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Regional differences in intelligence, infant mortality, stature and fertility in European Russia in the late nineteenth century

Andrei Grigoriev [a,*], Ekaterina Lapteva [b], Richard Lynn [c]

[a] Institute of Psychology, Russian Academy of Sciences, Moscow, Russia
[b] Federal Institute of Development of Education, Moscow, Russia
[c] University of Ulster, Coleraine, Northern Ireland BS52 1SA, United Kingdom

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ABSTRACT

Regional differences are presented for literacy adopted as a proxy for intelligence, infant mortality, fertility, stature and geographical location for 50 provinces in European Russia in the late nineteenth century. All variables were significantly inter-correlated. Intelligence was significantly higher in the north and west than in the south and east.

1. Introduction

There have been a number of studies of regional differences in intelligence within countries and their association with a range of socio-economic, demographic and epidemiological phenomena. The most commonly reported of these have been positive associations with per capita income, educational attainment, life expectancy and stature, and negative associations with infant mortality and fertility. These associations have been reported for the regions of the British Isles (Lynn, 1979), France (Lynn, 1980), the United States (Shatz, 2009), Italy (Lynn, 2010; Piffer & Lynn, 2014), Portugal (Almeida, Lemos, & Lynn, 2011), Spain (Lynn, 2012), China (Lynn & Cheng, 2013), Japan (Kura, 2013), Finland (Dutton & Lynn, 2014), India (Lynn & Yadav, 2015) and Turkey (Lynn, Sakar, & Cheng, 2015).

In this paper we present data for regional differences in intelligence, literacy, infant mortality, stature, fertility and geographical location in European Russia in the late nineteenth century. There are no data for regional intelligence in the nineteenth century and we have therefore adopted rates of literacy as a proxy for intelligence. This is justified on the grounds that a high correlation between literacy rates and intelligence have been reported in a number of studies. For example, a correlation of .861 between literacy rates for Italian regions in 1880 and early twenty-first century IQs has been reported by Lynn (2010); a correlation of .83 between literacy rates for Spanish regions in the early twenty-first century has been reported by Lynn (2010); (Lynn, 2012); and a correlation of 0.56 between literacy rates and IQs for the states and union territories of India in 2011 has been reported by Lynn and Yadav (2015). There is additional support for using literacy in the nineteenth century as a proxy for intelligence in the results of a study by Grigoriev, Lapteva and Ushakov (Григорьев, Лаптева, Ушаков, 2015) showing a correlation of .58 between literacy rates of the peasant populations of the districts (*uezds*) of the Moscow province in 1883 and the results of the Unified State Exam and State Certification on Russian Language in the districts of the contemporary Moscow oblast.

Our predictions based on results from a number of countries are that regional differences in literacy adopted as a measure of intelligence would be positively associated with stature and higher latitude and negatively associated with infant mortality and fertility. Positive correlations between IQ and stature of around 0.25 at the level of individuals have been reported in a number of studies (e.g. Stoddard, 1943, p. 200; Lacock & Caylor, 1965). It is proposed that these positive correlations arise because the quality of nutrition is a determinant of both IQ and stature shown in an extensive review of the evidence given in Lynn (1980) and confirmed by Benton (2001) and Arija et al. (2006). This effect of nutrition brings intelligence and stature into positive correlation at the level of individuals and populations. In addition, it is proposed that there is a positive feedback loop in which population IQ is a determinant of the quality of nutrition received by children, and the quality of nutrition received by children improves the IQs and stature of children. At the level of populations, a positive correlation between IQs and stature across the thirteen regions of the British Isles has been

* Corresponding author.
E-mail address: andrey4002775@yandex.ru (A. Grigoriev).

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reported by Boldsen and Mascie-Taylor (1985) and between regional IQs and stature across the twelve regions of Italy ($r = .93$) has been reported by Lynn (2010).

Negative associations between intelligence and infant mortality have been reported in a number of studies. At the individual level an association between infant mortality and the low IQ of mothers has been reported by Savage (1946). At the population level, negative associations between infant mortality and IQs have been reported for.

13 regions of the British Isles ($r = -.78$) (Lynn, 1979) and for 90 regions of France ($r = -.30$) (Lynn, 1980). These results have been confirmed in more recent studies in the United States for which Reeve and Basalik (2011) have reported a negative correlation of −.54 between infant mortality and state IQs for 50 US states. Negative correlations between regional IQs and infant mortality in 1955–1957 and in 1999–2002 for 12 regions of Italy of −.841 and −.861 have been reported by Lynn (2010); and a negative correlation of −.79 between regional IQs and infant mortality in Finland has been reported by Dutton and Lynn (2014). It is proposed that the explanation for these correlations is that populations with high IQs are more competent in looking after their babies, e.g. by avoiding accidents, and are able to give them better nutrition, which makes them healthier and more resistant to disease.

Negative correlations between regional IQ and fertility have been reported for the states of the United States (Shatz, 2009; Reeve & Basalik, 2011), the regions of Turkey (Lynn et al., 2015) and the regions of India (Lynn & Yadav, 2015). The negative correlations between regional IQs and fertility indicate that fertility was dysgenic in these countries in the early twenty-first century.

We also predict that literacy rates in Russia in late nineteenth century would differ by geographical location based on the results of several studies. For example, Lynn (2010) showed that populations of the northern regions of Italy have higher IQ than those of the southern regions, Lynn and Yadav (2015) have reported that in India the populations of the southern regions have higher IQs than those in the northern regions, and Dutton and Lynn (2014), have reported that in Finland the populations of the western regions have higher IQ than the eastern populations.

2. Method

The data for literacy, infant mortality, fertility and stature in the late nineteenth century are available for 50 provinces of European Russia. The percentages of the population that were literate in 1897 were calculated from the data of the Russian Imperial census carried out 28 January, 1897. These data were published in 119 volumes (Первая всеобщая перепись населения Российской Империи 1897, 1899–1905). The literacy data consisted of the numbers able to read in Russian or any other language and the total numbers of respondents for regions from which the percentages of the population that were literate were calculated. These percentages are adopted as a measure of intelligence on the grounds that rates of literacy have been found to be highly associated with regional IQs across the regions of Italy ($r = .86$) (Lynn, 2010) and Spain ($r = .81$) (Lynn, 2012). Data for the rates of infant mortality (deaths of infants in the first year per 1000 live births) for the 50 European provinces were taken from the book by Adolf Rashin (Рашин, 1956). This book contains various statistical data for Russia for the period 1811–1913. Particularly, mean rates of infant mortality are given for the periods 1867–1881, 1886–1897 and 1908–1910. We used data for the period 1886–1897 as the closest to the date of census (1897). Data for fertility (number of births per 100) were taken from the Encyclopaedic Dictionary (Brockhaus and Efron; Энциклопедический словарь Ф.А. Брокгауза и И.А. Ефрона). These data are means for the period 1887–1897. Data for the stature of 20 year old male military recruits for 1874–1883 given by Anuchin (Анучин, 1889) were used as the measure of the stature of the populations of the provinces. In addition, we calculated the correlation of literacy rates of conscripts in the census 1887–1897 with the literacy of conscripts 1874–1883 as 0.878 showing that the literacy data have high reliability. Also given are the latitude and longitude of the midpoint of the regions.

3. Results

Table 1 gives descriptive statistics for the percentages of literacy, the rates of infant mortality, fertility, stature, latitude and longitude for the 50 provinces of European Russia in the late nineteenth century. Table 2 gives the Pearson correlations for the variables given in Table 1.

Table 1
Literacy (Lit), infant mortality (InMo), fertility (Fert), stature of recruits, latitude and longitude for 50 provinces of European Russia in the late nineteenth century.

Province	Lit 1897	InMo 1886–1897	Fert 1888–1897	Stature (mm)	Latitude	Longitude
Estonia	77.9	156	2.94	1667	59.0	25.0
Livonia	77.7	190	2.89	1667	57.5	26.0
Courland	70.9	156	2.87	1670	56.5	23.0
St Petersburg	55.1	341	2.58	1644	59.0	30.0
Kovno	41.9	173	4.06	1641	55.5	23.5
Moscow	40.2	366	4.37	1644	55.5	37.0
Yaroslavl	36.2	306	4.29	1635	58.0	39.0
Grodno	29.2	179	4.75	1638	53.0	24.0
Vilna	28.8	141	4.12	1644	54.5	26.0
Tavriya	27.9	179	4.76	1660	46.0	34.5
Vladimir	27.0	363	5.23	1638	56.0	40.5
Kherson	25.9	170	4.59	1652	47.5	32.0
Olonets	25.3	321	4.60	1632	61.5	35.5
Vitebsk	24.6	187	3.75	1642	56.0	29.0
Tver	24.5	328	4.91	1642	57.0	35.5
Kostroma	24.0	341	4.80	1630	58.0	43.5
Saratov	23.8	377	5.53	1642	51.5	45.5
Arkhangelsk	23.3	253	4.01	1639	64.5	41.0
Novgorod	23.0	312	4.22	1638	58.5	36.0
Don Voisko oblast (Don Host Oblast)	22.4	206	–	1662	48.0	41.0
Samara	22.1	315	5.77	1641	53.0	50.5
Nizhniy Novgorod	22.0	410	4.81	1640	56.0	44.5
Yekaterinoslav	21.5	188	5.46	1658	48.0	36.0
Tula	20.7	320	4.97	1635	54.0	37.5
Orenburg	20.4	308	5.67	1636	53.0	59.0
Ryazan	20.3	292	5.81	1636	54.5	40.0
Kaluga	19.4	348	5.24	1636	54.5	35.5
Perm	19.2	437	5.42	1644	58.5	58.5
Vologda	19.1	358	4.48	1634	61.5	46.5
Chernigov	18.4	229	4.90	1641	52.0	32.0
Kiev	18.1	226	4.86	1654	50.0	30.5
Kazan	17.9	281	4.36	1626	55.5	49.0
Minsk	17.8	173	4.57	1634	53.0	28.0
Oryol	17.6	319	5.36	1639	53.0	35.5
Smolensk	17.3	322	5.45	1634	55.0	33.0
Volhynian	17.2	187	4.79	1641	51.0	26.5
Mogilev	16.9	194	4.86	1637	54.0	30.5
Poltava	16.9	205	4.83	1652	50.0	33.5
Kharkov	16.8	232	5.23	1645	50.0	36.5
Ufa	16.7	253	5.02	1628	55.0	56.0
Tambov	16.6	314	4.83	1636	53.0	41.5
Kursk	16.3	255	5.08	1643	51.5	36.5
Voronezh	16.3	309	5.56	1646	51.0	39.5
Vyatka	16.0	371	5.31	1629	58.0	50.5
Bessarabia	15.6	181	4.45	1654	47.0	29.0
Simbirsk	15.6	340	5.08	1637	54.5	47.0
Astrakhan	15.5	298	3.86	1651	48.0	47.0
Podolia	15.5	178	4.51	1648	49.0	28.0
Penza	14.7	366	5.50	1636	53.5	44.5
Pskov	14.6	298	4.17	1647	57.0	29.5