ScoreGGUM: An R Package for Estimating GGUM Person Parameters Using Pre-Calibrated Item Parameters and Disagree–Agree Response Data

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David R. King¹ and James S. Roberts¹

The generalized graded unfolding model (GGUM; Roberts, Donoghue, & Laughlin, 2000) measures individual differences on a latent continuum as a function of either binary or graded, disagree–agree responses to Likert- or Thurstone-type items. The GGUM assumes that an individual endorses items to the extent that the items reflect his or her self-concept or personal ideal, and hence the model is particularly well suited for measuring attitudes (Roberts, Laughlin, & Wedell, 1999) or personality factors (Drasgow, Chernyshenko, & Stark, 2010). Freeware software exists (GGUM2004; Roberts, Fang, Cui, & Wang, 2006) for simultaneously estimating item and person parameters in the model, but it does not allow applied researchers to use pre-calibrated items obtained from a norming study to score disagree–agree response data for individuals who were not in the calibration sample.

Program Description

The R package ScoreGGUM estimates person parameters and associated standard errors for the GGUM or one of its seven nested variants using an expected a posteriori (EAP) estimator and a posterior standard deviation (Bock & Mislevy, 1982). The user provides the disagree–agree response data to be scored along with the item parameter estimates output file from a previous GGUM2004 calibration. If the GGUM2004 output file is not available, the user may enter the item parameter estimates directly using a standard format. Program features allow for missing responses, variable numbers of response categories across items, response cutoffs that eliminate uninformative response patterns, recoding of integer responses, specification of the number of quadrature points for the prior distribution, and generation of a histogram of the EAP estimates.

Availability, Documentation, and Distribution

The R package ScoreGGUM can be downloaded at no charge from the Comprehensive R Archive Network (CRAN) at <http://www.cran.r-project.org> and is compatible with Windows, Mac OS, and Linux platforms.

¹Georgia Institute of Technology, Atlanta, GA, USA

Corresponding Author:

David R. King, School of Psychology, Georgia Institute of Technology, 654 Cherry Street, Atlanta, GA 30332, USA.
Email: david.randall.king@gatech.edu

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