

Experimental Research Methods

Course format

Ten double sessions, to be offered in the third quarter (March-July)

Objectives

The objective of this hands-on course is to introduce doctoral students to experimental research methods. The overall aim of the class is to equip students with the knowledge and capacity, and with the concepts and tools, to both conduct experimental research as well as to interpret and critique others' experimental research.

Approach

The course aims to achieve this goal in two ways.

First, on the practical side, students will go through the process of planning, preregistering, conducting, analyzing, and reporting an experiment. Specifically, we will conduct a replication project in which the whole class will jointly work on one replication project (with the goal of actually writing up and publishing the resulting paper).

Second, on the conceptual side, students will develop an experimental design that can answer a research question that stems from their own research interests.

Methodology

The course consists of 10 sessions of 3 hours each (with a fifteen minutes break in between). In each meeting, we will split the time between three activities:

1. **Discussing experimental papers.** Design skills are easiest acquired from (good and bad) examples; the more, the better. This part of the class will follow a seminar discussion format, which means that participants will present and discuss the assigned material. All students are expected to (a) have read **all** assigned readings before meeting each week, and (b) discuss and comment on all the readings listed for that day. A lack of preparation undermines not only your own learning but also brings down the quality of the class. I will cold-call students to summarize readings in class.
2. **Project management**, milestone presentations, and discussion/problem solving for the **replication project**. There will be deliverables and deadlines throughout the class, as all students will be **co-authors** on the replication project paper(s) that we aim to submit to a journal at the end of the term.
3. **Conceptual Input.** Given the technical nature of some of the concepts and tools, there will be a fair amount of lecturing and personal advice (and opinions) on my part. That being said, it is primarily your responsibility to do whatever it takes to learn as much as you can from this class. Rather than just being about receiving good grades, you're expected to be here to acquire fundamental skills to become rigorous (and hopefully successful) researchers.

Deliverables Overview

Overall, there are two kinds of deliverables:

1. Deliverables for the replication project. These include (this list might not be exhaustive):
 - a. Experiment preparation:
 - i. IRB application Draft, IRB application Final, Qualtrics import/rebuilt of original study
 - ii. Ideas for extension, Selection of final ideas for extension, Qualtrics implementation for extension ideas,
 - iii. Preregistration Draft, Preregistration Final, Qualtrics testing and error correction
 - b. Experimental methods documentation
 - i. Methods section Draft, Methods section Final, Screenshot presentation of full experiment
 - c. Experimental results
 - i. Re-analysis original data (& script),
 - ii. Exploratory graphs of new data, Analysis of new data (& script), Analysis of new data (& script) Final, Tables and Figures, Results section Draft, Results section Final, Shareable data, codebook, researchbox
 - d. Paper writing
 - i. Abstract, Introduction, Discussion, Cover letter, Supplementary materials
 - ii. Paper revision and editing
 - e. Re-analysis of the original experiment in the paper selected for replication
2. A presentation of a research question stemming from your own research interests (< 5 minutes pitch), and a presentation of a more extensive experimental design idea that can address this research question

Deadlines

All deliverables are to be sent before 23.59 on the day of the deadline. Late work will automatically result in lower grades. Students should not ask for an extension except in cases of extreme hardship.

There will be deadlines more or less on a weekly basis, potentially twice a week for busy periods. They will be communicated at least one week in advance. **Before** the first session, please submit **the following deliverable**:

<p>Self-introduction (1 page): Who are you + What research ideas do you find exciting?</p> <p>On a second page, include a bibliography of all research papers you've ever written (Bachelor thesis, papers for other MRM courses, etc., including abstracts of the papers). Be ready to have a 2 minutes pitch about yourself and your interests in class</p>	<p>Deadline: April 12, the day before our first class</p>
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Grading

Grading type	Weight	Learning goals
Class Participation	20%	<ul style="list-style-type: none"> Engage in effective scientific communication and discussion Independent and critical thinking
Deliverables Replication Project	60%	<ul style="list-style-type: none"> Conduct experimental research Communicate experimental research
Presentation of Own Research Idea	10%	<ul style="list-style-type: none"> Ask good research questions Develop experimental designs that can address these research questions
Hypotheses	10%	<ul style="list-style-type: none"> Submit five short documents with at least one new hypothesis (you can choose which sessions)

Session Plan and Readings

To tailor the class to students' needs and interests, and to allow for some flexibility once we jointly develop more details of the replication project, I'll only assign readings for the first three sessions, and update the readings for the later sessions only after the class started.

Session	Title of Session & Readings
1 & 2	<p>Overview – Foundations of Experimental Research Methods</p> <p>READINGS</p> <ul style="list-style-type: none"> Alcala, V., Johnson, K., Steele, C., Wu, J., Zhang, D., & Pashler, H. (2022). The tainted altruism effect: A successful preregistered replication. <i>Royal Society Open Science</i>, 9(1), 211152. https://doi.org/10.1098/rsos.211152 Up to three papers that we might select for replication will be added at the latest one week before the first session <p>TO SKIM (get the gist of what they were doing)</p> <ul style="list-style-type: none"> O'Donnell, M., Dev, A. S., Antonoplis, S., Baum, S. M., Benedetti, A. H., Brown, N. D., Carrillo, B., Choi, A. L., Connor, P., Donnelly, K., Ellwood-Lowe, M. E., Foushee, R., Jansen, R., Jarvis, S. N., Lundell-Creagh, R., Ocampo, J. M., Okafor, G. N., Azad, Z. R., Rosenblum, M., ... Nelson, L. D. (2021). Empirical audit and review and an assessment of evidentiary value in research on the psychological consequences of scarcity. <i>Proceedings of the National Academy of Sciences</i>, 118(44), e2103313118. https://doi.org/10.1073/pnas.2103313118 Cohn, A., Maréchal, M. A., Tannenbaum, D., & Zünd, C. L. (2019). Civic honesty around the globe. <i>Science</i>, 365(6448), 70-73. <p>OPTIONAL READINGS</p> <ul style="list-style-type: none"> Mitchell, Gregory (2012), "Revisiting Truth or Triviality: The External Validity of Research in the Psychological Laboratory," <i>Perspectives on Psychological Science</i>, 7 (2), 109-117. Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). <i>Experimental and quasi-experimental designs for generalized causal inference</i>: Wadsworth Cengage learning. Chapter 1 & 14 Campbell, D. T., & Stanley, J. C. (1966). <i>Experimental and quasi-experimental designs for research</i>. Boston: Houghton mifflin Company. Chapter 5. Christensen, L. (2012). Types of designs using random assignment, <i>APA Handbook of Research Methods in Psychology</i>.

3 & 4	<p>Pre-registration</p> <p>READINGS</p> <ul style="list-style-type: none"> • Brandt, M., IJzerman, H., Dijksterhuis, A., Farach, F., Geller, J., Giner-Sorolla, R., Grange, J., Perugini, M., Spies, J., & Veer, A. (2014). The Replication Recipe: What Makes for a Convincing Replication? <i>Journal of Experimental Social Psychology</i>, 50, 217–224. • Simmons, J., Nelson, L., & Simonsohn, U. (2021). Pre-registration: Why and How. <i>Journal of Consumer Psychology</i>, 31(1), 151–162. https://doi.org/10.1002/jcpy.1208 • Who would win, 100 duck-sized strategic ambiguities vs. 1 horse-sized structured abstract? (2021, December 8). The 100% CI. http://www.the100.ci/2021/12/08/who-would-win-100-duck-sized-strategic-ambiguities-vs-1-horse-sized-structured-abstract <p>OPTIONAL READINGS</p> <ul style="list-style-type: none"> • Highhouse, S. (2009). Designing Experiments That Generalize. <i>Organizational Research Methods</i>, 12(3), 554-566. • Spencer, S., Zanna, S., & Fong, G. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. <i>Journal of Personality and Social Psychology</i>, 89, 845-851.
5 & 6	<p>The replication crisis and the pre-registration solution</p> <ul style="list-style-type: none"> • Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-Positive Psychology: Undisclosed Flexibility in Data Collection and Analysis Allows Presenting Anything as Significant. <i>Psychological Science</i>, 22(11), 1359–1366. • [85] Data Replicada #4: The Problem of Hidden Confounds. (2020, March 10). Data Colada. http://datacolada.org/85 <p>TO SKIM (get the gist of what they were doing)</p> <ul style="list-style-type: none"> • Pham, M. T., & Oh, T. T. (2021). Preregistration is neither sufficient nor necessary for good science. <i>Journal of Consumer Psychology</i>, 31(1), 163-176. • Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2021). Pre-registration is a game changer. But, like random assignment, it is neither necessary nor sufficient for credible science. <i>Journal of Consumer Psychology</i>, 31(1), 177-180. • Pham, M. T., & Oh, T. T. (2021). On Not Confusing the Tree of Trustworthy Statistics with the Greater Forest of Good Science: A Comment on Simmons et al.'s Perspective on Pre-registration. <i>Journal of Consumer Psychology</i>, 31(1), 181-185 <p>OPTIONAL READINGS</p> <ul style="list-style-type: none"> • Wilson, T. D., Aronson, E., & Carlsmith, K. (2010). The art of laboratory experimentation. <i>Handbook of social psychology</i>. • Singleton, R., & Straits, B. (1999). <i>Approaches to social research</i> (Third Edition ed.). Oxford: Oxford University Press. Chapters 7 & 8.

7 & 8	<p>Graphical Causal Models and Levels</p> <ul style="list-style-type: none"> Rohrer, J. M. (2018). Thinking Clearly About Correlations and Causation: Graphical Causal Models for Observational Data. <i>Advances in Methods and Practices in Psychological Science</i>, 1(1), 27–42. https://doi.org/10.1177/2515245917745629 Goldstein, D. (2022). Leveling Up Applied Behavioral Economics. In A. Samson (Ed.), <i>The Behavioral Economics Guide 2022</i> (pp. 6-18). https://www.behavioraleconomics.com/be-guide/ <p>TO SKIM (get the gist of what they were doing)</p> <ul style="list-style-type: none"> Sheffer, L., Loewen, P. J., Walgrave, S., Bailer, S., Breunig, C., Helfer, L., Pilet, J.-B., Varone, F., & Vliegenthart, R. (2023). How Do Politicians Bargain? Evidence from Ultimatum Games with Legislators in Five Countries. <i>American Political Science Review</i>, 1–19. Bertrand, M., & Mullainathan, S. (2004). Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination. <i>American Economic Review</i>, 94(4), 991–1013. Lundberg, I., Johnson, R., & Stewart, B. M. (2021.). What Is Your Estimand? Defining the Target Quantity Connects Statistical Evidence to Theory. <i>American Sociological Review</i>, 34.
9 & 10	<p>Validity and detectability</p> <ul style="list-style-type: none"> Simonsohn, U. (2015). Small Telescopes: Detectability and the Evaluation of Replication Results. <i>Psychological Science</i>, 26(5), 559–569. https://doi.org/10.1177/0956797614567341 Datacolada [89] Data Replicada #6: The Problem of (Weird) Differential Attrition http://datacolada.org/89 <p>TO SKIM (get the gist of what they were doing)</p> <ul style="list-style-type: none"> Vazire, S., Schiavone, S. R., & Bottesini, J. G. (2022). Credibility Beyond Replicability: Improving the Four Validities in Psychological Science. <i>Current Directions in Psychological Science</i>, 31(2), 162–168. https://doi.org/10.1177/09637214211067779 Schilke, O. (2018). A Micro-Institutional Inquiry into Resistance to Environmental Pressures. <i>Academy of Management Journal</i>, 16(4), 1431-1466.
11 & 12	<p>Stimuli and stylized paradigms</p> <ul style="list-style-type: none"> Falk, A., & Szech, N. (2013). Morals and Markets. <i>Science</i>, 340(6133), 707–711. https://doi.org/10.1126/science.1231566 Hertwig, R., & Ortmann, A. (2001). Experimental practices in economics: A methodological challenge for psychologists?. <i>Behavioral and Brain Sciences</i>, 24(3), 383-403. <p>TO SKIM (get the gist of what they were doing)</p> <ul style="list-style-type: none"> Ambuehl, S. Can Incentives Cause Harm? Belmi, P., Jun, S., & Adams, G. S. (2022). The “Equal-Opportunity Jerk” Defense: Rudeness Can Obfuscate Gender Bias. <i>Psychological</i>

	<p><i>Science</i>, 33(3), 397-411. (→ skim Intro and Studies 1 and 2 only)</p> <ul style="list-style-type: none"> • Milkman, K. L., Gandhi, L., Patel, M. S., Graci, H. N., Gromet, D. M., Ho, H., ... & Duckworth, A. L. (2022). A 680,000-person megastudy of nudges to encourage vaccination in pharmacies. <i>Proceedings of the National Academy of Sciences</i>, 119(6), 1-6. (→ skim only; have a look at the different experimental conditions tested)
13 & 14	<p>Writing</p> <ul style="list-style-type: none"> • Gernsbacher, M. A. (2018). Writing empirical articles: Transparency, reproducibility, clarity, and memorability. <i>Advances in methods and practices in psychological science</i>, 1(3), 403-414. • Read multiple pages from this site, especially on the paragraph https://blog.cbs.dk/inframethodology/?page_id=612 and on the paper https://blog.cbs.dk/inframethodology/?page_id=614 <p>TO SKIM (get the gist of what they were doing)</p> <ul style="list-style-type: none"> • https://janfeld.weebly.com/uploads/1/1/8/9/118933153/writing_matters.pdf • Mislavsky, R., Dietvorst, B., & Simonsohn, U. (2020). Critical Condition: People Don't Dislike a Corporate Experiment More Than They Dislike Its Worst Condition. <i>Marketing Science</i>, 39(6), 1092–1104.
15 & 16	<p>Experiments in Finance</p> <ul style="list-style-type: none"> • Brown, M., Trautmann, S. T., & Vlahu, R. (2017). Understanding Bank-Run Contagion. <i>Management Science</i>, 63(7), 2272–2282. • Fischbacher, U., Hoffmann, G., & Schudy, S. (2017). The Causal Effect of Stop-Loss and Take-Gain Orders on the Disposition Effect. <i>The Review of Financial Studies</i>, 30(6), 2110–2129. https://doi.org/10.1093/rfs/hhx016 <p>TO SKIM (get the gist of what they were doing)</p> <ul style="list-style-type: none"> • Bullock, J. G., Green, D. P., & Ha, S. E. (2010). Yes, but what's the mechanism? (Don't expect an easy answer). <i>Journal of Personality and Social Psychology</i>, 98(4), 550–558. https://doi.org/10.1037/a0018933 • Spencer, S., Zanna, S., & Fong, G. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. <i>Journal of Personality and Social Psychology</i>, 89, 845-851.
17 & 18	<p>Field experimentation</p> <ul style="list-style-type: none"> • Bohren, J. A., Imas, A., & Rosenberg, M. (2019). The Dynamics of Discrimination: <i>Theory and Evidence</i>. <i>American Economic Review</i>, 109(10), 3395–3436. • Datacolada [17] No-way Interactions http://datacolada.org/17 <p>TO SKIM (get the gist of what they were doing)</p>

	<ul style="list-style-type: none"> • Spiller, S. A., Fitzsimons, G. J., Lynch Jr, J. G., & McClelland, G. H. (2013). Spotlights, floodlights, and the magic number zero: Simple effects tests in moderated regression. <i>Journal of marketing research</i>, 50(2), 277-288. • Milkman, K. L., Minson, J. A., & Volpp, K. G. M. (2013). Holding the Hunger Games Hostage at the Gym: An Evaluation of Temptation Bundling. <i>Management Science</i>, 60(2), 283–299. https://doi.org/10.1287/mnsc.2013.1784 • Chatterji, A., Delecourt, S., Hasan, S., & Koning, R. (2019). When does advice impact startup performance? <i>Strategic Management Journal</i>, 40(3), 331–356. https://doi.org/10.1002/smj.2987
19 & 20	<p>Paradigms</p> <ul style="list-style-type: none"> • Lejarraga, T., & Hertwig, R. (2021). How experimental methods shaped views on human competence and rationality. <i>Psychological Bulletin</i>, 147(6), 535–564. https://doi.org/10.1037/bul0000324 • Blavatsky, P., Ortmann, A., & Panchenko, V. (2022). On the Experimental Robustness of the Allais Paradox. <i>American Economic Journal: Microeconomics</i>, 14(1), 143–163. https://doi.org/10.1257/mic.20190153

Additional Selected Readings

Overview

- American Psychological Association (2010) Publication Manual of the American Psychological Association, 6th Ed. DC: American Psychological Association.
- Pelham, B. W., & Blanton, H. (2006). Conducting research in psychology: Measuring the weight of smoke (3rd edition). Belmont, CA: Wadsworth.
- Rosenthal, Robert and Ralph Rosnow (2007), Essentials of Behavioral Research: Methods and Data Analysis. 3rd ed. New York, McGraw Hill.
- Shadish, William R., Thomas D. Cook, and Donald T. Campbell (2002). Experimental and Quasi-Experimental Designs for Generalized Causal Inference. Boston: Houghton Mifflin.

Methods

- John, O. P. & Benet-Martinez, V. (2000). Measurement: Reliability, construct validation, and scale construction. In Reis, H. T., & Judd, C. M. (Eds.) *The Handbook of Research Methods in Personality and Social Psychology* (pp. 339-369). New York: Cambridge University Press.

Survey Design

- Bergkvist, L., & Rossiter, J. R. (2007). The predictive validity of multiple-item versus singleitem measures of the same constructs. *Journal of Marketing Research*, 44, 175-184.
- Bradburn, Norman, Seymour Sudman and Brian Wansink (2004). *Asking Questions: The Definitive Guide to Questionnaire Design – For Market Research, Political Polls, and Social and Health Questionnaires*. CA: John Wiley and Sons.
- Krosnick, J. A., & Presser, S. (2010). Question and questionnaire design. In P. Marsden & J.D. Wright (Eds.), *Handbook of Survey Research* (Vol. 2, pp. 263–314). Bingley, UK: Emerald Group Publishing Limited.
- Nisbett and Wilson (1977), "Telling More than we can know: Verbal Reports on Mental Processes," *Psychological Bulletin*, 67, 356-367.

Schwarz, Norbert (1999), "Self-reports: How the questions shape the answers," *American Psychologist*, February, 93-105.

Analysis & Statistics

Fitzsimons, Gavan J. (2008), "Death to Dichotomizing," *Journal of Consumer Research*, 35 (June), 5-8.

Preacher, Kristopher J. and Andrew F. Hayes (2004), "SPSS and SAS procedures for Estimating Indirect Effects In Multiple Mediator Models," *Behavioral Research Methods, Instruments, and Computers*, 36 (4), 717-31.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Hillsdale: Erlbaum.

Honig, B., Lampel, J., Siegel, D., & Drnevich, P. (2017). Special Section On Ethics in Management Research: Norms, Identity, and Community in the 21st Century. *Academy of Management Learning & Education*, 16(1), 84-93. doi: 10.5465/amle.2017.0023