

## Causal Models (24 hours)

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### Outline

The topics are:

#### **Measurement models:**

- Exploratory factor analysis with oblique and orthogonal rotation (and reliability)
- Confirmatory factor analysis
- Reflective and formative models
- Strictly confirmatory (SC), alternative models (AM), model generating (MG) approach
- Identification of models (and free, fixed and constrained parameters)
- Congeneric, tau-equivalent, (strictly) parallel models
- Model fit statistics
- Measurement equivalence (multigroup SEM)
  - o Configural equivalence
  - o Full or partial metric equivalence
  - o Full or partial scalar equivalence

#### **Structural equation models:**

- Basic path models with direct and indirect effects
- Correlated error terms
- Reciprocal effects
- Structural equation models with latent variables
- Multiple Indicators Multiple Cause (MIMIC) models
- Model fit statistics

#### **Literature:**

Brown, Timothy A. (2006), *Confirmatory Factor Analysis for Applied Research*

Carmines, Edward G. and Richard A. Zeller (1979), *Reliability and Validity Assessment*, Sage

STATA Structural Equation Modeling, Reference Manual Release 14 or later

Lecture slides

**Program:**

12 March 2021	Factor and Reliability Analysis I
16 March 2021	Factor and Reliability Analysis II
19 March 2021	Introduction to SEM
23 March 2021	Measurement models in SEM I
26 March 2021	Measurement models in SEM II
30 March 2021	Structural models in SEM I
9 April 2021	Structural models in SEM II
27 April 2021	Measurement and structural models combined in SEM
30 April 2021	Generalized SEM

**Laboratory:**

Stata labs are integrated in the course

**Grading:**

One research paper for Basics of Social Science Research (Ruud Luijkx & Moris Triventi), Multilevel Analysis (Moris Triventi) and this course