

In the framework of dichotomous response data, this study develops Markov Chain Monte Carlo estimation theory for an item response model that estimates the answer key, in addition to respondent competence (ability), response bias, and item difficulty parameters. This model unifies ideas of test theory and latent structure analysis, as the estimated answer-key infers the "latent class" of each item, as defined by a homogeneous respondent group. Both unrestricted and restricted versions of the model can accurately reconstruct the answer-key, even for data containing a very small number of respondents. Extensions and practical implications for the model are discussed.