Lab Experiments Team, 2015-2016

The past year was an exciting one for the lab experiments team. The lab upgraded its technical setup with the acquisition of a new software program, SuperLab, with different capabilities for use in research studies. Integrating this software into the lab's research protocols allowed for better recording of the timing with which multimedia content is displayed to participants during research studies. A new piece of equipment facilitated the recording of this timing information, interfacing the new software with our existing equipment and recording software. The lab also added the capability to measure electrocardiographic (ECG) data, for better measurement of heart activity. All of these technical upgrades were completed successfully at the beginning of the fall semester in time for the proctoring the lab team subsequently did during the rest of the semester.

On the proctoring front, the lab experiments team ran a study with 71 participants over a span of four weeks in early fall 2015. While doing this the team also developed the proctoring protocol for a separate study that involved the videorecording and collection of physiological measurements simultaneously from two participants. The team then implemented the new dual-participant protocol through the Government Department's Fall 2015 Omnibus Project, with 140 participants coming into the lab for this study over a six and half week period.

In the spring of 2016, the team brought on two new team members and has been proctoring a study with older participants from Williamsburg and surrounding communities who are members of the Christopher Wren Association at William & Mary.

What does the lab experiments team do?

There were probably many questions that floated through your head when you saw "Lab Experiments Team": What do they do? What can I learn if I join them? Will I be forced to participate in a promotional video?

Broadly speaking, there are four things you will learn as part of the team:

1) Experimental Design

You'll learn about the best practices currently used for data gathering in the field of political science and how to incorporate them into the experiments that we design. If you are a stickler for details, you'll appreciate this part of the team's work.

2) Proctoring Experiments

Unleash your inner mad scientist - you'll learn how to do research with human study participants (ethically, of course)! As part of the team, you'll learn how proctor these types of studies and what the data collection process looks like.

3) Lab-Based Research

As an undergraduate, you'll get access to opportunities and resources most individuals only get as graduate students.

You'll also learn how to decipher physiological readings, such as ECG and EDA. (As an added side-bonus, you'll also become more fluent in pretentious sounding acronyms.)

4) Data Analysis

You'll obtain training in *R*, the most powerful and widely used statistical software for data analysis. You'll also learn how to present your data in the best form possible to tell a compelling narrative.

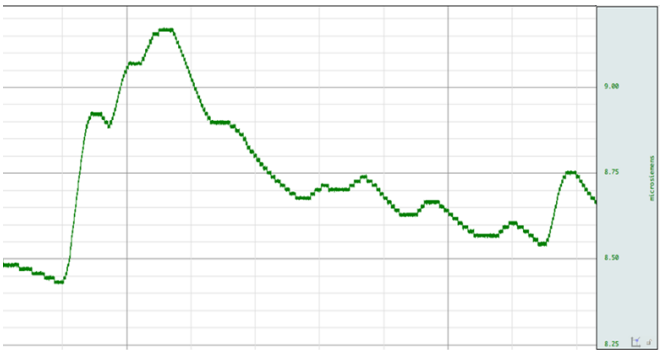
What exactly is physiological data?

The following screenshots are of videos used in the various studies done by the Lab Experiments team. The goal of these videos is to elicit a measurable emotional response.

This image portrays a man participating in a Tea Party rally. In times of patriotic desperation, even a pool noodle can double as a flag pole.

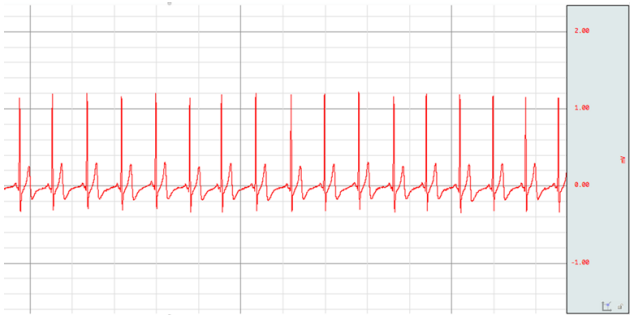
A heated yelling match between Obamacare supporters and critics at an Obamacare protest.

A contentious debate about religion and its relevance in today's society.

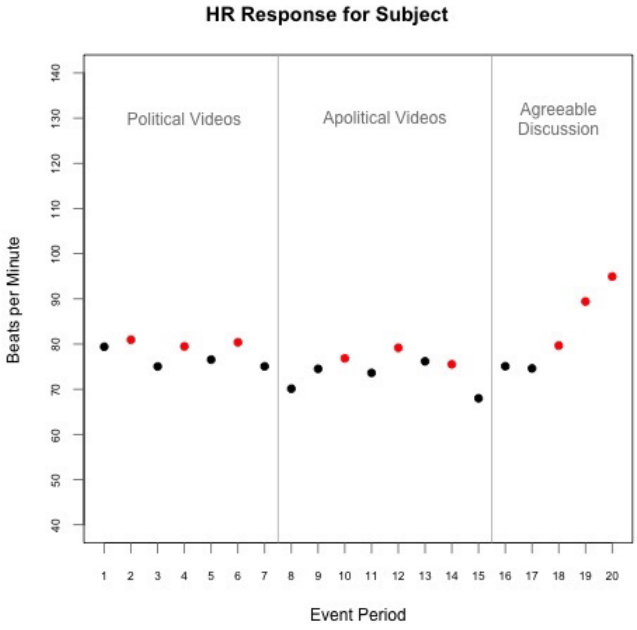


The graph above displays electrodermal activity (EDA) data, which measures the conductance of the skin. As sweat glands

activate, the amount of sweat permeating the different layers of the skin increases, increasing conductivity. Sweat gland activation can be due to both physical and psychological causes. For this latter reason, we use this type of data as a sign of how people are engaging psychologically with the world around them, in particular in ways that have political implications.



The graph above is an electrocardiogram (ECG), which records the electrical activity of the heart as it pumps. We're able to calculate heart rate from this measure. This is helpful for the research we do because heart rate often increases, decreases, or varies in other ways for psychological reasons.



This plot depicts one participant's average heart rate over the course of a typical lab session for one of the experiments the lab team has been conducting. The red dots represent average heart rate during a stimulus (either a video, or in the last section, a screen of text). The black dots represent heart rate during blank slides, which are used as a baseline during data analysis. This participant watched the set of political videos first, followed by the apolitical video set, and concluded their session reading prompts about a potential political discussion.

People:

Faculty: Jaime Settle
Students: Edward Hernandez '17, Zarine Kharazian '17, Michelle Hermes '18, Dan Brown '19, Daniel Tay '20