Behavioral Methods in Affective Neuroscience
Special Emphasis: The Event-Related Potential Technique
PSYC392/NS&B392
Fall 2012

Meeting Times: Tuesday 7-8:20pm
In addition, weekly scheduled project meetings

Location: Judd 307

Instructor: Charles Sanislow  E-mail: csanislow@wesleyan.edu
Office: Judd 316  Hours: M, 4-6pm
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 sundry of tools to conduct behavioral research in cognitive-affective neuroscience. As part of your learning, 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.

A central focus for this semester is the ERP technique. You will have the opportunity to 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, each of which will be discussed in detail at our weekly lab-seminar meetings.

Goals

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 the regular weekly lab-seminar meeting, there is the expectation of a second weekly meeting for advancing your individual project. Specific goals will be regularly set during each of these individual (or subgroup) meetings. Learning objectives to help meet your goals will include building skills and knowledge from among the following:

- 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 Classroom Meetings**

We will meet each Tuesday from 7-8:20pm as a full group. Weekly individual meetings times will be assigned at the first meeting. The second meeting will be either an individual meeting, or a subgroup meeting, depending on your project.

**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 project.** In the first week, I will meet individually with you to discuss and define the individual project that you will advance during the semester. We will set goals for moving that project forward on a weekly basis. (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) what goals you accomplished; (c) a brief summary of your findings; and (d) your plans for future work. Midway through the semester, I will meet with each of you individually to discuss and review your progress.