Structural Equation Modeling Seminar

Location: CIQSS, 3535 Queen-Mary, Suite 420, Montréal
Dates: May 25 to 29, 2009

Financial support for this Data Training School is provided by the Social Sciences and Humanities Research Council of Canada, the Fonds québécois de recherche sur la société et la culture and the universities affiliated to QICSS[1].

Course objectives and content

This intensive, graduate-level, five-day seminar deals with the principles, assumptions, strengths, limitations, and applications of the family of techniques known as structural equation modeling (SEM). Basic SEM techniques, including path analysis, confirmatory factor analysis (CFA), and full "LISREL" (structural-regression) models, will be covered. Some familiarity with basic statistical techniques, such as multiple regression and exploratory factor analysis, is assumed, but higher levels of quantitative knowledge are not required.

Also, the presentation of topics will be conceptually rather than mathematically oriented, and many examples of the application of SEM to different kinds of actual research problems are considered. There will be a strong emphasis on avoiding common kinds of mistakes in the analysis of structural equation models.

Computer tools for SEM will be described, and there will be opportunities for participants to gain hands-on practice with actual SEM analyses on site.

Trainer

This training session will be under the responsibility of Dr. Rex B. Kline[2], associate professor, Department of Psychology, Concordia University.

General course information

The sessions are in English. Morning sessions will be used for theoretical presentations. Some time in the afternoon sessions will be reserved for computer exercises.

Schedule

The seminar is scheduled from **9:30am to 5:30pm**.

Seminar web site

http://psychology.concordia.ca/fac/kline/sem/qicss.html

Main Source (optional)

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: Guildford Press. (See book resource site at www.guilford.com/pr/kline.htm)

Other Seminar Readings (see seminar website)

MacCallum, R. C., & Austin, J. T. (2000). Applications of structural equation modeling in psychological research. *Annual Review of Psychology*, *51*, 201-226.

Sava, F. A. (2002). Causes and effects of teacher conflict-inducing attitudes towards pupils: A path analysis model. *Teaching and Teacher Education*, 18, 1007-1021.

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Topics and Reading Schedule

Day 1: Background concepts: Data preparation, overview of computer tools, types of models (Chaps. 1-4)
Day 2: Path analysis: Effects, estimation, testing, Amos example, computer practice (Chaps. 5-6; Sava, 2002)
Day 3: Confirmatory factor analysis: Models, nonnormality, EQS example (Chap. 7; MacCallum & Austin, 2000)
Day 4: Structural-regression model: Variations, LISREL example, computer practice (Chaps. 8, 12)
Day 5: Computer practice, advanced topics (selective review based on participants' interests; Chap. 13)

Software Programs

Listed below are freely-available versions of some SEM computer programs that can be downloaded over the Internet:

Program	Web address	Limits
Amos 5 student version	http://amosdevelopment.com/download/	8 variables, 54 parameters
LISREL 8.8 student version	http://www.ssicentral.com/lisrel/student.html	15 variables
LISREL 8.8 full version	http://www.ssicentral.com/lisrel/downloads.html	15-day trial
Mx Graph	http://www.vcu.edu/mx/index.html	None (full version)

Software Resources

Syntax examples (Kline)	http://psychology.concordia.ca/fac/kline/sem/syntax.pdf
LISREL for Windows resources	www.ssicentral.com/lisrel/techdocs/GSWLISREL.pdf
Amos student version tutorial	http://ssc.utexas.edu/consulting/tutorials/stat/amos/

Eligibility

The course is open to graduate students and postdoctoral fellows as well as to professors and practising researchers. Some familiarity with basic statistical techniques, such as multiple regression, is assumed, but higher levels of quantitative knowledge are not required.

A maximum off 15 participants will be selected on the basis of the relevance of the course to their curriculum, research, or teaching.

Information

The online registration period will run from **March 2 to 27, 2009**. Selection results will be announced during the week of **March 30, 2009**.

For more information

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