

Statistical Models for Surveys and Other Studies of Small Groups

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Abstract

Surveys and other studies of small groups face the problem of non-independence of responses obtained from multiple group members. A common way to address this problem is to select or analyze data from just one member of each group (e.g. household, family, etc.). This sidesteps the potentially biasing effect of non-independence on standard errors and statistical tests, but also forecloses the ability to test hypotheses about relationships among responses from multiple group members. Often, however, the relationships among group members' responses are of central research interest, not simply a statistical nuisance. We outline several statistical models for analyzing these relationships and illustrate how to estimate and test the models using standard structural equation modeling (SEM) and hierarchical linear modeling (HLM) software. We also address the issue of whether the group members belong to a single class (e.g. same-sex twins) or to multiple classes (e.g. husbands and wives). We concentrate on very small groups, beginning with dyads, then considering triads, tetrads, etc. We also begin with the balanced case (equal sized groups) but describe extensions to mixed group sizes. Among the models we examine are the Actor Partner Interdependence Model most frequently used in relationship research with dyads, confirmatory factor analysis

models for small group data, latent growth curve models for small groups, and models for estimating, testing, and comparing dependent interclass and intraclass correlations. We also consider tests of the exchangeability of group members' responses, extending traditional tests of bivariate symmetry to cases with more than two group members.