Abstract

Background: With the 2-way mixed model, one a fixed factor and the other random, the procedure followed to test statistical significance of the random factor has been the focus of a heated controversy in theoretical and applied statistics, and the debating continues even now. One of the main consequences of this controversy is that the position defended in the classical ANOVA texts on the hypothesis of the significance of the random effect is not the same as that defended in almost all of the professional statistical software programs. Method: In this paper, we deal with a detailed analysis about the controversy of mixed model and the decision about one of two basic options, the non-restrictive and the restrictive model. Results: Three key questions we consider to go beyond the controversy are: (1) the two classical models are equivalent, (2) the marginality principle do not allow to test main effects in presence of interactive significant effects and (3) the relevance of linear mixed approach to analyze models with fixed and random effects. Conclusions: We propose the simple solution of using the mixed linear approach with REML estimation instead of the classical linear approach, which is really unapplicable in this context.

Keywords

Mixed approach, linear mixed model, mixed model controversy.