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IU researcher says tools to assess bias in tests are flawed

Study: Systems to spot bias in standardized tests don't work

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Standardized test scores often are an important tool used in evaluating aptitude, educational performance and even the suitability of personality types for employment opportunities.

The accuracy and validity of testing, as well as the weight placed on testing, have been challenged for as long as there have been tests.

New research from the Kelley School of Business at Indiana University argues that accepted measures to prevent "test bias" are flawed. "The belief in the fairness of the tests and the accuracy of the gauges to check them has been so deeply ingrained that to challenge them would be akin to questioning the sun as center of the solar system," said Herman Aguinis, a professor of organizational behavior and human resources.

"The irony is that for 40 years, we have been trying to assess potential test bias with a biased procedure, and we now see that countless people may have been denied or given opportunities unfairly," he said in an IU news release. "From an ethical standpoint, it may be argued that even if only one individual is affected this way, that is one too many. The problem is obviously magnified when we are dealing with hundreds of thousands, if not millions, of individuals taking standard-

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TEST BIAS

Study: Tools used to spot bias don't work

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ized tests every year."

Aguinis explained in an interview Friday that his research team created what he believes to be the largest numerical simulation ever undertaken to evaluate whether accepted standards to check for "test bias" actually worked. Hundreds of computers working nonstop for months utilized nearly 16 million samples to yield more than eight trillion pairs of individual test and outcome scores.

"We created scores with bias built into them," he said. "We knowingly and intentionally built bias in, and then we used the typical tools to assess whether there was bias in our data. The tools did not detect bias. Clearly, that's a problem."

A simple definition of test bias is: "A test which shows provable and systematic differences in the results of people based on group membership. For example, a test might be considered biased if members of one particular gender or race consistently and systematically have statistically different results from the rest of the testing population," according to about.com.

"For generations, important decisions have been made about life-changing opportunities in employment and education based on results of these tests — but we can no longer say with certainty they are unbiased," Aguinis said.

The director of the Kelley School's new Institute for Global Organizational Effectiveness said he does not have the magic formula to find or correct test bias, but that the research casting doubt on the existing methods for finding bias can not be underestimated. Standardized testing is used in the public schools, for admission to college and for admission into graduate and professional schools, he pointed out.

"After you've finished with schooling, tests are used for who to hire and who not to hire; for federal and state jobs; in the public sector; and not only for tests of general mental abilities but tests of personalities and attitudes," he said. "Testing is a pervasive fact of our lives, and many important decisions are made on a daily basis regarding thousands if not millions of people."

Aguinis said he expects his research to be controversial, and he welcomes both scrutiny of his work and debate. It was just published in the July issue of the Journal of Applied Psychology, a leading academic publication.

"It's challenging some established beliefs about how tests work, and hopefully it will lead to more and better research. We certainly acknowledge that no one intentionally promotes or condones bias. But much like in any science, in physics or astronomy or biology, in time you develop new instruments that allow you to measure things better or differently. In the case of the Hubble telescope, for example, we now have new information about the size and age of the universe."

Aguinis performed his research with researchers from the University of Colorado at Denver and the University of Memphis. Supercomputing power unavailable just a few years ago enabled the researchers to conduct their vast study, he said.

"Actually, that's one of the reasons I came to IU just over a year ago," he said. "I realized what incredible value supercomputing technology can have and that I needed to move to a university that could do this kind of work," the former University of Colorado professor said.

Although the bias study was done on hundreds of networked personal computers, Aguinis said he is already planning follow-up work on IU's Big Red. When commissioned in 2006, Big Red was one of the most powerful university-owned computers in the U.S. and one of the 50 fastest supercomputers in the world.