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Women, Math, and Test Scores

The article "Sex differences in mental test scores, variability, and numbers of high-scoring individuals" by L. V. Hedges and A. Nowell (7 July, p. 41) does not adequately address the question of mental test validity in predicting youth's performance in science and math courses or related careers. Studies have shown that standardized test scores tend to underpredict college grades for women and may overpredict for men (News & Comment, 17 Feb. 1989, p. 885); performance in school involves more than the ability to do well on standardized tests. In addition, the fairness of these tests for all populations, especially for girls and minority students, must be seriously questioned.

We find particularly disturbing the statement by Hedges and Nowell (p. 45) that "differences in the representation of the sexes in the tails of ability distributions are likely to figure increasingly in policy discussions about salary equi-

ty." Using standardized test scores as an argument for justifying salary inequity would be silly. It is job performance, not test scores, that should determine salary and advancement. This performance depends on many factors, including ability, education, training, work environment, and such personal qualities as motivation, commitment, and creativity. Test results do not predict on-the-job performance for the teacher, physician, lawyer, or scientist.

Finally, it concerns us that Hedges and Nowell suggest intervention for boys to raise their low literacy scores, but do not recommend interventions known to help girls reach their full potential in math and the sciences. Does this omission imply that girls cannot be helped? As women in science, we find this a dangerous assumption. Let us not exclude one-half of the population in our quest for math and science literacy.

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Response: We agree that test scores and group differences must be interpreted with caution, but Kegel-Flom and Didion may have misinterpreted our article. While we specifically suggested interventions for those with low literacy scores, we would also enthusiastically support interventions to help women improve their chances in mathematics and the sciences. We thought this was implicit in our positing socialization and opportunity structures as the likely cause of the differences we observed.

Our statement that test scores are likely to figure in policy discussions about salary equity was not a suggestion that test scores should be used to justify salary differences; it was a statement of fact that the amount of research on the relation between test scores and salary appears to be increasing. We agree that performance *should* determine salary and advancement. Social scientists, however, study real, as opposed to ideal or preferred, social behavior; their work may help document the discrepancy.

Finally, the issues of test fairness and job performance hold similar elusive qualities. A recent review (1) supports the notion that, because Scholastic Aptitude Test scores are somewhat *more* valid for females than for males, the linear regression prediction (derived from males' or from both sexes' scores pooled) tends to underpredict females' college grades. However, the higher validity coefficients for females also mean that females' grades are actually better predicted by tests than are males' grades.

Although there is extensive and convincing evidence that test scores predict job performance in many occupations (2), we know of no direct studies that have measures of on-the-job performance in the specific fields mentioned. Indirect studies of teachers (which use student learning adjusted for student background and school characteristics as a performance measure) show a consistent relation between verbal scores of teachers and performance. However, test scores can predict only a portion of performance in any occupation.

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2. J. A. Hartigan and A. K. Wigdor, *Fairness in Employment Testing: Validity Generalization, Minority Issues, and the General Aptitude Test Battery* (National Academy Press, Washington, DC, 1989).

Corrections and Clarifications

The News article "Another blow weakens EMF-cancer link" by Gary Taubes (29 Sept., p. 1816), discussed two papers that appeared in the October issue of the journal *Radiation Research*, not the "*Journal of Radiation Research*," as the article stated. The correct references are as follows: A. Lacy-Hulbert *et al.*, "No effect of 60 Hz electromagnetic fields on MYC or β -actin expression in human leukemic cells" [*Radiation Research* 144, 9 (1995)] and J. D. Saffer and S. J. Thurston, "Short exposures to 60 Hz magnetic fields do not alter MYC expression in HL60 or Daudi cells" [*Radiation Research* 144, 18 (1995)].

In the article "Grad school rankings rankle" by Wade Roush (News & Comment, 22 Sept., p. 1660), in the National Academy of Sciences (NAS) rankings of graduate geoscience programs (p. 1661), Stanford University appears twice—just as it does in the actual NAS data. The first Stanford listing is for its Program in Geophysics. The second is for the school's traditional geosciences program.

Figure 1 in the response by M. W. Moore *et al.* (15 Sept., p. 1591) to the technical comment "Neutrophilia in mice that lack the murine IL-8 receptor homolog" by D. E. Schuster *et al.* (15 Sept., p. 1590) was incorrectly placed in the text of the comment. It should have appeared in the text of the response by Moore *et al.*

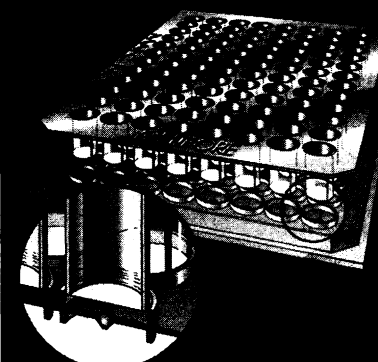
The name of the fourth author of the report "Identification of a stimulator of steroid hormone synthesis isolated from testis" by N. Boujrad *et al.* (16 June, p. 1609) should have been given as Choong-Hyun Lee. In note 26 of the same report (p. 1612), the name of the Kyung Hee University was misspelled.

Figures 1 (p. 1314) and 2 (p. 1315) of the Research Article "Mutagenesis and Laue structures of enzyme intermediates: Isocitrate dehydrogenase" by J. M. Bolduc *et al.* (2 June, p. 1312) were printed as cross-eyed stereograms, not the usual wall-eyed stereograms. In the same article, Robert M. Sweet's affiliation should have been given as the Biology Department at Brookhaven National Laboratory, and in note 27 (p. 1318), it should have been noted that Sweet was supported by a grant from the U.S. Department of Energy.

Letters to the Editor

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