Clinical Seminar: Research Methods in Clinical Psychology
Psychology 692
Fall 2019
Fridays 11:30 - 2:20
PSYC 2102

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Readings

All readings can be found on Blackboard.

Course Description

The purpose of this course is to provide an in-depth introduction to the fundamentals of research methods and design. Readings and in-class discussions will focus on theoretical and practical issues involved in the conception, implementation, and evaluation of empirical research in psychology. A secondary goal of the course is to facilitate exchange of methods, interests, and theories between students. The final goal is the completion of a study preregistration that can serve as the foundation for the first-year project or master's thesis.

The content of the course ranges widely. The course begins with a discussion of the scientific approach and its applicability to the science of psychology. From there, the course moves into a discussion of the philosophy of science, the role of theory, and hypothesis testing. Only after these philosophical and theoretical fundamentals are firmly in hand will the course move to methodological issues. The course includes content on the current replication crisis in psychology, the practices that contributed to it, and the means to overcome it. Additionally, the course covers issues in sampling (e.g., randomization and size), measurement (e.g., reliability and validity), and design (e.g., control). The course will examine nonexperimental research as well as experimental and quasi-experimental approaches.

The process of the course will be one of mediated discussion. The instructor will occasionally lecture for some (short) portion of the class, preferring to answer questions and provide clarification as the need arises. The primary vehicle of learning, however, is expected to be student reading, discussion, and interaction. Students will learn more from the readings than they will from any lecture. This process requires active participation and adequate preparation of each and every member of the class. To help ensure this participation, students will be assigned responsibility for leading discussion on certain weeks; this responsibility involves generating discussion points and questions on the assigned topics.

Course Requirements

The requirements for the class are straightforward: regular attendance and participation in class (notice that participation requires preparation), the submission of one reaction paper per week, good performance on two exams, and completion of a preregistration for a study. Additionally, each student must complete and pass the CITI (Collaborative Institutional Training Initiative) Human Research Protections Training Course—specifically the more advanced Social Behavioral Research for Investigators and Key Personnel Learner Group module. Student's performance on each will determine their grade for the course.

1. CITI Training (required for grade): The Collaborative Institutional Training Initiative (CITI)

Human Research Protections Training Course is a self-paced web-based training program covering core ethical concepts and regulatory requirements. Purdue University requires all individuals engaged in the conduct of human subject research to have current CITI certification. Students must complete the Social Behavioral Research for Investigators and Key Personnel Learner Group module (https://www.irb.purdue.edu/training/). Once completed, students must send the instructor a copy of their certification.

2. Participation (20%): Attendance at all class meetings is required. Regular and significant contributions to class discussion are expected (and should be based on the readings). Students will be responsible for certain weeks; this responsibility involves preparation and generation of discussion points and questions of clarification. Students must turn in copies of their questions and discussion points.

2. Reaction papers (10%): Each week students will submit a two-page reaction paper. This paper is to be a reaction to or consolidation/appreciation of the readings for the week. At the very minimum, this paper should demonstrate that students have read the assignments and given some thought to them. Ideally, students will use the reaction paper as an opportunity to relate the readings to articles in their content areas, to integrate readings from previous weeks with the current readings, and/or to begin an interesting and important discussion. These papers will be leniently graded from 1-10 points (mostly from 7-10 points).

3. Exams (20% each): Two exams will be given, one on October 18 and the other on December 6. The format of the exams will be essay and short answer (probably 3-4 questions on each exam). Students will receive study guides in advance of the exams in order to help structure their studying.

4. Research proposal (30%): The primary product of this course will be an OSF (Open Science Framework https://osf.io/) study preregistration, using the relevant OSF preregistration template, that presumably reflects the first-year project or thesis proposal. A preliminary draft of the proposal is due no later than November 22nd. Each draft will be reviewed by two students in the class, and each student will review two different pre-registrations. Each review should consist of 2-3 typed pages of suggestions and constructive criticisms, and will be read by the student submitting the proposal as well as by the instructor.

Academic Integrity

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern.

Students with Disabilities

Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at:

drc@purdue.edu or by phone: 765-494-1247

Course Outline and Reading Schedule

August 23 Course Overview

August 30 Thinking Rigorously and Creatively [Don]

Feynman, R. P. (1974). Cargo cult science: Some remarks on science, pseudoscience, and learning how to not fool yourself. *Caltech's 1974 commencement address.* http://calteches.library.caltech.edu/51/2/CargoCult.pdf

Spellman, B. A. (2015). A short (personal) future history of revolution 2.0. *Perspectives on Psychological Science, 10,* 886-899.

McGuire, W. J. (1997). Creative hypothesis generating in psychology: Some useful heuristics. *Annual Review of Psychology, 48, 1-30.*

Gray, K., & Wegner, D. M. (2013). Six guidelines for interesting research. *Perspectives on Psychological Science, 8*, 549-553.

Wicker, A.W. (1985). Getting out of our conceptual ruts: Strategies for expanding conceptual frameworks. *American Psychologist*, *40*, 1094-1103.

September 6 Philosophy of Science & Science of Psychology [Don]

Holz, P., & Monnerjahn, P. (2016). Falsificationism is not just 'potential' falsifiability, but requires 'actual' falsification: Social psychology, critical rationalism, and progress in science. *Journal for the Theory of Social Behaviour, 47*, 348-362.

Haig, B.D. (2005). An abductive theory of scientific method. *Psychological Methods, 10*, 371-388.

Gholson, B., & Barker, P. (1985). Kuhn, Lakatos, and Laudan: Applications in the history of physics and psychology. *American Psychologist, 40*, 755-769.

September 13 The Replication Crisis [Skye]

Ioannidis, J. P. (2005). Why most published research findings are false. *PLoS Med, 2*, e124.

Open Science Collaboration (2015). Estimating the reproducibility of psychological science. *Science, 349*.

Klein, R.A., et al. (2014). Investigating Variation in Replicability" A "Many Labs" Project. *Social Psychology, 45*, 142-152.

Klein, R.A., et al. (2018). Many Labs 2: Investigating variation in replicability across sample and setting. *Advances in Methods and Practices in Psychological Science, 1*, 443-490.

Pashler, H., & Harris, C.R. (2012). Is the replicability crisis overblown? Three arguments examined. *Perspectives on Psychological Science, 7*, 531-536.

September 20 **No Class**

September 27 NHST [Molly]

Cohen, J. (1994). The earth is round (p<.05). *American Psychologist, 49*, 997-1003.
Cortina, J. M., & Landis, R. S. (2011). The Earth is not round (p = .00). *Organizational Research Methods, 14*, 332-349.
Benjamin, D. J., Berger, J. O., Johannesson, M., Nosek, B. A., Wagenmakers, E.-J., … & Johnson, V.E. (2018). Redefine statistical significance. *Nature Human Behavior, 2,* 6-10.
Lakens, D., Adolfi, F. G., Albers, C. J., Anvari, F Apps, M. A. J., … & Zwaan, R. A. (2018). Justify your alpha. *Nature Human Behavior, 2,* 168-171.
Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society, 57*, 289-300,
Cumming, G. (2014). The new statistics: Why and how. *Psychological Science, 25*, 7-29.

October 4 Power, researcher dfs, and Bias [Sam]

Abraham, W. T., & Russell, D. W. (2008). Statistical power analysis in psychological research. *Social and Personality Psychology Compass, 2,* 283-301.
Gervais et al. (2015). A powerful nudge? Presenting calculable consequences of underpowered research shifts incentives towards adequately powered designs. *Social Psychological and Personality Science*, *6*, 847-854.
Simmons, J. P., Nelson, L D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. Psychological Science, 22, 1359-1366.
Kerr, N. (1998). HARKing: Hypothesizing after the results are known. *Personality and Social Psychology Review*, *2*, 196-217.
Gelman, A., & Loken, E. (2014). The statistical crisis in science. *American Scientist, 102,* 460-465.
John, L. K., Loewenstein, G., & Prelec (2012). Measuring the prevalence of questionable research practices with incentives for truth telling. *Psychological Science, 23*, 524-532.
Ferguson, C.J., & Heene, M. (2012). A vast graveyard of undead theories: Publication bias and psychological science's aversion to the null. *Perspectives on Psychological Science, 7*, 555-561.
Funder, D.C., & Ozer, D.J. (2019). Evaluating effect size in psychological research: Sense and nonsense. *Advances in Methods and Practices in Psychological Science, 2*, 156-168.

October 11 Fixing Psychology [Kim]

Nosek, B. A., Spies, J. R., & Motyl, M. (2012). Scientific Utopia: II: Restructuring incentives and practices to promote truth over publishability. *Perspectives on Psychological Science, 7,* 615-631
Wagenmakers, E.J., Wetzels, R., Borsboom, D., van der Maas, H.L.J., & Kievit, R.A. (2012). An agenda for purely confirmatory research. *Perspectives on Psychological Science, 7,* 632-638.
Ioannidis, J.P.A. (2012). Why science is not necessarily self-correcting. *Perspectives on Psychological Science, 7*, 645-654.
Rubin, M. (2017). An evaluation of four solutions to the Forking paths problem: Adjusted alpha, preregistration, sensitivity analyses, and abandoning the Neyman-Pearson approach. *Review of*

General Psychology, 21, 321-329.
Funder, D. C., et al. (2014). Improving the dependability of research in personality and social psychology: Recommendations for research and educational practices. *Personality and Social Psychology Review, 18*, 3-12.
Munafo, M. R., et al. (2017). A manifesto for reproducible science. *Nature Human Behaviour, 1*, 0021.
Chambers, C. D., et al. (2014). Instead of "playing the game" it is time to change the rules: Registered Reports at AIMS Neuroscience and beyond. *AIMS Neuroscience, 1*, 4-17.
Benning, S.D., Bachrach, R.L., Smith, E.A., Freeman, A.J., & Wright, A.G.C. (2019), The registration continuum in clinical science: A guide toward transparent practices. *Journal of Abnormal Psychology, 128*, 528-540.
Schonbrodt, F.D., & Perugini, M. (2013). At what sample size do correlations stabilize? *Journal of Research in Personality, 47*, 609-612,

October 18 Ethics [Melissa]

First Exam

Levenstein, M. C., & Lyle, J. A. (2018). Data: Sharing is caring. *Advances in Methods and Practices in Psychological Science, 1*, 95-103.
Walsh, C.G., Xia, W., Li, M., Denny, J.C., Harris, P.A., & Malin, B. (2018). Enabling Open-Science initiatives in clinical psychology and psychiatry without sacrificing patients' privacy: Current practices and future challenges. *Advances in Methods and Practices in Psychological Science, 1*, 104-114.
Soderberg, C.K. (2018). Using OSF to share data: A step-by-step guide. *Advances in Methods and Practices in Psychological Science, 1*, *115-120.*
Meyer, M. N. (2018). Practical tips for ethical data sharing. *Advances in Methods and Practices in Psychological Science, 1*, 131-144.
American Psychological Association (2002). Ethical principles of psychologists and code of conduct. *American Psychologist, 57*, 1060-1073.
Fine, M.A. & Kurdek. L.A. (1993). Reflections on determining authorship credit and authorship order on faculty-student collaborations. *American Psychologist, 48*, 1141-1147.

October 25 Psychometrics: Reliability [Allycen]

LeBreton, J.M., & Senter, J.L. (2008). Answers to 20 questions about interrater reliability and interrater agreement. *Organizational Research Methods, 11*, 815-852.
Revelle, W., & Condon, D.M. (2019, August 5). Reliability from α to ω: A tutorial. *Psychological Assessment.*
Cranford, J.A., Shrout, P.E., Iida, M., Rafaeli, E., Yip, T., & Bolger, N. (2006). A procedure for evaluating sensitivity to within-person change: Can mood measures in diary studies detect change reliably? *Personality and Social Psychology Bulletin, 32*, 917-929.
Shavelson, R.J., Webb, N.M., & Rowley, G.L. (1989). Generalizability theory. *American Psychologist, 44*,

922-932.

November 1 Psychometrics: Validity [Addy]

Clark, L.A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, *7*, 309-319.

Cronbach, L.J., & Meehl, P.E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, *52*, 281-302.

Haynes, S. N., Richard, D. C. S., & Kubany (1995). Content validity in psychological assessment: A functional approach to concepts and methods. *Psychological Assessment, 7,* 238-247.

Smith, G.T., McCarthy, D.M., & Zapolski, T.C.B. (2009). On the value of homogeneous constructs for construct validation, theory testing, and the description of psychopathology. *Psychological Assessment, 21*, 272-284.

Kazdin, A.E. (2003). *Research Design in Clinical Psychology (4th edition)*. Boston, MA: Allyn & Bacon. Chapter 3: Drawing Valid Inferences II.

November 8 Experimental Design: Internal Validity [Roslyn]

Kazdin, A.E. (2003). *Research Design in Clinical Psychology (4th edition)*. Boston, MA: Allyn & Bacon. Chapter 2: Drawing Valid Inferences I.

Kazdin, A.E. (2003). *Research Design in Clinical Psychology (4th edition)*. Boston, MA: Allyn & Bacon. Chapter 4: Sources of Artifact and Bias.

Kazdin, A.E. (2003). *Research Design in Clinical Psychology (4th edition)*. Boston, MA: Allyn & Bacon. Chapter 6: Experimental Research.

Hsu, L.M. (1989). Random sampling, randomization, and equivalence of contrasted groups in psychotherapy outcome research. *Journal of Consulting and Clinical Psychology*, *57*, 131-137.

November 15 Experimental Design: External Validity [Caroline]

Mook, D.G. (1983). In defense of external invalidity. *American Psychologist, 38*, 379-387.

Sue, S. (1999). Science, ethnicity, & bias: Where have we gone wrong? *American Psychologist, 54*, 1070-1077.

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences, 33,* 61-83.

Rad, M. S., Martingano, A. J., & Ginges, J. (2018). Toward a psychology of Homo sapiens: Making psychological science more representative of the human population. *Proceedings of the National Academy of Sciences, 115*, 11401-11405.

Does, S., Ellemers, N., Dovidio, J. F., Norman, J. B., Mentovich, A., van der Lee, R., & Goff, P. A. (2018). Implications of research staff demographics for psychological science. *American Psychologist, 73*, 639-650.

November 22 Nonexperimental Approaches/Mediation and Moderation [Taylor]

Draft of Pregistration is Due

Mediation/Moderation:

Baron, R.M. & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *5*, 1173-1182.

MacKinnon, D.P., Krull, J.L., & Lockwood, C.M. (2000). Equivalence of the mediation, confounding, and suppression effect. *Prevention Science, 1*, 173-181.

Longitudinal Studies:

Maughan, B., Taylor, A., Caspi, A., & Moffitt, T.E. (2004). Prenatal smoking and early childhood conduct problems. *Archives of General Psychiatry, 61*, 836-843.

Natural Experiments:

Caspi, A., Lynam, D., Moffitt, T.E., & Silva, P. (1993). Unraveling girls' delinquency: Biological, dispositional, and contextual contributions to adolescent misbehavior. *Developmental Psychology, 29*, 19-30.

Evans, G.W., Bullinger, M., & Hygge, S. (1998). Chronic noise exposure and physiological response: A prospective study of children living under environmental stress. *Psychological Science*, *9*, 75-77.

Behavioral Genetics:

Moffitt, T.E. (2005). The new look of behavioral genetics in developmental psychopathology: Gene-environment interplay in antisocial behaviors. *Psychological Bulletin, 131*, 533-554.

Rutter, M. (2005). Environmentally mediated risks for psychopathology: Research strategies and findings. *Journal of the American Academy of Child and Adolescent Psychiatry, 44*, 3-18.

Bonus articles: Additional reading – not required, but for your reference:

Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]. Retrieved from http://www.afhayes.com/public/process2012.pdf

Preacher, K.J., & Hayes, A.F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*, 717-731

November 29 **No Class**

December 6 Issues in Psychopathology [Kaela]

Exam 2

Chapman, L.C. & Chapman, J.P. (1973). *Disordered thought in schizophrenia*. Englewood Cliffs, N.J.: Prentice-Hall. (Chapter 3: differential deficit sections)

Miller, M.B., Chapman, J.P., Chapman, L.J., & Collins, J. (1995). Task difficulty and cognitive deficits in schizophrenia. *Journal of Abnormal Psychology*, *104*, 251-258.
Sher, K., & Trull, T.J. (1996). Methodological issues in psychopathology research. *Annual Review of Psychology*, *47*, 371-400.
Angold, A., Costello, E.J., & Erkanli, A. (1999). Comorbidity. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *40*, 5787.
Lynam, D.R., Hoyle, R.H., & Newman, J.P. (2006). The perils of partialling: Cautionary tales from aggression and psychopathy. *Assessment, 13*, 328-341.

December 10 Preregistration is due

Resources available on the internets: Many researchers have turned to the internet as a means for faster and potentially broader dissemination of their research, both content-related and methodological research. In fact, these modes of dissemination are used heavily by many Open Science advocates. I suggest that sudents become familiar with the following resources:

Center for Open Science (https://cos.io) and its affiliated site—*Open Science Framework* (https://osf.io/). These two sites provide information relevant to the Open Science Movement, a platform for posting pregistration, pre-prints, and data. They are also searchable which allows one to read very current research.

*PsyArXiv (*https://psyarxiv.com/). This is a free preprint service for the psychological sciences.

Twitter is an excellent resources for keeping abreast of new research. I suggest following the folks I list below (under blog posts).

Blogs
· Hilda Bastian, "Absolutely Maybe": http://blogs.plos.org/absolutely-maybe/
· Christina Bergmann & Sho Tsuji, "CogTales": https://cogtales.wordpress.com/
· Dorothy Bishop, "Bishop Blog": http://deevybee.blogspot.co.uk/
· Nick Brown: http://steamtraen.blogspot.de/
· Albert Cairo, "the functional art": http://www.thefunctionalart.com/
· Lorne Campbell: http://www.lornecampbell.org/
· Alexander Etz: "The Etz Files": https://alexanderetz.com/
· David Funder, "Funderstorms": https://funderstorms.wordpress.com/
· Roger Giner-Sorolla, "Approaching Signinficance": https://approachingblog.wordpress.com/
· Andrew Gelman, "Statistical Modeling, Causal Inference, & Social Science: http://andrewgelman.com/
· Oliva Guest, "Neuroplausible": http://neuroplausible.com/
· James Heathers: https://medium.com/@jamesheathers
· Daniel Lakens, "The 20% Statistician": http://daniellakens.blogspot.co.uk/

· Alison Ledgerwood, "Incurably Nuanced": http://incurablynuanced.blogspot.com/
· Leif, Simmons & Simonsohn, "Data Colada": http://datacolada.org/
· Sara Locatelli, "Deeply Trivial": http://www.deeplytrivial.com/
· Kristoffer Magnusson, "R Psychologist": http://rpsychologist.com/
· Deborah Mayo, "Error Statistics Philosophy": https://errorstatistics.com/
· Richard Morey, "Statistical modeling, Bayesian inference…": https://medium.com/@richarddmorey
· Neuroskeptic: https://blogs.discovermagazine.com/neuroskeptic/
· Jeff Rouder, "Invariances": http://jeffrouder.blogspot.co.uk/
· Guillaume Rousselet, "Basic Statistics": https://garstats.wordpress.com/
· Scheel, Arslan, Elson, & Rohrer, "The 100% CI": http://www.the100.ci/
· Uli Schimmack, "Replicability-Index": https://replicationindex.wordpress.com
· Felix Schonbrodt: http://www.nicebread.de/
· Sanjay Srivastava, "The Hardest Science": https://hardsci.wordpress.com/
· Simine Vazire, "Sometimes I'm Wrong": http://sometimesimwrong.typepad.com/
· Matti Vuore: https://mvuorre.github.io/post/
· E.J. Wagenmakers, "Bayesian Spectacles": https://www.bayesianspectacles.org/
· Tal Yarkoni, "[citation needed]": http://www.talyarkoni.org/blog/
· Rolf Zwaan, "Zeitgeist": https://rolfzwaan.blogspot.de/

Podcasts:
· The Black Goat: http://www.theblackgoatpodcast.com/
· Two Psychologists Four Beers: https://fourbeers.fireside.fm/
· Everything Hertz: https://soundcloud.com/everything-hertz