate Student Research (Center of Alcohol Studies)

I have mentored more than 40 Rutgers University undergraduate research students while I was at the Rutgers Center of Alcohol Studies (2007-2018). Of these students, 15 went to/are currently attending medical schools.

I have served as a summer research project supervisor for students from Cornell University (2007), Johns Hopkins University (2009), and Lehigh University (2012).

I was on Masters Thesis committee of Ms. Aradhana Srinagesh who received her degree on Masters in Public Health in 2016 at Icahn School of Medicine at Mount Sinai, NY.

Student Research Presentation

Moya, A., & Ray, S. Emergency room visits in the U.S. due to substance related

- problems. Endocrine conference, Busch Student Center, Piscataway, NJ. October 14, 2019.
- Moya, A. & Ray, S.** Trends in substance use-related emergency room visits in the U.S., 2004-2011. Presented at SHP Research and Scholarship Symposium. Rutgers Robert Wood Johnson Medical School, Busch Campus, Piscataway. May 2, 2019.
- Ray, S. & **Moya, A.** Trends in substance use-related emergency room visits in the U.S., 2004-2011. Presented at Rutgers Robert Wood Johnson University Hospital Global Health Conference. Dec 5, 2018.
- Ray, S., Bates, M. E., **Jan, I., & Padela, M.** (2011, June). Binge drinking college students show enhanced implicit and explicit memory for alcohol compared to emotional category word cues. Presented at the 34th Annual Scientific Meeting of the Research Society on Alcoholism, Atlanta, GA.
- Srinagesh, A.,** Ray, S., & Hanson, C. (2014, March). Enhanced cue reactivity to cocaine cues in non-treatment seeking cocaine smokers. Presented at the New Jersey Public Health Association Annual Conference, Piscataway, NJ.
- Srinagesh, A.,** Ray, S., & Hanson, C. (2014, April). Enhanced reactivity to cocaine stimuli in cocaine smokers. Presented at the Rutgers University Center of Alcohol Studies Poster Session, Piscataway, NJ.
- Aya, A., Srinagesh, A.,** Ray, S., Haney, M., Hanson, C., & Hanson, S. J. (2015, May). Modeling causal relationship between the long-term memory network and the drug-cue processing network in cocaine smokers. Presented at the Rutgers University Center of Alcohol Studies Poster Session, Piscataway, NJ. This poster was selected as the *Best Poster in the Clinical/ Human Experimental Study section.*
- Srinagesh, A.,** Ray, S., Haney, M., Gohel, S., Biswal, B., Hanson, C., Hanson, S. J. (2016, May 3rd). Modeling causal relationship between brain regions within the mesocorticolimbic system during the resting state in chronic cocaine smokers. Presented at the Rutgers University Center of Alcohol Studies Poster Session, Piscataway, NJ. This poster was selected as the *Best Poster in the Clinical/ Human Experimental Study section.*
- Student Publication**
- Ray, S., Hanson, C., Hanson, S. J., **Rahman, R. M.,** & Bates, M. E. (2010). fMRI BOLD response in high-risk college students (Part 2): During memory priming of alcohol, marijuana and polydrug picture cues. *Alcohol and Alcoholism*, 45, 444 – 448.

Invited Talks and Presentations

- 7-31-2019 Brain and Behavioral Alterations in Cocaine and Prescription Opioid Use Disorder. Invited talk at the Fellowship Didactics session at the Department of Psychiatry in Rutgers New Jersey medical School, Newark.
- 6-27-2019 Prescription Opioid and Drug Cue Processing Network. Presented at the Work-in-Progress (WIP) seminar series at the School of Health Professions, RBHS.
- 4-16-2019 Prescription Opioid Dependency and Brain. Invited talk at the Department of Nutrition research seminar, Rutgers School of Health Professions.
- 4-9-2019 Prescription Opioid dependency and drug-cue processing network. Presented at Rutgers Consortium for Clinical Research on Addictions meeting.
- 10-16-2018 Drug addiction and drug cue processing network. Presented at the Dean's meeting, Rutgers School of Health Professions.
- 09-04-2018 Prescription opioid dependency and mindfulness meditation. Invited talk at The Integrity House Drug Treatment Center, Newark, NJ.
- 11-10-2017 Effects of chronic cocaine use on brain and cognition. Invited talk at the Department of Animal Sciences, Rutgers University, Cook Campus, New Brunswick, NJ.
- 11/03/2017 Effects of alcohol and drugs on brain and behavior. Invited talk at the Integrity House drug abuse treatment center, Newark, NJ.
- 03/31/2017 Drugs and brain connectivity. Invited talk at the Byrne Seminar for the undergraduate students, Rutgers Center of Alcohol Studies.
- 12/21/2016 Task related brain activation in chronic cocaine users. Invited talk at the Department of Biomedical Engineering, New Jersey Institute of Technology, Newark, NJ.
- 12/13/2016 The effect of chronic cocaine use on brain connectivity. Presented at the Rutgers Consortium for Clinical Research on Addictions meeting, New Brunswick, NJ.
- 03/30/2016 Effects of drugs on the brain. Invited talk at the Byrne Seminar for the undergraduate students, Rutgers Center of Alcohol Studies.

- 07/2015 How do cocaine users process cocaine related cues in their brains?
Presented at the Summer School of Addiction Studies, Rutgers University.
- 05/2014 Modeling causal relationship between the long-term memory network and
the drug cue processing network in cocaine smokers. Invited talk at the Substance
Use Research Center, Columbia University, New York.
- 11/14/2014 Modeling causal relationship between the long-term memory network and
the drug cue processing network in cocaine smokers. Invited poster presentation
at the NIH/NIDA-Society for Neuroscience Mini-Convention (Frontiers in
Addiction Research), Bethesda, Maryland.
- 04/2009 Brain mechanisms of implicit memory for substance-related and emotional
stimuli in mandated college students. Presented at the Rutgers Transdisciplinary
Prevention Research Center (RTPRC) grant final meeting, New Brunswick, New
Jersey.
- 04/2008 fMRI BOLD response to emotional, alcohol, marijuana, and drug related
picture cues in at-risk college students. Invited talk at the Department of
Pediatrics, UMDNJ-Robert Wood Johnson Medical School, New Brunswick,
New Jersey.
- 11/2006 Heart rate variability and memory. Presented at the Rutgers
Transdisciplinary Prevention Research Center (RTPRC) Grant monthly meeting,
Center of Alcohol Studies, Piscataway.
- 01/2008 fMRI bold response to emotional, alcohol, marijuana, and drug related
picture cues in mandated college students. Presented at the Rutgers
Transdisciplinary Prevention Research Center (RTPRC) Grant monthly meeting.
Center of Alcohol Studies, Piscataway.
- 03/2006 Implicit and explicit memory for emotional and drug related stimuli.
Presented at the Rutgers Transdisciplinary Prevention Research Center (RTPRC)
Grant members meeting, Center of Alcohol Studies, Piscataway.
- 01/2006 Memory, emotion, and developmental stage of drug exposure. Invited talk
at Calcutta University, Calcutta, India.
- 01/2005 Implicit and explicit memory processes in chronic alcoholics: The role of
attention and implications for treatment development. Presented at the New Hope
Foundation Board of Trustee Meeting, Marlboro, New Jersey.
- 01/2005 Memory processes under acute alcohol intoxication. Invited talk at the
Department of Psychiatry, UMDNJ-Robert Wood Johnson Medical School,
Piscataway, New Jersey.

- 07/2004 Memory processes, emotional regulation, and developmental stage of drug exposure. A progress report of Project Area 3 presented to the Rutgers Transdisciplinary Prevention Research Center Grant Peer Review Committee.
- 07/2004 Memory processes and stages of drug exposure. Invited talk at the Rutgers Summer School of Alcohol and Drug Studies, New Brunswick, New Jersey.
- 02/2004 Role of memory and emotional regulation in different stages of drug exposure. Presented at the Rutgers Transdisciplinary Prevention Research Center Grant Advisory Board Meeting, Center of Alcohol Studies, Piscataway.
- 03/2002 Alcohol's effects on implicit and explicit memory processes. Invited talk at Calcutta University, Calcutta, India.