

Allan Svensson, 2008: Does the teenager of today have lower ability for academic studies? An investigation of changes in intelligence from 1961 to 2005/ Har dagens tonåringar sämre studieförutsättningar? En studie av förskjutningar i intelligenstestresultat från 1960-talet till 2005/. *Pedagogisk Forskning i Sverige*, Vol 13, No 4, pp 258–277. Stockholm. ISSN 1401-6788

The aim of the investigation is to study changes in intelligence among Swedish 13 year-olds between 1961 and 2005. Identical tests have been used for large and representative samples on seven occasions. The tests represent the verbal, spatial and reasoning factor according to a Thurstonian classification of abilities. The tests are called Opposites, Metal Folding and Number Series. Each test consists of 40 items.

Opposites: To find the opposite of a given word among four alternatives.

Metal Folding: To find the three-dimensional object among four alternatives that can be made from a flat piece of metal with bending lines marked on the drawing.

Number Series: To complete a number series of six given numbers with two more numbers.

During the first half of the investigation period the development is very positive. The means are significantly higher in all three tests in 1985 compared to 1961. The factors that have caused the rising trends are not easy to identify, but our results indicate that the development is connected to an increasing level of living standards, an extended availability of cultural activities and especially to extensive educational reforms.

If we look at the second half of the period, from 1985 to 2005, the trend is not as encouraging as earlier. To some degree the reason may be that the large educational reforms in Sweden finished around 1985 and that the smaller changes which then took place up to 2005 did not give the same effects. This argument applies particularly when we look at the reasoning test, where the mean continues to increase, but more slowly than during the first half of the period. However, it cannot be used to explain what has happened to the other tests. The mean of the spatial test is somewhat lower in 2005 compared to 1985 and the mean of the verbal test is considerably lower.

In the case of the verbal test we do not think that the sinking mean is a signal of decreasing verbal ability. The falling trend rather depends on the composition of the items of the test. This interpretation is supported by the fact that at the same time as the proportion of right answers has diminished among older (archaic) words the proportion among the fewer more modern words (loan-words) has grown. These conditions make it difficult to talk about changes in verbal ability over longer periods, especially if this ability is measured by a vocabulary test. The only conclusion that may be drawn is that the vocabulary of the students is not less nowadays, but the content is partly different than 20 or 40 years earlier, which is rather obvious considering the continuous development of languages.

The results in the spatial test had risen considerably up to 1985. For girls there was an increase of almost half a standard deviation unit since 1961 and for boys a third of a unit. Among the factors that may have caused this development are the introduction of the comprehensive school during the sixties and the seventies and the growth of the pre-school during the same period. These two circumstances probably contributed to both a rising spatial ability and an equalization of the sex differences in this ability.

After 1985 the results have decreased a bit, but they are still significantly higher in 2005 than in the sixties. The reduction during the two latest decades depends mainly on lower scores among boys, a decrease which is not easily explained. However, the different development between male and female students has implied that gender differences in the test have changed. In the beginning of the sixties boys had a significantly higher score than girls. Forty-five years later girls scored significantly better.

In the reasoning test the increments are of the same magnitude as those in the spatial test up to 1985, and even in this case school reforms are likely to have been of importance. However, unlike the spatial test the scores in the reasoning test have continued to rise even after 1985, although the acceleration of growth may have declined. There is also another difference between these two tests. Male students still perform better in reasoning ability.

Two of the abilities measured by the tests are of significant importance for school achievement. *Verbal ability* is crucial for acquiring knowledge of Swedish, foreign languages and many other subjects. *Reasoning ability* is significant for maintaining success in mathematics and sciences. From this point of view it may be an alarming signal when the scores of the verbal test are considerably lower in 2005 than in 1961. However, as has been pointed out, the falling tendency depends on the composition of the items and can not be taken as an evidence of decreasing verbal ability.

In the reasoning test the students score higher in 2005 not only compared to students 45 years earlier but also when a comparison is made with students 20 years ago. To conclude, there is nothing in this investigation that indicates the teenager of today has lower ability for academic studies than previously. On the contrary, the results indicate higher ability at least in the case of mathematics.