

**Neuropsychology, Mood Disorders, and Women's Mental Health**  
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**Main Ongoing Projects:**

**1. Mesolimbic Reward Processing and Neuropsychological Function in Major Depression**

I have become interested in the relationship between reward processing and mood disturbances. Although the neural mechanisms of reward processing in healthy controls are well-documented, the potential dysfunction in this system and its relationship to different mood states or specific symptoms is not yet well understood. We developed a novel, ecologically relevant paradigm in which depressed patients and healthy controls underwent functional MRI while listening to music (emotionally pleasant stimuli). Brain activity in mesolimbic structures (e.g., nucleus accumbens, ventral tegmental area) and related structures was negatively associated with anhedonia across groups. Extensive research demonstrates that the reward system is driven in part by dopamine. Thus, one could hypothesize that dysfunctional dopamine is driving dysfunctional reward processing in major depression. I am conducting a study funded by NARSAD that investigates the dopamine component of the reward system. Functional brain imaging, neuropsychological function, clinical symptoms, and treatment outcome are all assessed. This project includes an open-label clinical trial using a novel dopamine agonist to treat depression and will examine the relationship of symptom response to the change in neural activity of the reward system. This study is in the data collection stage.

**2. Self-Defense Training for Women with a History of Trauma**

A small body of empirical evidence suggests that self-defense training can be a potent means of empowering healthy women to prevent or cope with the threat of sexual assault. In this project, we have developed a class focusing on education, empowerment, psychological skills training, and physical self-defense training in women with a history of physical and/or sexual violence. Our research is examining the psychological effects of such an intervention. Our target population is adult women with emotional and interpersonal difficulties related to a history of physical or sexual violence. This project is scheduled to begin recruitment in Spring 2011.

**3. Depression and Trauma: Psychological and Biological Sequela**

A number of studies have suggested a link between early adverse events in childhood to dysfunctional hypothalamic-pituitary-adrenal (HPA) axis activity. This research suggests that early life stress makes the HPA axis more stress-reactive and therefore leads to dysfunction in affect regulation, cognition, cortisol secretion, and brain function. In our current study investigating the HPA axis in depression, I have also collected data on early life and adult trauma. Data collection on this sample is almost complete and will soon beginning to examine the inter-relationships between trauma and various cognitive, affective, and biological measures.

**4. Mental Health Care in South Asians**

We have two separate projects ongoing in this topic. First, we have a small on-line survey regarding health and well-being in South Asian Immigrants. Data collection will begin in Summer 2011. Second, we are examining the manifestation of mental health symptoms and their proximal causes in a primary care setting in Karachi, Pakistan. This is a small pilot study and the data will be used to develop several grants to examine broadly mental health symptoms, feasible mental health treatments within a primary care setting, and specific concerns relating to women's mental health (e.g., interpersonal violence). This project is in the planning stages.

**Openings:** 2 new members to join the group in September 2011.

**Apply:** Interested students are asked to submit the following items to Dr. Keller *via email* ([jkeller@stanford.edu](mailto:jkeller@stanford.edu)) by Monday April 4, 2011:

1. Curriculum Vitae
2. One or two page essay discussing past research experience, how and why the student became interested in this research group, and a description of their specific research and clinical interests.
3. A writing sample - usually a paper submitted for a psychology class while a student at PGSP. Your research proposal from the Research Methods class is a good choice.

Dr. Keller will interview potential students between April 6 – 22. Students will be notified on Monday April 25, 2011.