

Understanding of the flynn effect

[Education](#), [Learning](#)



The Flynn Effect, first observed by James Flynn in 1981, is the steady year on year increase in IQ scores on intelligence tests, noting a greater rise in fluid (non-verbal) intelligence than crystallised (verbal) intelligence. There are numerous studies providing evidence for this effect leading to the question; are generations getting more intelligent? There is no universal definition of intelligence, leading many researchers to try and discover common themes around the world.

Yang & Sternberg (1997b) found similarities in ideas of intelligence between Western and Eastern cultures but ultimately, along with other researchers such as Baral & Das (2004), concluded that there are great differences between conceptions of intelligence around the world. Due to this, there have been many different methods used to measure intelligence over the years, from Binet & Simon's (1911) intelligence test, to Gardner's (1983) multiple intelligence theory.

One of the more accepted and universally used methods designed to test intelligence is the intelligence quotient (IQ) test, developed by William Stern in 1912, an idea used by many other intelligence researchers. In 1981, when reviewing intelligence tests to test validity for new versions, James Flynn noticed that whenever participants were given an old test and a new test to complete, they always got higher scores on the newer test. He went on to look at a further 73 studies (Flynn, 1984) and discovered that between 1932 and 1978, white Americans had gained 14 IQ points, supporting his original discovery.

In 1987 he published intelligence test data from 14 countries (Flynn, 1987), coming to the conclusion that IQ scores were rising not only in America, but <https://assignbuster.com/understanding-of-the-flynn-effect/>

across a number of different countries and cultures, further displaying evidence for his discovery. In attempt to make sense of Flynn's discovery, it has been proposed that generations are getting more intelligent, an idea that Flynn himself rules out. He argued that if generations were getting more intelligent, we would expect to see an ever rising number of geniuses in the world which we don't.

So why are IQ scores getting higher? In 1998, Ulrich Neisser (Neisser, 1998a) edited a book suggesting some possible environmental explanations for the Flynn Effect. The book was contributed to by Flynn (1998), Greenfield (1998), Lynn (1998), Neisser (1998b), Schooler (1998) and Williams (1998). It covered 5 main areas: schooling, test-taking sophistication, parental rearing style, visual and technical environment and nutrition. However, Lynn (1990) originally broke these ideas down into two opposing hypotheses; the nutrition hypothesis and the cognitive stimulation hypothesis.

The Nutrition hypothesis proposes that nutrition is a key factor in generations' increased intelligence, Lynn (1990; 1998). It sees nutrition as increasing intelligence as part of a nurturing environment, including longer life expectancies, improved health and lower infant disease. As food has become more readily available to most people, we are inevitably receiving more of the nutrition and food that our bodies and brains require, meaning our bodies and brains are more capable of performing to the best of their ability.

Compared with generations ago, when food and water was scarce it is almost expected that we should achieve better results on intelligence tests when our brains are better nourished and equipped to deal with them.

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Average human height has also risen over the last century, which has been attributed to nutrition. Lynn (1990; 1998) suggested that this could be significant, as brain size has been linked to nutrition and also to intelligence. Some researchers began looking at particular nutrients in relation to intelligence.

Quian et al (2005) looked at the effects of iodine on intelligence. Findings showed that the children who had received iodine supplements before and after birth scored significantly higher on intelligence tests than children who hadn't. Iodine is now well known as one of the most important minerals for good health. Benton & Roberts (1988) conducted a study involving 90 children divided into 3 groups of 30. Group 1 were given a supplement which contained a number of vitamins and minerals. Group 2 were given a placebo and Group 3 was not given anything.

8 months later Benton & Roberts (1988) found that in Group 1 a significant increase in non-verbal (fluid) intelligence scores was observed, supporting the Flynn effect. However, there was no significant difference between verbal (crystallised) intelligence scores. Further research into understanding the Flynn effect saw Colom, Luis-Font & Andres-Pueyo (2005) test two large samples of Spanish boys with a 30 year gap in a measure of fluid intelligence. A significant rise in IQ scores was observed in the later sample, with findings interestingly noting intelligence gains mainly observed among the lower percentile of IQ scores.

Teasdale & Owen (1989) and Lynn & Hampson (1986) had previously found similar results. These findings, and many other replications, support the Nutrition hypothesis as evidence for the Flynn effect. In general these types

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of studies have provided plenty of evidence to conclude that IQ is affected by vitamin/mineral supplements on non-verbal measures of intelligence, however, it is becoming increasingly hard to test this as most people are well-nourished these days particularly in Western cultures.

Future studies could continue to look at which particular nutrients affect which particular areas of intelligence, and concentrate on broadening the research to a wider variety of cultures and socioeconomic backgrounds. Many of the previously mentioned studies use a sample consisting of only males, which makes results less representative to the entire population. The Cognitive Stimulation hypothesis, takes into account some of the other ideas mentioned in Neisser's book (Neisser 1998a), suggesting that higher intelligence is driven by improvements in cognitive stimulation.

In particular, visual analysis and technical advances are seen as causing intelligence to increase. Visual analysis can range between many things, from photographs, messages on cereal boxes, puzzles in a newspaper, to television programmes. One of the biggest changes in the twentieth century was the arrival of visual media such as television and the internet. Nowadays almost every home has a television and many have computers and access to the internet.

Children now have much wider access to educational toys, games, television programmes and computer programs, and adults now participate in many cognitively demanding activities such as reading, puzzles, video games and using devices such as television and computers. Johnson (2003) argues that popular television has become more cognitively demanding in recent years. One example is children's television show Sesame Street, designed to

increase children's intelligence and awareness by providing mental stimulation at an early age.

Sesame Street is now an award winning show and is recognised as helping to develop children's understanding and abilities (Palmer, 2003). Even simple things such as adverts provide us with cognitive stimulation, sometimes requiring viewers to work out a hidden or abstract meaning, compared with much more straight forward adverts seen from years ago. Intelligence tests such as Raven's matrices measure visual analysis, on which the largest gains in IQ have been found providing support for the cognitive stimulation hypothesis.

Some of the other ideas mentioned in Neisser's book include schooling, test-taking sophistication and parental rearing style. Nowadays, we attend school for many more years than our parents and grandparents did. Cahan & Cohen (1989) found that length of schooling influences intelligence, however their results suggested larger rises in verbal intelligence, thus not providing evidence for the Flynn effect. Test-taking sophistication is the idea that we are just generally more aware of intelligence tests than generations ago. IQ tests are something we learn about in school as teaching today is generally geared towards achievement tests.

This could potentially explain better scores in intelligence tests by those who know why and what they are doing them for, but it is unknown whether this could explain the emphasis on non-verbal intelligence seen in the Flynn effect, as it is a very difficult concept to test. Parental rearing styles have also changed, with families getting smaller meaning each child is spending more time with his or her parents. Flynn (1998) and Williams (1998) also

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suggest that today's parents are more interested in their children's intellectual development than in previous generations.

However, it could be argued that due to the Flynn effect, today's parents are simply more intelligent than their own parents and grandparents, and therefore better able to guide and educate their own children. If the cognitive stimulation hypothesis can truly explain the Flynn effect, then we should see a rise of IQ scores across generations at all levels of IQ (Flynn, 2003; Lynn (1990) but if the nutritional hypothesis provides the explanation, intelligence gains would appear more so at the bottom end of IQ scores, where nutritional deprivation is at its worst (Flynn, 2003).

Neither the nutritional hypothesis nor the cognitive stimulation hypothesis appears to be telling the whole story in relation to the Flynn effect, and there are still many other theories out there. Some suggest natural selection as a cause, such as Deary et al, 2004 who found significant correlation between low IQ score and risk of cardiovascular disease and death. However this could be down to environmental factors caused by lower IQ such as poverty and living conditions which could lead to death and illness Gottfredson 1997. Brain size has also been proposed as a relevant factor.

Tiedmann (1836) suggested a connection between brain size and mental energy, and medical advances allowing tests such as MRI scans have since led to further research in this area. Willerman et al (1991) and Raz et al (1993) went on to find correlations between brain size and general intelligence, supporting Tiedmann's hypothesis. However, these correlations were found in particular samples, and did not clarify causation. Luria (1968,

1972) conducted two case studies and discovered that injuries to different parts of the brain affected intelligence in different ways.

Flynn (1994, 1999) favoured environmental explanations himself, suggesting intelligence gains too rapid to be genetic. Many recent European studies have suggested that the Flynn effect is actually coming to an end, or could possibly be in reverse. Sundet et al (2004) composed intelligence tests from the 1950's and found that in line with the Flynn effect, non-verbal intelligence showed higher gains, that is until the 1990's when IQ scores ceased to increase. Teasdale & Owen (2005) found similar results, with scores rising from 1959 and peaking in the late 1990's.

Teasdale & Owen (2005) noticed that after this peak, intelligence test performance has since declined to pre-1991 level. Many people view these studies as direct evidence for the end of the Flynn effect; however some view it an extension of the Flynn effect, one which can still be explained by the nutritional hypothesis. It is proposed that the rise in IQ scores was a result of the number of low scorers who were dragging the average IQ score down, getting smaller and smaller.

Supporters of the nutritional hypothesis argue that this decreasing number of low scorers was due to the decreasing number of people suffering from poor nutrition, and now poor nutrition is not a problem the slow removal of low scorers has levelled out. Three big questions when looking at intelligence testing are the reliability of intelligence tests, the validity of intelligence tests and whether the usefulness of intelligence is overemphasised.

One issue with reliability is that IQ scores fluctuate, and if you take the same test a few weeks later it is likely you will achieve a different score, although you are not supposed to retake the same IQ test as your first interaction with it will almost certainly influence your second performance. Researchers question whether we can ever truly know if the first score we get is truly a representation of our intelligence, or if it may be a fluctuation from our real intelligence, questioning the accuracy of such scores. This concern has inspired plenty of research into IQ fluctuation, with many studies such as Jones & Bayley (1941) suggesting that although scores do fluctuate, they remain relatively stable. Furthermore, while there is plenty of evidence to suggest intelligence tests correlate well with other intelligence tests (Neisser et al, 1996), these studies are based on the assumption that there is a globally agreed idea of general intelligence when this is in fact not true (Benson, 2003). As mentioned earlier, there are cultural variations of what is perceived as intelligence, calling into question the validity of intelligence testing.

It wouldn't be sensible to dismiss intelligence tests entirely as there is plenty of evidence to support their reliability, validity and usefulness. However, we should not ignore the shortcomings. Both the nutritional hypothesis and the cognitive stimulation hypothesis have contributed somewhat to our understanding of the Flynn effect, but neither appears to be telling the whole story. The nutritional hypothesis views nutrition as increasing intelligence as part of a nurturing environment with plenty of evidence providing support for this as an explanation of the Flynn effect, such as Quian et al (2005) and Benton & Roberts (1988).

However it is becoming increasingly difficult to continue to test this as most people are well nourished these days, particularly in Western culture. The cognitive stimulation hypothesis suggests that the visual revolution is responsible for the Flynn effect, suggesting higher intelligence results from improvements in cognitive stimulation. Again, there is plenty of evidence in support of this; however it does not provide an absolute explanation.

Due to the rising number of studies suggesting the Flynn effect is coming to an end, it is possible that any current and future research into the Flynn effect is futile, although many of the evidence to suggest this is predominantly undertaken in Europe, pointing back to the cultural differences in intelligence. Perhaps less developed countries are seeing the Flynn effect? We could benefit from more research across various cultures. There are also the questions of intelligence test reliability, validity and usefulness to consider. Leading to my final question; if we can't define intelligence, how can we truly test it?