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Choosing Graduate Fellows

Since 1952, 18,000 fellowships have been awarded under the National Science Foundation's Graduate Fellowship Program (and another 8000 under the Cooperative Fellowship Program). As many scientists know from participating in the selection process, the Office of Scientific Personnel of the National Academy of Sciences–National Research Council annually convenes panels of scientists who review the applicants' test scores and college grades and the ratings and information supplied by faculty members or other sponsors. The panels sort the applicants into several quality groups, and the NSF then awards fellowships, going down the quality ladder as far as available funds allow. How well has this process worked? Lindsey R. Harmon has recently answered that question in a summary* of 14 years of study and review of the process of selection, the predictive value of various kinds of information concerning candidates, and the results of the whole effort.

Analysis of the panelists' ratings indicates that they have made their judgments with satisfactory reliability and have been consistent over the years in the bases used in judging candidates. A related finding was that panelists are not biased in rating candidates in scientific fields other than their own. Applicants appeared to be neither helped nor hurt by having interests close to or remote from the center of interest of the panel which evaluated their applications.

Performance in graduate school provides one means of validating the selection process, but it is later performance as scientists that provides the more interesting measure of the effectiveness of selection. The awardees have done better in graduate school than the nonawardees; on the average, they received their doctorates more than a year earlier. About 4 months of this difference can be attributed to their superior ability, and about 7 months to the fellowship itself—or to the fellowship plus abilities not measured in the selection process.

After completing graduate school the awardees continued to do better than the nonawardees, but the validity correlations were substantially lower. The difficulty comes largely from the lack of reliable measures of successful scientific work. Positions, opportunities, and types of work differ. Work judged at one time may seem of greater or less importance than it will later. Nevertheless, modest but encouraging correlations were obtained between the judgments of the selection panels and the composite of a variety of measures and judgments of the effectiveness of the awardees as young scientists several years later.

It is also possible to judge the effectiveness of the selection by asking what would have happened if fellowships had been awarded by lot to a random group of applicants. The recipients would have done substantially better than the average graduate student, for even the nonawardees were a select group; the competition for NSF fellowships is known to be keen, and that fact deters many who might have applied. Nevertheless, those actually selected outperformed the hypothetical random group. The selection process has worked.

Perhaps the predictions could be improved if satisfactory measures of creativity or other variables that are thought to be important could be developed. With present methods, however, it does not seem likely that the validity of selection can be increased much. The hundreds of scientists who have reviewed some 70,000 applications for graduate fellowships (plus some 30,000 applications for cooperative fellowships) can take satisfaction in having done a good job.—DAEL WOLFLE

* *Fourteen Years of Research on Fellowships Selection*, National Academy of Sciences–National Research Council, Washington, D.C., 1966. $1.50.