



**Course Title: Introduction to structural equation modeling with focus
on cross-cultural comparisons**

Lecturer: Junior-Prof. Dr. E. Schlüter/Prof. Dr. P.Schmidt

Course number	1581
Location/Room	October 4, 2011 9-12.30 (lecture) + 2:00-5:15pm- (tutorial) October 5, 2011, 9 :00- 12:30 (lecture) + 2 :00 -5:15pm (tutorial) October 6, 2011 9 :00-12 :30 (lecture) + 2 :00-5:15pm (tutorial) October 7, 2011) 9 :00-12-3:30 (lecture) + 2 :00-5:15pm (tutorial) Greinstr. 2, Socio Lab
Credit Points	3 ECTS
Type of course	PhD Course
Course Language	English

1.Objectives

The course shows how a causal theory can be represented by a path diagram and translated into a structural equation model, and how the model can be estimated and tested with the AMOS graphics computer programme. In the first part, we deal with confirmatory factor analysis relating multiple indicators to latent variables. Different specifications of measurement models are tested via confirmatory factor analysis (CFA) as a special case of a structural equation model (SEM). Exemplary specifications include Simultaneous Confirmatory factor analysis (SCFA) as well as Higher Order Confirmatory Factor Analysis. Special emphasis is given to the analysis of multiple groups (MGCFA) for comparisons within societies and between societies. The second part comprises both the structural model and the measurement model. Topics include moderation and mediation, MIMIC Models and multiple-group comparisons. Special attention is given to the process of model modification and alternative model testing using adequate fit measures and how to report CFA and SEM results.





2. Prerequisites

The target audience for the course is participants working on their own data who would like to learn how structural equation modeling can be used to develop and/or test both measurement models and causal theories with latent variables. A further important aim is to familiarize participants with the AMOS programme to handle the most important standard models. The programme will be run by graphical input via path diagrams (AMOS Graphics). Participants are expected to have extensive familiarity with Windows applications, good knowledge of working with statistics programs like SPSS regression analysis and some knowledge of exploratory factor analysis is required.

3. Relevance for study programmes

The course is open to doctoral students of the WiSo-Faculty.

4. Registration

It is necessary to register. The maximum number of participants is 25
Pls. register at office-cgs@wiso.uni-koeln.de

5. Contents

Short summary/synopses of the course (with reading list/recommended literature).

Confirmatory factor analysis

Theory:

Overview of the whole seminar. Different model specifications, causality and empirical research. Process and strategy of theory testing. Notation for Structural Modelling. Use of SEMNET and AMOS manual. Description of the data-set and overview of the input files.

Foundation of Confirmatory Factor Analysis (CFA): Assumptions, model specification and identification. Types of restrictions. Typology of model testing: parallel, tau-equivalent and congeneric models. Estimation and identification in CFA. Model modification and the strategy of theory testing: New factors, new factor loadings or residual correlations. Global and detailed fit measures.

Simultaneous Confirmatory Factor Analysis (SCFA) with multiple factors. Reliability and validity estimates in CFA. Multiple group comparison Types of invariance: configural, metric and scalar invariance. Higher order CFA. Optional: Comparison of latent means.

Structural equation modeling Theory:

Structural Equation Models (SEM) with latent variables and multiple indicators: Specification, identification and estimation. Causality and equivalent models. Model testing and model modification. Detailed and global fit measures. Interpretation of parameters. The two step strategy. Decomposition of effects. Mediator and Moderator effects. Multiple group comparison. MIMIC models. The two theoretical parts will be accompanied with extensive exercises with the program Amos.





Suggested references for the course:

-) Arbuckle, J.L. (2008). Amos 17.0 user's guide. Chicago: SPSS.
 -) Byrne, Barbara M. (2011). Structural equation modeling with AMOS. Basic concepts, application, and programming. London: Lawrence Erlbaum Associates.
 -) *Boomsma, A. (2000). Reporting analyses of covariance structures. *Structural Equation Modeling*, 7(3): 461-483. Lawrence Erlbaum Associates Inc.
 -) *Davidov, Schmidt and Schwartz (2008). Bringing values back in: the adequacy of the European social survey to measure values in 20 countries. *Public opinion quarterly*, 72, 420-445.
 -) *Davidov, Meuleman, Billiet and Schmidt (2008). Values and support for immigration: a cross-country comparison. *European sociological review*, 24, 583- 599.
 -) *Hoogland, J. H. and A. Boomsma (1998). Robustness studies in covariance structural modelling. An overview and a meta-analysis. *Sociological methods and research*, 26(3), 329-367.
 -) * Heyder, A. and P. Schmidt (2002). Authoritarianism and Ethnocentrism in East and West Germany - Does the system matter? In: R. Alba, P. Schmidt & M. Wasmer (eds.). New York: Palgrave, St. Martins Press.
 -) *Yang-Wallentin, Fan, Peter Schmidt, Eldad Davidov, and Sebastian Bamberg. (2004). Is There Any Interaction Effect between Intention and Perceived Behavioural Control? *Methods of Psychological Research Online*, 8(2), 127-157.
- * available online/sent per email.
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6. Working requirements and assessment method

Written exam.

7. Teaching staff

Elmar Schlueter is Junior-Professor of Sociology at the Institute of Sociology, University of Cologne. He completed his PhD as Fellow of the DFG Research Training School "Group-focused Enmity", at the Universities of Bielefeld, Giessen, and Marburg. His main research interests include methods of comparative empirical social research, social integration of migrants and interethnic conflicts and discrimination.

Peter Schmidt is presently Codirector of the International Scientific-Educational Laboratory of Socio-Cultural Research at the National Research University Higher School of Economics (HSE) in Moscow (Russia). His interests focus on the application and foundation of structural equation models for formalizing and testing social science theories. Special focus has been in the last years adequate methods for cross-cultural comparisons. His substantive research interests were in the last years especially the comparative measurement and study of values and the explanation of prejudice and discrimination against





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minorities. He has published several papers and edited several books on this topic.

8. Co-ordination/Contact

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Peter Schmidt: Peter.Schmidt@sowi.uni-giessen.de

