

Abstract

In meta-analysis two practical problems are frequently encountered: dependent effect sizes from the same study or sample, and incomplete information in pooling correlation matrices. Common procedures for handling dependent effect sizes are to treat them as independent (effectwise procedure), or to average them within a sample (samplewise procedure). To handle missing data in pooling correlation matrices, the two common procedures are to include only studies providing all correlations of concern (listwise aggregation), or to include all studies that reported at least one correlation (pairwise aggregation). In the present paper, the empirical performance of these different procedures were assessed by simulation studies. Results revealed that the standard error for the effectwise procedure was underestimated, while the samplewise procedure underestimated the degree of heterogeneity. Two modifications of the samplewise procedure had a smaller bias in estimating standard error than the effectwise procedure, and had higher power than the samplewise procedure. When meta-analyzing correlation matrices, the pairwise procedure generally over-rejected the true path model, while the listwise procedure had smaller power than the pairwise procedure in detecting heterogeneity in correlation matrices. A revised generalized least squares pairwise approach reduced the over-rejection rate while retaining a high power in detecting heterogeneity. Future directions to for further improvement of these procedures were discussed.