Research Design in Developmental Psychology PSYC 524 Course Syllabus Fall 2023

Section 52781D

DRAFT VERSION updated 20 August 2023

Lecture Meeting Time:	T & Th 3:00 - 4:50
Room:	Seeley G. Mudd (SGM), Room 226
Instructor:	Christopher R. Beam, Ph.D.
Office:	Seeley G. Mudd (SGM), Room 934
Office Hours:	Fri 10:00 - 11:00 (or by appointment)
Email:	beamc@usc.edu

1 Required Texts

Judith D Singer and John B Willett. *Applied longitudinal data analysis: Modeling change and event occurrence*. Oxford university press, 2003

Rick H Hoyle. *Handbook of structural equation modeling*. Guilford press, second edition, 2023

2 Course Description & Overview

The focus of this course is on methodological issues associated with the study of development, broadly defined, from a life-span perspective. General areas of concern include the conceptualization of research problems, research design, measurement, and data analysis and modeling. Course goals are to promote: 1) acquisition of knowledge and skills for the formulation of research questions and study design; 2) selection of appropriate measurement devices for longitudinal studies; and 3) application of data analysis for the examination of research issues from a life-span developmental perspective. The course focuses on design and data analytic tools for addressing lifespan developmental questions, ranging from different longitudinal designs (e.g., panel studies, cohort sequential designs, measurement designs) and statistical approaches (e.g., growth modeling, autoregressive simplex structures, trait-state-error models, dual change score models, dynamical systems analysis, and survival modeling) using structural equation modeling and multilevel modeling approaches.

There are both lecture and lab components of the course. Both focus on developing data analytic skills using both R and M*plus*. At the end of the course, students should be able to identify different developmental patterns in their own data, fit a variety of developmental models to settle on the most appropriate model that generated the data, and interpret model fit results and model parameters.

A seminar and workshop atmosphere is desired although the course will consist of didactic instruction and tutorials. Students are encouraged to bring research issues and data pertinent to their own interests to class for discussion and critique.

2.1 Prerequisites

Familiarity with basic statistical methods, data analytic procedures (e.g., exploratory data analysis, multiple linear regression, and logistic regression), and R is presumed.

2.2 Attendance

Student attendance is expected, but no record of attendance will be taken. If students must miss a lecture, be sure to consult with peers or Dr. Beam during office hours to review and/or clarify missed material.

2.3 Blackboard

Announcements and emails will be made via Blackboard. Routinely check the course site for updates, as all students are responsible for keeping track of all updates in this course. All grades will be posted on Blackboard. Grade discrepancies and corrections need to be made prior to registrar office's scheduled final exam date.

3 Student Evaluation

There are no formal examinations. Evaluation and course grades will be based primarily on the preparation and presentation of a research proposal emphasizing the nature of the research question, the design, and the proposed analyses using students' own data. There are 4 assignments throughout the semester that are designed to reinforce learning of the material and are graded based completion. Around week six of the semester, students are asked to turn in a 1-2 page research proposal to receive feed. While the proposal is not graded, feedback on projects earlier in the semester helps to ensure a successful research project. Presentation of the research project will count 30% of the course grade; the written report will count 60% of the course grade; and the assignments count 10% of the course grade. Research presentations should be presented in the format of a conference presentation. Written reports should must follow APA style as though it were being prepared for journal submission. Final written report is due the last day of the semester, December 1, 2023.

Letter grades will be assigned based on the percentage of points earned (traditional rounding rules to 2 decimal places apply):

$A: \ge 93\%$	A-: 90-92.99	
B+: 87-89.99	B: 83-86.99	B-: 80-82.99
C+: 77-79.99	C: 73-76.99	C-: 70-72.99
D+: 67-69.99	D: 63-66.99	D-: 60-62.99
F: < 59.99%		

Late assignments will not be accepted apart from illness, emergency, or universitysponsored athletic events with acceptable documentation and approval from Dr. Beam. Late assignments that meet one of the above criteria must be turned in by a date and time approved by Dr. Beam.

3.1 Makeup Policy

Students who are ill - due to COVID-19 or any other pathogen - should not attend lecture or lab. Please notify Dr. Beam if you are ill.

4 Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the USC Student Handbook (https://policy.usc.edu/studenthandbook/). All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage. The impact of academic dishonesty is far-reaching and is considered a serious offense against the university and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see the student handbook (https://policy.usc.edu/studenthandbook/) or the Office of Academic Integrity's website (https://academicintegrity.usc.edu/), and university policies on Research and Scholarship Misconduct (https://policy.usc.edu/research-and-scholarship-misconduct/).

All students are expected to complete their own work, including problem sets, lab assignments, and knowledge check quizzes. You are encouraged to ask one another for help in the laboratory sessions, but students are expected to complete and turn in their own work. For more information on Academic Integrity consult the Trojan Integrity Guide at http://www.usc.edu/student-affairs/SJACS/forms/tio.pdf. If you are caught cheating (regardless of level of involvement), you will automatically fail the course and a report will be filed with USC's Office of Student Judicial Affairs and Community Standards.

A comment on AI generators is in order. I see no need to police graduate student use of using AI in their academic development. AI is a shortcut, and shortcuts rarely lead to sustained success. It also likely leads to curbed academic creativity. Research is a labor of love that takes many hours to do thoroughly and to do well. Please make the prudent decision to write your own analytic scripts and paper drafts.

5 Statement on Academic Conduct and Support Systems

5.1 Academic Conduct

Plagiarism - presenting someone else's ideas as your own, either verbatim or recast in your own words - is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on Research and Scholarship Misconduct.

5.2 Students and Disability Accommodations

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disabilityrelated barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfront-desk@usc.edu.

Students who elect to use their acommodations for knowledge check quizzes will be administered their quizzes through OSAS.

5.3 Support Systems

Counseling and Mental Health - (213) 740-9355 - 24/7 on call

studenthealth.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

988 Suicide and Crisis Lifeline - 988 for both calls and text messages – 24/7 on call The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press ''0'' after hours - 24/7 on call

studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086 eeotix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298 usc-advocate.symplicity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

The Office of Student Accessibility Services (OSAS) - (213) 740-0776 osas.usc.edu

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

USC Campus Support and Intervention - (213) 740-0411

campussupport.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity, Equity and Inclusion - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 - 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 - 24/7 on call

dps.usc.edu

Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323) 442-0382 (HSC)

ombuds.usc.edu

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

Occupational Therapy Faculty Practice - (323) 442-3340 or otfp@med.usc.edu chan.usc.edu/otfp

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.

6 Course Schedule

Week 1 (8/22 & 8/24)

Lifespan Development & Measuring Change

Readings:

Paul B Baltes. Theoretical propositions of life-span developmental psychology: On the dynamics between growth and decline. *Developmental psychology*, 23(5):611, 1987

Alexandra M Freund, Christopher M Napolitano, and Joshua L Rutt. Personality development in adulthood. *Handbook of personality development*, page 313, 2019

Carl Bereiter. Some persisting dilemmas in the measurement of change. *Problems in measuring change*, 2:3–20, 1963

Week 2 (8/29 & 8/31)

Measurement Issues in Longitudinal Data Analysis

Readings:

Kateryna V Keefer, Ronald R Holden, and James DA Parker. Longitudinal assessment of trait emotional intelligence: measurement invariance and construct continuity from late childhood to adolescence. *Psychological assessment*, 25(4):1255, 2013

Justin M Luningham, Daniel B McArtor, Meike Bartels, Dorret I Boomsma, and Gitta H Lubke. Sum scores in twin growth curve models: Practicality versus bias. *Behavior genetics*, 47(5):516–536, 2017

John R Nesselroade, Denis Gerstorf, Sam A Hardy, and Nilam Ram. Idiographic filters for psychological constructs. *Measurement*, 5(4):217–235, 2007

Assignment #1 handed out (Due 9/8)

Week 3 (9/5 & 9/7) Measurement Invariance

Readings:

Keith F Widaman and Margarita Olivera-Aguilar. Investigating measurement invariance using confirmatory factor analysis. *Handbook of structural equation modeling*, pages 367–384, 2023

William Meredith and John Horn. The role of factorial invariance in modeling growth and change. 2001

Daniel J Bauer. A more general model for testing measurement invariance and differential item functioning. *Psychological methods*, 22(3):507, 2017

Week 4 (9/12 & 9/14) Developmental Research Designs

Readings:

K Warner Schaie and IL Caskie. Methodological issues in aging research. In Douglas M Teti, editor, *Handbook of research methods in developmental science*, chapter 2, pages 21–39. Blackwell Publishing Ltd Oxford, UK, 2005

Allison Holmes and Douglas M Teti. Developmental science and the experimental method. In Douglas M Teti, editor, *Handbook of research methods in developmental science*, pages 66–80

Steven C Pitts, Justin H Prost, and Jamie J Winters. Quasi-experimental designs in developmental research: Design and analysis considerations. In Douglas M Teti, editor, *Handbook of research methods in developmental science*, chapter 5, pages 81–100. Blackwell Publishing Ltd Oxford, UK, 2005

Week 5 (9/19 & 9/21) Modeling Growth

Readings:

John J McArdle and Edward Anderson. Latent variable growth models for research on aging. *Handbook of the psychology of aging*, 2:21–44, 1990

Judith D Singer and John B Willett. *Applied longitudinal data analysis: Modeling change and event occurrence*. Oxford university press, 2003: Chapters 1–8

Week 6 (9/26 & 9/28) Modeling Growth

Readings:

Judith D Singer and John B Willett. *Applied longitudinal data analysis: Modeling change and event occurrence*. Oxford university press, 2003: Chapters 1–8

Paras D Mehta and Stephen G West. Putting the individual back into individual growth curves. *Psychological methods*, 5(1):23, 2000

Assignment #2 handed out (Due 10/6)

*** Turn in course project proposal summary for feedback ***

Week 7 (10/3 & 10/5) Modeling Growth

Readings:

Judith D Singer and John B Willett. *Applied longitudinal data analysis: Modeling change and event occurrence*. Oxford university press, 2003: Chapters 1–8

Paras D Mehta, Michael C Neale, and Brian R Flay. Squeezing interval change from ordinal panel data: latent growth curves with ordinal outcomes. *Psychological methods*, 9(3):301, 2004

Week 8 (10/10 & 10/12) Modeling Intraindividual Change: Trait-State-Error

*No Lecture on 10/12 in observance of USC's Fall Break***

Readings:

Rolf Steyer, Michael Eid, and Peter Schwenkmezger. Modeling true intraindividual change: True change as a latent variable. *Methods of Psychological Research*, 2(1):21–33, 1997

David A Kenny and Alex Zautra. The trait-state-error model for multiwave data. *Journal of consulting and clinical psychology*, 63(1):52, 1995

Week 9 (10/17 & 10/19)

Modeling Intraindividual Change: Dual Change Score Models

Readings:

Kevin J Grimm, Yang An, John J McArdle, Alan B Zonderman, and Susan M Resnick. Recent changes leading to subsequent changes: Extensions of multivariate latent difference score models. *Structural equation modeling: a multidisciplinary journal*, 19(2):268–292, 2012

Patrick J Curran and Andrea M Hussong. The use of latent trajectory models in psychopathology research. *Journal of abnormal psychology*, 112(4):526, 2003

Sarfaraz Serang, Kevin J Grimm, and Zhiyong Zhang. On the correspondence between the latent growth curve and latent change score models. *Structural Equation Modeling: A Multidisciplinary Journal*, 26(4):623–635, 2019

Week 10 (10/24 & 10/26) Power Readings:

Philippe Rast and Scott M Hofer. Longitudinal design considerations to optimize power to detect variances and covariances among rates of change: simulation results based on actual longitudinal studies. *Psychological Methods*, 19(1):133, 2014

Yi Feng and Gregory R Hancock. Power analysis within a structural equation modeling framework. *Handbook of structural equation modeling*, pages 163–183, 2023

Assignment #3 handed out (Due 11/3)

Week 11 (10/31 & 11/2) Model Fit & Model Selection

Readings:

Stephen G West, Wei Wu, Daniel McNeish, and Andrea Savord. Model fit in structural equation modeling. *Handbook of structural equation modeling*, pages 184–205, 2023

Kristopher J Preacher and Haley E Yaremych. Model selection in structural equation modeling. *Handbook of structural equation modeling*, pages 206–222, 2023

Week 12 (11/7 & 11/9) Survival Analysis

Readings:

Judith D Singer and John B Willett. *Applied longitudinal data analysis: Modeling change and event occurrence*. Oxford university press, 2003: Chapters 9–14

Assignment #4 handed out (Due 11/17)

Week 13 (11/14 & 11/16) Survival Analysis

Readings: Judith D Singer and John B Willett. *Applied longitudinal data analysis: Modeling change and event occurrence*. Oxford university press, 2003: Chapters 9–14

Week 14 (11/21 & 11/23) Survival Analysis

*No Lecture on 11/23 in observance of the Thanksgiving holiday break***

Readings:

Judith D Singer and John B Willett. *Applied longitudinal data analysis: Modeling change and event occurrence*. Oxford university press, 2003: Chapters 9–14

Week 15 (11/28 & 11/30) Student Presentations