Field Experimentation Methods For Social Psychology

Updated: August 2017

Course	Instructor
PSYC UN3655 (3 points)	**Mark Alexander Conley**
Location: 200C Schermerhorn	**Office**: 329 Schermerhorn
Term: Fall 2017	**Office hours**: Monday 10:30 AM – 12:30 PM
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<u>Note</u>: "Reading" is due for the date listed. Full citations can be found at the bottom of this syllabus.

September 7th

Course Overview
<u>Lecture:</u>
Why Field Experiments (versus Lab Experiments)?
Ethical and Practical Constraints
<u>Reading</u>: Cialdini, 2009; Baumeister, 2007
<u>Notes</u>: Install R from https://cran.r-project.org/
Install R studio from https://www.rstudio.com/products/rstudio/download/
Make an appointment for office hours in September

September 14th

<u>Lecture:</u> Core Assumptions, Random Assignment, types of Random Assignment
<u>Reading</u>: Sears, 1986

September 21st

<u>Lecture</u>: Excludability and Non-Interference
Threats to Excludability; Protecting against Interference
<u>R</u>: Components, Basic Commands.
<u>Note</u>: Begin searching for dataset for *Homework* 2
<u>Reading</u>: Ein-Dor, 2014

September 28th

<u>Discussion</u>: Voter Participation / Psychology field experiments / Audit Studies
Human Subjects Protections for Audit Studies – Waivers of Consent
<u>Lecture</u>: Randomization Inference
<u>R</u>: Randomization Inference script
<u>Reading</u>: Gerber, Green & Larimer, 2008; Bertrand & Mullainathan, 2004

October 05th

<u>Lecture</u>: Covariate Adjustment and Block Randomization
<u>R</u>: Hypothesis testing, unpack outputs
<u>Note</u>: *Homework 1 assigned*. *Dataset from Instructor*
<u>Readings</u>:
Montgomery, Nyhan & Torres, 2016;
Bargh et al, 1996;
Cesario, Plaks & Higgins, 2006

<u>Recommended</u>: Gelman, A., & Loken, E. (2013)

October 12th

<u>Discussion Topic</u>: *Homework* 1 due and review. *Assign Homework 2*.
<u>Lecture</u>: One-Sided Noncompliance: Compliers & NeverTakers
<u>R</u>: Review hypothesis tests / Troubleshooting R / Intro {ggplot} & {tidyr}.
<u>Reading</u>: Ein-Dor, 2014

October 19th   Discussion Topic: Non-Compliance in Social Psychology Experiments
                        Lecture: Estimating Treatment Effects under Non-Compliance
                        R: Complier Average Causal Effect / Continue with {ggplot} & {tidyr}.
                        R: Issues impeding progress with *Homework 2*
                        Reading: Watson & Pennebaker, 1989

October 26th   Discussion Topic: Subject types in Social Psychology
                        Lecture: Review the CACE under Non-Compliance; 2-Sided Non-Compliance
                        Note: Students discuss initial stages of Practical Field Experiment
                        R: Random data creation; intro to {randomizr}
                        Reading: Excerpt from Mullainathan, Washington & Azari, 2010.

November 02nd   Lecture: Bonferroni's Correction
                        Note: *Homework 2* due and Review
                        R: R-Markdown
                        Reading: Waschull, 2001, revisit Watson & Pennebaker, 1989

November 09th   Lecture: Treatment x Treatment Interactions, Treatment x Covariate
                        Heterogeneous treatment effects
                        R: Modeling interactions / Visualizing interactions
                        Reading: Ein-Dor, 2014; Broockman & Butler, 2011

November 16th   Discussion Topic: Review Modeling interactions / Visualizing interactions
                        Note: *Practical Field Experiment* Due
                        Lecture: Bayesian updating: Prior Beliefs, Data, and Updates
                        R: Bayesian {shiny} app
                        Reading: Efron, 1986 – Why Isn't Everyone a Bayesian?

                        Recommended:
                        Bem, 2010 – Feeling the Future

November 30th   Lecture: Attrition
                        Discussion Topic: Design to prevent attrition
                        R: Default exclusion of missing data in regression
                        Calculating Extreme Value Bounds with an intro to {dplyr}
                        and Review all R
                        Reading: Gerber, 2003 (page 554); Newhouse, 2008

                        Recommended:
                        Manski, 1989

December 07th   Lecture: Mediation

                        Readings:
                        Bullock, Green, & Ha, 2010 - Yes, But What is the Mechanism?
                        Smith, 2012 - JPSP Editorial Response to above
                        Montgomery, Nyhan & Torres, 2016 (revisit)

                        Recommended:

Baron & Kenny, 1986 - The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations

Bolger & Amarel, 2007- Effects of social support visibility on adjustment to stress: experimental evidence

Spencer, Zanna, & Fong, 2005 - Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes.

December 14th   Time TBD: *Presentations* of research proposal, with Q&A + Feedback

December 21st   Due via email: *Research Proposal Paper / Planning Document*

Course Overview

This course instructs students how to design, analyze, and interpret psychology field experiments. Students will employ design and software tools in order to integrate social psychology questions into established research methodologies. This course will imbue students with the hypothesis testing and visualization tools needed to estimate the effects and communicate the results of psychology experiments.

Specific topics in this course will imbue students with the theoretical and technical tools needed to design and analyze field experiments that investigate questions on the frontiers of Social Psychology. This course confronts methodological shortcomings and common procedural errors that lead to biased estimations of social psychological mechanisms. As a suggested remedy, this course instructs researchers to employ modern design tools and to integrate social psychology questions into established and reliable research methodologies. Instruction on experimental compliance, randomization inference, and attrition will teach students how to avoid and defeat common threats to experiments. Readings and assignments are concerned with ecologically valid, ethical, and (sometimes) free methods of pursuing research questions at the frontiers of contemporary Social Psychology.

Objectives
This course will enable you to:
- Analyze field experiments with appropriate hypothesis tests
- Design and propose a reproducible field experiment that is practical, ethical, and interesting
- Engage in constructive scientific discourse on the limitations of both field and lab methodologies
- Critically evaluate social psychology empirical papers
- Use R for hypothesis testing and data visualization

Course Grading & Requirements
10%: R Script Homework 1
20%: R Script Homework 2
30%: Practical Field Experiment (no human subjects)
30%: Research Proposal Paper and Planning Document
10%: Research Proposal Presentation

R Scripts: Homework 1 and 2
Both homework scripts will entail analyzing data and creating visualizations from a real dataset derived from a social psychology field experiment.

For Homework 1, you will be provided with a data set to work with. Everyone will be provided with the same data, and collaboration is unambiguously permitted! Collaboration includes but is not limited to: working with peers in this seminar, any textbooks or online forums (e.g., Stack Overflow). Researchers frequently use an array of resources to address data challenges; your homework should emulate these standard practices.

For Homework 2, students must find a dataset to analyze. Potential sources of datasets are the Open Science Framework, or datasets from your peers, other professors, or TAs. It is also permissible and encouraged to contact any researcher who has published a social psychology field experiment to request the original data "for the purpose of data verification as a homework assignment" (we will refine definitions for "verification" versus "replication"). The experiment need not have been published, nor is it necessary that the original researchers found support for their hypotheses. It is required, however, that the study was a true experiment, and was conducted in a field environment.

Practical Field Experiment – No Human Subjects
Design a field experiment that does not require initiation of a new Institutional Review Board (IRB) protocol; this assignment should not be conducted using human subjects. For example, previous research that met subject requirements has examined the effects on identification requirements after choosing Spanish language (vs. English) on electronic kiosks at convenience stores. Another treatment versus control signage affecting the use of trash and recycling receptacles. Flyers, website traffic, food studies are other potential apparati.

- Plan for no less than fifty (50) observations between control and experimental groups.
- Execute a plan for simple, complete, or blocked random assignment and justify the reasoning for the method of randomization.
- Defend protections of the core assumptions that underpin every field experiment.
- Estimate treatment effects and quantify the associated uncertainty.
- Justify the type of analysis (regression, t.test, ANOVA, or randomization inference).
- If using multiple analyses, identify the best and explain why different analyses produced different estimations of treatment effects.
- Create a visual representation of the data
- Furnish this report via R-Markdown

The results of this practical field experiment should be written and submitted in the form of a social psychology journal article that includes the following sections: introduction, methods, results, and discussion. The results section should include a figure or data table to depict the data. Additionally, the raw data file and all statistical analyses should be submitted. Extensive coaching on R will be available from the instructor for analyses, visualizations, and the rendering features within R-Markdown.

Research Proposal – Final Paper and Planning Document
Propose a field experiment that investigates a social psychology research question. Your proposal must be novel so that if the hypothesis were supported in a subsequent execution, a psychology journal could accept the submission as original work. In order to confront the practical challenges to designing an ethical field experiment that examines a specific research question, students are strongly encouraged to craft a proposal regarding areas of personal academic interest. Students must meticulously anticipate and explain in writing their protections to core assumptions. Lastly, students should create sample data in a spreadsheet that displays the form and function of data collection and its readiness for hypothesis testing and data visualization.

Students must address potential ethical concerns and grapple with administrative obstacles by initiating an IRB protocol. After initiation, students must complete every module of the protocol with the exception of "Approve Protocol" and "Submit Protocol". A complete datasheet with an accompanying Consent Form furnished within RASCAL serves as a planning document.

Course Policies
Typical Class
The versatility of this topic facilitates a multimodal class structure. In a given section, we will discuss journal articles about field experiments, lecture proofs underpinning regression and random assignment, and wrestle with R code, and give progress reports on assignments. Therefore, class time will transition between instructor lectures, content discussion, Q&A reviews, software demonstrations, and more.

Class Attendance & Assignments
Come to every class and turn in all assignments on time, obviously.

Contact Policies
I am available during office hours (Monday, 10:30AM-12:30PM in Schermerhorn 329) and also by appointment Monday afternoons and Thursdays. You never need an appointment to visit office hours, but our discussion may prove more fruitful if you email me ahead of time with the topic or specific questions you would like to discuss. I am not available by phone, but any email you send to me at mac2393@columbia.edu, I will do my best to respond within 36 hours. Do not hesitate to email me specific questions about course material or other field experiments / social psychology topics.

Class Etiquette
Given this course's heavy reliance on the open-source and free R software, laptop computers are strongly recommended in each class. Students without access to a laptop should see the professor after the first session and we will find a solution for R instruction and practice during class. Certainly refrain from unrelated activities.

Mobile phones are strongly discouraged. They are distracting to the user, the professor, and other students. However, I recognize that there are cases and times when we must monitor our phones; mobile phones may be available on silent during class. Their active use in any way is strongly discouraged.

Students with Disabilities
Students who require particular classroom accommodations or support services, please contact the Office of Disability Services (ODS—http://health.columbia.edu/services/ods) to make the necessary arrangements.

Academic Integrity
"*The intellectual venture in which we are all engaged requires of faculty and students alike the highest level of personal and academic integrity. As members of an academic community, each one of us bears the responsibility to participate in scholarly discourse and research in a manner characterized by intellectual honesty and scholarly integrity…In practical terms, this means that, as students, you must be responsible for the full citations of others' ideas in all of your research papers and projects; you must be scrupulously honest when taking your examinations; you must always submit your own work and not that of another student, scholar, or internet agent.*"
From the Faculty Statement on Academic Integrity
(www.college.columbia.edu/academics/integrity-statement)

Please exercise candor with the instructor. Since the first R assignment is collaborative, and the second assignment is unique for each individual student, cheating in the traditional sense is not possible; you are encouraged to find and apply existing data and even R script you might find on the internet to your data analysis. However, all written work should be original, and normal standards of plagiarism will be

applied to submitted work. Any student suspected of plagiarism will be referred to the Dean's Disciplinary Process, described here (www.college.columbia.edu/academics/disciplinaryprocess).

For more information on what constitutes a violation of academic integrity, consult the Columbia University Guide to Academic Integrity (http://www.college.columbia.edu/academics/integrity).

Bibliography of Required & Recommended Readings

Class 1: Introduction

Cialdini, R. B. (2009). We have to break up. *Perspectives on psychological science*, 4(1), 5-6.

Baumeister, R. F., Vohs, K. D., & Funder, D. C. (2007). Psychology as the science of self-reports and finger movements: Whatever happened to actual behavior? *Perspectives on Psychological Science*, *2*(4)

Class 2: Core Assumptions: Random Assignment

Sears, D. O. (1986). College sophomores in the laboratory: Influences of a narrow data base on social psychology's view of human nature. Journal of personality and social psychology, 51(3), 515-31.

Class 3: Core Assumptions: Excludability, and Non-Interference

Ein-Dor, T., Hirschberger, G., Perry, A., Levin, N., Cohen, R., Horesh, H., & Rothschild, E. (2014). Implicit death primes increase alcohol consumption. *Health Psychology*, *33*(7), 748.

Class 4: Field Experiments

Gerber, A. S., Green, D. P., & Larimer, C. W. (2008). Social pressure and voter turnout: Evidence from a large-scale field experiment. *American Political Science Review*, *102*(1), 33-48.

Bertrand & Mullainathan, S. (2004). Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination. *The American Economic Review*, *94*(4), 991-1013.

Class 5: Covariate Adjustment

Montgomery, J. M., Nyhan, B., & Torres, M. (2016, November). How conditioning on post-treatment variables can ruin your experiment and what to do about it. In *Annual meeting of the Midwest Political Science Association, Chicago, IL, April*.

Cesario, J., Plaks, J. E., & Higgins, E. T. (2006). Automatic social behavior as motivated preparation to interact. *Journal of personality and social psychology*, *90*(6), 893-910.

Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. *Journal of personality and social psychology*, 71(2)

Gelman, A., & Loken, E. (2013). The garden of forking paths: Why multiple comparisons can be a problem, even when there is no "fishing expedition" or "p-hacking" and the research hypothesis was posited ahead of time. *Department of Statistics*, Columbia University.

Class 6: Noncompliance

(revisit) Ein-Dor, T., Hirschberger, G., Perry, A., Levin, N., Cohen, R., Horesh, H., & Rothschild, E. (2014). Implicit death primes increase alcohol consumption. *Health Psychology*, *33*(7), 748.

Class 7: One-Sided Noncompliance

Watson, D., & Pennebaker, J. W. (1989). Health complaints, stress, and distress: exploring the central role of negative affectivity. *Psychological review*, *96*(2), 234.

Class 8: Subject Types in Social Psychology

Mullainathan, S. (2010). Ebonya Washington and Julia R. Azari,"The impact of electoral debate on public opinions: an experimental investigation of the 2005 New York City mayoral election,". *Political representation, Ian Shapiro, Susan C. Stokes, Elisabeth Jean Wood, and Alexander S. Kirshner, eds.(Cambridge University Press, 2010)*.

Class 9: Bonferroni's Correction

Waschull, S. B. (2001). The online delivery of psychology courses: Attrition, performance, and evaluation. *Teaching of Psychology*, *28*(2), 143-147.

(revisit) Watson, D., & Pennebaker, J. W. (1989). Health complaints, stress, and distress: exploring the central role of negative affectivity. *Psychological review*, *96*(2), 234.

Class 10: Interactions & Heterogeneous treatment effects

Butler, D. M., & Broockman, D. E. (2011). Do politicians racially discriminate against constituents? A field experiment on state legislators. *American Journal of Political Science*, *55*(3), 463-477.

Class 11: Bayesian Updating

Efron, B. (1986). Why isn't everyone a Bayesian?. *The American Statistician*, *40*(1), 1-5.

Bem, D. J. (2011). Feeling the future: experimental evidence for anomalous retroactive influences on cognition and affect. *Journal of personality and social psychology*, *100*(3), 407.

Class 12: Attrition

Newhouse, J. P., Brook, R. H., Duan, N., Keeler, E. B., Leibowitz, A., Manning, W. G., ... & Rolph, J. E. (2008). Attrition in the RAND Health Insurance Experiment: a response to Nyman. *Journal of Health Politics, Policy and Law*, *33*(2), 295-308.

Manski, C. F. (1990). Nonparametric bounds on treatment effects. The American Economic Review, 80(2), 319-323.

Class 13: Mediation
Bullock, J. G., Green, D. P., & Ha, S. E. (2010). Yes, but what's the mechanism? (don't expect an easy answer). *Journal of personality and social psychology*, 98(4), 550-9
Editor. (2012). On Mediation - Attitudes And Social Cognition. *Journal of Personality and Social Psychology*, 102(1), 1-3.

Other:

Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. Psychological science, 18(5), 429-434.

Rubin, D. B. (1974). Estimating causal effects of treatments in randomized and nonrandomized studies. Journal of educational Psychology, 66(5), 688-701.

Tversky, A., & Kahneman, D. (1971). Belief in the law of small numbers. *Psychological bulletin*, *76*(2), 105-110.

Frontiers
Paluck, E. L. (2009). Reducing intergroup prejudice and conflict using the media: a field experiment in Rwanda. Journal of personality and social psychology, 96(3), 574-88.

Replications and Retractions
Burger, J. M. (2009). Replicating Milgram: Would people still obey today? *American Psychologist*, 64(1), 1-9

Francis, G. (2012). The psychology of replication and replication in psychology. Perspectives on Psychological Science, 7(6), 585-594.

Meehl, P. E. (1990). Why summaries of research on psychological theories are often uninterpretable. *Psychological reports*, *66*(1), 195-244.