A Comparison of Rapid Guessing Scoring Approaches An Applied Analysis

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Background

➢ Rapid guessing (RG; a noneffortful response strategy) is a validity threat prevalent on low-stakes, multiple-choice educational tests

➢ This study aimed to compare five scoring approaches for handling RG across five unique assessment contexts

Scoring Procedure	Model Dimensionality	RG Response Recoding
Penalized (PN)	Unidimensional	Incorrect
Effort-moderated (EM)	Unidimensional	Missing
EM-Imputation (EM-I)	Unidimensional	Multiple Imputation
Holman and Glas (HG)	Multidimensional	Missing
Mislevy and Wu (MW)	Multidimensional	Missing & Incorrect

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Datasets

➤ International (n=4) and national (n =1) large-scale assessments data

➤ Datasets differed in:

- Sample size
- Test domain
- Target examinee
- Test length
- Test language

Analysis & Outcomes

Analysis

➢ Item and ability parameters were estimated by a Rasch model for HG-MI, EM-MI, and ML scoring procedures

Outcomes

➢ Model fit was evaluated by Bayesian information criterion (BIC)

➢ Ability estimates comparability

- Linear correlation coefficients for the total sample
- Gender subgroup performance differences

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Findings

Model Fit

➢ EM scoring approach obtained the lowest BIC values across all datasets

➢ HG and MW scoring approaches provided the poorest model fit

Parameter Estimates

➢ A strong association was observed for both parameters across five datasets

➢ The largest ability estimates discrepancies were noted for EM and MW scoring

➢ The size of differences between gender groups decreased when using HG and MW scoring

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