

Ergodicity, local homogeneity and measurement invariance between subjects

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Keywords: ergodicity, multivariate time series analysis, measurement invariance

Abstract

Standard statistical techniques used in psychological research are based on the assumption of local homogeneity. In the common factor model this implies that the between-subject factor structure is the same as the within-subject factor structure. The latter can be determined using idiographic techniques such as Cattell's P-technique and multivariate time series analysis. To be able to interpret between-subject parameters at the within-subject level, measurement invariance between subjects is a necessary but not sufficient condition. It is shown that, if there is measurement invariance between subjects, but the time series observed in different subjects are not ergodic, parameters based on between-subjects data describe differences between subjects and may be invalid if one wishes to draw conclusions at the within-subject level.