

## FIELD EXPERIMENTATION METHODS FOR SOCIAL PSYCHOLOGY

### Course

**PSYC UN3655 (3 points)**

**Location:** 200C Schermerhorn

**Term:** Fall 2017

**Days:** Wednesdays

**Time:** TBD / 12:10 – 2 PM

### Instructor

**Mark Alexander Conley**

**Office:** 329 Schermerhorn

**Office hours:** TBD

**E-mail:** mac2393@columbia.edu

**Web:** [higginsweb.psych.columbia.edu/index.php/people/](http://higginsweb.psych.columbia.edu/index.php/people/)

### **Prerequisites**

*Introductory Statistics for Behavioral Sciences* (PSYC 1610) or equivalent statistics course and *Science of Psychology* (PSYC 1001) or equivalent introductory psychology course, and *Social Psychology* (PSYC 2630) or equivalent introduction to social psychology, and *Instructor permission*

### **Course Overview**

#### **Bulletin**

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

#### **Description**

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.

#### **Rationale**

Contemporary Social Psychology is a vibrant but beleaguered field. Researchers pursue important and socially significant research questions, while laypeople enjoy learning about causal links between individual traits, situational factors, and human behaviors. It is difficult for occasional magazine readers or even scientists to resist a juicy finding about romantic relationships, job performance, or political opinions. But how robust are these reported findings? Do they generalize outside of the lab? Are they reliable across many ecological contexts? Though many findings confirm lay hunches or are delightfully counterintuitive, are these findings robust and valid? Are they stable and scientific? What are the boundary conditions? This course aims to coach students on how to pursue social psychology research questions while also grappling with the aforementioned concerns. In order to prepare students to enter the field as junior researchers, we will drill specific techniques to integrate ecological observations, laboratory studies, and field experiments.

Communicating science is arguably among the most important and most difficult aspects of a career in social psychology. For class sessions where readings are assigned, all students should be prepared to scientifically comment on the review and empirical papers we examine. Although we will cover some seminal and robust findings, skeptical interrogations and non-normative approaches are encouraged where possible.

- For Psychology majors and students in the Psychology Certificate Program, this course may count toward the seminar requirement, and/or the Group III distribution requirement.
- For the Psychology concentration, this course may count toward the Group III distribution requirement.

### **Course Role in Departmental Curriculum**

PSYC UN3655 is a seminar designed for advanced undergraduates who are majoring in Psychology, and for students participating in the Psychology Postbac Certificate Program. These students will have priority in registration, followed by junior majors, followed by non-majors. The course will fulfill the following degree requirements:

- For the Psychology major or concentration in the College and in G.S., and for the Psychology Postbac certificate, it will meet the Group III (Social, Personality, and Abnormal) distribution requirement.
- For Psychology Postbac certificate students, and for Psychology majors who enter Columbia in Fall 2013 or later, it will fulfill the seminar requirement.
- It will meet one term of the social science requirement of G.S., provided that students obtain the necessary permissions and have taken the prerequisite psychology courses. Majors will have priority over students who are taking the course for social science credit.

### **Objectives**

This course will enable you to:

- Critically analyze field experiments with advanced statistical software and 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

### **Course Grading & Requirements**

<b>10%</b>	R script Homework 1
<b>20%</b>	R script Homework 2
<b>30%</b>	Practical Field Experiment – No Human Subjects
<b>30%</b>	Research proposal paper and planning document
<b>10%</b>	Research proposal presentation

#### *R Script Homework 1 and 2*

Both homework scripts will entail analyzing and providing visualizations of a real dataset from a social psychology field experiment. Sample R scripts will be provided and reviewed prior to the posting of these homework assignments.

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 expressly permitted! Collaboration includes but is not limited to: working with peers in this seminar or elsewhere, and includes the use of any textbooks or online software forums (e.g, Stack Overflow). Researchers frequently use an array of resources to address data challenges; your homework will conform to these standard practices.

For Homework 2, you will have to find a dataset to analyze. Potential sources of datasets are the Open Science Framework, and datasets from your peers, professors, or TAs. It is also permissible and encouraged to contact a researcher who has published a social psychology field experiment to request the original data for the purpose of a homework 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 the field.

#### *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 need not be conducted using human subjects. For example, previous research has examined the effects on identification requirements after choosing Spanish (vs. English) on electronic kiosks at convenience stores. Another example is a field experiment wherein treatment or control signage affects the use of trash receptacles (to avoid IRB permissions, receptacle use must be measured without systematic observation of the humans involved).

- 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 most appropriate method and explain why different analyses produced different estimations of treatment effects.

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 for analyses, visualizations, and even the PDF-rendering features of 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 by RASCAL serves as a planning document.

## **Course Policies**

### *Class Attendance & Assignments*

Excused absences are granted for academic conference attendance and otherwise only if proper documentation (i.e. a letter from your doctor or advising dean) is provided. In the event that you require a make-up assignment, you also need a letter as indicated above. Points will be deducted for late assignments (10% per day).

### *Contact Policies*

I am available during my office hours (Monday, 12:00PM-2:00PM) or by appointment in Schermerhorn 329. 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 me I will do my best to respond within 48 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 a student needs to know if a phone call is received, and for that reason, mobile phones may be available on silent during class. Their active use in any way, however, 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](http://www.college.columbia.edu/academics/integrity-statement))

Please exercise candor and complete honesty in all written and oral communications with the professor. Last but not least, plagiarism is obviously not tolerated. 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](http://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>).

Calendar Readings are required unless otherwise labeled, "Optional but recommended".

Class Date		Discussion Topics	Readings
<b>Introduction / Field Experiment Basics</b>			
1	SEP	<ul style="list-style-type: none"> <li>Course overview &amp; expectations</li> <li>Why Field (vs. Lab) Experiments?</li> <li>Ethical and Practical constraints</li> </ul>	Cialdini, 2009
2	SEP	<ul style="list-style-type: none"> <li>Core Assumptions Introduction</li> <li>Random Assignment: Simple, Complete, Blocked</li> </ul>	Tversky & Kahneman, 1971 Gerber & Green, 2012: pages 21-44
3	SEP	<ul style="list-style-type: none"> <li>Threats to Random Assignment</li> <li>Introduction to R</li> <li>Data formats for R</li> </ul>	Rubin, 1974 Baguley, 2012
<b>One-Sided Noncompliance</b>			
4	SEP	<ul style="list-style-type: none"> <li>Compliers and Never-Takers</li> <li>Ecological Examples of these types</li> </ul>	Gerber & Green, 2012, pages 131-151
5	OCT	<ul style="list-style-type: none"> <li>Estimating Average Treatment Effect</li> <li>Estimate the Intent to Treat Effect</li> </ul>	Gerber & Green, 2012, pages 152-166
<b>Technical Analysis Tools</b>			
6	OCT	<ul style="list-style-type: none"> <li>Covariate Adjustment, with caveats</li> <li>Randomization Inference theoretical</li> </ul>	Cesario, Plaks, & Higgins, 2006
7	OCT	<ul style="list-style-type: none"> <li>Hypothesis testing</li> <li>R packages</li> <li>Randomization Inference practical</li> </ul>	Revelle, 2004 Gerber & Green, 2012, page 51-86
8	OCT	<ul style="list-style-type: none"> <li>R data transformation and visualization</li> </ul>	Baguley, 2012 <b>ASSIGNMENT due: R Script Homework 1</b>
<b>Threats to Estimations of Treatment Effects</b>			
9	NOV	<ul style="list-style-type: none"> <li>Attrition</li> <li>Bounds: Trimming bounds, and Extreme Value Bounds</li> </ul>	Manski, 1990 Gerber & Green, 2012, page 51-86
10	NOV	<ul style="list-style-type: none"> <li>Interference</li> <li>Contagion / Spillover / Persistence</li> <li>Harnessing Interference into Estimation</li> </ul>	Schultz, 2007 <b>ASSIGNMENT due: R Script Homework 2</b>
<b>Integration of Field Experiments into Social Psychology</b>			
11	NOV	<ul style="list-style-type: none"> <li>Replication Crisis</li> <li>Retraction Watch</li> </ul>	Burger, 2009 Francis, 2012

12	DEC	<ul style="list-style-type: none"> <li>• Mediation</li> <li>•</li> <li>• Uncorrelated errors</li> </ul>	<p>Bullock, Green, &amp; Ha, 2010</p> <p>Editor's Response</p>
<b>Research Proposals</b>			
13	DEC	<ul style="list-style-type: none"> <li>• Current Themes in Social Psychology for field experimentation</li> </ul>	<b>ASSIGNMENT: Proposal presentations</b>
14	DEC	<ul style="list-style-type: none"> <li>• Frontiers in Social Psychology for field experimentation</li> </ul>	<p>Sears, 1986</p> <p><b>ASSIGNMENT: Proposal presentations</b></p>

## 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.
- Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science*. 1-69
- Rosenbaum, P. R. (2002). Observational studies. In *Observational Studies* (pp. 1-17). Springer New York.

### Class 2: Field Experiments: Core Assumptions

- Tversky, A., & Kahneman, D. (1971). Belief in the law of small numbers. *Psychological bulletin*, 76(2), 105-110.
- Gerber, A. S., & Green, D. P. (2012). *Field experiments: Design, analysis, and interpretation*. WW Norton: Chapter 2: Core Assumptions pages 21-44.

### Class 3: Random Assignment

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

### Class 4: One-Sided Noncompliance

- Gerber, A. S., & Green, D. P. (2012). *Field experiments: Design, analysis, and interpretation*. WW Norton. Chapter 5: One-Sided Non-Compliance: pages 131-151

### Class 5: One-Sided Noncompliance

- Gerber, A. S., & Green, D. P. (2012). *Field experiments: Design, analysis, and interpretation*. WW Norton. Chapter 5: One-Sided Non-Compliance: pages 151-166

### Class 6: Covariate Adjustment

- 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), 230-44.
- Hull, J. G., Slone, L. B., Meteyer, K. B., & Matthews, A. R. (2002). The nonconsciousness of self-consciousness. *Journal of personality and social psychology*, 83(2), 406-24.
- Doyen S, Klein O, Pichon C-L, Cleeremans A (2012) Behavioral Priming: It's All in the Mind, but Whose Mind? *PLoS ONE* 7(1). pages 1-9.

### Class 7: Randomization Inference

- Gerber, A. S., & Green, D. P. (2012). *Field experiments: Design, analysis, and interpretation*. WW Norton.: Chapter 5: Statistical Inference and Hypothesis Testing: pages 51-86

### Class 8: Data wrangling, hypothesis testing, and Visualization

- Baguley, T. (2012). *Serious stats: A guide to advanced statistics for the behavioral sciences*. Palgrave Macmillan, Chapter 4: Significance tests, pages 1-20.

### Class 9: Attrition

- Manski, C. F. (1990). Nonparametric bounds on treatment effects. *The American Economic Review*, 80(2), 319-323.
- Gerber, A. S., & Green, D. P. (2012). *Field experiments: Design, analysis, and interpretation*. WW Norton: Chapter 5: Attrition: pages 211-244

### Class 10: Interference

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

### Class 11: 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.

#### **Class 12: 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.

#### **Class 13: Current Themes Proposals**

- 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.

#### **Class 14: Frontier Proposals**

- 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.