Statistical Practices of Educational Researchers: An Analysis of their ANOVA, MANOVA, and ANCOVA Analyses

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Abstract

Articles published in several prominent educational journals were examined to investigate the use of data analysis tools by researchers in four research paradigms: between-subjects univariate designs, between-subjects multivariate designs, repeated measures designs, and covariance designs. In addition to examining specific details pertaining to the research design (e.g., sample size, group size equality/inequality) and methods employed for data analysis, the authors also catalogued whether (a) validity assumptions were examined, (b) effect size indices were reported, (c) sample sizes were selected on the basis of power considerations, and (d) appropriate textbooks and/or articles were cited to communicate the nature of the analyses that were performed. The present analyses imply that researchers rarely verify that validity assumptions are satisfied and that, accordingly, they typically use analyses that are nonrobust to assumption violations. In addition, researchers rarely report effect size statistics, nor do they routinely perform power analyses to determine sample size requirements. Recommendations are offered to rectify these shortcomings.