

What are IQ tests really measuring?

April 26 2011, by Deborah Braconnier



(Medical Xpress) -- When the average person thinks of an IQ test, they think of a measurement of intelligence. A test designed to find those of high intelligence who will go on to succeed in academics and employment. While the question has long been debated by researchers as to what exactly the IQ test measures, a new study shows that intelligence may not be the main focus, but a person's motivation as well.

Published in the [Proceedings of the National Academy of Sciences](#), psychologist Angela Lee Duckworth from the University of Pennsylvania reports her findings on how motivation levels seem to affect IQ results.

The report looks at two studies performed by Duckworth and her team. In the first study they combined the results from 46 previous studies where monetary incentives were used in IQ testing for meta-analysis. This combination brought together more than 2000 subjects. The ranges of monetary incentives were from \$1 to \$10 or more. Researchers used a statistical parameter called Hedge's g to indicate the effects (g values 20 IQ points). On the opposite side of the spectrum, those receiving less than \$1 incentive were only 0.1 effective.

In the second study they examined a previous study of 500 boys in Pittsburgh, Pennsylvania who were given IQ tests in the late 80s. The average age of the boys was 12.5 years old. During the IQ test, they had been videotaped and those trained to detect signs of boredom had evaluated the tapes and assessed each boy a motivational score.

By creating a series of computer models of the data, the team discovered that those with a higher motivational score achieved a higher IQ score and the prediction of later success in life held true. These differences in motivational score accounted for up to 84% of the difference in years of school they completed, however only 25% of the differences relating to how well they had done in school during their teenage years.

Researchers believe that while the [IQ test](#) is measuring raw [intelligence](#), it is also measuring motivation and how much subjects want to succeed, both on the test and in life.

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More information: Role of test motivation in intelligence testing, *PNAS*, Published online before print April 25, 2011, [doi: 10.1073/pnas.1018601108](#)

Abstract

Intelligence tests are widely assumed to measure maximal intellectual performance, and predictive associations between intelligence quotient (IQ) scores and later-life outcomes are typically interpreted as unbiased estimates of the effect of intellectual ability on academic, professional, and social life outcomes. The current investigation critically examines these assumptions and finds evidence against both. First, we examined whether motivation is less than maximal on intelligence tests administered in the context of low-stakes research situations. Specifically, we completed a meta-analysis of random-assignment experiments testing the effects of material incentives on intelligence-test performance on a collective 2,008 participants. Incentives increased IQ scores by an average of 0.64 SD, with larger effects for individuals with lower baseline IQ scores. Second, we tested whether individual differences in motivation during IQ testing can spuriously inflate the predictive validity of intelligence for life outcomes. Trained observers rated test motivation among 251 adolescent boys completing intelligence tests using a 15-min "thin-slice" video sample. IQ score predicted life outcomes, including academic performance in adolescence and criminal convictions, employment, and years of education in early adulthood. After adjusting for the influence of test motivation, however, the predictive validity of intelligence for life outcomes was significantly diminished, particularly for nonacademic outcomes. Collectively, our findings suggest that, under low-stakes research conditions, some individuals try harder than others, and, in this context, test motivation can act as a third-variable confound that inflates estimates of the predictive validity of intelligence for life outcomes.

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