The reproducibility crisis in science

PSYCH 490.012

2024-09-06

Fall 2024 ▪ MWF 3:35-4:20 PM

The reproducibility crisis in science

Much attention has focused on the reproducibility of research in psychology, but the challenges of producing robust and reliable knowledge extend to all disciplines, not just in science. In this seminar, we will discuss whether there is or is not a reproducibility crisis in psychology and in science more broadly. We will discuss how initiatives to make scientific research more open and transparent can also make it more reproducible and robust.

Instructor

Rick O. Gilmore, Ph.D.
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Schedule an appointment: https://doodle.com/mm/rickgilmore/book-a-time

Lab web site: https://gilmore-lab.github.io

Teaching Assistant

Adam Calderon
Graduate Student in Clinical Psychology
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Meeting time & location

Monday, Wednesday, & Friday, 3:35 PM - 4:20 PM
Cedar Building 134

Canvas site

We will use Canvas to submit assignments and grade them. The Canvas site may be found here: https://psu.instructure.com/courses/2350148.

Most of the course content will be found on this site.

Course structure

This is a discussion-focused course. On most days we will discuss readings assigned prior to class. On many Fridays and a few Mondays, we will work together or individually on the assigned exercises, the final project, or another assignment.

Schedule

August 26-30

Monday, August 26

Introduction to the course: Why trust science?

- Read
  - (Recommended) (Oreskes 2019, chap. 1, pp. 55-68) | PDF on Canvas.
- (Extra credit) Complete Survey 01 on Trust in Science and Scientists
- Class notes

> **Tip**
>
> To earn 3 extra credit points for completing the survey, send the TA one of the following:
>
> 1. The date and time you completed the survey in the following format: "7/30/2024 12:20:23"
> 2. A special code or phrase that is likely to be unique to you but doesn't contain identifiable information.

Wednesday, August 28

- Wrap up on "Why trust science"

Don't Fool Yourself

- Read
  - (Feynman 1974).
  - (Recommended) (Sagan 1996), Chapter 12, The Fine Art of Baloney Detection. PDF on Canvas
- Class notes

Friday, August 30

Work Session: How to read a scientific paper

- Read
  - (Carey, Steiner, and Petri 2020)
  - (Ruben 2016) (for fun)
- Assignment
  - Exercise 01: Reading a scientific paper
- Class notes

September 2-6

Monday, September 02

NO CLASS, LABOR DAY

Wednesday, September 04

How science works (or should)

- Read
  - (Ritchie 2020), Chapter 1. Alternate link to PDF on Canvas.
  - (Brian A. Nosek and Bar-Anan 2012). Alternate link to PDF on Canvas
- Assignment
  - Complete (anonymous, extra credit) survey on scientific norms and counter-norms. **No write-up**.
- Class notes

Friday, September 06

Work Session: Reading a paper; Evaluating its claims

- Due
  - Exercise 01: Reading a scientific paper
- Assignment
  - Exercise 02: Textbook Findings, due Friday, September 20
- Class notes, due

September 9-13

Monday, September 09

Scientific norms and counter-norms

- Read
  - (Merton 1973). PDF on Canvas.
  - (Mitroff 1974). PDF on Canvas.
- Assignment
  - Complete (anonymous) survey on scientific norms and counter-norms. **No write-up**.
- Class notes

Wednesday, September 11

Adherence to norms and counter-norms

- Read
  - Kardash and Edwards (2012).
  - Macfarlane and Cheng (2008).
- Class notes