Dr. Williamson is a Neuropsychologist whose Emotion and Cognition Laboratory conducts research evaluating the effects of neurological injury, disease and psychiatric illness on neurophysiological pathways that regulate behavioral state including emotion and cognitive functions.

The long term goal of our research is to advance our mechanistic understanding of the interacting effects of neurological injury and chronic stress on the brain, particularly as they relate to autonomic functions. Further, we seek to develop strategies and methods to optimize cognitive function and regulate neurophysiological state to ameliorate the effects of chronic stress on negative cascade effects such as in maladaptive aging.

The Emotion and Cognition Lab spans three Centers including the Brain Rehabilitation Research Center (BRRC) at the North Florida/South Georgia VA Medical Center, the Center for OCD and Anxiety Related Disorders (COARD) in the Department of Psychiatry at the McKnight Brain Institute, and the Center for Cognitive Aging and Memory (CAM) in the College of Medicine. Our work is collaborative and interdisciplinary and we have active projects in traumatic brain injury (TBI) mechanisms associated with Post Traumatic Stress Disorder (PTSD), non-invasive vagal nerve stimulation (VNS) modulation of neurophysiological state in PTSD and Alzheimer’s disease spectrum mild cognitive impairment (MCI), and cardiac resynchronization therapy (CRT) impacts on cerebral perfusion and cognition in patients with heart failure. Students can expect to learn multi-modal neuroimaging including MR based approaches (DTI, fMRI, MRS), psychophysiological methods (e.g., heart rate variability, EDA/GSR) and non-invasive neural modulation techniques such as transcutaneous vagal nerve stimulation in addition to a variety of clinical and laboratory methods to assess cognitive and emotional functions.