

**EDP 384: Research Design and Methods for Psychology and Education**  
**Spring 2015, Tues/Thur, 9:30 - 10:50 am**  
**SZB 432**

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### **Course Description**

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 empirical research of their own. 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 and 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.

### **Learning Goals**

By the end of this course, students should be able to...

- Identify and describe the important operational features of different types of research designs (e.g., surveys, randomized experiments, quasi-experimental designs).
- Identify major strengths and weaknesses of different research designs.
- Critique the design of published studies that use quantitative, empirical research methods in terms of construct validity, internal validity, and external validity.
- Construct proposals for empirical research studies using a variety of different research designs.

### **Pre-Requisites**

- EDP 380P Measurement & Evaluation or equivalent training
- EDP 382K Correlation & Regression or equivalent training (or prior consent of the instructor)

## **Readings**

- Required text: Nestor, Paul G., & Schutt, Russell K. (2015). *Research Methods in Psychology: Investigating Human Behavior* (2<sup>nd</sup> edition). Thousand Oaks, CA: Sage Publications, Inc.
- Further readings posted on Canvas.

## **Research Proposals**

It is impossible to learn how to ride a bicycle only by reading about how to pedal and balance. Similarly, one of the best ways—if not the only way—to learn how to design empirical research studies is through practicing. Therefore, a major component of this course involves developing short (8-10 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.*** Students may work on each project in a group of up to three; all students in the group will receive the same grade on the project.

## **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/slcl/grad>), which offers free tutoring services for graduate students.

Students 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.

## **Article Presentations**

Over the course of the semester, we will read and discuss a number of empirical research articles that use the designs discussed in each section of the course. Each student will be in charge of presenting and leading discussion of one article. The presentation should cover: 1) the motivation for the research, 2) the main research question(s), 3) relevant details about how the research was carried out, 4) a succinct summary of the results, and 5) implications of the findings. Through discussion, we will then identify any important shortcomings or critiques of the research.

## **Evaluation**

- Proposals (60%). There will be four 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 (20%). Students' reviews of their peers' proposals will be evaluated for thoroughness, relevance, and constructiveness. Late submissions will not be accepted.
- Article presentation and discussion (10%). Each student will sign up to present and lead discussion of one article over the course of the semester. Presentations and discussions will be evaluated on the extent to which the student has prepared thoroughly.
- 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). Class participation will be evaluated based on the instructor's global impression over the entire semester.

A tentative rubric for assignment of final grades is listed below. ***The instructor reserves the right to modify this rubric.*** Square brackets correspond to  $\leq$  or  $\geq$ ; rounded parentheses correspond to  $<$  or  $>$ .

A	[90, 100]	C+	[74, 77)
A-	[87, 90)	C	[70, 74)
B+	[84, 87)	C-	[67, 70)
B	[80, 84)	D	[60, 67)
B-	[77, 80)	F	[0, 60)

## Attendance

Students are responsible for all of the material presented during class meetings. If a student must miss a class, it is their responsibility to obtain and thoroughly review notes or summaries of the material that they missed. Frequent or unexcused absences will adversely affect a student's participation grade.

## Academic Integrity

Following the University's honor code, students are expected to maintain absolute integrity and a high standard of individual honor in scholastic work. All assignments (projects and presentations) 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. ***Assignments 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.

### **Religious Holidays**

By UT Austin policy, students must notify the instructor of a pending absence due to religious observance at least fourteen days in advance. If the student must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, the student will be given an opportunity to complete the missed work within a reasonable time after the absence, with no penalty.

## Tentative Schedule and Readings

### ***Introduction***

1/20 - Types of research questions

- Nestor & Schutt (2015). Chps. 1-2.

1/22 - Posing research questions

- Fraenkel, Wallen, & Hyun (2008). *How to Design and Evaluate Research in Education*. Chps. 1-2.

1/27 - Reading, summarizing, and critiquing research

- Nese, J. F. T., et al. (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.
- Chiu, A. W., et al. (2013). Effectiveness of modular CBT for child anxiety in elementary schools. *School Psychology Quarterly*, 28(2), 141–53.

### ***Measurement***

1/29 - The validity typology, 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. Chps. 2-3.

2/3 - Reliability and validity

- Nestor & Schutt (2015). Chps. 4 (pp. 81-105) & 5 (pp. 123-134).

2/5 - Questionnaire design

- <http://www.people-press.org/methodology/questionnaire-design/>
- Schwarz, N. (1999). Self-reports: How the questions shape the answers. *American Psychologist*, 54(2), 93–105.

2/10 - More design issues in descriptive and associational research

- 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.
- Grossman, P., Cohen, J., Ronfeldt, M., & Brown, L. (2014). The test matters: The relationship between classroom observation scores and teacher value added on multiple types of assessment. *Educational Researcher*.

2/12 - Effect sizes

- Hedges, L. V. (2008). What are effect sizes and why do we need them? *Child Development Perspectives*, 2(3), 167–171.
- Bloom, H. S., Hill, C. J., Black, A. R., Lipsey, M. W., & Rebeck, A. (2008). Performance trajectories and performance gaps as achievement effect-size benchmarks for educational interventions. *Journal of Research on Educational Effectiveness*, 1(4), 289–328.

2/17 - Discussion of measurement projects

### ***Populations and sampling***

2/19 - External validity, probability sampling

- Nestor & Schutt (2015). Chp. 5.

2/24 - Stratification

- Groves, et al. (2009). *Survey Methodology*. Chps. 1 & 4.

2/26 - Multi-stage (cluster) sampling

- Robinson-Cimpian, J. P., Lubienski, S. T., Ganley, C. M., & Copur-Gencturk, Y. (2014). Teachers' perceptions of students' mathematics proficiency may exacerbate early gender gaps in achievement. *Developmental Psychology*, 50(4), 1262–81. ***Focus on Study 1 only.***

3/3 - Missing data

- Baraldi, A. N., & Enders, C. K. (2010). An introduction to modern missing data analyses. *Journal of School Psychology*, 48(1), 5–37.

3/5 - Discussion of survey sampling projects

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

3/10 - Simple randomized experiments

- Muraven, M., Baumeister, R. F., & Tice, D. M. (1999). Longitudinal improvement of self-regulation through practice: building self-control strength through repeated exercise. *The Journal of Social Psychology*, 139(4), 446–57.
- 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.

3/12 - Theory of randomized experiments, design choices

- Nestor & Schutt, Chps. 6-7.

3/17 and 3/19 – No class (Spring break)

3/19 – No class (Spring break)

3/24 - Block-randomization, covariate adjustment, and power

- NEED POWER READING

3/26 - 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. **Read pp. 115-134 and 141-157.**
- Sumi, W. C., et al. (2012). Assessing the effectiveness of First Step to Success: Are short-term results the first step to long-term behavioral improvements? *Journal of Emotional and Behavioral Disorders*, 21(1), 66–78.

3/31 - Field issues: compliance and 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, pp. 314-340.

4/2 - Field issues: Attrition

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

4/7 - Some examples of experiments

- 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.
- 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.

4/9 - Criticism of the experimental paradigm

- Persons, J. B., & Silberschatz, G. (1998). Are results of randomized controlled trials useful to psychotherapists? *Journal of Consulting and Clinical Psychology*, 66(1), 126–35.
- (Optional) Howe, K. R. (2004). A critique of experimentalism. *Qualitative Inquiry*, 10(1), 42–61.
- (Optional) Raudenbush, S. W. (2005). Learning from attempts to improve schooling: The contribution of methodological diversity. *Educational Researcher*, 34(5), 25–31.

4/14 - Discussion of randomized experiment projects

4/16 – To be determined

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

4/21 - Single-case designs

- Nestor & Schutt (2015), Chp. 9.
- Kamps, D., et al. (2011). Class-Wide Function-Related Intervention Teams: Effects of group contingency programs in urban classrooms. *Journal of Positive Behavior Interventions*, 13(3), 154–167.
- Russell Carter, D., & Horner, R. H. (2009). Adding function-based behavioral support to First Step to Success: Integrating individualized and manualized practices. *Journal of Positive Behavior Interventions*, 11(1), 22–34.
- Saddler, B., Behforooz, B., & Asaro, K. (2008). The effects of sentence-combining instruction on the writing of fourth-grade students with writing difficulties. *The Journal of Special Education*, 42(2), 79–90.

4/23 - Quasi-experimental designs

- Nestor & Schutt (2015), Chp. 8.

4/28 - Statistical adjustment and matching

- Gelman, A., & Hill, J. L. (2007). Data Analysis Using Regression and Multilevel/Hierarchical Models. New York, NY: Cambridge University Press. **Read pp. 167-188.**
- Belfort, M. B., et al. (2013). Infant feeding and childhood cognition at ages 3 and 7 years: Effects of breastfeeding duration and exclusivity. *JAMA Pediatrics*, 02115, 1–9.

4/30 - Regression discontinuities

- 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.
- (Optional) Bloom, H. S. (2012). Modern regression discontinuity analysis. *Journal of Research on Educational Effectiveness*, 5(1), 43–82.

5/5 - 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. **Read pp. 171-206.**

5/7 - Discussion of quasi-experiment projects