History and Philosophy of Psychology (HPS 2690)
Prof. E. Machery
Spring 2018

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Class Meetings
T 2:00am-4:25 pm, G28

Office Hours
By appointment. 817CL.

Course Description/Goals
In this course, we will examine the on-going methodological controversies around psychology, cognitive science, and cognitive neuroscience. We will look at the question of replication, statistical reform, measurement of psychological attributes, incentives for a successful science, etc. We will read articles and book chapters by scientists and statisticians in addition to some relevant articles by philosophers of science. There is no prerequisites for this course.

Prerequisites
Graduate standing or permission of instructor.

Texts
Readings will be available on a shared Dropbox folder. You will receive an invitation to join this folder by email. Please **do not drag and drop files** in the shared folder: you would delete them. **Do not annotate these files** either.

Relevant introductory articles include:
Machery, E., and Doris, J. M. (2017). An open letter to our students: Doing interdisciplinary moral psychology. In B. G. Voyer and T. Tarantola (Eds), *Moral Psychology: A multidisciplinary guide* (pp. 119-143). Springer.

Assignments
(1) Readings and participation;
(2) A research paper due at the end of the term.

Research paper
The research paper may be on any subject of relevance to the seminar. To assist you in commencing work, you should submit a brief essay proposal by ***March 13***. It should contain a short paragraph describing the topic to be investigated and give a brief indication of the sources you intend to use. It may, but need not, be based on the seminar presentation. I advise you to talk to me about possible topics as soon as possible. The

paper should have the form and the length of a short journal article (no less than 4000 and no more than ***7000 words***). The deadline is ***April 24*****, 12:00 pm (send it by *e-mail*)**. **I do NOT issue incomplete grades**, save in extraordinary circumstances. In return for the rigidity of the deadline, the seminar will not meet in the final week of term (i.e., *no class April 24*).

Assessment
Your seminar grade will be based on the quality of your research paper due at the end of the term and on your participation.

Class Organization
This course will be based on the discussion of the readings. I will lead the discussion. Participation in class discussion is expected. Reading the articles is of course mandatory. You are expected to attend every class.

Special Needs
If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources and Services (DRS), 140 William Pitt Union, 412 648 7890, drsrecep@pitt.edu, 412 228 5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

COURSE SCHEDULE
(Subject to revision as the semester proceeds)

Tuesday 01/09
Topic: syllabus

Tuesday 01/16
Topic: Is There a Replication Crisis?
Readings:

Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science*, *349*, aac4716.
Simonsohn, U. (2015). Small telescopes: Detectability and the evaluation of replication results. *Psychological Science*, *26*, 559-569.
Gilbert, D. T., King, G., Pettigrew, S., & Wilson, T. D. (2016). Comment on "Estimating the reproducibility of psychological science". *Science*, *351*, 1037-1037.
Etz, A., & Vandekerckhove, J. (2016). A Bayesian perspective on the reproducibility project: Psychology. *PLoS One*, *11*(2), e0149794.

Additional Readings:

Sturm, T., & Mülberger, A. (2012). Crisis discussions in psychology—New historical and philosophical perspectives. *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences*, *43*(2), 425-433.

Marsman, M., Schönbrodt, F. D., Morey, R. D., Yao, Y., Gelman, A., & Wagenmakers, E. J. (2017). A Bayesian bird's eye view of 'Replications of important results in social psychology'. *Royal Society Open Science*, *4*(1), 160426.

Tuesday 01/23

Topic: What is a Replication and What Kind of Replication Should Scientists Do?

Readings:

Schmidt, S. (2009). Shall we really do it again? The powerful concept of replication is neglected in the social sciences. *Review of General Psychology*, *13*, 90.

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

Crandall, C. S., & Sherman, J. W. (2016). On the scientific superiority of conceptual replications for scientific progress. *Journal of Experimental Social Psychology*, *66*, 93-99.

Machery, E. (ms). What is a replication?

Additional Reading:

Zwaan, R., Etz, A., Lucas, R. E., & Donnellan, M. B. (Forthcoming). Making replication mainstream. *Behavioral and Brain Sciences*.

Tuesday 01/30

Topic: Is Reproducibility Important in Science?

Readings:

Collins, H. (1985). *Changing order: Replication and induction in scientific practice*. Chicago: University of Chicago Press. Chapters 2 and 3.

Fiedler, K., Kutzner, F., & Krueger, J. I. (2012). The long way from α-error control to validity proper: Problems with a short-sighted false-positive debate. *Perspectives on Psychological Science*, *7*(6), 661-669.

Finkel, E. J., Eastwick, P. W., & Reis, H. T. (2017). Replicability and other features of a high-quality science: Toward a balanced and empirical approach. *Journal of Personality and Social Psychology*, *113*(2), 244.

Wednesday 02/06

Topic: Is Science Full of False Positives and Does it Self-Correct?

Readings:

Ioannidis, J. P. (2005). Why most published research findings are false. *PLoS medicine*, *2*(8), e124.

Romero, F. (2016). Can the behavioral sciences self-correct? A social epistemic study. *Studies in History and Philosophy of Science Part A*, *60*, 55-69.
Smaldino, P. E., & McElreath, R. (2016). The natural selection of bad science. *Royal Society open science*, *3*(9), 160384.

Tuesday 02/13
Topic: Explanations of the Replication Crisis
Readings:

Colquhoun, D. (2014). An investigation of the false discovery rate and the misinterpretation of p-values. *Royal Society open science*, *1*(3), 140216.
Gelman, A. (2015). The connection between varying treatment effects and the crisis of unreplicable research: A Bayesian perspective. *Journal of Management, 41,* 632-643.
Van Bavel, J. J., Mende-Siedlecki, P., Brady, W. J., & Reinero, D. A. (2016). Contextual sensitivity in scientific reproducibility. *Proceedings of the National Academy of Sciences*, *113*(23), 6454-6459.
Bench, S. W., Rivera, G. N., Schlegel, R. J., Hicks, J. A., & Lench, H. C. (2017). Does expertise matter in replication? An examination of the reproducibility project: psychology. *Journal of Experimental Social Psychology*, *68*, 181-184.

Additional Reading:

Gelman,A. (2018) The failure of null hypothesis significance testing when studying incremental changes, and what to do about it. *Personality and Social Psychology Bulletin, 44*(1), 16–23.

Tuesday 02/20 NO CLASS

Wednesday 02/27
Topic: Bad Practices in Psychology
Readings:

Fanelli, D. (2010). “Positive” results increase down the hierarchy of the sciences. *PloS one*, *5*(4), e10068.
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*(11), 1359-1366.
John, L. K., Loewenstein, G., & Prelec, D. (2012). Measuring the prevalence of questionable research practices with incentives for truth telling. *Psychological science*, *23*(5), 524-532.
Fraley, R. C., & Vazire, S. (2014). The N-pact factor: Evaluating the quality of empirical journals with respect to sample size and statistical power. *PloS one*, *9*(10), e109019.
Gelman, A., & Loken, E. (2014). The statistical crisis in science: Data-dependent analysis—a “garden of forking paths”—explains why many statistically significant comparisons don't hold up. *American Scientist*, *102*(6), 460.

Additional Readings:

Bern, D. J. (1987). Writing the empirical journal article. In M. Zanna & J. Darley (Eds.), *The complete academic: A practical guide for the beginning social scientist* (pp. 171-201). New York: Random House.

Kerr, N. L. (1998). HARKing: Hypothesizing after the results are known. *Personality and Social Psychology Review*, *2*(3), 196-217.

Tuesday 03/13 Deadline for term essay proposal

Topic: Social Influences on Science

Readings:

Fanelli, D. (2010). Do pressures to publish increase scientists' bias? An empirical support from US States Data. *PloS one*, *5*(4), e10271.

Ledgerwood, A., & Sherman, J. W. (2012). Short, sweet, and problematic? The rise of the short report in psychological science. *Perspectives on Psychological Science*, *7*(1), 60-66.

Higginson, A. D., & Munafò, M. R. (2016). Current incentives for scientists lead to underpowered studies with erroneous conclusions. *PLoS biology*, *14*(11), e2000995.

Romero, F. (2017). Novelty vs. replicability: Virtues and vices in the reward system of science. *Philosophy of Science, 84,* 1031-1043.

Tuesday 03/20

Topic: The p<.005 Controversy

Readings:

Benjamin, D. J., Berger, J. O., Johannesson, M., Nosek, B. A., Wagenmakers, E. J., Berk, R., ... & Cesarini, D. (2017). Redefine statistical significance. *Nature Human Behaviour*, 1.

McShane, B. B., Gal, D., Gelman, A., Robert, C., & Tackett, J. L. (2017). Abandon statistical significance. *arXiv preprint arXiv:1709.07588*.

Trafimow, D., Amrhein, V., Areshenkoff, C. N., Barrera-Causil, C., Beh, E. J., Bilgiç, Y., ... & Chaigneau, S. E. (2017). Manipulating the alpha level cannot cure significance testing–comments on "Redefine statistical significance". *PeerJ Preprints*.

Lakens, D., Adolfi, F. G., Albers, C. J., Anvari, F., Apps, M. A. J., Argamon, S. E., & Zwaan, R. A. (2017). Justify your alpha: A response to “Redefine statistical significance”. *Retrieved from psyarxiv. com/9s3y6*.

Machery, E. ms. Thoughts on the p<.005 controversy.

Tuesday 03/27

Topic: Statistical Reform

Readings:

Wagenmakers, E. J., Wetzels, R., Borsboom, D., & Van Der Maas, H. L. (2011). Why psychologists must change the way they analyze their data: the case of psi:

comment on Bem (2011). *Journal of Personality and Social Psychology, 100*, 426-432.

Simonsohn, U. (2014). Posterior-hacking: Selective reporting invalidates Bayesian results also.

Carlsson, R., Schimmack, U., Williams, D. R., & Bürkner, P. C. (2017). Bayes factors from pooled data are no substitute for Bayesian meta-analysis: Commentary on Scheibehenne, Jamil, and Wagenmakers (2016). *Psychological science*, *28*(11), 1694-1697.

de Heide, R., & Grünwald, P. D. (2017). Why optional stopping is a problem for Bayesians. *arXiv preprint arXiv:1708.08278*.

Wagenmakers, E. J., Marsman, M., Jamil, T., Ly, A., Verhagen, J., Love, J., ... & Matzke, D. (2017). Bayesian inference for psychology. Part I: Theoretical advantages and practical ramifications. *Psychonomic bulletin & review*, 1-23.

Tuesday 04/03

Topic: Transparency, Preregistration, and Other Strategies

Readings:

Nosek, B. A., & Bar-Anan, Y. (2012). Scientific utopia: I. Opening scientific communication. *Psychological Inquiry*, *23*(3), 217-243.

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*(6), 615-631.

Wagenmakers, E. J., Wetzels, R., Borsboom, D., van der Maas, H. L., & Kievit, R. A. (2012). An agenda for purely confirmatory research. *Perspectives on Psychological Science*, *7*(6), 632-638.

Nosek, B. A., & Lakens, D. (2014). Registered reports. *Social Psychology, 45*, 137-141.

Additional Readings:

Hagger, M. S., Chatzisarantis, N. L., Alberts, H., Anggono, C. O., Batailler, C., Birt, A. R., ... & Calvillo, D. P. (2016). A multilab preregistered replication of the ego-depletion effect. *Perspectives on Psychological Science*, *11*(4), 546-573.

Schweinsberg, M., Madan, N., Vianello, M., Sommer, S. A., Jordan, J., Tierney, W., ... & Srinivasan, M. (2016). The pipeline project: Pre-publication independent replications of a single laboratory's research pipeline. *Journal of Experimental Social Psychology*, *66*, 55-67.

Tuesday 04/10

Topic: Evidence Synthesis

Readings:

Braver, S. L., Thoemmes, F. J., & Rosenthal, R. (2014). Continuously cumulating meta-analysis and replicability. *Perspectives on Psychological Science*, *9*(3), 333-342.

Inzlicht, M., Gervais, W., and Berkman, E. (2015). Bias-correction techniques alone cannot determine whether ego depletion is different from zero: Commentary on Carter, Kofler, Forster, & McCullough, 2015. Available at SSRN: https://ssrn.com/abstract=2659409 or http://dx.doi.org/10.2139/ssrn.2659409

Van Elk, M., Matzke, D., Gronau, Q. F., Guan, M., Vandekerckhove, J., & Wagenmakers, E. J. (2015). Meta-analyses are no substitute for registered replications: a skeptical perspective on religious priming. *Frontiers in psychology*, *6*.

Gelman, A., & O'Rourke, K. (2016). Attitudes toward amalgamating evidence in statistics.

Simmons, J. P., & Simonsohn, U. (2017). Power posing: P-curving the evidence. *Psychological Science*, *28*(5), 687-693.

Additional Readings:

Cunningham, M. R., & Baumeister, R. F. (2016). How to make nothing out of something: analyses of the impact of study sampling and statistical interpretation in misleading meta-analytic conclusions. *Frontiers in psychology, 7*.

Simonsohn, U., Nelson, L. D., & Simmons, J. P. (2014). P-curve: a key to the file-drawer. *Journal of Experimental Psychology: General*, *143*(2), 534.

Tuesday 04/17

Topic: Effect Size

Readings:

Richard, F. D., Bond, C. F., Jr., & Stokes-Zoota, J. J. (2003). One hundred years of social psychology quantitatively described. *Review of General Psychology, 7*(4), 331-363.

Gelman, A., & Weakliem, D. (2009). Of beauty, sex and power: Too little attention has been paid to the statistical challenges in estimating small effects. *American Scientist*, *97*(4), 310-316.

Gelman, A., & Carlin, J. (2014). Beyond power calculations: Assessing Type S (sign) and Type M (magnitude) errors. *Perspectives on Psychological Science*, *9*(6), 641-651.

Morey, R. D., Lakens, D. (2017). Why most of psychology is statistically unfalsifiable.

Tuesday 04/24 No Class—Deadline for the term paper