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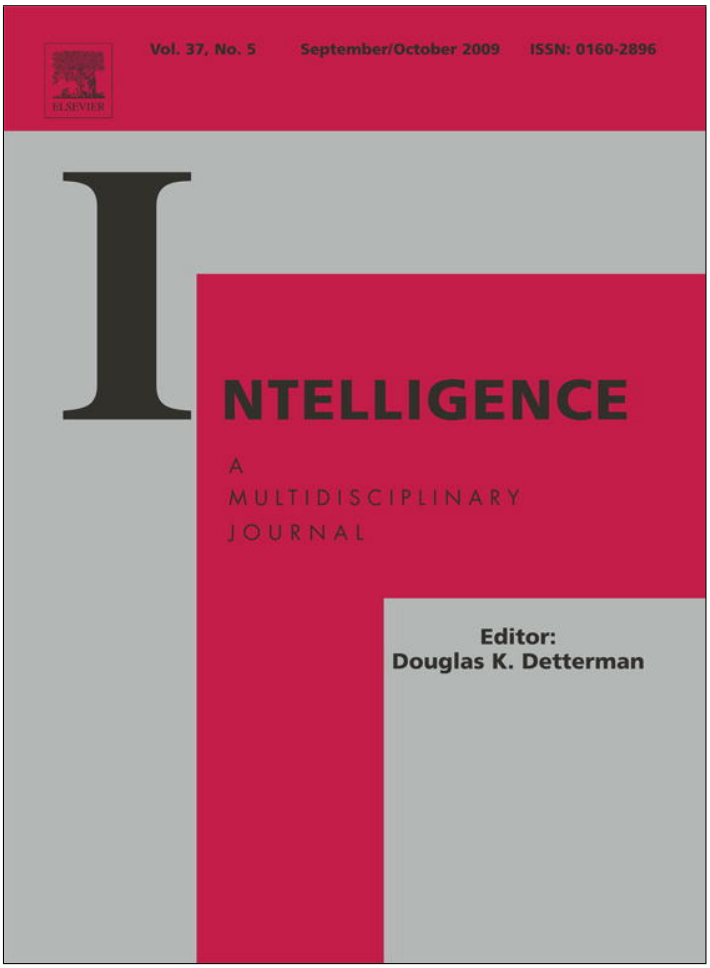

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Studies of socioeconomic and ethnic differences in intelligence in the former Soviet Union in the early twentieth century

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ABSTRACT

This paper reviews the studies of socioeconomic and ethnic and racial differences in intelligence carried out in Russia/USSR during the late 1920s and early 1930s. In these studies the IQs of social classes and of ethnic minorities were tested. These included Tatars (a Caucasoid people), Chuvash and Altai (mixed Caucasoid–Mongoloid peoples), Evenk (a mixed Caucasoid–Arctic people), and Uzbeks (a Central–South Asian people). The results of these studies showed socioeconomic differences of 12 IQ points between the children of white collar and blue collar workers, and that with the exception of the Tartars the ethnic minorities obtained lower IQs than European Russians.

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Little is known in the west of the studies of socioeconomic and ethnic/racial differences in intelligence that were carried out in Russia/USSR during the first third of the twentieth century, except for the work of A.R. Luria (*А.Р. Лурия*). These studies are not mentioned by Grigorenko & Kornilova (1997) in their otherwise thorough review of work on intelligence in the Soviet Union. Even in Russia this early work has been unknown until recently when N.S. Kurek (*Н.С. Курек*) (Курек, 1997, 2004) has attracted attention to them. The objective of this paper is to give a review of these early studies of IQ differences between socioeconomic and ethnic and racial groups in the former Soviet Union.

The first study in which an IQ test was used to measure the intelligence of Russian children was carried out in 1909 by A.M. Schubert (*А.М. Шуберт*) (*Челпанов*, 1999). She used the French Binet test (administered in Russian translation) to measure the intelligence of 229 children. She concluded that the Binet test appeared to be too difficult for Russian children and the scale should be moved on 1 to 2 ages to be appropriate for them. She presented her results on The First Congress on Experimental Pedagogy in 1910. This conclusion was criticized by G.I. Chelpanov (Г.И. Челпанов) (Челпанов,

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1999, p. 423), the founder of the first Research Institute of Psychology in Russia, who argued that Schubert had measured the intelligence of children from lower socioeconomic classes, and suggested that if she measured the intelligence of children of higher socioeconomic class and more intelligent parents the results might be equal to or above the French norms.

The question of the relation of IQ to social–economic class was addressed in a study by E. V. Gurjanov (*E.B. Гурьянов*), A.A. Smirnov (*A.A. Смирнов*), M. V. Sokolov (*M.B. Соколов*), and P.A. Shevarev (П.А. Шеварев) (*Гурьянов, Смирнов, Соколов, & Шеварев*, 1930). They tested 414 children aged between 8½ and 11½ with the American Stanford–Binet (administered in Russian translation). The sample consisted of 200 children of peasants, 141 children of blue collar workers, and 73 children of white-collar workers. All children were from Moscow or the Moscow region. The results were that the children of peasants obtained a mean IQ of 87 (the standard deviation = 10), the children of blue-collar workers a mean IQ of 91 (SD = 8.6) and the children of white-collar workers a mean IQ 98 (SD = 8.4). The mean IQ (unweighted) for three groups was 92. The 7 IQ point difference between the children of the blue-collar workers and the children of white-collar workers seems quite small but the SDs are also quite small. When the difference is expressed in conventional IQs with the SD set at 15, the difference between the two socioeconomic groups becomes 12 IQ points.

Thus, the total weighted mean for Russian children in this study was 90.3 (these IQs are in relation to American Stanford–Binet norms). The distributions of the IQs are given in Table 1. The authors did not test the statistical significance of the differences, but from the figures they report one-way ANOVA reveals a highly significant difference between the three social groups ($F(2,411) = 38.98$, $p < .001$). All pair differences (calculated with the Scheffé test) are highly significant ($p < .001$ for all pair comparisons).

Another study of relation of IQ to social class was carried out by M. Syrkin (*М. Сыркин*) (*Сыркин*, 1929) who compared the intelligence of fourth grade children ($N = 338$, age approximately 10 years) belonging to six socio-economic groups. The lowest group was described as "blue collar workers and at least one of parents illiterate" and the highest group was described as "white-collar workers and at least one parent educated in an institute of higher education". Intelligence was assessed with five verbal tests measuring comprehension and verbal reasoning. There was a difference of 1.42*d* (equivalent to 21.3 IQ points) between the lowest and highest socioeconomic groups. The correlation between the socio-economic status of the parents and the test scores of the children was 0.369 ($p < .001$). Approximately two years later the children (now in sixth grade) were tested again and the same socio-economic group differences were present. The difference between the lowest and highest socioeconomic groups at the second testing was 1.50*d* (equivalent to 22.5 IQ points). This difference is closely similar to that typically found in western countries. For instance, in the United States a 19 IQ point difference between the children from the highest and lowest socioeconomic groups in the 1930s was reported by Terman & Merrill (1937), a 20 IQ point difference in England in the 1920s was reported by Duff & Thomson (1923), and a 19 IQ point difference in France in the 1950s was reported by Zazzo (1960). In Syrkin's study the correlation between the socio-economic status of the parents and the test scores of the children at the second testing was 0.386 ($p < .001$), which does not differ significantly from the correlation at the first testing. The author concluded that children's IQs are significantly associated with parental socio-economic status and that two years of schooling had not had any influence on the socio-economic group differences.

Table 1
Distributions of IQs for three socioeconomic groups (%).

Social group	IQ					
	56–65	66–75	76–85	86–95	96–105	106–115
Peasants	1	17	27	37	16	2
Blue-collar workers	1	6	27	38	26	2
White-collar workers	0	1	7	26	58	13
Total	1	11	24	34	26	4

In 1928, E.I. Zverev (*Е.И. Зверев*) (*Зверев*, 1931) tested the IQ of 114 children just admitted to school and aged about 7½–8 years, in and around the city of Kursk, about 500 km south of Moscow. The children were tested with the Binet–Bert test (a Russian adaptation of the Binet). The mean IQ of these children was 80.8. This is much lower than the IQ of children obtained by Gurjanov, Smirnov, Sokolov, & Shevarev (*Гурьянов, Смирнов, Соколов, & Шеварев*, 1930) for Moscow and the Moscow region. Probably this difference was due to methodological and sample differences, but there is a possibility that the regional factor was also involved. According to contemporary data the proportion of mentally retarded children in the Kursk region in 1995 was 3.16% and in 2000 it was 3.41% while in a number of other populations in Russia this proportion ranged from 2 to 3% (*Специальная психология*, 2006, p. 3–4). In this study Zverev compared the IQs of three groups of children: those who were illiterate (i.e. could not read at all) on entering school, those who were half literate (i.e. could read poorly, but could not write), and those who were literate (i.e. could read well) before entering school. The results were as follows: the mean IQ of illiterate children was 73 ($n = 66$); the mean IQ of half literate children was 87 ($n = 22$); the mean IQ of literate children was 93 ($n = 28$). There was also a substantial correlation between the IQ of children and the level of education of their parents ($r = 0.54$).

There were also some studies of the IQs of non-Slavonic but predominantly Caucasoid peoples. I. Bektchentay (*И. Бикчентай*) and Z. Carimowa (*З. Каримова*) (*Бикчентай & Каримова*, 1930) tested the IQs of 380 Tartar children aged 8–18 in five Tartar schools in Moscow with the Boltunow–Binet test (a Russian adaptation of the Binet). The Tartars are indigenous to the Caucasus in the far south of Russia and the former Soviet Union, but a number of them live in central Russian towns and cities. The mean IQ of the Tartar children in this study was approximately the same as that of Russian children. The correlation between the Boltunow–Binet test and school achievements (assessed by teachers' estimates) in their study was 0.84.

In addition to studies of socioeconomic differences, several studies of the intelligence of non-European peoples in the Soviet Union were carried out between 1926 and 1931. The first of these was reported by F.P. Petrov (*Е.П. Петров*) (*Петров*, 1928) who tested the IQs of 1398 Chuvash children

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aged 3–13 in 1926–1927 with the French Binet–Simon test. The Chuvash peoples live by the Volga River, adjacent to Tartars, Russians and East Finn peoples. Their language is classified as Turkic, but it is "very different from other Turkic languages" (The New Encyclopædia Britannica, 1994, vol. 3, p. 310) and "Formerly, scholars considered Chuvash not properly a Turkic language at all but, rather, the only surviving representative of a separate subdivision of the Altaic languages probably spoken by the Huns" (Ibid.). Anthropologically, Chuvash are a mixture of the Europeans (Caucasoids) and East Asian Mongoloids (*Каховский*, 2003) and belong to the *Uralic* people of Siberia (The Big Encyclopedia (*Большая энциклопедия*), 2006, vol. 58, p. 414; vol. 53, p. 285; Cavalli-Sforza, Menozzi, & Piazza, 1994, p. 225). At the time of the study, their lifestyle was similar to that of Russian peasants. According to M. Efimov (*М Ефимов*) (*Ефимов*, 1931) the level of literacy among the Chuvash was 20% in 1917, and 85% in 1931 (the latter figure is probably an exaggeration). The results of Petrov's study (group medians) are given in Table 2.

The figures in Table 2 show a median IQ of 87 for boys and 84 for girls, and means (unweighted) of 89 for boys and 86 for girls. These are in relation to 100 for French norms, but no normative data are reported for Russian children. The IQs of the Chuvash children show a decline with age, with the lowest IQs among the 12 and 13 year olds. Petrov explained the decline as a result of majority of the boys leaving school by the age of 11 and many of the girls leaving school by the age of about 8, when the parents took them out of school to work, largely at spinning (drawing out fibers from a mass and twisting them together to form a continuous thread or yarn, which at this time many of the Chuvash did at home). Petrov suggested that this retarded normal cognitive development.

Petrov also reported the relationship between the IQs of Chuvash children and their living standards. He divided the children into three groups based on their own reports: poor, medium and well-to-do. He presented medians for each of these groups for each age from 5 years upward and for boys and girls separately. The poor obtained the lowest IQs, followed by the medium, while the well-to-do obtained the highest IQs. The differences between the groups is statistically significant: for boys $F(2,24) = 43.81$ ($p<0.001$) and for girls $F(2,24) = 6.02$ ($p<0.01$).

In 1929 a study of the IQs of the Evenk (also known as the Tungus) was carried out by I. Bulanow (*И. Буланов*) (*Буланов*, 1930). The Evenk (Tungus) inhabit the territory of north east Siberia "from the Ob–Irtysh watershed eastward to the Okhotsk seacoast and Sakhalin, and from the Amur River basin in the south northward to the Arctic Ocean" (The New Encyclopædia Britannica, 1994, vol. 4, p. 619). Their population is quite small, numbering about 60,000, of which about 30, 200 live in Russia and the remainder in China and Mongolia (The Big Encyclopedia (*Большая энциклопедия*), 2006, vol. 59, p. 582). Their language belongs to Manchu–Tungus language family (The New Encyclopædia Britannica, 1994, vol. 4, p. 619). Anthropologically, they belong to the Arctic or Innuit (Eskimo) peoples (sometimes regarded as part of the major Mongoloid race) and are most closely related genetically to the Chukchi and Koryak peoples (Cavalli-Sforza, Menozzi, & Piazza, 1994, p.115; The Big Encyclopedia (*Большая энциклопедия*), 2006, vol. 59, p. 582).

Table 2
Median IQs of Chuvash children. Numbers of children are given in parentheses.

Age	Boys	Girls
3	110 (2)	102 (2)
4	99 (11)	110 (14)
5	93 (19)	91 (25)
6	87 (44)	87 (38)
7	87 (70)	90 (47)
8	87 (100)	84 (86)
9	87 (95)	81 (76)
10	89 (102)	80 (100)
11	85 (113)	76 (101)
12	79 (106)	72 (96)
13	75 (93)	72 (58)
Mean	89	86

Bulanow's study of the intelligence of the Evenk (Tungus) consisted of only 6 children aged 10–15 years, four of whom attended school (and clear figures were given for only 5) with the Binet test, 17 children aged 7–19 years with the Rossolimo test[1], and 15 children with the American Pintner test. The results are presented as typical for Evenk children, but because of the small samples, their IQs may not be regarded as reliable. The results are as follows. For the Binet test the mean IQ was 70.16 (for 5 children, and in relation to French norms). The results obtained with the Rossolimo test showed lower average IQs of the Evenk (Tungus) compared with a Moscow sample on some abilities, namely, memory for pictures and words, ability to comprehend combined pictures, ability to comprehend visual incongruities, and, according to Bulanow's interpretation, ability to retain a high level of attention. As regards memory for pictures, the results contradicted the sometimes described capacity of Evenk (Tungus) to remember exactly long routes on wild territory (Encyclopedic Dictionary by Brockhaus & Efron (*Энциклопедический словарь Ф.А. Брокгауза и И.А. Ефрона*), 1902, vol. 67, p. 66). The low IQs on this test may have been due to some methodological reasons. The Evenk children found the Pintner non-verbal and spatial test the most interesting, but their results were poor. They worked blindly and frequently tried to squeeze an object into an inappropriate place.

Bulanow also reported some observations on Evenk (Tungus) children and adults concerning their great difficulty in understanding the concepts of measurement and number. He reported that when Evenk children were questioned about devices for measurement, they did not have the concept of an absolute unit of measurement. They thought that the unit changed with the material measured. Bulanow reported further that when he asked Evenk adults how many children they had "It was difficult, almost impossible, to get from parents precise information as to how many of their children were alive, how many of their children had died, what was the age of their children, and so on." (p. 198). A third study was carried out in 1929 by A.V. Zaporojets (*А.В. Запорожец*) (*Запорожец*, 1930) on the Altai, the indigenous peoples of the Gorno–Altai autonomous region in southern Siberia who

[1] Test Rossolimo was construed by Russian physician G.I. Rossolimo (*Г.И. Россолимо*) (*Россолимо*, 1910). It measures different cognitive abilities and will (measured as the resistance to automatisms and to suggestion).

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inhabit the western border of Mongolia with China and Russia (at the time of the study called Oyrot). The Altai language belongs to Northeastern group of Turkic language family (The New Encyclopædia Britannica, 1994, vol. 12, p. 59). Anthropologically, the Altai are not homogenous. Some of them are pure Mongoloids, while others are Mongoloids with some European admixture (*Степанов*, 2002, p. 46; Cavalli-Sforza et al., 1994, p.231). Their rate of literacy at the time of the study was 11%, while in the population of region, in which the proportion of Altai was 48% and the proportion of Russians was 50%, the level of literacy was 23% (*Голубева*, 1930).

Zaporojets tested 52 school pupils aged 8–20 years with the Binet test (of whom 48 were included in calculations), 50 children with the Rossolimo test, and some children (the figure was not reported) with Pintner–Peterson test (only the 6th, 7th and 8th form boards were used). The results for the Binet test were as follows: mean IQ for total group was 66.9 (sd. 8.5), mean IQ for children aged 8–12 was 69.15, and the mean IQ for children aged 13–16 years was 64.8. As noted by Zaporojets, this test was tedious for the Altai children. Some tasks were especially difficult for them. These were tasks involving calculation, logical operations, and the fluency task to name as many as words as possible during 3 min. As for the Rossolimo test, the most difficult tests for Altai children were those requiring the ability to retain a high level of attention and to comprehend visual incongruities. Their mean IQ for the Pintner–Peterson test was 75.

Zaporojets noted that the Altai children did not have a clear understanding of units of measurement. He observed that when they were questioned about the length of a meter, the Altai would often ask: "Which meter?" They thought that the meter in one shop could be longer than in another. An adult Altai said about distance: "It is 100 *big versts* (approximately 100 kilometers)" (he apparently thought that the number of small *versts* must be more).

Zaporojets' paper contains some interesting observations on adult Altai. Although adult Altai performed calculations poorly at the time of study, they showed a remarkable ability for visual estimation of large quantities. A herdsman, who could count only to 20–30, noticed very well the absence of one horse, cow or sheep in a herd of many hundreds. He looked at a huge herd and noted that a particular cow was absent. Another example of the great visualization ability of the Altai was that they could remember and showed the way through wild territory, where they had been only once many years previously.

During this period there were also three studies of the intelligence of the Uzbeks. These peoples are indigenous to central Asia in present day Uzbekistan, Turkmenistan and Kyrgyzstan, between the Caspian sea and China, and north of Afghanistan and Iran. They are most closely related genetically to the Iranians (Cavalli-Sforza , Menozzi, & Piazza, 1994, p. 225). The first study was carried out in about 1926 by A. Schtelerman (*А. Штилерман*) and has been described by Kurek (*Курек*) (2004). He tested 164 Uzbek children aged 8–15 years with the Rossolimo test. He did not give IQs but reported that the scores of the Uzbek children were lower than those of children in Moscow. Schtelerman also described living and schooling conditions in Uzbekistan as very poor.

The second study was carried out by V.K. Soloviev (*B.K. Соловьев*) (*Соловьев*, 1929) in 1927. He tested 72 applicants for the army school (a secondary school specializing in preparation for the army), 112 students of this school and 393 soldiers, the majority of whom were Uzbeks, and in 1928/29 he tested samples of Uzbek professionals ($N = 566$) and European professionals ($N = 1031$) with several tests. He reported that both the test scores and the educational level of the Uzbeks were lower than those of the Europeans. The correlation between the test scores and school achievements in the first testing was 0.66.

The third study of the intelligence of the Uzbeks was carried out in 1931 by A.R. Luria (*А.Р. Лурия*), at that time at the Institute of Psychology in Moscow. Luria did not use intelligence tests but gave a descriptive analysis of the Uzbeks' cognitive abilities. He distinguished two modes of thought designated *graphic recall* (memories of how objects in the individual's personal experience are related) and *categorical relationships* (categorisation by abstract concepts). He found that the thought processes of illiterate Uzbek peasants were confined to *graphic recall* and that they were not able to form abstract concepts. For example, they were shown a hammer, an axe, a log and a saw, and asked which of these did not belong. The typical Uzbek answer was that they all belonged together because they are all needed to make firewood. People who are able to think in terms of *categorical relationships* identify the log as the answer because the other three are tools (an abstract concept). Illiterate Uzbeks peasants were unable to form concepts of this kind. They were also unable to solve syllogisms. For instance, given the syllogism "There are no camels in Germany; the city of B is in Germany; are there camels there?" Luria gave as a typical Uzbeks answer "I don't know, I have never seen German cities. If B is a large city, there should be camels there." Similarly, Luria asked "In the far north, where there is snow, all bears are white; Novia Zemlya is in the far north; what color are the bears in Novia Zemlya?". A typical Uzbek answer was "I've never been to the far north and never seen bears" (Luria, 1979, p. 77–8). Thus, Luria concluded that these peoples were not capable of abstract thought: "the processes of abstraction and generalization are not invariant at all stages of socioeconomic and cultural development. Rather, such processes are products of the cultural environment" (Luria, 1979, p. 74). Luria proposed that the ability to think in terms of *categorical relationships* is acquired through education. He did not suggest that the Uzbeks have any genetic cognitive deficiency. Luria's distinction between the categorization of objects in terms of practical experience and in terms of abstract concepts is similar to Piaget's (1929) distinction between concrete and formal operations.

These early studies carried out in the years 1926–1931 found that there were substantial socioeconomic and ethnic/racial differences in intelligence in the Soviet Union. These conclusions were not consistent with Marxist orthodoxy which held that these differences would disappear under communism. Accordingly, these studies, particularly that of Luria, attracted a great deal of criticism in the Soviet Union in the early 1930s. This has been described by Kozulin (1984): "Critics accused Luria of insulting the national minorities of Soviet Asia whom he had ostensibly depicted as an inferior race. The results of the expedition were refused publication and the very theme of cultural development was forbidden". In 1936 intelligence testing was banned in the Soviet Union. It

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Table 3
Scores in PISA 2006 in four countries.

Country	Science	Math	Reading	Mean
Kyrgyzstan	322	311	285	306
Latvia	490	486	479	485
Lithuania	488	486	470	481
Russia	479	476	440	465

was not until the 1960s and early 1970s that this prohibition was progressively relaxed (Grigorenko & Kornilova, 1997). Luria's work was not published in Russian until 1974 and English translations were published in 1976 and 1979 (Luria, 1976, 1979).

With the relaxation of the prohibition on intelligence testing the results of these early studies have been confirmed. In a study carried out in communist Poland in 1974, substantial social class differences in intelligence were reported in a sample of approximately l4,000 11 year olds in Warsaw (almost all the children in the city) (Firkowska, Ostrowska, Sokolowska, Stein, Susser, & Wald, 1978). The authors concluded that "an egalitarian social policy executed over a generation failed to override the association of social and family factors with cognitive development that is characteristic of more traditional societies".

The results of Luria and others that the Usbeks of central Asia have lower IQs than European Russians is consistent with a number of studies showing that average IQs in countries to the south of this region (i.e. Iran and Pakistan) also have average IQs lower than those of Europeans (Lynn, 2006). This has been confirmed in the 2006 PISA (Program for International Student Assessment) study of reading comprehension, mathematical ability, and science understanding administered to 15 year olds in 56 countries (OECD, 2007). These three abilities are all components of many intelligence tests and can be regarded as tests of intelligence or, more broadly, of cognitive ability. This study included Kyrgyzstan which borders Uzbekistan and is inhabited by Uzbek and related peoples of central Asia between the Caspian sea and China. The scores for Kyrgyzstan and Russia are given in Table 3. It will be seen that on all three of the tests the scores for Kyrgyzstan are well below those of Russia. On the mean of the three tests (given in the right hand column), the scores are 306 for Kyrgyzstan and 465 for Russia. The standard deviation is 100. Thus, the difference between the two scores is 159 = 24 IQ points, giving Kyrgyzstan an IQ of 76 in relation to 100 for Russia. Also given in the table are the scores for Latvia and Lithuania, which were incorporated into the Soviet Union in 1940. It will be seen that these scores are closely similar to those of Russia. The difference of 20 in the mean between Russia and Latvia is equivalent to only 3 IQ points. These results show that the difference in cognitive ability between the Asian peoples and Europeans of the former Soviet Union remained about the same in 2006 as in 1929–1931, despite some 70 years of universal education in the republics of central Asia.

The principal conclusions of these early studies were that there were substantial socioeconomic and ethnic/racial group differences in intelligence in the Soviet Union, and that these were resistant to education and social engineering. These results were contrary to prevailing Marxist–Leninist doctrine and work on intelligence was suppressed in the 1930s for approximately 40 years. The history of work on intelligence in the former Soviet Union parallels that of genetics, where mainstream Mendelian theory represented by Nikolai Vavilov in the 1920s was likewise suppressed in the 1930s and replaced by the environmentalist pseudo-genetics of Trofim Lysenko. The domination of science by political theory was relaxed in the 1960s and 1970s, and in recent decades both intelligence research and Mendelian genetics have been rehabilitated in Russia.

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