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خلاصه مقاله:

Cognitive diagnostic models (CDMs) have received sustained attention in educational settings because they can be used to operationalize formative assessment to provide diagnostic feedback and inform instruction. A large number of CDMs have been developed over the past few years. An important component of all CDMs is a Q-matrix that specifies a particular hypothesis about the relationship between each test item and its required attributes. The purpose of this study was to construct and validate a Q-matrix for the reading comprehension section of the Islamic Azad University English Proficiency Test (IAUEPT), as an advanced English placement test designed to measure language ability of Ph.D. candidates who tend to pursue their studies in the IAU. To achieve this, using item responses of ۱۱۵۲ candidates to twenty items of the reading section of the test, an initial Q-matrix was constructed based on theories and models of second/foreign language (L۲) reading comprehension, previous applications of CDMs on L۲ reading comprehension, and brainstorming and consensus of five content experts. Then, the initial Q-matrix was empirically validated using the method proposed by de la Torre and Chiu (۲۰۱۶) and checking mesa plots, and heatmap plot. Five attributes were derived for the reading comprehension section: vocabulary, grammar, making an inference, understanding specific information, and identifying explicit information. Finally, the analysis of the Generalized Deterministic Inputs, Noisy "and" Gate (GDINA) regarding absolute fit at item- and test-level as well as three residual-based statistics showed the accuracy of the Q-matrix and a perfect model-data fit.

کلمات کلیدی:

Cognitive Diagnostic Models (CDMs), GDINA, Islamic Azad University English Proficiency Test (IAUEPT), Q-matrix, Reading comprehension attributes