WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

Field Experiments in Education Research
ED PSYCH 711-021 – Spring 2023

Lecture   Tues/Thur 9:30 – 10:45 am
Room   Education Sciences 1053
Credits   3 credits[1]
Instruction   Face-to-face
Website   https://canvas.wisc.edu/courses/332383

Instructor   Dr. James E. Pustejovsky (pronounced "PUHS-tea-UV-ski" or "Pusto" for short)
Pronouns   he/him/his
Office   1082C Educational Sciences
Phone   (608) 262-0842
Email   pustejovsky@wisc.edu
Office hours   TBD

1/24   Course introduction

- Further: Hedges and Schauer (2018). Randomised trials in education in the USA.
- Further: Gueron (2016). The Politics and Practice of Social Experiments: Seeds of a Revolution

1/26   A validity typology

- Primary: Shadish, Cook, & Campbell (2002), chapters 2 and 3.

1/31   Examples of field experiments

- Bring your own!

2/2   Institute of Education Sciences applications

- Primary: IES RFA (2022-84305A or 2022-84324A)

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[1] This class meets for two, 75-minute class periods each week over the Spring semester and carries the expectation that students will work on course learning activities (reading, writing, problem sets, studying, etc) for about 3 hours out of the classroom for every class period.

2/7   **Logic Models and Theories of change**

- Primary: Kekahio et al. (2014). Logic models: A tool for effective program planning, collaboration, and monitoring.
- Primary: Peck (2020). *Experimental Evaluation Design for Program Improvement*, Chapter 2.
- Recommended: McLaughlin & Jordan (2016). Using logic models.

2/9   **Outcome measurement**

- Primary: Seer Standards: High Quality Outcome Measures
- Primary: Schneider (2020). *Making common measures more common* [blog post]. https://ies.ed.gov/director/remarks/5-05-2020.asp

2/14   **Implementation, fidelity, and treatment contrast**

- Primary: Nelson et al. (2012). A procedure for assessing intervention fidelity in experiments testing educational and behavioral interventions.
- Recommended: Hamilton & Scrivener (2018). Measuring treatment contrast in randomized control trials.

2/16   **Implementation (continued)**

- Recommended: Weiss, Bloom, & Bock (2014). A conceptual framework for studying the sources of variation in program effects.

2/21   **Research design and statistical inference**

- Primary: Gerber & Green (2012), chapters 1-2.

2/23   **Individual-level random assignment**

- Primary: Gerber & Green (2012), chapter 3.

2/28   **Balance and covariate adjustment**

- Primary: Gerber & Green (2012), chapter 4.

3/2   **More on balance and covariate adjustment**

- Recommended: Lin (2013). Agnostic notes on regression adjustments to experimental data: Reexamining Freedman's critique.
- Recommended: Morris et al. (2022). Planning a method for covariate adjustment in individually randomized trials: A practical guide.

3/7   **Block randomization and multi-site experiments**

- Primary: Miratrix, Weiss, & Henderson (2021). An applied researcher's guide to estimating effects from multisite individually randomized trials: Estimands, estimators, and estimates.
- Further: Pashley & Miratrix (2021). Block what you can, except when you shouldn't.

3/9   **Block randomization: inference models**

- Primary: Raudenbush & Bloom (2015). Learning about and from a distribution of program impacts using multisite trials.

3/14   **Spring Break (no class)**

3/16   **Spring Break (no class)**

3/21   **Introduction to power analysis**

- Primary: Lakens (2022). Sample size justification.
- Recommended: Dong & Maynard (2013). PowerUp!: A tool for calculating minimum detectable effect sizes and minimum required sample sizes for experimental and quasi-experimental design studies.

3/23   **Power analysis: An extra jolt**

- Recommended: Dong & Maynard (2013)

3/28   **Cluster randomization**

- Primary: Bloom (2005). Randomizing groups to evaluate place-based programs.
- Further: Kahan et al. (2022). Estimands in cluster-randomized trials: Choosing analyses that answer the right question.

3/30   **Cluster randomization (continued)**

- Recommended: Raudenbush (1997). Statistical analysis and optimal design for cluster randomized trials.

4/4   **Power analysis revisited**

- Primary: Dong & Maynard (2013).

4/6   **Non-compliance**

- Primary: Gerber & Green (2012), chapters 5 and 6

4/11   Non-compliance (continued)

- Recommended: Angrist, Imbens, & Rubin (1996). Identification of causal effects using instrumental variables.

4/4   Instrumental variables analysis in practice

- Recommended: Abadie (2003). Semiparametric instrumental variable estimation of treatment response models.
- Further: Raudenbush, Reardon, & Nomi (2012). Statistical analysis for multisite trials using instrumental variables with random coefficients.
- Further: Reardon et al. (2014). Bias and bias correction in multisite instrumental variables analysis of heterogeneous mediator effects.

4/18   Attrition

- Primary: Gerber & Green (2012), chapter 7.

4/20   Attrition (continued)

- Further: Zhao & Ding (2022). To adjust or not to adjust? Estimating the average treatment effect in randomized experiments with missing covariates.
- Further: Lee (2009). Training, wages, and sample selection: Estimating sharp bounds on treatment effects.

4/25   Generalizability

- Primary: Tipton & Olsen (2018). A review of statistical methods for generalizing from evaluations of educational interventions.
- Recommended: Stuart, Bradshaw, & Leaf (2015). Assessing the generalizability of randomized trial results to target populations.

4/27   Generalizability (continued)

- Primary: Tipton & Matlen (2019). Improved generalizability through improved recruitment: Lessons learned from a large-scale randomized trial.
- Recommended: Tipton & Olsen (2022). Enhancing the generalizability of impact studies in education.

5/2   Discussion of research proposals

5/4   Conclusions and reflections