

Development of the Hamdan Giftedness Test: Psychometric Analysis Strategies According to Advanced Global Models (Rasch Model)

Prof. Dr. Alaa Eldin Abdel Hamed Ayoub
alaaeldinaa@agu.edu.bh

ABSTRACT

This study aimed to assess the psychometric properties of Hamdan Giftedness Test by applying Rasch model. Hamdan Giftedness Test comprise of the five cognitive ability tests; Verbal Ability I (Semantic Information Processing), Preknowledge in Science (Conceptual Information Processing), Verbal Ability II (Comprehension), Preknowledge in Mathematics (Quantitative Information Processing), and Nonverbal Ability. All test items were designed for the four respective age groups (grade 4-6, grade 7-8, grade 9-10, grade 11-12).

Participants in this study were 12071 students (4009 male and 8062 female) and they are representatives of the seven governorates of the UAE. The results of the psychometric analysis of Hamdan Giftedness Test includes validity and reliability, item calibration and differential item functioning (DIF) assessment. Standardized residual variance, Largest standardized residual correlations were used to identify dependent item. Moreover, difficulty coefficients estimated according to Rasch model with different methods were used to handle missing values. Additionally, the results contained the percentiles/ standards table, which showed the values of the raw scores and the estimated abilities values according to Rasch model corresponding to the percentile ranks. Finally, Cut-off scores were also set to identify gifted students.

KEYWORDS:

Standards table, Estimated abilities, Statistical analysis