LETTERS TO THE EDITOR

Asymptotic Relative Efficiency

I was pleased to read “Promise in Nonparametric” by Royeen and Seaver (March, 1986). As the authors state, analysis of data by nonparametric methods when the strong assumptions for parametric counterparts cannot be met provides the researcher with effective statistical procedures that may be more realistic and valid in a given situation.

It is also interesting to note that a measure of relative efficiency, called the asymptotic relative efficiency (ARE), can provide for a comparison of a nonparametric test with its parametric counterpart under normal distribution assumptions (1). For example, the ARE for the nonparametric Spearman rank correlation (when compared with its parametric counterpart of the Pearson product-moment correlation) is .912. This is interpreted to mean that with $N = 100$ using the Spearman, you will obtain the same efficiency as if the Pearson had been used with $N = 91$. This index may possibly assist in the choice of a nonparametric technique if more than one is appropriate in a given situation. The interested reader is referred to Gibbons for measures of asymptotic relative efficiency of other nonparametric tests.

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Student Research Assistants

In the March 1986 issue of the American Journal of Occupational Therapy Deborah Labovitz encouraged occupational therapy faculty members to use their students in research projects. As junior occupational therapy students from the University of Minnesota and prior to our experience as research assistants, we took research for granted, thought it was too complicated and boring, and had no idea how to begin a study. We feel it should be left to others more scholarly.

Judith Reisman, an instructor studying the influence of head movement on compensatory eye movements of infants, asked us to assist her for the summer. Our duties consisted of scheduling subjects, verifying appointments, preparing the computer and research room, meeting subjects with their parents and siblings, and informing them about the study and occupational therapy. During the data collection process, one assistant rocked the baby in its special infant seat coordinating the cradle movements with an oscilloscope signal. The other assistant held the infant’s head still and monitored its state. Our instructor was in charge of recording and analyzing data.

Daily exposure enhanced our learning about occupational therapy research. Terms such as vestibulo-ocular reflex, cervico-ocular reflex, and compensatory eye movements became topics of conversation. We became more familiar with research equipment such as computers, oscilloscopes, electrodes, and impedance meters, which were basic to our laboratory.

We also encountered the frustrations of research. Our 2- and 4-month-old subjects were far from predictable; one out of three cooperated. The other two thirds slept, fussed, or needed a change of diapers. Human error and machine malfunction also took their toll. Despite these setbacks, more than 100 infants were evaluated.

Now as graduating seniors our attitudes toward research have changed. Once the basic guidelines and terms are understood, research no longer seems foreign. This comprehension enables us to think of potential research projects—something that never happened during our junior year. We now have tremendous respect for those involved in research, believing it will further our profession. Finally, and most significantly, we feel an obligation and duty to participate in future research.

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The Purdue Pegboard: Its Predictive Validity for Work Potential of Persons with Mental Retardation

In the March 1986 issue of the journal, Virgil Mathiowetz and his four coinvestigators rekindled the long-term interests of occupational therapists in dexterity tests by determining the norms of the four subtests of the Purdue Pegboard test for the age group of 14 to 19 years. Their paper’s com-
prehensive literature review went back to Tiffin and Asher's (1) early paper on the reliability, validity, and norms of the Purdue Pegboard and continued with literature coverage through 1985. The authors included a citation of Tobias and Gorelick's (2) classical investigation of the effectiveness of the Purdue Pegboard as a predictor of work potential in retarded adults. The subject of predictive validity of work performance by dexterity tests is of considerable complexity and clinical value. The readers of the 1986 paper could benefit by the following additional literature coverage quoted from Renate Neeman (3):

Manipulative dexterity tests have repeatedly been found to be predictors of MRs' work success, for example, in Taylor's study at Goodwill Industries sheltered workshop in Tacoma, Washington, and in Shulman's study at Michigan State University and the Chicago Jewish Vocational Center.5,6 Taylor's study, which was oriented to assessment of the rehabilitation potential of MR adults, was designed to establish the degree of predictive validity of 15 tests, serving as predictor variables, against a Work Evaluation Scale (WES) developed by the Goodwill project as criterion measure. The predictive value of the test battery is the correlation of test scores with the WES. Among the 4 tests selected by Taylor as the most efficient predictors is the Purdue Pegboard (Assembly) Test, and a predictive formula is presented that gives the WES score from weighted scores of the 4 most efficient predictor test scores. Shulman's study was aimed at vocational development of Educable Mentally Handicapped adolescents. A review of this extensive investigation, which included a longitudinal study of the effects of training on a group of variables relevant to vocational maturity, is beyond the scope of the present paper. Shulman used the Purdue Pegboard test, among others, in what he termed the "competence group." This consisted of measures of intelligence, production, manual dexterity, general work behavior, and social maturity, and seemed to form an identifiable cluster that varied together. Also, Shulman found a correlation of 0.70 between Purdue Pegboard scores in the first year of the study and Employability Index in the third year of the study. Thus, the Purdue Pegboard Test turned out to be the best single predictor variable for Employability found in this study. The Purdue Pegboard was very stable over the three years of the study. In an earlier study, Tobias and Gorelick had found the Purdue Pegboard Test an effective predictor of productive efficiency of MRs in a variety of production tasks.7 Thus, the predictive validity of the test for MRs can be considered well established (p. 309).

The above quote places into context the predictive validity of the Purdue Pegboard for criteria of work evaluation, vocational maturity, competence, and other variables determining the potential for employability of persons with mental retardation. Neeman's work (3) also served to intercorrelate the Purdue Pegboard tests with other measures of manipulative dexterity (O'Connor Finger Dexterity) (4) and measures of perceptual-motor abilities (5) of persons with mental retardation by cluster analysis (4). As can be seen from the additional literature germane to dexterity measures, they are closely related to the psychomotor domain and should not be viewed in isolation.

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REFERENCES