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Tiffany A. Whittaker, Steven J. Fitzpatrick, Natasha J. Williams and Barbara G. Dodd
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Computer Program Exchange

IRTGEN: A SAS Macro Program to Generate Known Trait Scores and Item Responses for Commonly Used Item Response Theory Models

Tiffany A. Whittaker, University of Missouri-Columbia
Steven J. Fitzpatrick, Pearson Educational Measurement
Nataasha J. Williams, ACT, Inc.
Barbara G. Dodd, University of Texas at Austin

Description

When conducting simulation studies using item response theory (IRT) models, a trait level and responses to items according to a given IRT model are generated for each hypothesized person. IRTGEN is a collection of SAS macros that can generate known trait scores (theta values) according to the random normal or random uniform distribution and item responses for simulees based on the graded response (GR) (Samejima, 1969), partial credit (PC) (Masters, 1982), generalized partial credit (GPC) (Muraki, 1992), rating scale (RS) (Andrich, 1978), successive intervals (SI) (Rost, 1988), and three-parameter logistic (3PL) (Birnbaum, 1968) IRT models. Before using the macro, the user must first create a SAS data set containing the item parameters for the desired IRT model.

The input SAS data set containing item parameters, the name of the IRT model being used to generate item responses, the number of items to which responses are generated, and the number of examinees for which theta values are generated are passed to a macro named IRTGEN. The user can specify either a normal or uniform distribution under which the known trait scores will be generated and has the option to reproduce the same trait scores when using the macro. The output is another SAS data set that contains the responses of each simulee to each item and each simulee's known trait score. The macros are able to generate responses to items with differing numbers of categories when one of the polytomous IRT models is used.

Availability

The SAS code is included in the IRTGEN manual, which provides several examples of how to use the macros and calibration results under the various IRT models. The manual (in rich text format) is available without charge. Send a DOS-formatted 3.5-inch diskette and a self-addressed, stamped disk mailer to Tiffany A. Whittaker, 16 Hill Hall, University of Missouri-Columbia, Columbia, MO 65211. The IRTGEN manual may also be obtained through the Internet by sending an e-mail request to TWhittaker@mail.utexas.edu.

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299

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