

Maximizing the Validity of a Test as a Function of Subtest Lengths for a Fixed Total Testing Time: A Comparison between Two Methods

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Abstract

Two methods proposed for determining the lengths of the subtests of a test with a fixed total testing time, so as to maximize the predictive validity of the test, were compared. In the search method (Kennet-Cohen, Bronner, & Cohen, 2003) a search for the optimal allocation of the total testing time among the subtests is conducted by a repetitive process of transferring testing time from one subtest to another and calculating the predictive validity that would be obtained. In the analytic method (Jackson & Novick, 1970), a formal solution is offered. This solution is valid and unique whenever it specifies nonnegative times for all subtests. A step-down procedure is suggested for cases in which some of the testing times are zero. Both methods were applied to the Psychometric Entrance Test, using data obtained from 4,321 first-year students in Israeli universities. Not only was the search method validated by the analytic method, it also overcame some of its limitations. Two appendices are included in the paper. Appendix 1 presents a comparison between the search method and the regression-weights approach for maximizing validity. Appendix 2 explains and discusses a correction used in the calculation of the estimates of the subtest reliabilities.