Behavioral Methods in Affective Neuroscience
Special Emphasis: The Event-Related Potential Technique
PSYC392/NS&B392
Fall 2013

Meeting Times: M, W 2:40-4pm
In addition, scheduled project meetings and lab work

Location: Judd 307

Instructor: Charles Sanislow E-mail: csanislow@wesleyan.edu
Office: Judd 316 Hours: M, 4:30-6 and W 1-2
X2750 And, by appointment

Course Overview

This is an advanced research methods course that is designed to teach skills in experimental design, and to provide you with a variety of tools to conduct behavioral research in cognitive-affective neuroscience. You will have the opportunity to evaluate studies from the contemporary research literature pertaining to cognition and emotion interactions, and to consider implications of disruptions in these systems as they may be used to understand psychopathological disorders, particularly depression and anxiety.

In addition to research design, different methods and tools to study psychopathology are taught in this course. Emphasis on certain methods may vary depending on the semester. Examples include behavioral and statistical approaches. With behavioral paradigms, we utilize response latency and memory data collected in conjunction with experimental tasks, often in combination with individual difference measures. Recording brain activity with Electroencephalography (EEG) can be used to build on behavioral paradigms, and this is called the Event-Related Potential technique, or “ERP” for short. Advanced statistical procedures are routinely used in conjunction with clinical/behavioral data, including from current and past studies carried out in the lab, as well as from large clinical data sets.

You will learn how to acquire ERP data, and to become skilled at placing electrodes, including the proper handling and operation of the equipment. Procedures for preprocessing and analyzing ERP data will also be covered. You will also learn about specific, well-studied waveforms that are associated with attention, error commission, and reward processing, and the theoretical ways of linking EEG and behavioral findings to understand function and dysfunction in of which will be discussed in detail at our weekly lab-seminar meetings.

Goals and Learning Objectives

The ultimate aim of this course is to prepare you to do clinical research. The method of learning will be active participation. A number of learning objectives will be used to meet this aim along with more specific objectives set to advance your own personal learning.
In addition to regular weekly lab-seminar meetings, there is the expectation of meetings for advancing either group or individual projects. At the beginning of the semester, I will meet with each of you individually to clarify specific goals. These may include participating in a group project, or beginning or continuing an individual project, or preparing for an independent project in a future semester. Example learning activities to help you achieve your goals include:

- Reviewing experimental studies in the literature to help guide the development of new studies and extend work in the field
- Programming experimental stimuli presentation for behavioral studies
- Designing behavioral studies
- Running subjects and processing data
- Scoring response latency and recognition data
- Using Excel and SPSS for data analysis (repeated measures ANOVA)
- Using advanced statistical methods to test theoretically-driven hypotheses
- Summarizing and methods and results and considering their implications

**Organization of Meeting Times**

Please reserve the regular classroom meeting times for group and individual meetings. Meeting format will vary throughout the semester, sometimes group, sometimes individual, depending the various needs and stages of projects.

**Readings**


Additional readings will be selected from current technical and scientific literature. Reading assignments will be made each week for the following class meeting.

**Evaluation**

You will be evaluated in four areas. (1) **Attendance and collaboration.** Being an active member of the group is important not only for your own learning, but also for others in the lab. In the large-group learning, you will achieve skills using ERP as described above. (2) **Presentation.** Each of you will be responsible for presenting on a topic once during the semester. (3) **Your lab work.** As noted, I will meet individually with each you in the first and second week of class discuss and define the goals and scope of your lab work for the semester. (4) **Final report/self-study.** You will be asked to summarize the culmination of your work for the semester in a final “progress” report. The report should detail: (a) your individualized learning objectives; (b) goals accomplished; (c) a brief summary of your findings; and (d) plans for future work.

Throughout the semester, we will set “action items” to keep projects moving, and mid-semester, I will meet with each of you individually to discuss and review progress thus far.