

Centre for Population Health Sciences – PhD projects 2012

Project title: Modern methods for detecting examiner bias in naturalistic assessment data

Principal Supervisor: Dr Margaret MacDougall

Second/third supervisors: Dr Pam Warner

Background:

This project aims to extend recent methodology involving hypothesis tests for detecting examiner bias to more naturalistic cases in which non-parametric assessment data cannot readily be Normalized and data may be categorical or sample sizes small. The successful candidate will have access to a rich and ongoing large database of examinee ratings for undergraduate medical students, commencing from 2001. This will facilitate the application of bootstrapping and Monte Carlo techniques to examine hypothesis test robustness and enhance the derivation of new approaches to obtaining associated confidence intervals. The research will apply specifically to cases where student scripts are double-marked, with one examiner having prior knowledge of student performance in a separate but related assessment. An emphasis will be placed on distinguishing between natural tendencies of individual students to perform well or poorly overall and consistency in perceived performance influenced by examiner bias. The research outcomes will therefore be of relevance across a wide range of disciplines where double marking is viewed as a reputable procedure for enhancing score reliability. Additionally, these outcomes will inform existing methodologies for detecting halo and horn effects within the more general literature on examiner bias. The final phase of the project will involve a more qualitative component requiring management of focus group sessions, with examiners as participants. The findings from this component will be used to explore the underlying sociocultural mechanisms which lead to halo and horn effects. This will in turn help to address the more philosophical issue of the extent to which such effects ought to be modelled as measurement error when estimating score reliability.

The Student:

Interested candidates may already wish to pursue a career in educational research or acquire solid methodological training for a career as a social statistician.

Additional requirements

Essential: a good first degree (at least 2:1) and Master's degree in the mathematical sciences or in psychology (or a related social science) with a substantial quantitative component; postgraduate level training in psychometrics or educational psychology, normally as part of a Master's degree programme; experience in the application of statistical regression techniques, including Generalized Linear Modelling

Desirable: experience in the application of intraclass correlation coefficients for a variety of research designs; experience in the use of MPlus, R or Stata and in the application of bootstrapping and Monte Carlo techniques, experience in the construction of in vivo codes from transcript data.

Suggested reading/further info:

MacDougall M, Riley SC, Cameron HS, McKinstry B. Halos and horns in the assessment of undergraduate medical students: a consistency based approach. Journal of Applied Quantitative Methods. 2008;3 (2):116 – 28 (<http://jaqm.ro/volume-3,issue-2.php>)