Vocabulary IQs of Russian and British Children

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Vocabulary IQs of British and Russian children are compared to samples of British children aged two to ten years. It is estimated that the Russian sample had a British IQ of 97.6.

Key Words: Russian children; British children; IQ; Dysgenic effects of war; Selective migration; Bolshevik Revolution.

The objective of this paper is to compare the vocabulary IQs of British and Russian children aged between 2 years 6 months and 10 years 11 months. Vocabulary is an excellent measure of general intelligence and of Spearman's *g*. The research literature on this issue has been summarized by Jensen (1980, p.146): "vocabulary tests are among the best measures of intelligence, because the acquisition of word meanings is highly dependent on the *education* of meaning from the contexts in which words are encountered… The meaning of a word is most usually acquired by encountering the word in some context that permits at least some partial inference as to its meaning … children of high intelligence acquire vocabulary at a faster rate than children of low intelligence, and as adults they have a much larger average vocabulary."

The comparison of the vocabulary of British and Russian children that we report in this paper will therefore provide a measure of the IQs of the two populations. There have been three previous studies that have reported IQs for Russia in

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relation to 100 (and standard deviation of 15) for those in Britain. An IQ of 97 was given for 14-15 year old Russian children in the city of Bryansk tested with the Progressive Matrices (Lynn, 2001). An IQ of 96 was given for Russian adults in the city of Voronezh tested with the Cattell Culture Fair test (Grigorenko & Sternberg, 2001). And an IQ of 96.5 was given for 15 year old Russian children based on the results of the PISA studies of performance in mathematics, language and science abilities (Meisenberg & Lynn, 2011). These three studies produced virtually identical results of a British IQ between 96 and 97.

Method

The data for the British children are given by Morrison, Chappell & Ellis (1997) and are for 280 children aged between 2 years 6 months to 10 years 11 months.

The children were drawn from schools in and around the city of York. All were native speakers of English, and none was bilingual. The authors write that "An attempt was made to test children from a range of backgrounds within each age band, and the children were drawn from rural schools as well as small city schools, though most of the children would probably be deemed to have a middle-class background."

Vocabulary was assessed by presenting 297 pictures of objects, which the children were asked to identify. Children up to 7 years 11 month were tested on all 297 pictures. For children of 8.0 and older, 181 pictures were eliminated as too easy, so these were tested on a reduced set of 116 pictures. Scores in both the British and Russian studies were calculated as the age at which a picture could be identified by at least 75% of children.

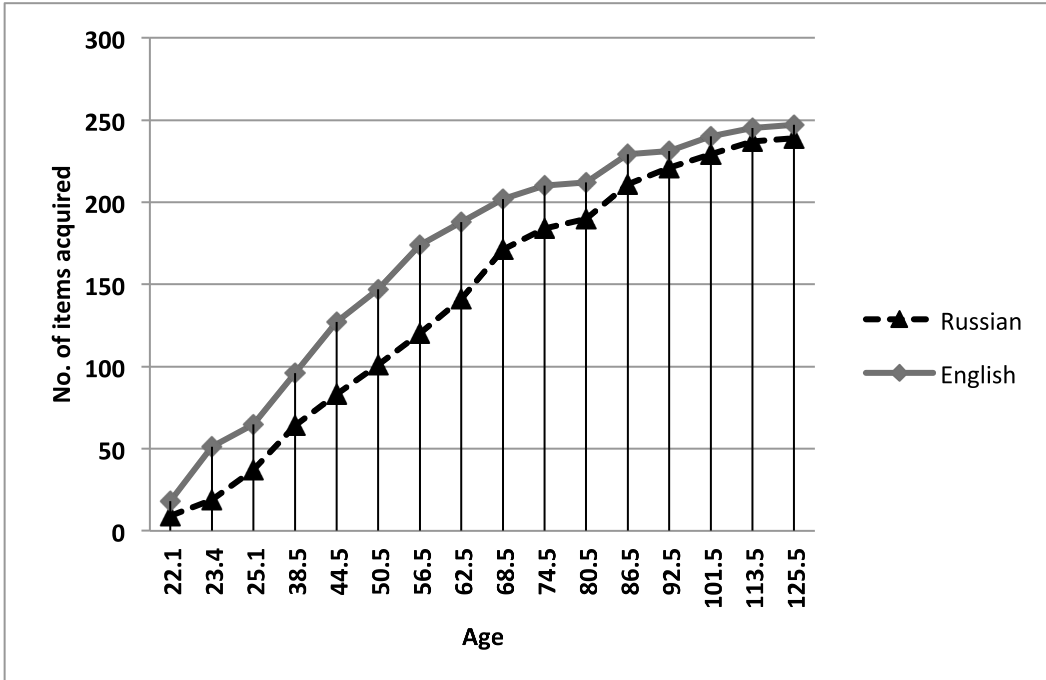
The data for the Russian children were obtained in 2009-2012 and are for 293 children (142 boys and 151 girls) aged between 2 years 6 months and 10 years 11 months. The data were collected in Moscow and Kaluga, a town about 175 southwest of Moscow. Data for children up to 7 were collected in kindergartens, data of older children were collected in schools. The test consisted of 286 pictures of objects. Children up to 7 years 11 month were tested on all 286 pictures. Children of 8.0 and older than were tested on a reduced set of 170 pictures. The great majority of the objects whose pictures were presented to the children were the same as those in the British study. Only a few of the objects pictures which were used in the British study had no counterpart in the Russian study (e.g., armadillo), and there were a few objects whose pictures were used in the Russian study but not in the British study (e. g., crocodile). For 173 objects pictures were the same, but for a number of objects it was necessary to make some changes. For example, the picture of church was redrawn for the Russian study because Russian church architecture is different from that in Britain.

Results

The age of acquisition of a word was determined according to the so-called “75% rule”: a word was considered to be acquired if at least 75% of a given age band and the next two age bands named it correctly. The age of this age band was an estimate of the age of acquisition of this word. The mean of these estimates of words studied represents the average age of acquisition for the set of words used. The standard deviation of these values represents the spread of age of acquisition for the set used. These means and standard deviations for two samples may be used for comparison of vocabulary of British and Russian children.

As would be expected, the Russian and British children were broadly similar in the ages at which they acquired particular words. The correlation for the ages at which the vocabularies were acquired in the two samples was 0.611 for the whole set of words and is highly statistically significant. There was virtually no difference between pictures that were the same in two studies and pictures that were different (the correlations were 0.607 and 0.604 respectively). We used both these subsets in calculations of the scores. However, for

Figure 1. Word acquisition dynamics for Russian and British samples



some words there were quite large differences. For example, the Russian children acquired the word *pepper* at the average of 86.5 months, but the British children did not acquire this word until the average age of 114.5 months. Conversely, Russian children acquired the word *zebra* at the average of 65.5 months, but the British children acquired this word at the average age of 48.5 months. The dynamics of word acquisition for two samples is shown in Figure 1.

Figure 1. Word acquisition dynamics for Russian and British samples

For the set of 253 objects used for comparison, the British children obtained word knowledge of the objects at a mean age of 53.22 months (sd = 27.85) and Russian children obtained word knowledge of the objects at a mean age of 64.20 months (sd = 30.24). The difference is highly statistically significant. The value of t is 4.25; df = 501; $p < 0.001$. However, because the Russian and British data are correlated, the t test for paired data is more suitable. In calculating this, the differences in ages of acquisition between Russian and British children for each word are computed. The resulting value of t is 6.80; df = 252; $p < 0.001$.

The difference in vocabulary IQ between the British children and the Russian children can be calculated in standard deviation units transformed to IQs. The mean of differences in ages of acquisition for 253 words equals to 10.99 and standard deviation of these differences equals to 25.69. The difference in standard deviation units obtained by dividing the mean difference by the standard deviation of differences is 0.43*d* and is equivalent to 6.4 IQ points. This would give the Russian children an British IQ of 93.6. However, the authors of the British study reported that "most of the children would probably be deemed to have a middle-class background". This would have inflated the IQ of the British sample because middle-class children have higher average IQs than working-class children. In Britain, a study of a large representative sample found that middle-class children had an average IQ of 109 and working-class children an average IQ of 99 (Douglas, 1964). In the United States, middle-class children had an average IQ of 105 and working-class children an average IQ of 95 (Kaufman & Doppelt, 1976), and a number of other similar studies are summarized in Lynn (2011). In Russia also, an early study found that middle-class children had an average IQ of 112 and working-class children an average IQ of 97 (Sirkin, 1927). Some adjustment downwards of the British IQ is therefore required to allow for this sampling bias in the British sample. To adjust for this, we adopt the Douglas (1964) finding that middle-class children have an average IQ of 109 and working-class children an average IQ of 99, that can be averaged to 104 for the population. Hence, 4 IQ points should be added to the IQ of 93.6 obtained by the Russian sample to give a British IQ of 97. 6.

The data for the British children were collected about 1995 and approximately fifteen years before the collection of the present data for the Russian children. No adjustment is required for the different years in which the data were collected because there has been no increase in the vocabulary IQ of British children over this period (Lynn, 2009).

Discussion

The results provide three points of interest. First, they confirm that the average IQ in Russia is fractionally lower than that in Britain at between 96 and 98. Second, they confirm this estimate for kindergarten and primary school children aged 2 to 10 years, while the three previous studies showed this for adolescents and adults. And third, they confirm this for intelligence measured by vocabulary while two of the previous studies showed this for non-verbal tests and the third showed it for educational tests of math, language and science abilities measured by PISA. Thus, the four studies have given consistent results with different tests on different age groups and on samples drawn from different locations in Russia.

There are four possible explanations for the slightly lower average IQ in Russia than in Britain and other countries in northern and central Europe. First, the per capita income in Russia has been considerably lower. For example, the per capita GNI (Gross National Income in $US) in 2002 was 8,080 in Russia compared with 26,580 in Britain, 27,040 in France, 26,980 in Germany, and similar figures throughout northern and central Europe (Lynn & Vanhanen, 2006, p 316). This low per capita income has likely reduced the quality of nutrition, which has an adverse effect on intelligence (Lynn, 1990).

A second possible explanation for the slightly lower average IQ in Russia may be the large number of soldiers killed in World War Two. It has frequently been asserted that those who are killed in war tend to have higher than average IQs and as a result the intelligence of the remaining population that survives is reduced. In 1915 the British physician Caleb Saleeby coined the term *dysgenics* to designate the genetic deterioration of a population resulting from war. He argued that war is typically dysgenic because those killed are "the strongest and the fittest, the healthiest and the best … war involves "reversed selection" in which the best are chosen to be killed, and the worst are preserved to become the fathers of the future" (Saleeby, 1915). In the same year of 1915, the American David Starr Jordan published *War and the Breed: The relation of War to the Downfall of Nations* (1915), the classical book length treatment of the dysgenic theory of war. He began by asserting that "It is apparent that armies demand men above the average in physical efficiency. It is plain that the most energetic and intelligent among these make the best soldiers. It is recognized that those who fight best suffer the most in action, while the demands of battle cut off men in the prime of life from normal parenthood. This leaves the weaker elements to be fathers of the next generation … war promotes the waste of the fittest" (pp. 2, 35).

The Russian army suffered very considerable losses of the World War Two. The standard statistical analysis of all the deaths, wounded and missing in action has been made by Colonel-General G. F. Krivosheev (1993, p.407). He estimates that 8,668,400 died. This figure includes those killed in action, died of wounds, killed in accidents, missing and those who died in captivity. Possibly these losses had a dysgenic effect and may have contributed to the slightly lower average IQ in Russia compared with that in Britain and other countries in northern and central Europe.

A third possible explanation for the slightly lower average IQ in Russia may be the emigration of many of the cognitive elite after the Bolshevik Revolution of 1917 and the Civil War. It is estimated that about 1,160, 000 refugees emigrated from the country (Nazarov, 1994). Almost exclusively these were from the upper and professional classes. The IQ of a population can be estimated by the number of significant figures from this population, following Galton (1869). Among the Russian emigrants who left the country after the Bolshevik Revolution we find many persons who made significant contribution to science, literature and art. These include the three Nobel Laureates Ivan Bunin, Wassily Leontief and Ilya Prigogine, chess champion Alexandr Alekhine, designer of helicopters Igor Sikorsky, linguists Nikolai Trubetzkoy and Roman Jacobson, composers Sergei Rachmaninoff and Igor Stravinsky, writer Vladimir Nabokov and many others. Such a great number of outstanding persons shows a high intelligence of the Russian emigrants and their emigration will likely have had a dysgenic effect on the IQ of their home country.

A fourth possible explanation is the Bolshevik terror, which started in 1918 and continued until Stalin's death in 1953. The estimation of dysgenic effect of this terror demands a special treatment, but, without doubt, this effect was significant. (See Glad, 1998). The repressions affected predominantly the more intelligent and successful people and therefore would have reduced the number of people on the right tail of the IQ distribution.

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