# Latent Variable Models for Social Research – video 1

## Transcript

Full resource, see: <https://www.ncrm.ac.uk/resources/online/all/?id=20835>

Chris Playford: Hello. In this short video I will explain what a latent variable model is by considering how we measure social science concepts. I’ll then describe different types of variable, both observed variables and unobserved variables. I’ll then conclude by thinking about which latent variable model might be appropriate for your analysis.

In social science research, we are often interested in concepts. For example, these might be gender, ethnicity or social class. These tend to be the topic which we are interested in. But to investigate these concepts using quantitative data analysis techniques, we need to identify measures of these concepts. We tend to use variables in our analyses which are proxies for the concept we’re interested in. For example, if I were interested in social class, I might use the UK Office for National Statistics socioeconomic class measure based on occupation. This is sensible because it is a well-established indicator and allows for comparison with other studies. Researchers do recognise, however, that all measures are imperfect and we cannot directly observe the concept of interest. What might be do if we have several potential observed variables? Well, we might choose one measure or choose another measure, or we might explore how these measures are associated.

Latent variable techniques help us to understand patterns of response and association across multiple observed indicator variables to develop a measurement model. The manifest variables are those variables we can observe in our dataset. For instance, we might have a battery of questions which ask about frequency of attending church or how often someone prays, or perceived importance of God in their life. But do people who answer these questions give consistent answers to a range of questions? Are responses grouped into particular patterns or can we treat response across a range of indicators as being summarised well by a continuous scale? Latent variable models attempt to measure this. These models summarise the patterns of response to the manifest variables. These are theorised to be closer to the concept of interest that we care about. Which latent variable model might we choose then?

This table summarises different types of latent variable model. For example, if the manifest variables are categorical and the researcher wishes to treat the latent variable as a series of groups or categories, then the appropriate method is latent class analysis. In contrast, if the manifest variables are continuous and the researcher wishes to treat the latent variables categorical, then laten profile analysis is suitable. As a researcher, we have to make a choice about how to treat the latent variable. It can be instructive to estimate different types of latent variable model using the same dataset if you have suitable measures and then to compare the results of these different models. The main aspect to take away from this is that latent variable models, despite having quite different names and having their origin in a range of different disciplines, are more similar than they are different. They are all part of the generalised linear and mixed modelling framework.

Hopefully from this video you will now have a clearer idea of the different types of latent variable model and how these are related to one another. In the next short video I will use an example to briefly demonstrate how a latent class model is estimated using Stata and then to describe how to interpret the output.

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