Diagnostic-robust generalized potentials for identifying high leverage points in mediation analysis

ABSTRACT

Due to the fact that mediation model involves several linear regression equations, there is concern not only when the data contain observations that are extreme in the response variable but also in the regressor space, namely the leverage points. The Diagnostic Robust Generalized Potentials (DRGP) procedure in multiple linear regression incorporated the Robust Mahanalobis Distance based on the minimum volume ellipsoid and uses Median Absolute Deviation as its cut-off points. In this paper, a slight modification to the DRGP is proposed and we call it ModDRGP. The ModDRGP is applied to the mediation model. The performance of our proposed ModDRGP is evaluated based on Monte Carlo simulation study. The simulation results suggest that ModDRGP has improved the accuracy of the identification of high leverage points when the percentage of high leverage points is medium or high. The method can also be used for the identification of high leverage points in multiple mediation models, as well.

Keyword: Mediation analysis; Mahalanobis distance; Potentials; Monte Carlo