



Department of Methodology & Statistics

Workshop 'Generalized Latent Variable Modeling'

Jeroen K. Vermunt

March 19 & 20, 2009

Location: Tilburg University, Room M-23, Montesquieu Learning Centre

This seminar introduces you to the most recent developments in the field of latent variable modelling. Techniques that were originally developed fully separate from one another turn out to be special cases of the broad family of generalized latent variable models (GLVMs). This family includes latent class analysis, finite mixture models, factor analysis, item response theory (IRT) models, multilevel models, panel regression models, as well as models for dealing with missing data and selection bias. Recently, interesting hybrids combining elements of these special cases have been proposed, such as mixture factor analysis and IRT and multilevel variants of latent class analysis and IRT models.

In this course, I will introduce you into the framework of generalized latent variable modelling. I will take the most important special cases – mixture, IRT, factor, growth and multilevel models – as the starting point and from there elaborate on the connections between these. For example, I will show that an IRT model can be defined as a multilevel model, that one can perform multilevel analysis using mixture regression techniques, and that latent class analysis can be used as a nonparametric or semiparametric IRT or factor model. I will also pay attention to various recent developments that are of great interest, such as multilevel growth mixture modelling, multilevel latent class analysis, and hidden Markov modeling. The two main application types that I will focus on are clustering and scaling on the one hand and dealing with dependent observations and multilevel modelling on the other hand. Not only empirical applications, but also technical issues such as maximum likelihood estimation and numerical integration will be discussed.

The seminar will be held in a computer lab. This means that it will not only be theoretical but also practical. You will learn how to set up the GLVMs of interest with specialized software that I developed (the new syntax version of Latent GOLD 4.5), as well how to program simple GLVMs on your own with the Excel solver.

Reading:

- Skrondal, A. and Rabe-Hesketh, S. (2004). Generalized latent variable modeling. Chapman & Hall.
- Vermunt, J.K. and Magidson, J. (2005). Technical guide for Latent GOLD 4.0: Basic and advanced. Statistical Innovations.
- Vermunt, J.K. and Magidson, J. (2008). LG 4.5 Syntax: Guide for Latent GOLD 4.5 Syntax.

Map of the campus: <http://www.tilburguniversity.nl/contact/route/uvmap.html>

Time schedule:

Morning sessions: 10:00 - 12:30
Lunch: 12:30 - 14:00
Afternoon sessions: 14:00 - 16:30



Enrollment (please read carefully):

The deadline for registration is February 19, 2009

Participation in this workshop for IOPS-PhD's is free.

If you would like to participate, please send an email to: m.c.c.timmermans@uvt.nl with the following information:

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- 1) *Name:*
 - 2) *Department/institute:*
 - 3) *Email address:*
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Hotel accommodation

The organization committee requests all participants to arrange their own accommodation. The city of Tilburg has a limited range of hotels in various price classes.

Tilburg University has an agreement with most hotels enlisted. These hotels will charge you, as a guest of Tilburg University, a Tilburg University-rate. Please, mention it when booking the hotel. All these hotels have a bathroom (with shower or bath), telephone, radio, and color TV.

<http://www.tilburguniversity.nl/faculties/law/research/reflect/launch/practicalinformation/hotels/>