

**EDP 384: Research Design and Methods for Psychology and Education  
Spring 2014, Tues/Thur, 9:30 - 11:00 am  
SZB 444**

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**Overview**

This course will introduce essential concepts and methods used in quantitative empirical research in the fields of education and psychology, in order to prepare students both to be informed consumers of research and to conduct high-quality empirical research of their own. Though the focus is predominantly on quantitative methods, qualitative perspectives will also be presented as counter-points. The course is organized around four main themes: measurement, populations and sampling, experimental causal research, and quasi-experimental causal research. On each theme, we will read relevant theoretical/methodological literature, discuss empirical research in light of those concepts, and develop research proposals using the methods that we discuss. Throughout, emphasis will be placed on building intuition and heuristics regarding research designs and methods, rather than mastering technical details, though some essential statistical concepts will be introduced.

**Readings**

All readings will be posted on Canvas.

**Research proposals and peer reviews**

A major component of this course involves developing short (3-4 page), realistic research proposals that use the methods and tools covered under each theme of the course. Students will develop initial drafts of their proposals, submit them for feedback from their peers, and then revise and resubmit final drafts. Only the final drafts of the proposals will be graded.

**Writing**

It is expected that the research proposals will be well composed, following the style and tone of an academic paper. Students who need assistance with their writing are encouraged to seek help from the Sanger Learning Center (<http://www.utexas.edu/ugs/slc/grad>), which offers free tutoring services for graduate students.

You will need to cite other scholarly work in your assignments, following APA6 format. I highly recommend using reference management software such as [Microsoft EndNote](#), [Zotero](#), or [Mendeley](#). Software like this will make it much easier to format your citations and reference lists.

## **Evaluation**

- Class participation (10%). Students are expected to attend each meeting and to be informed, active participants in class discussions. Besides asking and answering questions during class discussions, other modes of participation include coming to office hours to discuss the course material (but not to discuss grades) and posting thoughtful questions or responses in the online discussion board for the class. Class participation will be evaluated based on my global impression over the entire semester.
- Homework (15%). Periodic homework will consist mostly of short (~1/2 page) essays and exercises to check your comprehension of the reading. Homework must be submitted electronically (via Canvas) by the time and date listed. Late submissions will be marked down 20% per day.
- Proposals (60%). There will be five proposals in all. Each proposal has two due-dates: one for a draft that will be distributed for peer feedback and a second for a final draft. Late submissions on the first draft will lose the benefit of peer review, and will lead to final drafts being marked down 20% per day. Late submissions on the final draft will be marked down 20% per day.
- Peer reviews (15%). Students' reviews of their peers' proposals will be evaluated for thoroughness, relevance, and constructiveness. Late submissions will not be accepted.

## **Academic integrity and plagiarism**

Following the University's honor code, students are expected to maintain absolute integrity and a high standard of individual honor in scholastic work. Assignments and exams must be completed with the utmost honesty, which includes acknowledging the contributions of other sources to your scholastic efforts; avoiding plagiarism; and completing assignments independently unless expressly authorized otherwise. ***Homework assignments or proposals containing any plagiarized material will not be accepted.***

## **ADA accommodations**

The University of Texas at Austin provides upon request appropriate accommodations for qualified students with disabilities. For more information, please contact the Office of the Dean of Students at 471-6259, 471-4671 TTY.

## **Tentative Schedule**

### ***Introduction***

1/14 – Course introduction

1/16 – Proposing, summarizing, and critiquing research

- Chiu, A. W., Langer, D. a, McLeod, B. D., Har, K., Drahota, A., Galla, B. M., ... Wood, J. J. (2013). Effectiveness of modular CBT for child anxiety in elementary schools. *School Psychology Quarterly*, 28(2), 141–53.
- Nese, J. F. T., Biancarosa, G., Cummings, K., Kennedy, P., Alonzo, J., & Tindal, G. (2013). In search of average growth: describing within-year oral reading fluency growth across grades 1-8. *Journal of School Psychology*, 51(5), 625–642.

### ***Measurement***

1/21 – Construct validity

- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston, MA: Houghton, Mifflin and Company. Pp. 33-42, 64-82.
- Messick, S. (1988). The once and future issues of validity: Assessing the meaning and consequences of measurement. In H. Wainer & H. I. Braun (Eds.), *Test validity* (pp. 33–45). Hillsdale, NJ: Lawrence Erlbaum Associates.

1/23 – Reliability

- Crocker, L., & Algina, J. (1986). Procedures for estimating reliability. In *Introduction to Classical and Modern Test Theory*. New York, NY: Holt, Rinehart and Winston.

1/28 – Instrument design

- Schwarz, N. (1999). Self-reports: How the questions shape the answers. *American Psychologist*, 54(2), 93–105.

1/30 – Associational research

- Pekrun, R., Goetz, T., Daniels, L. M., Stupnisky, R. H., & Perry, R. P. (2010). Boredom in achievement settings: Exploring control–value antecedents and performance outcomes of a neglected emotion. *Journal of Educational Psychology*, 102(3), 531–549.
- Neitzel, C., Alexander, J. M., & Johnson, K. E. (2008). Children’s early interest-based activities in the home and subsequent information contributions and pursuits in kindergarten. *Journal of Educational Psychology*, 100(4), 782–797.

2/4 – Effect sizes

- Hedges, L. V. (2008). What are effect sizes and why do we need them? *Child Development Perspectives*, 2(3), 167–171.
- Hedges, L. V., & Nowell, A. (1999). Changes in the Black-White gap in achievement test scores. *Sociology of Education*, 72(2), 111–135.

- (Optional) Hill, C. J., Bloom, H. S., Black, A. R., & Lipsey, M. W. (2008). Empirical benchmarks for interpreting effect sizes in research. *Child Development Perspectives*, 2(3), 172–177.

#### 2/6 – Qualitative counterpoint: Clinical interviews, cognitive interviews

- Ginsburg, H. P. (1997). *Entering the Child's Mind: The Clinical Interview in Psychological Research and Practice*. Cambridge University Press. Chps. 2-3.
- (Optional) Desimone, L. M., & Le Floch, K. C. (2004). Are We Asking the Right Questions? Using Cognitive Interviews to Improve Surveys in Education Research. *Educational Evaluation and Policy Analysis*, 26(1), 1–22.

#### 2/11 – Discussion of measurement instruments

### **Populations and sampling**

#### 2/13 – External validity, probability sampling

- Groves, et al. (2009). *Survey Methodology*. Chp. 1.

#### 2/20 – Two-stage (cluster) sampling and complex sampling

- Groves, et al. (2009). *Survey Methodology*. Chp. 4.

#### 2/18 – Stratification

- West, J., Denton, K., & Reaney, L. M. (2001). The Kindergarten Year: Findings from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99.

#### 2/25 – Missing data

- Schlomer, G. L., Bauman, S., & Card, N. a. (2010). Best practices for missing data management in counseling psychology. *Journal of Counseling Psychology*, 57(1), 1–10.
- (Optional) Graham, J. W. (2009). Missing data analysis: making it work in the real world. *Annual Review of Psychology*, 60, 549–76.

#### 2/27 – Criticisms of probability sampling

- Small, M. L. (2009). 'How many cases do I need?': On science and the logic of case selection in field-based research. *Ethnography*, 10(1), 5–38.
- Duncan, G. J. (2008). When to promote, and when to avoid, a population perspective. *Demography*, 45(4), 763–784.

#### 3/4 – Discussion of survey proposals

### **Causal research: Randomized experiments**

#### 3/6 – Simple randomized experiments

- Siegler, R. S., & Ramani, G. B. (2008). Playing linear numerical board games promotes low-income children's numerical development. *Developmental Science*, 11(5), 655–61.

- Ramani, G. B., & Siegler, R. S. (2008). Promoting broad and stable improvements in low-income children's numerical knowledge through playing number board games. *Child Development*, 79(2), 375–394.

3/11 – No class (Spring Break)

3/13 – No class (Spring Break)

3/18 – Internal validity, causal models

- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston, MA: Houghton, Mifflin and Company. Chp. 8.

3/20 – Power

- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155–159.
- Spybrook, J., Bloom, H. S., Congdon, R., Hill, C. J., Martinez, A., & Raudenbush, S. W. (2011). *Optimal Design Plus Empirical Evidence: Documentation for the “Optimal Design” Software*.

3/25 – Block-randomization and covariate adjustment

- Landa, R. J., Holman, K. C., O'Neill, A. H., & Stuart, E. A. (2011). Intervention targeting development of socially synchronous engagement in toddlers with autism spectrum disorder: A randomized controlled trial. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 52(1), 13–21.
- Becker, C. B., Smith, L. M., & Ciao, A. C. (2006). Peer-facilitated eating disorder prevention: A randomized effectiveness trial of cognitive dissonance and media advocacy. *Journal of Counseling Psychology*, 53(4), 550–555.

3/27 – Cluster-randomized designs

- Bloom, H. S. (2005). Randomizing groups to evaluate place-based programs. In H. S. Bloom (Ed.), *Learning More from Social Experiments: Evolving Analytic Approaches* (pp. 115–172). New York, NY: Russell Sage Foundation.
- Bradshaw, C. P., Mitchell, M. M., & Leaf, P. J. (2009). Examining the effects of schoolwide positive behavioral interventions and supports on student outcomes: Results from a randomized controlled effectiveness trial in elementary schools. *Journal of Positive Behavior Interventions*, 12(3), 133–148.

4/1 – Field issues: compliance & fidelity

- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston, MA: Houghton, Mifflin and Company. Chp. 10.

4/3 – Field issues: attrition

- What Works Clearinghouse. (2013). *Procedures and Standards Handbook (Version 3.0)*, pp. 1-21.

- Stice, E., Rohde, P., Gau, J., & Shaw, H. (2009). An effectiveness trial of a dissonance-based eating disorder prevention program for high-risk adolescent girls. *Journal of Consulting and Clinical Psychology, 77*(5), 825–34.

#### 4/8 – Discussion of proposed field experiments

#### 4/10 – Criticisms of the experimental paradigm

- Raudenbush, S. W. (2005). Learning from Attempts to Improve Schooling: The Contribution of Methodological Diversity. *Educational Researcher, 34*(5), 25–31.
- Howe, K. R. (2004). A Critique of Experimentalism. *Qualitative Inquiry, 10*(1), 42–61.

### **Causal research: Quasi-experiments**

#### 4/15 – Regression discontinuities

- Bloom, H. S. (2012). Modern Regression Discontinuity Analysis. *Journal of Research on Educational Effectiveness, 5*(1), 43–82.
- Gormley, W. T., Gayer, T., Phillips, D., & Dawson, B. (2005). The effects of universal pre-K on cognitive development. *Developmental Psychology, 41*(6), 872–84.

#### 4/17 – Interrupted time series

- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston, MA: Houghton, Mifflin and Company. Pp. 171-206.
- Quesnel, C., Savard, J., Simard, S., Ivers, H., & Morin, C. M. (2003). Efficacy of cognitive-behavioral therapy for insomnia in women treated for nonmetastatic breast cancer. *Journal of Consulting and Clinical Psychology, 71*(1), 189–200.

#### 4/22 – Single-case designs

- Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S. L., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children, 71*(2), 165–179.
- Ross, S. W., & Horner, R. H. (2009). Bully prevention in positive behavior support. *Journal of Applied Behavior Analysis, 42*(4), 747–59.

#### 4/24 – Statistical adjustment

- Gelman, A., & Hill, J. L. (2007). *Data Analysis Using Regression and Multilevel/Hierarchical Models*. New York, NY: Cambridge University Press. Pp. 167-188.
- Belfort, M. B., Rifas-Shiman, S. L., Kleinman, K. P., Guthrie, L. B., Bellinger, D. C., Taveras, E. M., ... Oken, E. (2013). Infant feeding and childhood cognition at ages 3 and 7 years: Effects of breastfeeding duration and exclusivity. *JAMA Pediatrics, 02115*, 1–9.

#### 4/29 – Matching and balancing

- 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*.

- (Optional) Ho, D. E., Imai, K., King, G., & Stuart, E. A. (2007). Matching as nonparametric preprocessing for reducing model dependence in parametric causal inference. *Political Analysis*, 15(3), 199–236.

5/1 – Discussion of quasi-experiment proposals