

# Mathematics 231

Lecture 14  
Liam O'Brien

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## Announcements

- Reading
  - Today M&M 3.4 224-232
  - Tomorrow Rest of chapter 3

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## Ethics

- Participants in studies have not been historically protected. A huge effort has recently been made to change this.
- Prospective studies must have the approval of an institutional Human Subjects Committee
- International standard set by Principle I of the Nuremberg Code and the Declaration of Helsinki.
- An institutional Committee on Animal Welfare must approve animal studies.

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## Stanford Prison Experiment

- An ad offered subjects \$15/day for two weeks to participate in a study on an experiment involving human behavior in an incarceration setting.
- Subjects were told they may be randomly selected to be either a captor or captive.
- Applications were received and processed by Stanford University psychology department.

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## Stanford Prison Experiment

- Those chosen to be “prisoners” were arrested at their homes, places of work, etc without warning.
- They were placed in a makeshift prison on the Stanford campus.
- They were told that they may be forced to survive on a diet that provided “minimal dietary” sufficiency.

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## Stanford Prison Experiment

- The prisoners staged a revolt that was quickly suppressed by the captors soon after their capture.
- Afterward the captors became increasingly cruel and subjected prisoners to verbal abuse and humiliation.
- The treatment became so severe that several had to be released early.

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## Stanford Prison Experiment

- Those that were able to endure the two weeks suffered from elevated levels of mental illnesses and stress levels.
- Some were physically harmed by the lack of adequate nutrition during their stay.
- The study directors maintain that nothing was done in violation of international rules.
- There are legal suits pending to this day.

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## Milgram's Learning Experiment

- Newspaper ad offered \$4.50 for one hour experiment on memory and learning at Yale.
- Two subjects enter a room, and draw lots to decide who will be the “learner” and the “teacher.”
- The experimenter enters in a white coat, and instructs the “teacher” that he/she will administer an electric shock to “learner” for incorrect responses to repetitive task.

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## Milgram's Learning Experiment

- The “learner” is attached to a shock generator with labels ranging from 15V to 450V at 15V increments.
- The labels read: Slight shock, moderate, strong, very strong, intense, extremely intense, danger, severe shock, XXX.

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## Milgram Experiment

- Experimenter and “teacher” go to another room and ask “learner” to repeat word pairs.
- After each wrong answer, an electric shock is delivered.
- 75V learner grunts
- 120V “Stop, too painful”
- 150V “Let me out!”
- 180V “I can’t stand the pain”
- 300V screams, insists on being set free
- 330V silence

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## Milgram Experiment

- Throughout the experiment, the “teacher” is told by the experimenter:
  - You can’t stop now
  - He is getting paid to do this experiment
  - This experiment depends on your continuing compliance
  - You have no choice

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## Milgram Experiment

- “Learner” was predetermined and a confederate of the experimenter. So the only real subject was the “teacher.”
- Prediction was 0-3% would administer all shocks.
- In actuality, 65% administered all shocks.
- Subjects showed signs of severe distress, including 3 seizures.

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## Tuskegee Study

- In 1932, U.S. government scientists enrolled 400 African American males from Alabama known to be infected with syphilis.
- Participants were followed up to determine the long term effects of the disease.
- Participants were told they were being treated for “bad blood.”
- Study lasted 40 years; exposed in 1972.

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## Tuskegee Study

- By 1972:
  - 28 participants had died due to syphilis.
  - 100 had died due to conditions related to syphilis.
  - 40 wives had been infected.
  - 19 infants were infected.
- On May 16, 1997, President Clinton apologized for the role the U.S. government played in this study.

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## Informed Consent

- Three elements of informed consent:
  1. Information
  2. Comprehension
  3. Voluntary
- Prospective subjects should have sufficient opportunity to consider whether or not to participate; no coercion or undue influence.

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