ESTIMATING THE COMPARABILITY OF TWO DISTINCT VARIABLES: HOW TO MODEL ACROSS SUBJECTS AND REPEATED MEASURES

Sh. Zare

Hormozgan University of Medical Sciences, Bandar Abbas, Iran

Email: shzare@hums.ac.ir

Comparability between two variables arises when two different and distinct aspects of an underlying characteristic are measured in a succession of times. Any relationship between these two is likely to vary not only from subject to subject but even within repeat measures on the same subject. The first step in this study is the attempt to investigate how best to provide point and interval estimates for an assumed common correlation by pooling across a number of repeats for one individual. Five different methods of weighted, unbiased, Fisher, Hedges and Olkin, and profile likelihood estimates for producing a point and an interval estimate are introduced. Further investigation on the performance of these methods is carried out by means of a simulation study across a variety of underlying configurations. The overall results suggest the Fisher method as the best method of point and interval estimate of common correlation. In the second step, using Fisher transformation space, the correlation between a pair of variables across replicate visits for a number of individuals and then across all individuals in a sample from an appropriate population is modeled in a one-stage modeling process and in a twostage modeling process. Finally, to compare the two models, a simulation study is carried over a number of underlying configurations. The results show a tendency for narrower confidence intervals under the Multiplicative Fisher model both in one and in two stagemodeling.