

**GTE-Employee Capability and Competency Design:
Development and Validation
of the GTE Selection Test (GTEST)**

Project Date: April 1997-July 2000

Description

The purpose of this project was to develop and validate an automated selection system to measure basic skills and abilities important for success in hourly and salaried non-exempt jobs at GTE. This new selection system, named the GTE Selection Test (GTEST), was designed to replace many existing test batteries. GTEST includes two test batteries ³/₄ an initial screen and a job family screen. Both batteries were designed to be administered and scored on computers. The initial screen takes about a half hour to complete, and measures the basic skills and abilities (such as the ability to read) that are essential for success in any job within GTE. The job-family specific test battery takes about two hours to complete, and includes tests designed to measure the most important skills and abilities for each of 11 broad job families. GTEST includes measures of cognitive abilities (e.g., verbal comprehension, spatial ability, mechanical comprehension), as well as measures of interpersonal skills and behaviors that contribute to teamwork and initiative. Major project steps included job domain definition, job analysis, test development, job performance measure development, and test validation. These steps are described below.

Job Domain Definition. At the time this study was conducted, there were over 700 hundred hourly job titles and several hundred salaried non-exempt job titles within GTE. Before the jobs at GTE could be analyzed, and before tests could be developed, the domain of jobs to be targeted in this study had to be specified. The goal of the first project step was to specify the domain of jobs of interest in this study, and to group those jobs into an initial set of job families. In many cases, people with different job titles performed the same tasks. In other words, different titles represented the same job. In other cases, people in jobs that had the same title had very different responsibilities and performed different tasks. Thus, the same title represented several different jobs. During the job domain definition step, project staff met with GTE HR representatives and with managers from many different operational groups to determine which job titles represented the same job, which titles represented several different jobs, which titles were no longer being populated or were being transitioned to new titles, and which jobs required similar skills and abilities. This project step resulted in a list of jobs to be targeted in this study, grouped according to job family.

Job Analysis. An activity list and a list of skills and abilities was developed using a variety of sources, including the results of previous job analyses and input from subject matter experts. These lists formed the basis for a Job Analysis Questionnaire (JAQ). A branching format was used with the JAQ. This format allowed respondents to skip blocks of activities that were not relevant to their jobs. The JAQ was completed by approximately 6,000 employees, including hourly and salaried non-exempt incumbents and their supervisors. The information collected with this questionnaire was used to identify the (1) important and time consuming activities, and (2) required skills and abilities. This information was summarized according to job title, and empirically similar jobs were identified. A job family structure, including 11 job families, was identified based on the

JAQ data. Profiles of skill and ability requirements in each of the job families were used to determine target predictor constructs. Finally, job analysis information was used to develop experimental performance measures against which the effectiveness of GTEST was gauged.

Test Development. Information obtained in the job analysis step indicated the critical skills and abilities important for success in each job family. Tests were designed to measure these critical skills and abilities. Both cognitive tests and tests of interpersonal skills were developed. The tests were computerized using software developed for GTE by a vendor, and were administered to technical school students during a large-scale pilot test. Information gathered during the pilot test was used to refine the tests and to develop two forms of each of the cognitive tests.

Development of Job Performance Measures. Based on the information gathered in the job analysis step, experimental performance measures were developed. These performance measures consisted of rating scales designed to be completed by supervisors of hourly and salaried non-exempt employees. The rating scales were used to gauge current employees' performance on job dimensions found to be critical during the job analysis.

Test Validation. A large-scale, concurrent criterion-related validity study was conducted to determine the extent to which scores on the tests are empirically related to performance within each job family. The tests were administered to incumbents in each job family. Supervisors of the incumbents who took the tests provided performance appraisal ratings using the job performance measures described above. The data gathered during this project step were analyzed to determine the relationship between scores on the tests and performance in each job family. These data were also used to examine the fairness of the tests for various demographic subgroups and to guide decisions about cut-off scores.

The data were also analyzed using a synthetic validation strategy, allowing us to (a) compute stable overall validities for each job family using the component samples rather than generally smaller job family samples, (b) conduct analyses to examine the fairness of the test battery for protected demographic groups with adequate statistical power, even for job families with small sample sizes, and (c) design efficient procedures for developing test battery scoring algorithms and producing associated validity evidence for new jobs, including jobs that are not similar enough to any existing job family to legitimately be considered to be part of an existing family

Results

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