

Changing intelligence test performance: A century of IQ increases

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A team led by Martin Voracek of the University of Vienna has analyzed intelligence tests over a period of more than one hundred years. Credit: University of Vienna

In the general population, IQ increases have been observed over the past 100 years. But are we really becoming more intelligent and if so, how much more intelligent are we becoming? University of Vienna psychologists Jakob Pietschnig and Martin Voracek now provide insights

into how strong IQ gains are and perhaps why they occur. In their recent publication in the renowned journal *Perspectives on Psychological Science*, they show global increases of three IQ points per decade since the early 20th century.

In 1984, the first systematic account of IQ changes in the [general population](#) was published indicating increasing scores in the US general population. This phenomenon which has become widely known as the "Flynn effect" has been puzzling to the scientific community. Specifically, trajectories of IQ changes over time and possible reasons for gains have been heavily debated.

Global IQ gains

Now, researchers of the University of Vienna provide the largest account of IQ gains so far: Based on data of almost four million participants from 31 different countries, they were able to show that IQ increases amounted to about three IQ points per decade over a period of more than 100 years (1909-2013). Interestingly, global increases could be observed for reasoning as well as knowledge, although reasoning increases were substantially larger.

Based on this large data set and differences in strengths of gains over time and in different IQ domains, it was possible to evaluate potential causes of the Flynn effect: Improved nutrition, hygiene and availability of medical services which benefit foremost child development, as well as better education emerged as prime candidates for gains.

IQ test standardization

IQ tests are standardized to an average IQ of 100 and an average deviation of 15 and test results follow a bell-shaped curve. Many

naturally measurable variables follow such a bell-shaped curve. This means that two out of three people score between 85 and 115 and 96 out of 100 between 70 and 130 IQ points. To account for changes of population ability, IQ tests are routinely reset to a quota of 100.

As mentioned above, the study results showed an average increase of about three IQ points every ten years. But do these results mean that an average IQ test result of 100 points in the present day would translate into an IQ of 130 a century ago? Although gains of about 30 points over a hundred years might suggest so, such an interpretation seems unlikely. Rather than increases in general cognitive ability, these gains are more likely to reflect improvements in specific abilities. "A person with an average IQ score of 100 in the early 20th century might have had quite different capabilities than a person with a seemingly equivalent IQ score of 70 in the present day", explain Jakob Pietschnig and Martin Voracek of the University of Vienna. IQ gains thus appear to be hollow in terms of global cognitive ability changes. Higher IQ test scores are more likely reflective of increasing specialization and better test taking strategies of participants.

Periodic changes

Interestingly, the strength of gains appeared to be non-linear. This means that periods of rather strong gains alternated with periods of smaller gains. For instance, periodic changes revealed smaller gains during the time of World War II in Europe, a time of considerable environmental stress.

Although IQ gains appear to be still ongoing, study findings suggest that the strength of gains has been substantially decreasing in the recent decades. This may indicate that beneficial effects of factors improving our test scores have peaked and IQ increases might cease in the coming decades. Future research will show whether these observed decelerations

of the IQ gains will lead to an end or ultimately a reversal of the Flynn effect.

More information: Pietschnig, J., & Voracek, M. (2015). One century of global IQ gains: A formal meta-analysis of the Flynn effect.

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