



Intelligence and Achievement Testing: Is the Half-Full Glass Getting Fuller?

More research is needed to try to ensure that IQ and achievement tests are used to maximize learning opportunities for all students.

Findings

When psychologist Alfred Binet developed a test to measure the intellectual skills of French schoolchildren in 1904, he could not have possibly imagined how his research would change the world. In the last century, IQ and achievement tests have changed the face of education and employment all over the industrialized world. Given modern controversies regarding IQ testing, one might ask how Binet viewed intelligence. Binet equated intelligence with common sense. He called intelligence "judgment...good sense...the faculty of adapting one's self to circumstances." Binet also believed that intelligence is a combination of many skills - skills that are shaped heavily by the environment. His research goal was to help teachers adapt their teaching methods to the needs and abilities of individual students. Students with a weakness in math, for example, could receive special attention in this specific area.

Things changed when IQ and achievement tests were transplanted to America. Some researchers continued to believe that intelligence is a learned combination of many different skills and abilities. Others, however, assumed that intelligence is a single trait that is heavily determined by genetics. Some people further assumed that there are large ethnic or racial differences in general intelligence. A new wave of research now supports Binet's original, more progressive, assumptions. For example, researchers have shown that IQs have been steadily rising, year by year, all over the industrialized world. This historical tendency for average IQ to increase is called the **Flynn effect**, named after James R. Flynn. The Flynn effect has profound implications for how one thinks about IQ. For example, the Flynn effect means that Blacks today have a higher average IQ performance than Whites of 60 or 70 years ago. This difference cannot be genetic because human gene pools do not change over such short periods (see Neisser, 1998).

Significance and Practical Application

What does all this mean? What useful purposes have IQ tests served over the past century? Have IQ and achievement tests been misused in any way? This depends heavily on one's perspective. However, it is useful to remember that prior to the modern age of intellectual testing, whether a student had the opportunity to get a good education depended almost exclusively on that student's gender, ethnicity and socioeconomic background. If your father taught chemistry at Princeton, and you had a Y chromosome, chances were, you could do the same thing yourself someday. And if your father worked as a janitor, chances were your only exposure to chemistry would come in the form of bleach and ammonia. Today, however, achievement and IQ tests have the potential to identify talented students from all walks of life - and thus to level the playing field of public education. Of course, the playing field is not yet level, but there are some signs that things are getting better.

One sign is that IQ and achievement tests continue to be refined and improved. For example, in response to concerns about cultural and ethnic biases in traditional IQ tests, the developmental psychologist Howard Gardner, PhD, popularized the phrase "multiple intelligences" to reflect that fact that intelligence is multi-faceted. Gardner's IQ tests measure not only verbal and mathematical skills but also musical, mechanical, physical, and even social skills. Similarly, cognitive psychologist Robert Sternberg, PhD, has developed a triarchic ("three component") theory of intelligence that includes analytical, creative and practical intelligence. Binet would presumably be most interested in Sternberg's concept of **practical intelligence** (i.e., common sense). According to Sternberg, practical intelligence is not assessed in traditional IQ tests, but it is easy to measure, and it allows people to adapt effectively to the demands

of work and daily life. Sternberg asserts that practical intelligence predicts people's future job success at least as well as, if not better than, people's scores on traditional IQ tests (e.g., see Sternberg et al., 1995). With the cooperation of the College Board, Sternberg recently directed the Rainbow Project. This research project, carried out on 15 college campuses throughout the nation, was designed to supplement the SAT by adding measures of creativity and practical intelligence. Results show that the expanded SAT predicts actual success in college more accurately than traditional SAT scores. Initial results also suggest that the ethnic differences historically observed on the math and verbal portions of the SAT are greatly reduced for tests of creativity or practical intelligence.

The SAT notwithstanding, it is unclear whether contemporary research will lead to radical changes in the way students are tested and educated in the U.S. Nonetheless, some school systems do already make use of IQ and achievement tests that focus on a broad range of skills and abilities. Furthermore, many nontraditional teaching techniques are built on the implicit assumption that intelligence has many components. For example, cooperative learning techniques developed by psychologist Elliot Aronson, PhD, and others are built on the idea that success in school requires children to use a wide array of intellectual skills - and to do so in a social setting (see *How to Build a Better Educational System: Jigsaw Classrooms* ([/research/action/jigsaw.aspx](http://research/action/jigsaw.aspx))).

Certainly no half full glass has been scrutinized more carefully than the glass that symbolizes intelligence and achievement tests. Despite all the controversy surrounding intelligence testing, few people would call for a wholesale abandonment of any form of testing under any circumstances. Thus, IQ and achievement tests are likely to be around for many years to come. This drives home the point that more research is needed to try to ensure that tests are used to maximize learning opportunities for all students - rather than becoming an additional barrier to some children's achievement. Much is being done, but there is much more left to do.

For Further Reading

Gardner, H. (1983). *Frames of Mind*. New York: Basic Books.

Gardner, H. (1993). *Multiple Intelligences: The Theory in Practice*. NY: Basic Books

Neisser, U. (1998). Introduction: Rising test scores and what they mean. In U. Neisser (Ed.) *The rising curve; Long-term gains in IQ and related measures*. Washington, DC: American Psychological Association.

Sternberg, R. J., Wagner, R. K., Williams, W. M., Horvath, J. A., et al. (1995). Testing common sense. *American Psychologist*, Vol. 50, pp. 912-927.

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