

## GRN 770-6

### Longitudinal Methods in Adult Development and Aging

*Thursdays, 1-4 PM*

*239 Sanders-Brown Building*

#### **Instructor:**

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#### **Overview**

The study of aging poses complex challenges to researchers. These concerns are most apparent in the design and implementation of longitudinal research studies. This course will introduce students to pertinent conceptual and methodological topics (e.g., longitudinal research design, measurement of change, and attrition) and the analytical tools necessary to address these issues. The application of SPSS programming to conduct longitudinal analyses will be reviewed. In addition to class readings and weekly assignments, students will have the opportunity to select a research topic and apply what is learned in class to an area of academic interest.

During each weekly meeting, the course will be divided into three sections: 1) a discussion of the topic of the day; 2) overview of a particular analytical issue, and 3) review of each student's selected research project (see below).

#### **Objectives**

The three main objectives of the course are:

1. To provide students with the ability to develop a methodological framework for a longitudinal study;
2. To offer students the analytical tools necessary to carry out a longitudinal analysis; and
3. To assist students in developing an in-depth longitudinal research topic on adult development and aging.

#### **Required Readings**

This course will include required and, when appropriate, recommended readings. Students are expected to complete the required readings prior to each class, as they will constitute the major sources of discussion material. Recommended readings are available to students who wish to explore a topic more fully, or for beginning readings for the research project.

Selected readings from the following texts will be provided throughout the course:

- Afifi, A., & Clark, V. (1984). Computer-aided multivariate analysis. Belmont, CA: Wadsworth.
- Baltes, P. B., Reese, H W., & Nesselroade, J. R. (1988). Life-span developmental psychology: Introduction to research methods. New Jersey: Lawrence Erlbaum.
- Cook, T. D., & Campbell, D. T. (1979). Quasi-experimentation: Design and analysis. Boston, MA: Houghton-Mifflin.
- Howell, D. C. (1992). Statistical methods for psychology, 3<sup>rd</sup> ed. Boston, MA: PWS-Kent.
- Neuman, W. L. (1997). Social research methods. (3<sup>rd</sup> ed.). Boston: Allyn and Bacon.
- Tabachnick, B. G., & Fidell, L. S. (1996). Using multivariate statistics. (3<sup>rd</sup> ed.). New York: Harper Collins.

### **Attendance Policy**

Attendance is both required and necessary, since discussion from each participant is crucial to the class. If an inevitable absence occurs, talk to the instructor, preferably before the scheduled class. Documentation for an illness or similar emergency is required for an excusal. Any unexcused attendance will result in a 2% reduction of the final course grade.

### **Course Requirements**

1. Attendance and active participation: As a seminar course, a considerable amount of class time will be spent discussing the readings for each week. Therefore, attendance and active participation is required of all students **(25% of final grade)**
2. Analysis assignments: A series of analysis assignments will be due throughout the semester to familiarize students with various methodological topics. The instructor will provide a longitudinal data set for analysis and interpretation. Assignments will be graded with a ‘+’ (excellent), ‘v’ (satisfactory), or ‘-’ (unsatisfactory). Failure to turn in an assignment will result in an automatic unsatisfactory grade. **(25% of final grade)**
3. Research critiques: Students will be asked to conduct two oral research critiques of empirical studies related to a weekly methodological topic. The week prior to the critique, students must distribute the article to the rest of the class. The critique must:
  - 1) Identify the purpose of the study;
  - 2) Define the characteristics of the sample and the major measures used;
  - 3) Summarize the major findings of the study;
  - 4) Provide a critique of the study (i.e., the design, sample, measures, conclusions, etc.)Students should prepare a 10-15 minute oral critique for each study. **(25% of final grade)**
4. Research project: At the beginning of the 2<sup>nd</sup> course period, students will select a research topic they are interested in developing over the course of the class. Students will develop this research question into a Methods section, similar to those found in peer-reviewed manuscripts, or a grant/dissertation proposal. Different components of the Methods section will be identified for each student during the 2<sup>nd</sup> course period, and those components will be

due at different points during the semester. By the end of the course, students will have written a Methods section for a longitudinal study of interest. **(25% of final grade)**

### **SEMINAR 1 (1/10/2002)**

#### **-Course Overview**

**-Discussion Topic:** *What do you want to know? From research questions to hypotheses*

#### Readings:

Gopen, G. D., & Swan, J. A. (1990). The science of scientific writing. American Scientist, 78, 550-558.

Baltes et al., 1988: Ch. 1-3

Neuman, Chs. 5-6

**-Analysis Topic:** *Introduction to the Adult Day Care Collaborative Study  
Creating a longitudinal data set: Issues and techniques*

#### Readings:

Afifi & Clark: Ch. 2,5

Tabachnick & Fidell: charts

Zarit, S. H., Stephens, M. A. P., Townsend, A., & Greene, R. (1998). Stress reduction for family caregivers: Effects of adult day care use. Journal of Gerontology, 5, S267-S278.

**DUE: N/A**

The Procedure of Longitudinal Studies in Aging
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### **SEMINAR 2 (1/17/2002)**

**-Discussion Topic:** *Issues in longitudinal research*

#### Readings:

Schaie, K. W. (1988). Methodological issues in aging research: An introduction. In K. W. Schaie, R. T. Campbell, et al. (Eds.). Methodological issues in aging research (pp. 13-42). New York, NY: Springer.

Campbell, R. T., & Alwin, D. F. (1996). Quantitative approaches: Toward an integrated science of aging and human development. In R. H. Binstock & L. K. George (Eds.), Handbook of aging and the social sciences, 4<sup>th</sup> ed. (pp. 31-51).

Schaie, K. W., & Hofer, S. M. (2001). Longitudinal studies on aging research. In J. E. Birren & K. W. Schaie (Eds.), Handbook of psychology of aging, 5<sup>th</sup> ed. (pp. 53-77).

**-Analysis Topic:** *Ensuring data quality: Descriptive statistics and data transformation*

#### Readings:

Tabachnick & Fidell, Ch. 4

**DUE:** Research question/hypothesis for project  
Data Assignment #1

### **SEMINAR 3 (1/24/2002):**

**-Discussion Topic:** *Longitudinal research design*

Readings:

Schaie, K. W., & Willis, S. L. (1996). Research methodology in adult development and aging. In Adult development and aging (2nd ed). (pp. 111-132).  
Baltes et al., Chs. 13-15, 17

**-Analysis Topic:** *Relationships between variables: Covariance and correlation*

Readings:

Howell, pp. 220-230  
Afifi & Clark: Ch. 6  
Tabachnick & Fidell: pp. 54-55

**DUE:** Data Assignment #2

**SEMINAR 4 (1/31/2002):**

**-Discussion Topic:** *Internal validity and causality*

Readings:

Baltes et al., Ch. 5  
Cook & Campbell: Ch. 1, 2 (pp.37-70)

**-Analysis Topic:** *The General Linear Model: Regression*

Afifi & Clark, Ch. 7  
Tabachnick & Fidell, Ch. 5

**DUE:** Data Assignment #3

**SEMINAR 5 (2/7/2002):**

**-Discussion Topic:** *Randomization, experimentation, and quasi-experimentation*

Readings:

Baltes et al., Ch. 8  
Neuman, Ch. 8  
Cook & Campbell, Ch. 3

**-Analysis Topic:** *The General Linear Model: Regression and special topics*

Readings:

\*Afifi & Clark, Chs. 8-10

**DUE:** Data Assignment #4

**SEMINAR 6 (2/14/2002):**

**-Discussion Topic:** *Data collection: Interviewing*

Readings:

Fowler, F. J. Design and evaluation of survey questions.  
Neuman, Ch. 10  
\*Edelstein, B. A., & Semenchuk, E. M. (1996). Interviewing older adults. In L. L. Carstensen, B. A. Edelstein, et al. (Eds.). The practical handbook of clinical gerontology (pp. 153-173).  
Thousand Oaks, CA: Sage Publications.

Herzog, R. A., & Rodgers, W. L. (1988). Interviewing older adults: Mode comparison using data from a face-to-face survey and a telephone resurvey. Public Opinion Quarterly, 52, 84-99.

\*Russell, C. (1999). Interviewing vulnerable older people: Ethical and methodological implications of imagining our subjects. Journal of Aging Studies, 13, 403-417.

Wilson, K., & Roe, B. (1998). Interviewing older people by telephone following initial contact by postal survey. Journal of Advanced Nursing, 27, 575-581.

**-Analysis Topic:** *Analyses of variance*

Readings:

Tabachnick & Fidell, pp. 37-52, Ch. 9

**DUE:** Data Assignment #5

Procedure section for project

Sampling Issues in Longitudinal Studies
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**SEMINAR 7 (2/21/2002):**

**-Discussion Topic:** *Sampling techniques*

Readings:

Henry, G. T. Practical sampling.

Neuman, Ch. 9

Nesselroade, J. R. (1988). Sampling and generalizability: Adult development and aging research issues examined withing the general methodological framework of selection. In K. W. Schaie, R. T. Campbell, et al. (Eds.). Methodological issues in aging research (pp. 13-42). New York, NY: Springer.

**-Analysis Topic:** *Repeated measures analyses of variance*

Tabachnick & Fidell, p. 343; review ch. 9

**DUE:** Data Assignment #6

**SEMINAR 8 (2/28/2002):**

**-Discussion Topic:** *Attrition in longitudinal design*

Readings:

Schaie, K. W., Labouvie, G. V., & Barrett, T. J. (1973). Selective attrition effects in a fourteen-year study of adult intelligence. Journal of Gerontology, 28, 328-334.

Hayslip, B. J., McCoy, L. R., & Pavur, R. (1999). Selective attrition effects in bereavement research: A three-year longitudinal analysis. Omega, 38, 21-35.

Leigh, J. P., Ward, M. M., & Fries, J. F. (1993). Reducing attrition bias with an instrumental variable in a regression model: Results from a panel of rheumatoid arthritis patients. Statistics in Medicine, 12, 1005-1018.

Miller, R. B., & Wright, D. W. (1995). Detecting and correcting attrition bias in longitudinal family research. Journal of Marriage and the Family, 57, 921-929.

\*Sharma, S. K., Tobin, J. D., & Brant, L. J. (1989). Attrition in the Baltimore Longitudinal Study of Aging during the first twenty years. In M. P. Lawton & R. A. Herzog (Eds.). Special research methods for gerontology: Society and aging (pp. 233-247). Amityville, NY: Baywood.

**-Analysis Topic:** *Analyses of covariance*

Readings:

Tabachnick & Fidell, ch. 8

**DUE:** Data Assignment #7

**SEMINAR 9 (3/7/2002):**

**-Discussion Topic:** *Selection bias*

Readings:

Mark, D. H. (1997). Interpreting the term selection bias in medical research. Family Medicine, 29, 132-136.

Berk, R. A. (1983). An introduction to sample selection bias in sociological data. American Sociological Review, 48, 386-398.

Braver, S. L., & Bay, R. C. (1992). Assessing and compensating for self-selection bias (non-representativeness) of the family research sample. Journal of Marriage and the Family, 54, 925-

Ellenberg, J. H. (1994). Selection bias in observational and experimental studies. Statistics in Medicine, 13, 557-567.939.

Wainer, H. (1989). Eelworms, bullet holes, and Geraldine Ferraro: Some problems with statistical adjustment and some solutions. Journal of Educational Statistics, 14, 121-140.

Newcomer, R., Clay, T., Luxenberg, J. S., & Miller, R. H. (1999). Misclassification and selection bias when identifying Alzheimer's disease solely from Medicare claims records. Journal of the American Geriatrics Society, 47, 215-219.

**-Analysis Topic:** *Canonical correlation*

Readings:

Afifi & Clark, Ch. 15

Tabachnick & Fidell, Ch. 6

**DUE:** Data Assignment #8

Sample section for project

**NO CLASS (3/14/2002): SPRING BREAK**

Measurement in Longitudinal Studies
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**SEMINAR 10 (3/21/2002):**

**-Discussion Topic:** *Measurement issues in longitudinal design*

Readings:

Selected reading

Baltes et al., Ch. 7

Collins, L. M. (1996). Measurement of change in research on aging: Old and new issues from an individual growth perspective. In J. E. Birren & K. W. Schaie (Eds.), Handbook of the psychology of aging (3rd Ed). (pp. 38-56) San Diego, CA: Academic Press.

**-Analysis Topic:** *Discriminant function analysis*

Readings:

Afifi & Clark, Ch. 11

Tabachnick & Fidell, Ch. 11

*DUE:* Data Assignment #9

**SEMINAR 11 (3/28/2002):**

**-Discussion Topic:** *Reliability*

Readings:

Selected readings

**-Analysis Topic:** *Logistic regression*

Readings:

Afifi & Clark, Ch. 12

Tabachnick & Fidell, Ch. 12

*DUE:* Data Assignment #10

**SEMINAR 12 (4/4/2002)**

**-Discussion Topic:** *External validity*

Readings:

Baltes, Ch. 6

Selected readings

**-Analysis Topic:** *Principal components analysis and factor analysis*

Readings:

Afifi & Clark, Ch. 14

Tabachnick & Fidell, Ch. 13

*DUE:* Data Assignment #11

Measures section for research project

Analytical Issues in Longitudinal Studies
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**SEMINAR 13 (4/11/2002):**

**-Discussion Topic:** *Interindividual and intraindividual change*

Readings:

Baltes et al., Ch. 10

**-Analysis Topic:** *Event history analyses*

Readings:

Singer, J. D., & Willett, J. B. (1991). Modeling the days of our lives: Using survival analysis when designing and analyzing longitudinal studies of duration and the timing of events.

Psychological Bulletin, 110(2), 268-290.

Willett, J. D., & Singer, J. D. (1996). Investigating onset, cessation, relapse, and recovery: Why you should, and how you can, use discrete-time survival analysis to examine event occurrence. Journal of Counseling and Clinical Psychology, 61, 952-965.

**DUE:** Data Assignment #12

**SEMINAR 14 (4/18/2002):**

**-Discussion Topic:** *Two-wave vs. multi-wave analysis designs*

Readings:

Rogosa, D. R. (1996). Myths and methods: Myths about longitudinal research plus supplemental questions. In J. M. Gottman (Ed.), The analysis of change (pp. 3-66). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Willett, J. B. (1988). Questions and answers in the measurement of change. In E. Z. Rothkopf (Ed.), Review of research in education (Vol. 15, pp. 345-422). Washington, D. C.: AERA.

**-Analysis Topic:** *Change score approaches*

Readings:

None

**DUE:** Data Assignment #13

**SEMINAR 15 (4/25/2002):**

**-Discussion Topic:** *The growth curve model*

Readings:

Bryk, A. S., & Raudenbush, S. W. (1987). Application of hierarchical linear models to assessing change. Psychological Bulletin(101), 147-158.

Willett, J. B., & Sayer, A. G. (1994). Using covariance structure analysis to detect correlates and predictors of change over time. Psychological Bulletin, 116, 363-381.

Willett, J. B., & Sayer, A. G. (1996). Cross-domain analyses of change over time: Combining growth modeling and covariance structure analysis. In G. A. Marcoulides & R. E. Schumacker (Eds.), Advanced structural equation modeling: Issues and techniques (pp.125-157). Mahwah, New Jersey: Lawrence Erlbaum.

**DUE:** Analysis section, research project

DUE 5/2/2002: FINAL RESEARCH PROJECT, 5 P.M.
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