The Aptitudes of Engineering Students

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ABSTRACT

This report presents the results of a validation study of 256 University of Texas-Austin (UT-Austin) engineering students. The engineering students were administered the Johnson O'Connor Research Foundation's standard battery of aptitude and knowledge tests to examine how aptitude performance relates to performance in and completion of the engineering major.

The engineering students as a whole were a quite able group. They averaged High scores (70th percentile or above) on Graphoria, Foresight, Number Series, Memory for Design, Number Memory, and Mathematics Vocabulary. Also, students who successfully completed an engineering degree at UT-Austin scored significantly higher than unsuccessful students on Analytical Reasoning, Number Series, Number Facility, Incomplete Open Cubes (a test of structural visualization), and both English and Mathematics Vocabulary. In terms of engineering degree specialties, mechanical engineering majors excelled on Inductive Reasoning, Incomplete Open Cubes, and Spatial Visualization. Electrical and chemical engineering majors excelled on the two vocabulary tests. Correlations between standard battery performance and college grade point averages showed significant relationships for Foresight, Number Facility, Memory for Design, and the two vocabulary tests.

A follow-up questionnaire was sent to participants in the study, but there were too few respondents to obtain meaningful results.

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From the Foundation, Ms. Marsha Buckner, test administrator from our Seattle office, worked with Mr. Halton in the planning for the study and organized the recruitment and testing of the first two cohorts of students. Mr. David Lyon, director of our Los Angeles testing office, took over leadership for the latter two years of recruitment and testing. Other Foundation staff who tested students included Mr. Russell Burke, test administrator from our Washington, D.C., office; Mr. Richard Hoffman, director of our Houston office; Mr. Edwin Delaney, test administrator from our New York office; and Ms. Karen Metzger and Mr. Don Anderson, test administrators from our Chicago office. Ms. Wendy Bigelow, Director of Testing for the Foundation, assisted greatly with the organization and recruitment for the study. Two research assistants, Ms. Mikako Nakajima and Ms. Lia Meyer, worked on the analysis of the overall aptitude pattern of the 256 undergraduate majors. Finally, Mr. Russell Burke and Mr. David Ransom offered very constructive criticism and useful suggestions throughout the writing of this report.