Political Science 283
Fall 2002
Class meets: Monday 2:00 - 4:45
351 Hamilton Hall
http://blackboard.unc.edu/

Stuart Elaine Macdonald
Email macdonald@unc.edu
Office hours: Wednesday 9:00 - 10:30
Friday 9:00 - 10:30
255 Hamilton Hall

INTRODUCTION TO STRUCTURAL EQUATION MODELS

This course introduces methods and applications of structural equation modeling. Much of the course will focus on models with observed variables and the classical econometric estimation methods. The last few sections will introduce models with unobserved variables and LISREL-type analyses.

Texts

Required

Coursepak at UNC Student Stores or make your own from JSTOR.

Kline, Rex B. Principles and Practice of Structural Equation Modeling. New York: Guilford Press, 1998.

Kelloway, E. Kevin. Using LISREL for Structural Equation Modeling. Thousand Oaks, CA: Sage, 1998.

Recommended

Bollen, Kenneth A. Structural Equations with Latent Variables. New York: Wiley, 1989.

Schumacker, Randall E., and Lomax, Richard G. A Beginner's Guide to Structural Equation Modeling. Mahwah, NJ: Lawrence Erlbaum, 1996.

Joreskog, Karl, and Sorbom, Dag. LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language. Hillsdale, NJ: Scientific Software International, 1993.

Hatcher, Larry. A Step-by-Step Approach to Using the SAS System for Factor Analysis and Structural Equation Modeling. Cary, NC: SAS Institute, 1994.

Hoyle, Rick H. (ed.). Structural Equation Modeling: Concepts, Issues, and Applications. Thousand Oaks, CA: Sage, 1995.

Maruyama, Geoffrey. Basics of Structural Equation Modeling. Thousand Oaks, CA: Sage, 1998.

Course Policies

Grades will be based on the following criteria:

(1) Class attendance and participation	15%	
(2) Problem assignments		20%
(3) Exam		40%
(4) Final project		25%

Class attendance is required, and it important to be on time. Please do not bring food or disruptive beverages into class. We will take a break about midway in the class, and you may eat something then.

Conduct of the Course

This course may be somewhat unusual in that I expect you to be able to replicate virtually everything that I demonstrate in class. I encourage your active participation, and I will call on students in class to be sure that you are understanding what is going on.

The problem assignments are designed to give you practice in using the methods we are learning and in writing up your results. Assignments are due on the date indicated on the syllabus unless otherwise specified. We will usually go over assignments in class, so it is important to have them done BEFORE class. They will be graded loosely with a check, check minus, or check plus. No assignments will be accepted after the due date.

Note: Please type the homework assignments, but you can hand write the equations if you wish. You'll notice I don't take time to subscript when I type, and I don't expect you to either. Even though it takes more time to type the assignments, then you can keep them in a file for future reference and they're easier for you to read, too.

The exam is a three-hour, in-class closed-book exam designed to test what you have learned in the course. It also serves as a vehicle for enhancing your knowledge when we discuss the answers in the following class. Copies of two prior exams will be available in the Social Science Library so that you can see the format of the exam and the type of questions asked. *A grade of P- or higher on the exam is required to receive a P- or higher in the course.* No make-up exams will be given.

The final project involves applying structural equation methods to a substantive problem of interest to you. The project should represent original work not previously or simultaneously handed in for credit in another course, unless prior approval is obtained from all instructors involved. Students will present their work in a colloquium simulating a conference presentation or abbreviated job talk. The presentation should include appropriate slides or handouts of your model and findings. A written version of your presentation is due by the date indicated on the syllabus. It is very important to begin work on the project early in the semester so that any difficulties with data can be tackled in a timely fashion. No incompletes will be given on the project.

READINGS

Readings with a * are required. Most of these are included in the Coursepak and they are also available on JSTOR. Many of the additional readings are on reserve in the Graduate Social Science Library on the second floor of Hamilton Hall. Readings marked with (B) appear in Blalock, H. (ed.), Causal Models in the Social Sciences (Chicago: Aldine Atherton, 1985). This volume collected some of the early classics in causal modeling.

Aug. 26

I. Introduction to Structural Equation Modeling

*Kline, R. B., Principles and Practice of Structural Equation Modeling (New York: Guilford Press, 1998), chapters 1 - 4.

*Kish, L., "Some Statistical Problems in Research Design," ASR, June 1959, pp. 328-338.

*Robinson, H. J., "Public Affairs Television and the Growth of Political Malaise: The Case of 'The Selling of the Pentagon'," APSR, June 1976, pp. 407-432.

*Sloan, J. H., et al., "Handgun Regulations, Crime, Assaults, and Homicide," New England Journal of Medicine, November 1988, pp. 1256-1262.

Blalock, H., Causal Inferences in Nonexperimental Research (Chapel Hill, N.C.: University of North Carolina Press, 1964), chapter 1.

Bollen, K., Structural Equations with Latent Variables (New York: Wiley, 1989), chapter 3.

Cook, T. D., and Campbell, D. T., Quasi-Experimentation: Design and Analysis Issues for Field Settings (Boston: Houghton Mifflin, 1979), pp. 1-36.

Heise, D., Causal Analysis (New York: John Wiley, 1975), chapter 1.

Sept. 2 LABOR DAY

II. Recursive Systems: Representation and Estimation

*Kline, R. B., Principles and Practice of Structural Equation Modeling, chapter 5: 95-120.

*Stokes, D., "Compound Paths: An Expository Note," AJPS, February 1974, pp. 191-206.

Duncan, O. D., Introduction to Structural Equation Models (New York: Academic Press, 1975), chapter 1.

Pedhazur, E. J., Multiple Regression in Behavioral Research (New York: Holt, 1982), chapter 15, pp. 577-588.

Wonnacott, R., and Wonnacott, T., Econometrics (New York: John Wiley, 1979), chapter 7.

Sept. 9

III. Path Analysis: Indirect Effects and Total Effects

Problem 1 due

*Kline, Principles and Practice of Structural Equation Modeling, chapter 5: 120-125, 146-154.

*Stokes, "Compound Paths," pp. 206-210.

*Simon, H., "Spurious Correlation: A Causal Interpretation," in Simon, H., Models of Man (New York: John Wiley, 1957), chapter 2 (B).

Alwin, D., and Hauser, R. "The Decomposition of Effects in Path Analysis," ASR, February 1975, pp. 37-47. Also in Marsden, P., Linear Models in Social Research (Beverly Hills: Sage, 1981).

Lewis-Beck, M., and Mohr, L., "Evaluating Effects of Independent Variables," Political Methodology, 1976, pp. 27-47.

Duncan, Introduction to Structural Equation Models, chapter 2 - 3.

Pedhazur, Multiple Regression in Behavioral Research, chapter 15, pp. 588-628.

Sept. 16

IV. Path Analysis Continued

Problem 2 due

Sept. 23

V. Research Applications

*Cnudde, C., and McCrone, D., "The Linkage between Constituency Attitudes and Congressional Voting Behavior: A Causal Model," APSR, March 1966, pp. 66-72.

*Forbes, H., and Tufte, E., "A Note of Caution in Causal Modelling," APSR, December 1968, pp. 1258-1264.

*Communication between Cnudde and McCrone and Forbes and Tufte in APSR, December 1968, pp. 1269-1271.

*Goldberg, A., "Discerning a Causal Pattern among Data on Voting Behavior," APSR, December 1966, pp. 913-922 (B).

*Schulman, M., and Pomper, G., "Variability in Electoral Behavior: Longitudinal Perspectives from Causal Modeling," AJPS, February 1975, pp. 1-18.

*Hartwig, F., Jenkins, W., and Temchin, E., "Variability in Electoral Behavior: The 1960, 1968, and 1976 Elections," AJPS, August 1980, pp. 553-558.

*Hofferbert, R., and Urice, J., "Small-Scale Policy: The Federal Stimulus versus Competing

Explanations for State Funding of the Arts," AJPS, May 1985, pp. 308-329.

Richardson, B., "Constituency Candidates versus Parties in Japanese Voting Behavior," APSR, September 1988, pp. 695-736.

Duncan, O. D., "Path Analysis: Sociological Examples," AJS, July 1966, pp. 1-16 (B).

Werts, C. E., and Linn, R. L., "Path Analysis: Psychological Examples," Psychological Bulletin, 1979, pp. 193-212.

Sept. 30

VI. Nonrecursive Systems: Identification and Estimation

*Kline, Principles and Practice of Structural Equation Modeling, chapter 6: 155-188.

Bartels, L. M., "Instrumental and 'Quasi-Instrumental' Variables," American Journal of Political Science, August 1991, pp. 777-800.

Duncan, Introduction to Structural Equation Models, chapter 5 - 7.

Koopmans, T. C., "Identification Problems in Economic Model Construction," Econometrica, 1949, pp. 125-143 (B).

Strotz, R., and Wold, H., "Recursive versus Nonrecursive Systems: An Attempt at Synthesis," Econometrica, 1960, pp. 417-427 (B).

Fisher, F., "The Choice of Instrumental Variables in the Estimation of Economy-Wide Econometric Models," International Economic Review, 1965, pp. 245-274 (B).

Wonnacott and Wonnacott, Econometrics, chapters 8 - 9 and 18 - 19.

Oct. 7

VII. Research Applications

Problem 3 due

*Greenberg, D. F., Kessler, R. C., and Logan, C. H., "A Panel Model of Crime Rates and Arrest Rates," ASR, October 1979, pp. 843-850.

*Howell, S., "Candidates and Attitudes: Revisiting the Question of Causality," JOP, May 1986, pp. 450-464.

*Page, B., and Jones, C., "Reciprocal Effects of Policy Preferences, Party Loyalties and the Vote," APSR, December 1979, pp. 1071-1089.

Duncan, O. D., Haller, A., and Portes, A., "Peer Influence on Aspiration: A Reinterpretation," AJS, September 1968, pp. 119-137 (B).

Jackson, J., "Issues, Party Choices, and Presidential Votes," AJPS, May 1975, pp. 161-185.

Erikson, R., "The `Uncorrelated Errors' Approach to the Problem of Causal Feedback," JOP, August 1982, pp. 863-881.

Markus, G., and Converse, P., "A Dynamic Simultaneous Equation Model of Electoral Choice," APSR, December 1979, pp. 1055-1070.

Oct. 14

VIII. The Structural Model with Observed Variables in LISREL

*Kelloway, E. Kevin, Using LISREL for Structural Equation Modeling (Thousand Oaks, CA: Sage, 1998), chapters 4 and 6 (see also 1 - 2).

*Bollen, Kenneth, Structural Equations with Latent Variables (New York: John Wiley & Sons, 1989), chapter 4 (see also chapters 1 - 3).

Oct. 21

IX. Assessing Model Fit

Problem 4 due

*Kelloway, Using LISREL for Structural Equation Modeling, chapter 3.

*Kline, Principles and Practice of Structural Equation Modeling, chapter 5: 125-142.

Oct. 28

X. The Measurement Model and Confirmatory Factor Analysis

*Kelloway, Using LISREL for Structural Equation Modeling, chapter 5.

*Kline, Principles and Practice of Structural Equation Modeling, chapter 7: 189-243.

*Bollen, K., "Issues in the Comparative Measurement of Political Democracy," ASR, June 1980, pp. 370-390.

Bollen, Structural Equations with Latent Variables, chapters 6-7 (see also chapter 5).

Duncan, Introduction to Structural Equation Models, chapters 9 and 10.

Nov. 4

XI. Models with Structural and Measurement Components

Problem 5 due

*Kelloway, Using LISREL for Structural Equation Modeling, chapter 7.

*Kline, Principles and Practice of Structural Equation Modeling, chapter 9: 244-269.

Bollen, Structural Equations with Latent Variables, chapter 8.

Nov. 11

XII. Research Applications

Problem 6 due

*Kline, Principles and Practice of Structural Equation Modeling, chapter 9: 273-281

*Dalton, R., "Reassessing Parental Socialization: Indicator Unreliability Versus Generational Transfer," APSR, June 1980, pp. 421-431.

*Green, D. P., "On the Dimensionality of Public Sentiment toward Partisan and Ideological Groups," AJPS, August 1988, pp. 758-780.

*Sullivan, J., Marcus, G., Feldman, S., and Pierson, J., "The Sources of Political Tolerance: A Multivariate Analysis," APSR, March 1981, pp. 92-106.

Duncan, Haller, Portes, "Peer Influence."

Nov. 18

XIII. Exam Review

Nov. 25

XIV. **EXAM**

Nov. 27-Dec. 1 THANKSGIVING

Dec. 2

XVI. Presentation of student projects

Dec. 11 Project report due no later than 5:00 PM