EDHD 780 Research Methods

Syllabus Spring 2019
Thursdays 9:30Am
Benjamin Building Room 3233

Instructor: Richard Prather
Office Hours: By appointment
Email: prather1@umd.edu

Textbook: None

Major Grading:
Final Paper and presentation: 50%
Research statement: 20%
Participation including presentations: 30%

Course Overview. EDHD780 is a required course for Human Development Graduate students. The goal of the course is to introduce students to common methodological approaches to the study of human development. This includes conceptualization, problem definition, measurement, sampling and design. The focus of lectures and class discussions will be on applying principles of research design and measurement to issues relevant to developmental and educational psychology. Students' research interests will provide focus for assignments and class discussion. This is a doctoral level course designed for majors in EDHD.

Course Objectives. To help students:
- Gain an understanding about research methodology in human development.
- Understand the scientific method and acquire the ability to formulate research questions.

Develop critical reading, writing, and presentational skills through reading assignments, writing assignments, group discussions of theoretical material, and class presentations of current research findings

Course Requirements

1. Preparation for class and class participation (30%). As part of class activities, students will be called on to discuss/comment on readings.
2. Research Statement (20%). Midterm paper
3. Proposal paper (50%): Guidelines will be distributed in class

Topic Schedule by Week

1. 1/31
Introduction

Introduction discussion. Presentations and discussion of student research areas. Discussion of syllabus and class topics

DEVELOPMENTAL METHODOLOGY AS A CENTRAL SUBDISCIPLINE OF DEVELOPMENTAL SCIENCE (2017) Noel A. Card

Barret (2009) The Future of psychology

2. 2/7
The State of Human Development Methods

McClamrock (1991) Marr's Three Levels: A Re-evaluation. In Mind and Machines.

THE PAST, PRESENT, AND FUTURE OF DEVELOPMENTAL METHODOLOGY (2017) Todd D. Little, Eugene W. Wang, and Britt K. Gorrall

Yoshikawa, H., Weisner, T. S., Kalil, A., & Way, N. (2008). Mixing qualitative and quantitative research in developmental science: Uses and methodological choices. *Developmental Psychology, 44*, 344-354.

3. 2/14
Statistical Approaches in Human Development.

DEVELOPMENTS IN THE ANALYSIS OF LONGITUDINAL DATA (2017) Kevin J. Grimm, Pega Davoudzadeh, and Nilam Ram

Collins, L. (2006) Analysis of Longitudinal data. Annual Review of Psychology. 57

DESIGN-BASED APPROACHES FOR IMPROVING MEASUREMENT IN DEVELOPMENTAL SCIENCE (2017) Jonathan Rush and Scott M. Hofer

4. 2/21
Approaches to the study of Human Development II

Hedges, L. V. (2008). What are effect sizes and why do we need them? *Child Development Perspectives, 2*, 167-171.

Dong, N., Maynard, R. A., & Perez-Johnson, I. (2008). Averaging effect sizes within and across studies of interventions aimed at improving child outcomes. *Child Development Perspectives, 2*, 187-197.

McCartney, K, Burchinal, M. R., & Bub, K. L. (2006). Best practices in quantitative methods for developmentalists. *Monographs of the Society for Research in Child Development*, Vol 71, No. 285.,

5. 2/28
Research Conventions: The curious case of Infant lab drama

The Hardest Science
https://hardsci.wordpress.com/2016/02/11/an-eye-popping-ethnography-of-three-infant-cognition-labs/

The Baby Factory Difficult Research Objects, Disciplinary Standards, and the Production of Statistical Significance
https://pdfs.semanticscholar.org/1d6e/5792e474742aad16f0b50a08accf8919010f.pdf

CogDevSoc Email thread: Best Practices in Infant Cognition

Discuss Midterm Paper Assignment: Research statement

6. 3/7
Demographic characteristic data analysis

Bradley & Corwyn (2002) Socioeconomic status and Child development. Annual Review of Psychology.

Hernandez (1997) Child Development and the Social Demography of Childhood. Child Development, 68, 149-169.

7. 3/14
Midterm paper discussion and in-class critiques

DUE: Midterm paper

8. 3/28
Mathematical Models and Quantitative Methodology

McClelland, J. L. (2009). The Place of Modeling in Cognitive Science. *Topics in Cognitive Science*, *1*(1), 11–38. http://doi.org/10.1111/j.1756-8765.2008.01003.x

Simmering et al (2010) A Dialogue on the Role of Computational Modeling in Developmental Science. Child Development Perspectives.

9. 4/11
Biological Data and Human Development

Bowers, J. S. (2016). The Practical and Principled Problems With Educational Neuroscience. *Psychological Review*, *123*(5), 600–612. http://doi.org/10.1037/rev0000025

Cohen, M. X. (2017). Where Does EEG Come From and What Does It Mean? *Trends in Neurosciences*, *xx*, 1–11. http://doi.org/10.1016/j.tins.2017.02.004

Vliegenthart, J., Noppe, G., Rossum, E. F. C. Van, Koper, J. W., Raat, H., & Akker, E. L. T. Van Den. (2016). Psychoneuroendocrinology Socioeconomic status in children is associated with hair cortisol levels as a biological measure of chronic stress, *65*, 9–14.

10. 4/18
Meta-Science: Replications, pre-registration, OpenScience
REPLICATION, RESEARCH ACCUMULATION, AND META-ANALYSIS IN DEVELOPMENTAL SCIENCE (2017) Noel A. Card. *Monographs of the Society for Research in Child Development*

Nosek et l. (2018) The preregistration revolution. PNAS

Morey, R. D., Chambers, C. D., Etchells, P. J., Harris, C. R., Hoekstra, R., Lakens, D., et al. (2016). The peer reviewers' openness initiative: Incentivizing open research practices through peer review. Royal Society Open Science, 3(1), 150547–7. http://doi.org/10.1098/rsos.150547

Asendorpf, J. B., Conner, M., De Fruyt, F., De Houwer, J., Denissen, J. J. A., Fiedler, K., . . . Wicherts, J. M. (2013). Recommendations for Increasing Replicability in Psychology. European Journal of Personality, 27(2), 108-119.

Estimating the reproducibility of psychological science. *Science* 2015. 28 Aug 2015: Vol. 349, Issue 6251, aac4716 DOI: 10.1126/science.aac4716

https://bold.expert/child-development-research-needs-open-science/

https://www.livescience.com/62072-psychology-preregistration.html

http://www.psychologicalscience.org/publications/psychological_science/preregistration

http://www.apa.org/science/about/psa/2015/08/pre-registration.aspx

https://featuredcontent.psychonomic.org/avoiding-nimitz-hill-with-more-than-a-little-red-book-summing-up-psprereg/

11. 4/25
Big Data and Technology in Human Development

FROM SMALL TO BIG: METHODS FOR INCORPORATING LARGE SCALE DATA INTO DEVELOPMENTAL SCIENCE (2017) Pamela E. Davis-Kean and Justin Jager. *Monographs of the Society for Research in Child Development*

Maria K.Eckstein (2017) Beyond eye gaze: What else can eyetracking reveal about cognition and cognitive development? Developmental Cognitive Neuroscience

-MIT Media lab Language study
https://www.ted.com/talks/deb_roy_the_birth_of_a_word

Soroush Vosoughi, Matthew S. Goodwin, Bill Washabaugh, and Deb Roy. 2012. A portable audio/video recorder for longitudinal study of child development. In Proceedings of the 14th ACM international conference on Multimodal interaction (ICMI '12).ACM, New York, NY, USA, 193-200.

Suanda, S. H., Smith, L. B., & Yu, C. (2016). The Multisensory Nature of Verbal Discourse in Parent–Toddler Interactions. *Developmental Neuropsychology*, *41*(5-8), 324–341. http://doi.org/10.1080/87565641.2016.1256403

https://babieslearninglanguage.blogspot.com/2015/12/the-manybabies-project.html
http://manybabies.stanford.edu/

https://nyu.databrary.org/volume/254

12. 5/2
Small N Designs. WEIRD problems.

MORE THAN JUST CONVENIENT: THE SCIENTIFIC MERITS OF HOMOGENEOUS CONVENIENCE SAMPLES (2017) Justin Jager, Diane L. Putnick, and Marc H. Bornstein

PERSON-SPECIFIC INDIVIDUAL DIFFERENCE APPROACHES IN DEVELOPMENTAL RESEARCH (2017) Michael J. Rovine and Lawrence L. Lo

Philip L. Smith1 · Daniel R. Little1 (2018) Small is beautiful: In defense of the small-N design. Psychonomic Bulletin and Review

13. 5/9/18
Presentations

Further Reading & Edification

Beyond Bar and Line Graphs: Time for a New Data Presentation Paradigm
https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.1002128

APA Publications (2008). Reporting standards for research in psychology. *American Psychologist, 63*, 839-851.

Burchinal, M., & Neebe, E. (2006). I. Data management: Recommeneded practices. *Monographs of the Society for Research in Child Development, 71*(3), 9-23.

van den Eynden, V., Corti, L., Woollard, M., Bishop, L., & Horton, L. (2011). Managing and sharing data: Best practice for researchers. UK Data Archive, University of Essex, United Kingdom.

Kording, K. P., & Mensh, B. (2016). Ten simple rules for structuring papers. bioRxiv, 88278. http://doi.org/10.16373/j.cnki.ahr.150049

How to write a first-class paper. *Nature*
https://www.nature.com/articles/d41586-018-02404-4

Richard Shiffrin, Indiana University: Perspectives on Scientific Progress and Irreproducibility
https://vimeo.com/271774540

Scientific Python
https://www.scipy.org/

Rstats
https://www.statmethods.net/index.html

Multilevel Regression as Default
http://elevanth.org/blog/2017/08/24/multilevel-regression-as-default/

BLACKBOARD
We will be using the University's Blackboard, https://elms.umd.edu. The syllabus, additional readings, and announcements will be posted on Blackboard. Students can login to the website using your University ID and Password. Please let the instructor know if you have trouble accessing the course website.

CLASS POLICIES

Academic integrity: The University of Maryland, College Park has a student-administered Honor Code and Honor Pledge. For more information on the Code of Academic Integrity or the Student Honor Council, please visit http://www.studenthonorcouncil.umd.edu/whatis.html. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. The code prohibits students from cheating, fabrication, facilitating academic dishonesty, and plagiarism. Instances of this include submitting someone else's work as your own, submitting your own work completed for another class without permission, or failing to properly cite information other than your own (found in journals, books, online, or otherwise). Any form of academic dishonesty will not be tolerated, and any sign of academic dishonesty will be reported to the appropriate University officials.

Special needs: If you have a registered disability that will require accommodation, please see the instructor so necessary arrangements can be made. If you have a disability and have not yet registered with the University, please contact Disability Support Services in the Shoemaker Building (301.314.7682, or 301.405.7683 TTD) as soon as possible.

Religious observances: The University of Maryland policy on religious observances states that students not be penalized in any way for participation in religious observances. Students shall be allowed, whenever possible, to make up academic assignments that are missed due to such absences. However, the student must contact the instructor **before** the absence with a written notification of the projected absence, and arrangements will be made for make-up work or examinations.

Course evaluations: As a member of our academic community, students have a number of important responsibilities. One of these responsibilities is to submit course evaluations each term though CourseEvalUM in order to help faculty and administrators improve teaching and learning at Maryland. All information submitted to CourseEvalUM is confidential. Campus will notify you when CourseEvalUM is open for you to complete your evaluations for fall semester courses. Please go directly to the website (www.courseevalum.umd.edu) to complete your evaluations. By completing all of your evaluations each semester, you will have the privilege of accessing online, at Testudo, the evaluation reports for the thousands of courses for which 70% or more students submitted their evaluations.

Missed single class due to illness: Once during a semester, a student's self-authored note will be accepted as an excuse for missing a minor scheduled grading event in a single class session if the note documents the date of the illness, acknowledgement from the student that information provided in the note is correct, and a statement that the student understands that providing false information is a violation of the Code of Student Conduct. Students are expected to attempt to inform the instructor of the illness prior to the date of the missed class.*

Major scheduled grading events: Major Scheduled Grading Events (MSGE) are indicated on the syllabus. The conditions for accepting a self-signed note do not apply to these events. Written, signed documentation by a health care professional, or other professional in the case of non-

medical reasons (see below) of a University-approved excuse for the student's absence must be supplied. This documentation must include verification of treatment dates and the time period for which the student was unable to meet course requirements. Providers should not include diagnostic information. Without this documentation, opportunities to make up missed assignments or assessments will not be provided.

Non-consecutive, medically necessitated absences from multiple class sessions: Students who throughout the semester miss multiple, non-consecutive class sessions due to medical problems must provide written documentation from a health care professional that their attendance on those days was prohibited for medical reasons.

Non-medical excused absences: According to University policy, non-medical excused absences for missed assignments or assessments may include illness of a dependent, religious observance, involvement in University activities at the request of University officials, or circumstances that are beyond the control of the student. Students asking for excused absence for any of those reasons must also supply appropriate written documentation of the cause and make every attempt to inform the instructor prior to the date of the missed class.