FACULTY RESEARCH INTERESTS
2017/2018

DAVID SOMERS (B)
Chair, Department of Psychological & Brain Sciences
Professor
Ph.D., Boston University
The Perceptual Neuroimaging Laboratory employs functional MRI, psychophysics, and computational modeling to investigate the mechanisms underlying perception, attention & short-term memory. Our studies focus on basic science questions about the functioning of the normal human brain. We are particularly focused on questions of how we perceive, attend to, and remember multiple objects at the same time. Studies focus on visual, auditory, and/or tactile perception and cognition.

PETER BLAKE (DS)
Assistant Professor
Ed.D., Harvard University
Our research focuses on how children come to understand the social world. We conduct cognitive and behavioral experiments with children from 2 to 12 years of age. We study things such as cooperation and competition, ownership and private property, fairness and other social norms, and learning through imitation and communication. As a directed study student you would be involved in running studies, recruitment, interacting with participants and parents, study development and entering data.

LESLIE BRODY (C) (SAB SEM I)
Professor
Ph.D., Harvard University
I am interested in gender differences in emotional functioning and how cultural and family socialization contributes to such differences. I am also interested in the relationship between emotional expressiveness and mental and physical health. My current research focuses on how psychosocial predictors (such as coping strategies and gender roles) predict physical and mental health outcomes in women with HIV (such as depression, quality of life, and immune functioning) using both qualitative and quantitative methods, including analyzing autobiographical narratives.

TIMOTHY BROWN (C)
Professor
Psy.D., Virginia Consortium for Professional Psychology
Statistical analysis and research methodology (e.g., clinical research applications of new latent variable analytic methods); classification of anxiety and mood disorders; vulnerability/temperament/personality in the development, course, and treatment outcome of emotional disorders; experimental psychopathology research on anxiety/mood disorders; psychometric evaluation and test/interview development.

DANIEL BULLOCK (B) (SAB SEM I & II)
Professor
PhD, Stanford University
Interests of the Bullock lab are focused on the use of integrated computational models of local circuits implicated in reinforcement learning, planning of action sequences (including speech), and motivated decision making. Current models focus on forebrain circuits within or linking: laminar frontal cortex, the striatum and other parts of the basal ganglia, and midbrain dopaminergic areas. The long-term goal is construction of quantitative models of sufficient accuracy to predict effects of many pharmacological manipulations on decision-making, voluntary behavior, and skill learning.

S. BARAK CAINE
Full-Time Lecturer
Ph.D., University of California San Diego
My research focuses on two principal areas: (1) pharmacological mechanisms underlying stimulant-induced arousal and stimulant drug abuse (mentor: George F. Koob), and (2) neural mechanisms underlying stimulant-induced psychosis and antipsychotic drug actions (mentors: M.A. Geyer, N.R. Swerdlow). Psychomotor stimulant drugs including cocaine, amphetamine and methamphetamine increase synaptic levels of several monoamine neurotransmitters, and the transporter and receptor proteins involved are highly diverse. For example, the single neurotransmitter dopamine engages five different g-protein coupled receptors. My efforts are directed toward identifying the roles of different transporters and receptors in mediating the abuse-related and psychoses-related effects of stimulant drugs. Ongoing investigations focus on brain dopamine systems. Recent new areas focus on acetylcholine including muscarinic receptors and nicotine. A principal strategy is to push young investigators in my laboratory to introduce and persuade me toward new scientific directions.

CATHERINE CALDWELL-HARRIS (B)
Associate Professor
Ph.D., University of California, San Diego
Students are invited to join me in investigating foreign language acquisition, bilingualism and cross-cultural psychology. Special projects for the current year are understanding jokes in a foreign language, how deaf children learn to read, differences between reading Chinese vs. English, and how Russian immigrants to the US learn English. Students who speak Mandarin or Russian can use their bilingualism skills in ongoing projects. Independent study involves collaborating with me and other lab members on established projects, and/or helping to design new projects. The ideal research intern is responsible and motivated, can work with minimal supervision but also interacts well with other lab members.

JAMES CHERRY (B)
Professor
Ph.D., North Carolina State University
My research examines the cellular mechanisms underlying cognitive and sensory processes. Our primary interest is to define the functional significance of anatomically distinct chemosensory systems in the mouse, with the overall goal of understanding how odors can influence mammalian reproductive behavior.

ALICE CRONIN-GOLOMB (B, C)
Professor, Director of Graduate Studies
Ph.D., California Institute of Technology
My main areas of interest are: (1) the relation between vision, perception, cognition, gait, and other aspects of daily function in normal aging and in neurodegenerative disease; in particular, visual cognition in Parkinson's disease (PD); (2) the neural circuitry of perception and cognition in PD; (3) methods to improve cognition in PD, including at-home attentional training and in-lab assessments. We conduct basic research as well as intervention studies in collaboration with investigators at Sargent College and the Boston VA. Some individual student-led projects on PD include studies of the relation of motor to non-motor symptoms (such as the cost of cognitive-motor dual-tasking) and the relative functional integrity of two visual systems. In addition, we collaborate on BUSM-affiliated Framingham Heart Study projects relating neuropsychological function to markers of physical function, such as hypertension and white matter integrity, and on projects based at BUSM and at the Massachusetts General Hospital on biomarkers and function in Alzheimer's disease.

MARGARET A. HAGEN (B) (SAB SEM I & II)
Professor
Ph.D., University of Minnesota
My current interest revolves around determining what kind of biases, prejudices and assumptions jurors bring to trials involving "psychological torts" like the Intentional Infliction of Emotional Distress, Defamation and Invasion of Privacy. I am especially interested in trying to assess the effect of jurors' decision of "extra-legal" assumptions and beliefs about major societal issues of the day. In our lab, we have created a Civil Juror Bias Scale to help predict whether a potential juror is likely to decide for the plaintiff bringing the suit or for the defendant who has been accused of causing the injury. We are currently starting a new study to apply our Bias Scale to a real world scenario involving an accident between a student on a bicycle and a student pedestrian.

MICHAEL E. HASSELMO (B)
Professor, Director of Center for Systems Neuroscience
D.Phil., University of Oxford, England
Research in my laboratory concerns the coding of space and time by cortical neurons for episodic memory function, and the regulation of network oscillatory dynamics by neuromodulators such as acetylcholine. Neurophysiological techniques are used to analyze the representation of space and time by cortical neurons including grid cells, head direction cells, and boundary vector cells, and to analyze the local effects of neuromodulation on synaptic and neuronal activity in cortical circuits. Computational modeling at the cellular and network level is used to link the physiological data to behavioral function. Areas of focused research include episodic memory function, memory-guided spatial behavior, and theta rhythm dynamics in hippocampal formation and entorhinal cortex. Research addresses physiological effects relevant to Alzheimer's disease, schizophrenia and depression.

STEFAN G. HOFMANN (C)
Professor
Ph.D. University of Marburg, Germany
My primary research interests are in the treatments and psychophysiology of anxiety and other emotional disorders. Specifically, I am interested in the mechanism of treatment change and the factors that predict treatment success. I am also interested in the biological correlates of different emotional states. For more information, please visit www.bostonanxiety.org.

MARC HOWARD (B)
Professor, Brain, Behavior and Cognition Program Director
Ph.D., Brandeis University
Research investigates topics centered on episodic memory, the ability to remember specific events situated in a particular spatiotemporal context. We develop mathematical models of cognition and evaluate them against both behavioral and neurophysiological data, providing a bridge between cognition and systems-level neuroscience. We use a combination of mathematical, computational and behavioral tools to evaluate our hypotheses. At present, our efforts are focused on developing and evaluating a unified mathematical framework to describe how the brain constructs the spatial and temporal context believed to underlie episodic memory. This model appears to have far-ranging implications, leading to research interests in statistical learning, semantic memory, time perception, and reward systems.

KATHLEEN KANTAK (B)
Professor
Ph.D., Syracuse University
My research uses animal models to conduct translational research related to drug addiction, attention deficit hyperactivity disorder and their co-morbidity. Using intravenous drug self-administration procedures in rats, I investigate how multiple memory systems regulate drug-seeking and drug-taking behavior as well as how drug exposure influences the neurocognitive functioning of multiple memory systems. In addition, I investigate how cognitive-enhancing therapeutics may be useful to facilitate extinction learning for drug-conditioned cues and attenuate drug relapse. Other studies focus on evaluating the frontostriatal and medial temporal lobe neurocognitive deficits in rats with an ADHD phenotype and their response to medications as well as comorbidity between ADHD and vulnerability to drug addiction. In the context of all this research, I collaborate with other investigators to conduct neurochemical analyses to determine molecular correlates of these disorders and their treatment.

DEBORAH KELEMEN (DS)
Professor
Ph.D., University of Arizona
Research in the Child Cognition Lab focuses on cognitive development. Our studies explore conceptual influences on intuitive, religious, and scientific theory-formation, object categorization, social and moral cognition, sociocultural and individual differences in cognition, and the development of children's causal and purpose-based reasoning about the natural world. A significant emphasis of current work is the application of basic cognitive developmental research to elementary STEM education. Directed study research assistants will learn a range of research and lab organization skills. Individuals with fine arts and graphic arts skills are particularly encouraged to apply.

MELISSA M. KIBBE (DS)
Assistant Professor
PhD, Rutgers University
The world is rich with information, but our brains process and store only a small fraction of the information available. How do we decide which information we should keep track of, and how do we store and use this information efficiently? My research focuses on how infants, children, and adults represent objects and people, the kinds of computations they can do with those representations, and how they use that information to guide behavior. I also look at how cognitive systems (such as working memory, attention, social cognition, and decision-making) interact during complex tasks. My research relies on both behavioral methods and computational modeling of cognitive processes.

DAVID A. LANGER (C)
Research Associate Professor
Ph.D., University of California, Los Angeles My research explores the efficacy and effectiveness of psychosocial treatments for youth psychopathology, the processes through which psychosocial treatments work, and the applicability of the research literature to non-research clinical settings. I am currently working on developing novel approaches to personalize psychosocial treatments for youth by supporting active collaboration between clinicians and families throughout the treatment planning process (i.e., shared decision-making). This includes studying parent and youth treatment preferences and how families and clinicians make treatment-related decisions.

SAM LING (B)
Assistant Professor
Ph.D., New York University
Sensation is easy –even a camera can sense light. For a camera, light simply falls onto film, creating a photograph of what was seen; the story ends there. For humans, however, the moment light falls on our retina is but the beginning of an exceedingly complex process, culminating in our rich perceptual experiences. It is this remarkable process that sets our visual system far apart from simple devices such as cameras: our brain's ability to perceive and consciously experience the visual world. My lab's work centers on that pivotal stage of cognitive processing –the stage at which sensation becomes perception. My research combines a variety of techniques, including psychophysics, computational modeling, and functional magnetic resonance imaging (fMRI) –all aimed towards understanding how the brain mediates between the 'buzzing confusion' of the visual environment and our limited processing power.

KRISTIN LONG (C)
Assistant Professor
Ph.D., University Pittsburgh
My research focuses on (1) reciprocal influences between a person's medical illness or disability and his/her family and cultural context, (2) health disparities in autism diagnosis and treatment, and (3) the development and evaluation of psychosocial interventions for individuals with chronic conditions and their families. The majority of my work is carried out within the context of cancer (childhood) and autism (across the lifespan).

MICHAEL J. LYONS (C)
Professor
Ph.D., University of Louisville
My general interests are in the areas of psychiatric and behavioral genetics and psychiatric epidemiology. My research focuses on how genetic factors (and environmental factors) influence psychopathology and other aspects of behavior. My current research primarily involves twin studies of aging, personality disorders, PTSD, and substance abuse, especially nicotine and alcohol.

JOSEPH MCGUIRE (B)
Assistant Professor
Ph.D., Princeton University
My group conducts basic research on decision making. Our goal to understand the information processing operations that enable people to make good decisions in uncertain environments. We study how people decide what future rewards to pursue and how long to persist in the face of setbacks. Our methods include behavioral experiments, computational modeling, psychophysiology, and neuroimaging. See sites.bu.edu/cdlab for more information.

MICHAEL OTTO (C) (SAB SEM I)
Professor
Ph.D., University of Mexico
My research focuses on the investigation of the etiology and treatment of anxiety, mood, and substance-use disorders. Of particular interest to me is the development and testing of new treatments, including the combination of pharmacologic and cognitive-behavioral strategies for treatment-refractory and substance abusing patients. In addition, I am pursuing a number of translational research agendas, examining potential mediators and moderators of the efficacy of exposure-based treatments, as well as novel approaches for the promotion of health behaviors, including the role of exercise in treating mood and anxiety disorders.

TIBOR PALFAI (C)
Professor, Clinical Program Director
Ph.D., Yale University
My primary research interest is the role of cognitive-motivational processes in health risk behavior, including problem drinking, smoking, and eating. Specific areas of research include, (1) understanding the processes underlying successful and failed self-control attempts and (2) developing approaches to reduce health-risk behaviors among college student and medical populations.

BRENDA CALDWELL PHILLIPS
Full-Time Lecturer
Ph.D., Boston University
My research explores the social-cognitive factors that facilitate children's conceptual development in both formal and informal learning environments. The overarching goal of my research program is to (a) identify the mechanisms that facilitate knowledge acquisition, (b) examine the influence of emergent intuitive causal explanations on conceptual development and conceptual change, and (c) identify empirically-based intervention strategies for school and community-based programs. Most recently my interests have culminated in an applied research program dedicated to fostering children's understanding of evolution and biological conservation (see http://sdr.seas.harvard.edu/).

DONNA B. PINCUS (C)
Associate Professor
Ph.D., SUNY Binghamton
My primary research interests include the assessment and treatment of children's fears and anxieties; children's coping with everyday stress; risk and resilience factors affecting the development of child psychopathology; and psychological factors affecting children with medical conditions. My current research focuses on developing new treatments for children and adolescents with anxiety disorders and their families. I am also currently developing treatments for children and adolescents with comorbid conditions, such as anxiety and sleep disorders.

ROBERT REINHART (B)
Assistant Professor
Ph.D., Vanderbilt University
My research examines how the brains of healthy people and those with neuropsychiatric disorders selectively extract, store, and use information from the external world. We employ visual perceptual and cognitive tasks, and noninvasively measure the electrical brain activity and behavior of participants performing these tasks. We also use transcranial electrical stimulation to safely and reversibly manipulate participants' brain activity and behavior. Active areas of study include visual attention, visual working memory, long-term memory, learning, and cognitive control. As a directed study student you would be involved in some or all of the following stages of our research: experimental design and task programming, participant recruitment, the acquisition and analysis of behavior and electroencephalographic data, the delivery of transcranial electrical brain stimulation, and the preparation of abstracts and posters for publication.

MARK RICHARDSON (C)
Clinical Associate Professor
Ph.D., University of California, Los Angeles
My primary clinical and research interest address neurobehavioral sequelae of a variety of acute and chronic conditions among adults, including: HIV disease, depression, traumatic closed head injury and substance abuse. Current interests also include assessment of cognitive abilities and personality functioning, clinical judgment, and ethnicity and culture as risk- and protective factors in psychopathology.

ANTHONY J. ROSELLINI (C)
Research Assistant Professor
Ph.D., Boston University
My research uses clinical psychological and epidemiological methods to identify and understand emotional (e.g., personality/temperament) and environmental factors (e.g., stress/adversity) that influence the development and persistence of anxiety and depression. My current work involves using machine learning methods to develop optimized prediction tools that identify individuals at risk of anxiety and mood disorder onset and chronicity. I am also interested in improving the assessment and classification of anxiety and mood psychopathology.

MICHELE RUCCI (B)
Professor
Ph.D., Scuola Soperiore S. Anna
My primary research area is in how humans perceive the world. Ongoing studies include the development of models of the visual system, psychophysical experiments with human subjects, and experiments with robots replicating human behaviors.

KIMBERLY SAUDINO (DS) (SAB SEM II)
Professor
Ph.D., University of Manitoba
My primary research area is infant and child temperament with a focus on activity level. I am particularly interested in etiology of individual differences in the development of temperament, and much of my research involves the study of twins in an effort to disentangle the contributions of genetic and environmental factors to the development of temperament and related behaviors. A second focus of my research is on the measurement of temperament in childhood; specifically, the factors that influence the validity of parents' ratings of their child's temperament.

SHANNON SAUER-ZAVALA (C)
Research Assistant Professor
Ph.D., University of Kentucky
My research is focused on exploring emotion-focused mechanisms that maintain psychological symptoms and using this information to develop more streamlined, easily-disseminated intervention strategies that target these mechanisms. I am particularly interested in treatment development for borderline personality disorder.
sites.bu.edu/bestlab

CHANTAL E. STERN (B)
Professor, Director Cognitive Neuroimaging Center
D. Phil., University of Oxford, England
My lab uses neuroimaging methods coupled with behavioral and computational techniques to examine short-term and long-term memory processes, context-dependent rule learning, and spatial navigation. Basic science work in the lab focuses on the medial temporal lobe and prefrontal cortex, and collaborative work aims to integrate our understanding of how memory interacts with attention and perception. In addition, translational work in the lab focuses on aging, including work on Alzheimer’s disease and Parkinson’s disease and the effects of exercise on brain function.

HELEN TAGER-FLUSBERG (DS)
Professor, Director of the Developmental Science Program
Ph.D., Harvard University
My current research focuses on four broad questions in the area of autism/ASD and related neurodevelopmental disorders: (1) What are the early brain and behavioral risk signs for ASD before the onset of the disorder? (2) Can we assess variability in 'mirror neuron system' functioning in toddlers and preschoolers with ASD and will a brief targeted intervention lead to changes in both electrophysiological and behavioral markers of the MNS; (3) Why do about one-quarter of all children with ASD fail to acquire spoken language? and (4) Can we develop novel, efficient, language outcome measures that can be used in the context of clinical and interventions trials. These research programs involve collaborations with colleagues at BU and at neighboring universities and all involve a range of methods covering brain and behavioral development.

AMANDA TARULLO (DS)
Assistant Professor
Ph.D., University of Minnesota
My research focuses on the effects of early experiences on the neural and behavioral development of infants and young children. In particular, I examine the ways in which early life stress shapes the developing brain as well as the neurodevelopmental mechanisms that link early life stress to child outcomes. Using electroencephalogram (EEG) measures, I identify patterns of infant brain activity that predict socio-emotional and cognitive functioning in early childhood. I study both typically developing and at-risk populations in order to explore both normative and atypical neurodevelopmental processes. One aim of this research is to understand why some children who experience early life stress are resilient and fare quite well, whereas others have enduring developmental problems.

MARTHA TOMPSON (C)
Associate Professor, Master's Program Director
Ph.D., University of California, Los Angeles
My research focuses on the role of the family in promoting individual mental health. I have examined adults and children with a variety of mental disorders and their families. I am particularly interested in family processes and family treatment among individuals with depression, bipolar disorder and schizophrenia. The goal of this work is to identify strengths and deficits in family systems, which may impact on the course of mental disorders, and to develop programs for helping families cope with theses disorders. My most recent projects include: 1) designing and implementing family-based treatment for preadolescent children with depressive disorders; 2) examining the role of maternal depression and family relationships in the development of depression vulnerability in youth; and 3) understanding the impact of family psychoeducationally-focused treatment for adults with bipolar affective disorder.