Multivariate Data Analysis / Eldad Davidov
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Content:
The course provides an overview of methods to analyze individual, contextual and longitudinal data and how theories can be tested using these methods with a focus on the analysis of survey data. Terms discussed during the BA studies, such as reliability, validity, standardized and unstandardized coefficients, regression, measurement and index construction, or experimental design will be either partly repeated or deepened and expanded. We discuss how regression models and the analysis of cross-sectional data may be expanded to analyze longitudinal and panel data, data on different levels of analysis (individual and societal-level data), and data from several countries or cultural groups. Special attention is also given to the differentiation between manifest and latent variables and to the problem of missing values. It is shown how these methods are applied to survey and experimental data in empirical theoretically-driven contemporary sociological studies. The course is thus application-oriented rather than technical.

Goals: Providing an overview of various methods of data analysis beyond regression analysis. Being able to read, understand and interpret substantive studies that apply various advanced methods. A deep understanding of some of the methods discussed will require at least a full semester course. Thus, it becomes obvious that the goal cannot be a full command of each method, but a basic understanding of what it is good for, and how to interpret its estimates in substantive studies.

Requirements: Written exam and Referat plus active participation in the discussion.

Detailed Program:

18.09. **Organization, overview, division of topics for presentation among participants**

25.09. **Repetition: Variance, correlation, covariance, type of scales** (Datler)
Methodological literature: Kühnel and Krebs (2012), pp. 29-118, 433-444.

02.10. **Repetition: OLS regression, logistic regression**, discussion which types of analyses cannot be performed with OLS and logistic regression (Seddig)
Methodological literature: Backhaus, Erichson, Plinke and Weiber (2011), pp. 55-118; 249-302.

09.10. **Path analysis** (Seddig)
Methodological literature: Schumacker and Lomax (2004), pp. 149-166; Reinecke (2005), pp. 45-97.
Substantive study: Britton, D. M. (1990).

16.10. **Exploratory and confirmatory factor analysis (EFA, CFA)** (Datler)
Methodological literature: Brown (2006), pp. 12-95.
Substantive study: Huddy and Kathib (2007).

23.10. **Full structural equation modeling (SEM)** including the topics model fit, model testing (Seddig)
Methodological literature: Schumacker and Lomax (2004), pp. 195-229; Reinecke (2005),

pp. 225-262.
Substantive study: Oreg and Katz-Gerro (2006).

30.10. **Multiple group analysis** (Datler)
Methodological literature: Davidov, Meuleman, Cieciuch, Schmidt and Billiet (2014).
Substantive study: Davidov, Schmidt and Schwartz (2008).

06.11. **Panel data analysis: Autoregressive cross-lagged models (ARCL)** (Seddig)
Methodological literature: Finkel (1995).
Substantive study: Schlüter, Schmidt and Wagner (2008).

13.11. **Panel data analysis: Latent growth curve modeling (LGM) and LGM mixture modeling** (Seddig)
Methodological literature: Duncan, Duncan and Strycker (2006), pp. 1-79.
Substantive study: Schlüter, Davidov and Schmidt (2007).

20.11. **Multilevel analysis** (Datler)
Methodological literature: Hox (2002), pages 1-71.
Substantive study: Semyonov, Raijman and Gorodzeisky (2006).

27.11. **Experimental designs** (Seddig)
Methodological literature: Jackson and Cox (2013).
Substantive study: Bamberg and Schmidt (1998).

04.12. **Repetition** (Datler/Seddig)

11.12. **Guest speaker**: Tenko Raykov

18.12. **Exam**

References:

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Finkel, S. (1995). *Causal analysis with panel data.* London: Sage.

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Reinecke and Weins (2012). The development of delinquency during adolescence: A comparison of missing data techniques. *Quality and Quantity, 47: 3319–3334.*

Schafer, J. L. and J. W. Graham (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7*, 147–177.

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Semyonov, M., R. Raijman, and A. Gorodzeisky (2006). The rise of anti-foreigner sentiment in European societies, 1988-2000. *American Sociological Review, 71*, 426–449.