Multilevel Latent Variable Modeling of Contextual Variables: Application of Multilevel Structural Equation Modeling on Rater Effects

Hawjeng Chiou

Department of Business Administration National Central University

The estimation of latent construct is the core issue of social and behavioral science. Structural equation modeling is the most important paradigm for estimation and for exploring the relationships among constructs. If the data for analysis involving multilevel or clustered structure, however, the multilevel SEM have to be applied for the special form of dataset. One of the features of multilevel data is that the observed variables in the individual level could be aggregated as a contextual variable into higher level. In terms of latent construct, contextual variable may behave as a latent form and should be estimated in a way of factorial analysis instead of manifest procedure. In a circumstance that the latent contextual variables have significant effects on dependent variable is called latent contextual effects. The purpose of present paper is to clarify the significance of the latent contextual effects in the social research. Rating data of oral examination examined in the present study contains a total of 76 raters and 841 interviewees. A series of single and multiple level SEM models was proposed for examining the latent contextual effects. Results of Mplus indicated that the MSEM modeling can effectively extract the latent contextual variables and furthermore used to explain the dependent variables. Different factorial structure on latent contextual variables in both macro and micro level reveals that the contextual model is not equivalent across levels. The present study proved that the MSEM approach to examine contextual variables is more flexibility than traditional MLM paradigm. However, technical as well as methodological issues have to be solved.

Keywords: *contextual variables, latent contextual variables, multilevel data, multilevel structural equation modeling, rater effects*