Syllabus for Methods in Human Neuroendocrinology Seminar (PSY 607)

Spring 2015, University of Oregon
Tuesdays: 2 – 3:50 PM, 483 Straub

Instructor:
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Office Hours: By appointment

Course Rationale and Goals

Behavioral neuroendocrinology is a vibrant field that investigates the dynamic interactions among hormones, the environment, and behavior. Psychology has witnessed incredible growth in neuroendocrinology research over the past decade due to technological advances that have made it feasible to measure or manipulate hormone concentrations in human participants. This influx of studies on hormones and human behavior has already contributed to many areas of psychology, but this contribution is expected to increase in the future as new psychoneuroendocrinology theories emerge and as technology advances even further. The next generation of psychologists will surely benefit from training in endocrine methods to inform their specific areas of research.

The goal of this course is to provide a foundation in human neuroendocrinology methods, both for graduate students who are already doing neuroendocrinology research as well as for students who plan to do such research in the future. The specific goals of the course are to:

1. Gain an understanding of methods for measuring and manipulating the primary endocrine systems under investigation within psychology: the hypothalamic-pituitary-adrenal axis (e.g., cortisol), the hypothalamic-pituitary-gonadal axis (e,g, testosterone), and neuropeptides (e.g., oxytocin).

2. Leverage these methodological insights to design new psychoneuroendocrinology studies, analyze neuroendocrinology data, and make appropriate inferences.

3. Critically evaluate neuroendocrinology research methods in the form of discussion questions and reaction papers.

4. Gain a basic understanding of (some) additional neuroendocrinology methods topics, such as:
    a. Measurement and manipulation of other relevant neuroendocrine systems
    b. The unique methodological challenges of conducting neuroendocrinology in other populations besides healthy adults, including in children and those with mental and physical disorders.

c. Some hands-on experience/training with hormone measurement/manipulation
d. Controversies in human neuroendocrinology methods
e. Cutting-edge methods in neuroendocrinology

5. (Optional) -- Make novel contributions to social neuroendocrinology methods

COURSE STRUCTURE AND REQUIREMENTS

Class Participation/Discussion Questions: 35%
Individual Readings/Reaction Papers: 35%
Either Quizzes or Final Project: 30%

Each week we will read and discuss some papers with a focus on methods. I will lecture some depending on the week, and then we will have a discussion on the papers. Here are course requirements:

1. Required Readings: Every week there will be 2 or 3 required readings. You should have read all of these articles, and you should come to class prepared to discuss them.

2. Discussion Questions: Think critically about the readings, and submit at least **two discussion questions that you are ready to ask in class**. The goal of your questions should be to stimulate lively and thought provoking discussion on the topic for that week. The questions should be submitted via Blackboard Monday night before class.

3. Individual Readings/Reaction Paper (at most one page double-spaced): In addition to the required readings, you will sign up for individual readings in at least one week. In that week you are required to read another methods paper in addition to the required readings and present a reaction paper to the entire class, in order to add to the discussion and collective methods knowledge of the class. You should briefly summarize the research/paper you read about and critically evaluate it. Please consult me in advance to confirm that the article you selected is appropriate for the course.

Either quizzes or final project (you choose):

4. Quizzes: These will be 3 take-home quizzes (Week 4, Week 7, Week 10).

OR

5. Final Paper and Oral Presentation: You can complete a final project as a new methods contribution individually or in small groups of 2-3. You should submit a paper (approximately 5-6 pages long) and give an oral presentation on your topic in Week 10. You should consult with me in advance to discuss your topic.

Overview of Topics by Week

Assigned readings for each week will be posted to Blackboard. The syllabus will be updated with the assigned readings.

Week	Topic
1 (March 31)	**Introduction, Course Overview and Structure** Nelson, R. J. (2005). Chapter 2: The endocrine system. An Introduction to Behavioral Endocrinology (3rd edition). Sinauer: MA.
2 (Apr 7)	**Methodological Foundations** Cacioppo, J. T., Tassinary, L. G & Berntson, G. G. (2000). Psychophysiological science: Interdisciplinary approaches to classic questions about the mind. *Handbook of psychophysiology (2rd edition).* New York, NY. (the first chapter in the 3rd edition is also a good read, though somewhat redundant). Schultheiss, O. C. & Stanton, S. J. (2009). Assessment of salivary hormones. *Methods in Social Neuroscience.* Guilford: NY.
3 (Apr 14)	**Testosterone Measurement and Administration** Individual Readings: Colton, Stephanie
4 (Apr 21)	**Cortisol Measurement and Administration (Quiz 1)** Individual Readings: Erik, Jenn, Jessica
5 (Apr 28)	**Oxytocin Measurement and Administration** Individual Readings: Smrithi
6 (May 5)	**Measuring Other Endocrine Systems** Individual Readings: Ben, Dori

NOTE: Topics from weeks 7 to 10 and subject to some changes and re-ordering

7 (May 12)	**Special Topics 1: (Quiz 2)** - **Controversies in human neuroendocrinology methods, and potential solutions** - **Collecting data in special populations or in an uncontrolled environment. Benefits and challenges.** - **Combining endocrinology with neuroimaging** - **Statistical power: Benefits and challenges** - **Practical Considerations: Trade-Offs, Time, and Money** Individual Readings: Alec, Katie
8 (May 19)	**Special Topics 2:** - **Hands-on experience**
9 (May 26)	**Guest Speaker (if possible):** - **Cutting-edge methods in human neuroendocrinology**
10 (June 2)	**Final Presentations (Quiz 3)** **FINAL PAPER DUE VIA EMAIL by Friday of Week 10, 5 PM**