

Item Parameter Recovery, Standard Error, and Fit Statistics of the BIGSTEPS

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Keywords: Rasch model, rating scale model, simulation.

Abstract

This study examines item parameter recovery, estimated standard error, and fit statistics of the BIGSTEPS/WINSTEPS under the Rasch model and the rating scale model through Monte Carlo simulations. The independent variables were (a) item response model, (b) test length, and (c) sample size. Five hundred replications were made under each condition. The results showed that the BIGSTEPS yielded practically unbiased estimates for item parameters, although the bias was somewhat more serious when the items were very easy or very difficult. The standard errors for item parameters were underestimated, especially for small sample sizes and the rating scale model. The cube-root-transformed weighted and unweighted fit statistics did not follow the standard normal distribution in that their empirical variances were much smaller than unity. For the Rasch model, this underestimation was more serious when the item difficulty moved further away from zero. A procedure is proposed to correct this underestimation. In addition, cut points for the weighed and unweighed mean square errors are developed to screen misfitting items.