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A New Study of Differences in Intelligence in the Provinces and Regions of the Russian Federation and Their Demographic and Geographical Correlates

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Data are reported for intelligence in 85 provinces and regions of the Russian Federation and compared with those obtained for educational attainment in a previous study of 79 provinces and regions. The two measures were correlated at .74. In both studies, the IQs of the provinces and regions were positively correlated with mean per capita income, net migration, urbanization, the percentage of ethnic Russians and latitude, such that intelligence was higher in the North, and significantly negatively correlated with infant mortality, fertility and longitude, such that intelligence was higher in the West.
Key Words: Intelligence; Russia; Infant mortality; Fertility; Urbanization

Data for cognitive ability in 79 provinces and regions of the Russian Federation have been reported by Grigoriev et al. (2016). The ability measure in this study consisted of the scores obtained by young people in the Unified State Examination (USE), a scholastic achievement test administered nation-wide. The scores were those of students who had been accepted by state universities and institutions for tertiary education in the year 2014. The Unified State Examination scores were reported as educational quotients (EQ) and were treated as a proxy for intelligence. This was justified on the grounds that the correlations between educational attainment and intelligence among individuals are typically around .5

to .7. For example, Benson (1942) showed that in the United States intelligence measured at the age of 12 years was correlated at .57 with educational attainment at age 23, and Thienpont and Verleye (2003) showed that in Britain intelligence measured at age 11 years was correlated at .70 with educational attainment at age 21. We report here new data for intelligence in the provinces and regions of the Russian Federation and their demographic and geographical correlates to assess the validity of the results obtained in the previous study.

Method

The sample consisted of 238,619 men (mean age 26.548 years, range 18-40 years) who visited the site of the Ministry of Defense of the Russian Federation (www.mil.ru) from September 2012 to December 2017. This site affords an opportunity to take some tests to assess eligibility for voluntary military service in the Russian Armed Forces, including an intelligence test measuring verbal, numerical and spatial abilities. The test consists of 30 items and the score is the number of items answered correctly. The time limit is 15 minutes. The mean scores and standard deviations obtained by the online test takers from 85 regions of the Russian Federation were calculated. For better comparability, the raw score means were scaled to the IQ metric. For this, the raw score standard deviation for the total sample (6) was converted to 15 and the weighted raw score mean (20) was converted to 100.

Results

The appendix table gives the numbers of testees in the provinces and regions, mean scores and standard deviations, means scaled to the IQ metric, and the scores in the earlier study of educational achievement measured as EQ given in Grigoriev et al. (2016). We calculated the correlations of the present IQs with the 2016 EQs and the demographic variables. Because the 2016 dataset combined St. Petersburg city with the Leningrad region and Moscow city with the Moscow region, the present IQs for these pairs of regions have been averaged using population numbers for 2016 as weights. The weighted mean for the St. Petersburg city and the Leningrad region is 21.090 and the weighted mean for the Moscow city and the Moscow region is 20.854.

Table 1 gives correlations weighted by population size in 2016 for the regional IQs in the present study and in the previous study (Grigoriev et al., 2016), with mean per capita income, net migration per 10,000, infant mortality, fertility, urbanization (all for 2012), percentage of ethnic Russians, latitude and longitude. The correlations of the present IQs with demographic variables are calculated for

the whole set of regions of the Russian Federation in 2012 and for the subset of the 79 regions having the 2016 IQs (in parentheses).

Table 1. *Weighted correlations between IQs and demographic variables in the present and 2016 data.*

Variables	Present IQs	2016 IQs
2016 IQs	.74***	-
Income	.39*** (.40)	.58***
Net migration	.55*** (.55)	.78***
Infant mortality	-.72*** (-.72)	-.56***
Fertility	-.72*** (-.72)	-.56***
Urbanization	.68*** (.69)	.65***
Ethnic Russians	.60*** (.60)	.44***
Latitude	.55*** (.53)	.33**
Longitude	-.29** (-.29)	-.38***

* p<.05; ** p<.01; *** p<.001.

Discussion

There are three points of interest in the results. First, the principal objective of this study was to examine a new data set of differences in intelligence in the provinces and regions of the Russian Federation to assess the validity of the data on educational achievement published by Grigoriev et al. (2016). The earlier study used scores from the Unified State Examination that had been obtained by students accepted at institutions of tertiary education as a proxy for intelligence. The present study used IQs from applicants to serve in the Russian Armed Forces. Neither of the samples is representative of the general population in the provinces and in the previous study educational attainment was used as a proxy for intelligence. Despite these shortcomings of both datasets, the two measures were significantly correlated at .74 across the Russian provinces and regions. This positive correlation can be regarded as corroborating and validating the differences in intelligence in the provinces of the Russian Federation obtained in the previous study.

Second, the correlations for the IQs and EQs of the provinces and regions with the demographic variables in the present study and in the previous study given in Table 1 are consistent. In both datasets, the IQs of the provinces and regions were positively correlated with mean income per capita, net migration, urbanization, the percentage of ethnic Russians and latitude, such that intelligence was higher in the North, and significantly negatively correlated with

infant mortality, fertility and longitude, such that intelligence was higher in the West. These correlations are also consistent with those of regional differences in intelligence and their demographic and geographical correlates obtained in a number of other countries given in Lynn, Fuerst and Kirkegaard (2018).

Third, the present study gives data for six more provinces and regions of the Russian Federation than were available in the previous study, increasing the number from 79 to 85 for which there are intelligence and demographic data.

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Appendix. *Numbers of participants, mean raw scores and standard deviations and IQs for the provinces and regions of Russia, and educational quotients (EQ) given in Grigoriev et al. (2016).*

Region	This study				Grigoriev et al. (2016)
	N	Mean	SD	IQ	EQ
St. Petersburg City	9516	21.449	5.779	103.5	111
Yaroslavl region	1460	21.214	5.664	102.9	99
Moscow City	14621	21.146	5.900	102.7	110
Kirov region	1946	21.009	5.650	102.4	102
Tomsk region	1442	20.897	5.982	102.1	108
Chuvashi Republic	1444	20.873	5.690	102.1	101
Perm territory	2703	20.871	5.826	102.1	105
Vologda region	2198	20.854	5.882	102.0	93
Udmurt Republic	1646	20.725	5.663	101.7	99
Ryazan region	1544	20.694	5.731	101.6	102
Republic of Komi	1359	20.662	5.771	101.5	98
Nenets autonomous district	65	20.631	6.454	101.5	-
Republic of Mari El	1306	20.594	5.864	101.4	94
Novgorod region	840	20.557	5.721	101.3	97
Republic of Karelia	1272	20.551	5.972	101.3	101
Oryol region	1208	20.542	5.756	101.2	93
Samara region	3739	20.504	5.809	101.1	101
Kostroma region	1018	20.472	5.901	101.1	96
Kaluga region	1410	20.466	5.735	101.0	101
Republic of Tartarstan	2739	20.464	5.850	101.0	104
Penza region	1809	20.457	5.790	101.0	95
Moscow region	10391	20.369	5.898	100.8	110
Tyumen region	1664	20.365	5.783	100.8	92
Tula region	1604	20.352	5.878	100.8	99
Tver region	1989	20.341	5.712	100.7	97
Sevastopol City	2353	20.312	5.742	100.7	-
Arkhangelsk region	3808	20.311	5.993	100.7	103
Nizhni Novgorod region	4039	20.296	5.899	100.6	104
Sverdlovsk region	6257	20.289	5.912	100.6	106
Kursk region	1930	20.274	5.824	100.6	101
Novosibirsk region	4278	20.247	6.073	100.5	106

Region	This study				Grigoriev et al. (2016)
	N	Mean	SD	IQ	EQ
Ulyanovsk region	1680	20.221	5.779	100.4	97
Voronezh region	4532	20.213	6.016	100.4	100
Krasnoyarsk territory	3890	20.153	5.977	100.3	98
Vladimir region	2428	20.145	6.052	100.2	98
Lipetzk region	1667	20.141	5.707	100.2	93
Smolensk region	1951	20.136	5.822	100.2	102
Republic of Mordovia	836	20.134	5.661	100.2	99
Belgorod region	3353	20.116	5.913	100.2	100
Rostov region	6958	20.113	5.841	100.2	98
Chelyabinsk region	5391	20.100	6.036	100.1	98
Ivanovo region	2231	20.098	6.040	100.1	97
Murmansk region	3483	20.094	5.963	100.1	99
Kaliningrad region	3199	20.083	5.756	100.1	103
Republic of Bashkortostan	4204	20.072	6.031	100.1	99
Kurgan region	1152	20.052	5.936	100.0	91
Saratov region	4667	20.050	5.860	100.0	99
Leningrad region	2609	20.033	6.097	100.0	111
Tambov region	1785	19.988	5.987	99.9	95
Bryansk region	2512	19.982	6.196	99.8	92
Krasnodar territory	8853	19.914	5.799	99.7	105
Pskov region	1644	19.888	5.821	99.6	103
Khabarovsk territory	4176	19.860	5.958	99.5	94
Republic of Crimea	4281	19.856	5.790	99.5	-
Magadan region	205	19.854	5.935	99.5	88
Volgograd region	5494	19.827	5.957	99.4	96
Yamalo-Nenets autonomous district	483	19.793	5.875	99.4	-
Republic of Sakha (Yakutia)	647	19.793	5.762	99.4	96
Chukotka autonomous district	93	19.785	6.240	99.3	-
Omsk region	3767	19.723	5.804	99.2	98
Kemerovo region	3217	19.701	5.952	99.1	99
Irkutsk region	5207	19.654	6.084	99.0	93
Republic of Adygeya	1620	19.647	6.387	99.0	83
Kamchatka territory	852	19.635	5.901	99.0	86

Region	This study				Grigoriev et al. (2016)
	N	Mean	SD	IQ	EQ
Altai territory	6202	19.578	6.003	98.8	101
Orenburg region	3891	19.475	5.940	98.6	100
Khanty-Mansijsk autonomous district - Yugra	1231	19.467	5.961	98.5	94
Jewish autonomous region	586	19.417	6.258	98.4	87
Astrakhan region	2489	19.405	6.106	98.4	94
Amur region	3166	19.230	6.192	98.0	89
Republic of Khakassiya	979	19.200	5.973	97.9	98
Primorsky territory	6221	19.193	5.917	97.9	96
Stavropol territory	4064	19.189	6.102	97.9	97
Republic of Altai	1186	18.987	6.693	97.3	-
Republic of Kalmykiya	364	18.975	6.313	97.3	92
Sakhalin region	929	18.869	6.320	97.1	87
Zabaykalsky territory	4149	18.701	6.062	96.6	87
Republic of Buryatiya	4195	18.560	6.240	96.3	80
Republic of North Ossetia-Alania	989	18.397	6.066	95.9	85
Kabardino-Balkarian Republic	929	18.210	5.950	95.4	82
Karachay-Cherkess Republic	421	18.204	5.980	95.4	86
Republic of Dagestan	2520	16.698	6.428	91.6	84
Chechen Republic	342	16.371	6.370	90.8	77
Republic of Tyva	959	16.006	5.893	89.9	97
Republic of Ingushetiya	142	15.873	6.368	89.6	100
Mean		**19.831**			