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Test Validity: *g* Versus "Tacit Knowledge"

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What is This?

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performance would be highly suspect in the eyes of ability researchers and industrial-organizational psychologists.

The key problem with Sternberg and Wagner's article is that it attempts to introduce two new constructs—tacit knowledge and practical intelligence—that are just not needed; they are redundant with the existing construct of job knowledge, which is broader and more explanatorily powerful. Job knowledge explains a wider range of phenomena; has well-studied relationships with intelligence, job experience, and job performance; and relates nicely to known principles of learning theory. The theory the authors offer (in which their constructs are embedded) is inconsistent with many existing research findings, and there appear to be no research findings (or real-world observations) that are explained better by their theory than by existing theories.

Notes

1. An overview of this research is provided in F.L. Schmidt and J.E. Hunter, Development of a causal model of processes determining job performance, *Current Directions in Psychological Science, 1*, 89–92 (1992). More detail can be found in the following: F.L. Schmidt, J.E. Hunter, and A.N. Outerbridge, The impact of job experience and ability on job knowledge, work sample performance, and supervisory ratings of job performance, *Journal of Applied Psychology, 71*, 432–439 (1986); F.L. Schmidt, J.E. Hunter, A.N. Outerbridge, and S. Goff, The joint relation of experience and ability with job performance: A test of three hypotheses, *Journal of Applied Psychology, 73*, 46–57 (1988); and J.E. Hunter, Cognitive ability, cognitive aptitudes, job knowledge, and job performance, *Journal of Vocational Behavior, 29*, 340–362 (1986).

2. Computed from information given in R.K. Wagner, Tacit knowledge in everyday intelligent behavior, *Journal of Personality and Social Psychology, 52*, 1236–1247 (1987).

3. See the following two articles for explanations of why this is the case: L.G. Humphreys, Commentary: What both critics and users of ability tests need to know, *Psychological Science, 3*, 271–274 (1992); A.R. Jensen, Commentary: Vehicles of g, *Psychological Science, 3*, 275–278 (1992).

4. See, e.g., D.S. Ones, C. Viswesvaran, and F.L. Schmidt, Meta-analysis of integrity test validities, *Journal of Applied Psychology* (in press). Measures of integrity and conscientiousness predicted ratings of job performance with an average correlation of .41; the correlation of these scales with intelligence is essentially zero.

Controversies

Test Validity: g Versus "Tacit Knowledge"

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Sternberg and Wagner (this issue) argue that the well-established empirical evidence for the practical predictive validity of psychometric g (such as claimed by Ree and Earles[1]) is somehow "wrong." On the contrary, it is Sternberg and Wagner who are wrong. They are also wrong to identify g merely as "academic intelligence," as if it were something highly specialized and elitist. There is much more to g than the fact that it is a better predictor of academic performance than any other known ability factor or combination of factors independent of g.[2] There is no longer any question that g is a large component of virtually every measure that validly predicts training outcomes and proficiency on the job in a wide variety of occupations. Other ability factors independent of g usually contribute, but seldom more than g, to the predictive validity for specific jobs.

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Given that g and the other ability factors all together typically account for considerably less than half of the criterion variance, the problem now is to discover other variables that will appreciably enhance prediction of training and job performance. In view of the past vast efforts based on tests of ability factors alone, I suspect that if any such additional variables are found, they will be found not in the abilities domain, but in the domain of personality, motivation, interests, and values. The proclivity to acquire tacit knowledge could turn out to be one such variable.

At present, however, tacit knowledge seems an exceedingly mysterious variable, theoretically and empirically. We are told that it behaves like a personality factor (predicting "adjustment" in college), and that it also predicts scholastic performance. But then we are told that it is virtually uncorrelated with personality, or with IQ or g, or with almost anything else we know something about (cognitive style, interpersonal orientation). Obviously, we will need to know much more empirically about the nature of tacit knowledge for it to become a theoretically coherent and convincing psychological construct.

I would like to see measures of tacit knowledge factor analyzed among a standard battery of ability tests. (I would bet that tacit-knowledge tests are about as highly g-loaded as most other cognitive

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tests, when corrected for attenuation.) On the practical side, the first order of business is a large-scale validity study. Measures of tacit knowledge should be entered into a stepwise multiple regression after entering g factor scores derived from a conventional test battery, to see how much tacit knowledge increases the multiple correlation over and above the simple g-score validity coefficient.

Although Ree and Earles[1] presented massive evidence for the validity of g, one might question (a) the narrowness of their test batteries in terms of the variety of ability factors included and (b) the relative homogeneity of their subject samples. However, support for their conclusion can be found in a broader study[3] using the same types of analysis with the more diverse General Aptitude Test Battery (GATB), which comprises 11 subtests. Figure 1 shows the results for subject samples in over 400 occupations, ranging from unskilled manual laborers to Ph.D. mathematicians. The median G-score validity coefficient was +.27; the median multiple-predictors validity coefficient, based on an optimally weighted composite of GATB subtests for each occupation, was +.36. Although unique, optimally weighted composites of other ability factors (independent of g) added slightly but significantly to the predictive validity for various occupations, g per se contributed overall by far the most to validity.

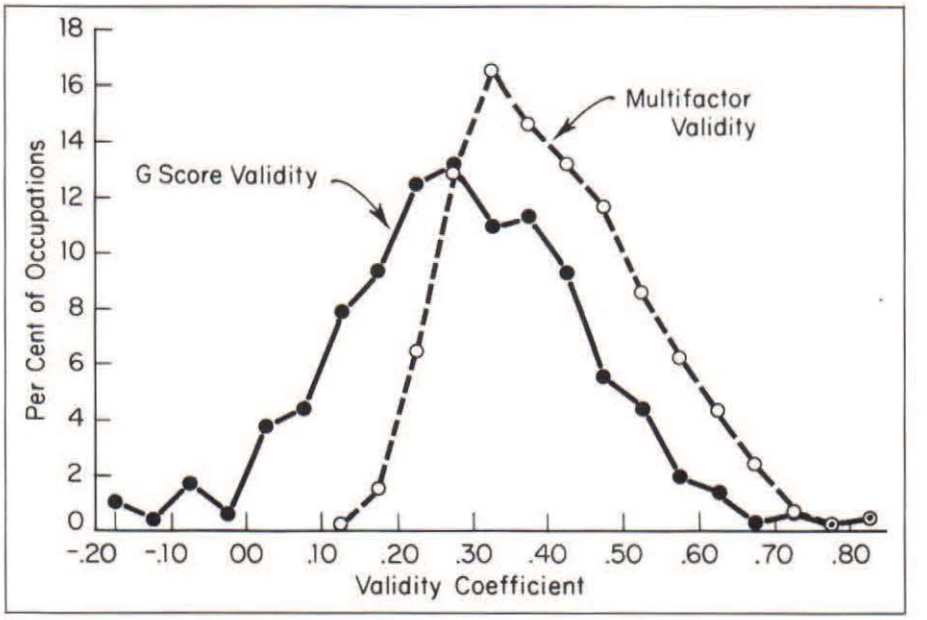

Fig. 1. Frequency distribution of 537 validity coefficients of the General Aptitude Test Battery (GATB) for 446 different occupations. G score is general intelligence; multifactor validity is based on an optimally weighted composite of nine GATB aptitudes (including G) for each job category. The median validities are +.27 for G and +.36 for the multifactor composite.

What does not show up in Figure 1 (and also is not mentioned by Ree and Earles) is that g acts as a threshold variable for entry into many higher-level occupations. Hence, an analysis of variance of the GATB data indicates that about half of the total g variance is associated with mean differences *between* occupations.

Notes

1. M.J. Ree and J.A. Earles, Intelligence is the best predictor of job performance, *Current Directions in Psychological Science, 1*, 86–89 (1992).

2. A.R. Jensen, The g beyond factor analysis, in *The Influence of Cognitive Psychology on Testing and Measurement*, J.C. Conoley, J.A. Glover, and R.R. Ronning, Eds. (Erlbaum, Hillsdale, NJ, 1987).

3. A.R. Jensen, *Bias in Mental Testing* (Free Press, New York, 1980); A.R. Jensen, Test validity: g versus the specificity doctrine, *Journal of Social and Biological Structures, 7*, 93–118 (1984).

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