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Author's reply

Frank Bretz, Martin Posch, Ekkehard Glimm, Florian Klinglmueller, Willi Maurer, and Kornelius Rohmeyer

We thank Drs. Xie and Chen for their interest in the gMCP package (Rohmeyer and Klinglmueller, 2012). Their observation of a seeming size inflation is explained by the fact that they apply the gMCP package to p-values of two-sided instead of one-sided tests. It is well-known that in many multivariate test situations two-sided tests cannot be constructed from one-sided tests by simply halving the significance levels or doubling p-values. For this reason, already Dunnett (1955) as well as standard text books (e.g. Hochberg and Tamhane, 1987) provided separate tables with critical values for both one- and two-sided cases. The methodology described in Bretz et al. (2011) applies generally to both one- and two-sided hypotheses tests. The gMCP package implements only the one-sided case when correlations between test statistics are exploited. This avoids the intrinsic problems occurring with directional decisions for stepwise multiple test procedures applied to two-sided hypotheses (Shaffer, 1980; Bauer et al., 1986), in particular because two-sided hypothesis tests can lead to counterintuitive decisions in the context of stepwise procedures.

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