

## UNDERGRADUATE DIRECTED STUDY/HONORS OPPORTUNITIES 18/19

Prof. Peter Blake ([pblake@bu.edu](mailto:pblake@bu.edu)). 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.

Prof. Leslie Brody ([lesbro@bu.edu](mailto:lesbro@bu.edu)). My current research investigates how coping strategies and gender roles in women with HIV predict their health outcomes. Students in the lab are trained to collaboratively code autobiographical narratives for coping strategies, gender roles, and interpersonal themes; to enter data, and then to select their own research question for further investigation.

Prof. Catherine Caldwell-Harris ([charris@bu.edu](mailto:charris@bu.edu)). My research concerns cognition, language, and the brain. I have projects on bilingualism, psycholinguistics, deaf children's sign acquisition and literacy, and cross-cultural aspects of emotion and language. I encourage students to begin the directed study by working on one of the existing projects in the lab, and then to develop their own study in conjunction with other lab members, if desired.

Prof. James Cherry, ([jcherry@bu.edu](mailto:jcherry@bu.edu)). Projects are available for students with some background and interest in neurobiology in studies that investigate brain circuitry in the mouse that processes odors used in social communication. Projects typically require animal handling and may use methods that include behavioral observation, neurosurgery, electrophysiology and/or histology/immunohistochemistry.

Prof. Alice Cronin-Golomb ([alicecg@bu.edu](mailto:alicecg@bu.edu)). Vision and cognition in Parkinson's disease and other neurological disorders. I am also conducting studies in cognition with healthy elderly individuals. Students may participate in literature review, data collection, coding and entry, and analysis.

Prof. Margaret Hagen ([hagen@bu.edu](mailto:hagen@bu.edu)). We have an ongoing research laboratory studying jurors' decision-making in cases involving bullying, inflicting emotional distress, and ruining the reputations of others. Many of our cases center on evolving standards for use of social media and the expectations of privacy people do and do not have on these media.

Prof. Michael Hasselmo ([hasselmo@bu.edu](mailto:hasselmo@bu.edu)). Students with a strong interest in neurophysiological mechanisms of memory function may have the opportunity to perform projects involving training of rats and gathering of physiological data. This requires a strong background in courses related to neuroscience. There are also opportunities for interested students in computer modeling of memory function in cortical networks. This requires some background in mathematics, programming or neural network theory.

Prof. Kathleen Kantak ([kkantak@bu.edu](mailto:kkantak@bu.edu)). My research uses animal models to conduct translational research related to drug addiction. Using intravenous drug self-administration procedures, the current project investigates the pharmacological, behavioral and molecular determinants of extinction memory enhancement in drug-addicted rats for relapse prevention.

## UNDERGRADUATE DIRECTED STUDY/HONORS OPPORTUNITIES 18/19 (continued)

Prof. Deb Kelemen ([dkelemen@bu.edu](mailto:dkelemen@bu.edu)). Research in the Child Cognition Lab focuses on children's conceptions of animals, people, and human-made objects. Depending on the specific project, directed study participation may include subject recruitment, data entry, assisting in the design stimuli (drawing and Photoshop skills are always in demand!), some child interviewing with training.

Prof. Melissa Kibbe ([kibbe@bu.edu](mailto:kibbe@bu.edu)). I study how we perceive, attend to, and remember objects in both social and non-social contexts. Depending on the project and your interests, you might work on one of the following questions: 1) What counts as a visual object? 2) What are the limitations on working memory for objects? 3) How do we overcome limitations on working memory? 4) How does our memory for objects change when objects are placed in a social context (for example, when some objects are preferred by a person and some are not)? Also depending on the project, studies may be conducted with adults and/or infants and children. Directed study students may assist with participant recruitment, designing stimuli, data entry and coding, and/or running adult participants or (with training) infant/child participants.

Prof. David Langer ([dalanger@bu.edu](mailto:dalanger@bu.edu)). My research explores the efficacy and effectiveness of psychosocial treatments for youth psychopathology and the processes through which psychosocial treatments work. I am currently 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). Directed study students contribute to this research (and the research and clinical activities in the Child Program of the Center for Anxiety and Related Disorders) by observing and coding assessment and therapy sessions, conducting/transcribing/coding qualitative interviews, data entry and management, and assisting study staff as they conduct clinical assessments and treatments (when needed), among other potential responsibilities. Directed study students need to make a minimum 2-semester commitment to working in the lab, and the Directed Study is taken during the second semester.

Prof. Sam Ling ([samling@bu.edu](mailto:samling@bu.edu)). 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. Our lab's work centers on that pivotal stage of cognitive processing—the stage at which sensation becomes perception. Our 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.

Prof. Kristin Long ([kalong@bu.edu](mailto:kalong@bu.edu)). My research focuses on (1) reciprocal influences between a child'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 children with chronic conditions and their families. The majority of my work is carried out with families facing childhood cancer, intellectual disability, autism, and asthma.

## UNDERGRADUATE DIRECTED STUDY/HONORS OPPORTUNITIES 18/19 (continued)

Prof. Joseph McGuire ([jtmcg@bu.edu](mailto:jtmcg@bu.edu)) (SAB SEM II). My group conducts basic research on decision making. Our goal is 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](http://sites.bu.edu/cdlab) for more information.

Prof. Tibor Palfai ([palfai@bu.edu](mailto:palfai@bu.edu)). My primary research interests are:

(1) understanding the cognitive-motivational processes that underlie hazardous drinking, smoking, substance use, and related health risk behaviors (e.g., sexual risk behavior) (2) clarifying the factors that facilitate and interfere with efforts to change these behaviors, and (3) developing interventions to promote health behavior change. I am particularly interested in the study of addictive behaviors among college student and medical populations and the use of technology in intervention delivery.

Prof. Robert Reinhart ([rmgr@bu.edu](mailto:rmgr@bu.edu)). Our research aims to understand how the brains of healthy individuals and neuropsychiatric patients, such as those with schizophrenia, selectively extract, store, and use information from the external world. Typically, we employ visual perceptual and cognitive tasks, and measure the behavior of our participants performing these tasks as well as the electrophysiological responses of their brains which we record non-invasively from the scalp. We also rigorously use a causal neuroscientific tool called transcranial electrical stimulation to safely and reversibly manipulate the behavior and electrophysiological signals of our participants while they perform a task. Active areas of investigation in the lab include: visual attention, visual working memory, feedback learning, and adaptive control. As a directed study student you would be involved in some or all of the following stages of our research: experimental design and programming, participant recruitment, the acquisition and analysis of behavior and electroencephalographic (EEG) data, the delivery of transcranial electrical brain stimulation, and the preparation of abstracts, posters, and manuscripts for publication.

Prof. Mark A Richardson ([markrich@bu.edu](mailto:markrich@bu.edu)). Current research priorities include assessment of HIV risk behavior, HIV primary and secondary prevention among adults with serious mental illness, and the contribution of neuropsychological factors on changing knowledge about and engagement in risky behavior. I am also involved in a longitudinal study of cognitive and psychosocial adaptation following prenatal exposure to substances of abuse. Please note that current research activities are based at Boston Medical Center.

## UNDERGRADUATE DIRECTED STUDY/HONORS OPPORTUNITIES 18/19 (continued)

Prof. Kim Saudino ([ksaudino@bu.edu](mailto:ksaudino@bu.edu)). My research is in the area of early childhood temperament. I am currently working a twin study examining developmental change in temperament across the preschool period. The temperament dimensions of negative emotionality, positive emotionality, activity level, attention, persistence, shyness and inhibitory control is longitudinally assessed via multiple methods (e.g., behavioral tests, observations, actigraphs and parent ratings) in a sample of 300 twin pairs at 3, 4, and 5 years of age. Parent report and observational measures of parenting behavior are also obtained at each age. Developmental outcome measures include externalizing and internalizing behavior problems, prosocial behavior, and academic readiness. The specific aims of the study are to: 1) Explore individual differences in developmental change across the preschool period using observational measures of temperament in addition to parent ratings; 2) Assess links between child temperament and parenting trajectories. 3) Explore relations between temperament trajectories and developmental outcomes at age 5; and 4) Examine genetic and environmental influences on individual differences in temperament trajectories.

Prof. David Somers ([somers@bu.edu](mailto:somers@bu.edu)). I am interested in the mechanisms of visual perception, recognition, and attention. How is visual information encoded in the mind and brain? How is it used for recognizing objects? How does attention modulate these representations and processes? Can we achieve a computational understanding of the brain mechanisms that support these functions? My research employs visual psychophysics and functional magnetic resonance imaging (fMRI) of human brain activity. In addition, computational modeling techniques are used. Students interested in any of these methods and topics are welcome to apply.

Prof. Helen Tager-Flusberg ([htagerf@bu.edu](mailto:htagerf@bu.edu)). Current projects all focus on autism spectrum disorder with an emphasis on language and communicative impairments. Projects fall into 3 areas: infants at high risk for ASD; the development of the mirror neuron system in toddlers with ASD; children and adolescents who fail to acquire spoken language. Methods include standardized behavioral assessments, observational measures, language transcription and coding, and electrophysiology, (see website for more information: [www.bu.edu/autism](http://www.bu.edu/autism)). Directed Study Masters level students need to make a 2-semester commitment to working in the lab; the Directed Study is taken during the second semester. Projects focus primarily on coding observational data, language transcription and analysis but students with a background in EEG might take on projects using these data. Undergraduate students who can only do one semester of research may apply for internships in the lab. Students who have been working in the lab before their senior year and have ideas for projects they would like to pursue can discuss the possibility of completing honors under my direction.

## UNDERGRADUATE DIRECTED STUDY/HONORS OPPORTUNITIES 18/19 (continued)

Prof. Amanda Tarullo ([atarullo@bu.edu](mailto:atarullo@bu.edu)). My research examines how families and communities nurture the brain development of young children and how early life stress affects child development. Current studies focus on (1) How parents help their children regulate biological stress (2) How brain activity during attention and learning tasks varies depending on children's socioeconomic status and (3) Designing interventions to promote kindergarten readiness in at-risk children.

Prof. Martha Tompson ([mtompson@bu.edu](mailto:mtompson@bu.edu)). My current work emphasizes understanding both family processes and designing and testing family-based treatment models for preadolescent-onset depression. My lab is conducting a clinical trial comparing a family-based to an individually-based treatment for preadolescent depression. Directed study students working in my lab learn about diagnosis and evaluation of depressive symptoms and disorder in youth, about family and individual treatment models for depression, and about the implementation of clinical trials of psychotherapeutic interventions. Students work in the lab 7 hours per week and participate in a 1 hour weekly lab meeting.

Prof. Nicholas J. Wagner ([njwagner@bu.edu](mailto:njwagner@bu.edu)) (Sem II Only). My research investigates the enduring impact of early parent-child relationships on children's socio-emotional development, the mechanisms and processes through which psychobiological and environmental factors promote psychosocial adaptation or contribute to the emergence of psychopathology in children, and how self-regulatory processes serve to augment or constrain these associations. Students will have the opportunity to gain experience with observational and psychobiological measurement. Depending on interests and the status of ongoing projects, students may assist with participant recruitment, data collection, observational coding, data entry and analysis, and the preparation of abstracts, posters, and manuscripts.

UNDERGRADUATE DIRECTED STUDY/HONORS OPPORTUNITIES 18/19  
AT THE B.U. CENTER FOR ANXIETY AND RELATED DISORDERS (CARD)

Numerous ongoing research projects on the nature and treatment of anxiety disorders in both adults and children. Specific areas of study include social phobia and panic disorder research and treatment with both psychological treatments and drugs, classification of anxiety disorders, the development of new transdiagnostic unified treatments for anxiety disorders, the study and treatment of eating disorders, and the study and treatment of addictive behavior and depression.

Prof. Stefan G. Hofmann ([shofmann@bu.edu](mailto:shofmann@bu.edu)). I am conducting a number of research projects investigating the psychopathology and treatment of anxiety disorders (social phobia, specific phobia, and panic disorder). Furthermore, I am interested in the psychophysiology of emotions. Students will become familiar with various stages of a research project and may assist in conducting psychological experiments, coding video and audio tapes, data entry, data organization, and data reduction.

Prof. Michael W. Otto ([mwotto@bu.edu](mailto:mwotto@bu.edu)). Much of my current research focuses on strategies to increase the retention of therapeutic learning - strategies that are designed to provide more efficient treatment of anxiety, mood, and substance use disorders. In addition to pharmacologic strategies (use of d-cycloserine or yohimbine in conjunction with cognitive-behavior therapy) our newest projects will examine the role of exercise in creating brain conditions for faster learning. This work complements (1) our ongoing focus on (1) identifying core factors in psychopathology and its treatment (with an emphasis on the role of distress intolerance across a wide variety of disorders), (2) issues in the acquisition or maintenance of health behaviors (smoking, exercise, and medication adherence), and (3) predictors of extinction learning.

Prof. Shannon Sauer-Zavala ([ssauer@bu.edu](mailto:ssauer@bu.edu)). My research is focused on developing efficient, cost-effective treatment strategies for emotional disorders, particularly borderline personality disorder, by addressing core mechanisms maintaining symptoms.