



Data on the Raven's Standard Progressive Matrices from four Serbian samples

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ABSTRACT

Previous studies have found the mean IQs for countries in the Balkans such as Serbia, Croatia, Romania, Bulgaria, Greece, and Turkey range from 89 to 94. This is lower than the mean IQ of 100 for other European countries. To examine this issue further, we tested 608 17–65-year-olds (418 males; 190 females) from four different communities in the Republic of Serbia over a two-year period using the Raven's Standard Progressive Matrices. Analyses showed that an average of 48 of the 60 matrices was solved ($SD = 10$), which is at the 31st percentile on the 1993 American standardization, equivalent to an IQ of 93. If an adjustment is made for the increase in American norms of two IQ points a decade from the 1993 standardization to the date of the study (2007 = 14 years), the Serbian IQ is reduced to 90. If a further reduction is made of two IQ points because the American IQ is 98 due to the inclusion of African Americans with a mean IQ of 85, the final best estimate of the Serbian IQ is 88. There were no significant differences between Muslims and Christians or males and females.

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1. Introduction

As the trend toward a more global economy continues, national differences in cognitive performance are likely to become more salient. The IQs of 113 different countries from 620 studies ($N = 813,778$) have been tabulated and the world average IQ found to be 90 (Lynn, 2006; Lynn & Vanhanen, 2006). East Asians (Chinese, Japanese and Koreans) obtained the highest mean IQ at 105. Europeans followed with an IQ of 100. Some ways below these were South Asians and North Africans (IQ 85), followed by sub-Saharan Africans (IQ 70). All these IQs were calculated in relation to a mean IQ in Britain of 100 ($SD = 15$). The national IQs correlated positively from .40 to .80 with variables such as gross domestic product, adult literacy, life expectancy, level of democratization, and quality of life indicators (Lynn & Vanhanen, 2006; Templer, 2008).

The mean IQ for the Balkan countries of Serbia, Croatia, Romania, Bulgaria, Greece, and Turkey were 89, 90, 94, 93, 92, and 90, respectively, which gives a lower mean (IQ = 91) than the IQ of 100 for the rest of Europe (Lynn, 2006). These studies were conducted on subjects of different ages using different instruments in different countries and yet resulted in similar conclusions. The IQ of 89 for Serbia came from a study of 76 15-year-olds using the Colored Progressive Matrices (Moyses & Wolins, 1973). The IQ of 90 for Croatia came from a study of 299 13–16-year-olds using the Standard Progressive Matrices (Sorokin, 1954). The IQ

of 94 for Romania came from a study of 300 6–10-year-olds using the Colored Progressive Matrices (Zahirnic et al., 1974). The IQ of 93 for Bulgaria came from two studies, one of 215 adults and the other of 1456 11–17-year-olds, both using Cattell's culture fair test (Buj, 1981; Lynn, Plaspalanova, Stetinsky, & Tzenova, 1998, respectively). The IQ of 92 for Greece came from five studies based on a total of 2568 children and adults using five different tests. The IQ of 90 for Turkey came from three studies based on a total of 2544 7–12-year-olds using the Dominoes and Draw-a-Man tests and the Standard Progressive Matrices (Kagitcibasi, 1972; Sahin & Duzen, 1994; Uzman, 1972).

Finer-grain analyses tend to validate these findings. For example, when the Organization for Economic Co-Operation and Development (OECD) carried out studies of the attainments in mathematics and science in 2000 of representative samples of 15-year-olds in 40 countries, the correlations with national IQs was .88 (Lynn & Vanhanen, 2006; Rindermann, 2007). The OECD studies, known as the Program for International Student Assessment (PISA), also showed lower scores in the Balkans. For example, on the 2003 PISA mathematics test, standardized with a mean of 500 and SD of 100, Europe as a whole scored 499, whereas Serbia, Bulgaria, Greece, and Turkey scored 437, 439, 449, and 424, respectively.

Why should the IQ scores and educational attainments be lower in the Balkans than elsewhere in Europe? Lynn (2006) suggested that one explanation is that the people in this region are a hybrid population who comprise a genetic mix between Europeans and Muslim Turks. This latter group has a mean IQ of 90 and belong to the population group designated South Asians/North Africans

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in the genetic linkage trees identified by Cavalli-Sforza, Menozzi, and Piazza (1994). In a review of nearly 100 studies carried out on this population group, Lynn found their mean IQ is less than 90. In the Balkans such a mixed population might have evolved because of the occupation of large territories in southeast Europe by Turkey for a number of centuries during the time of the Ottoman Empire (1521–1919). This brought about a mixing of Turkish and European genes and a lowering of the IQ scores in the region. People of mixed-race have often been found to score intermediate to the two parental populations in IQ (Rushton, 2008).

However, several critics contend that national IQ measures are virtually “meaningless” and so unlikely to be reliable or valid (e.g., Barnett & Williams, 2004; Hunt & Sternberg, 2006). It is important, therefore, to collect more data to assess the reliability of the national IQs to see if past findings can be replicated. In the present paper, we test the hypothesis of a lower IQ in the Balkans with new data from the Republic of Serbia using the Raven’s Progressive Matrices. Because Lynn’s (2006) review found that Muslim countries average a lower IQ than European countries, we also test the hypothesis of Muslim/non-Muslim IQ differences within Serbia. Similarly, because Lynn and Irwing (2004) and Irwing and Lynn (2005, 2006) found that women average four IQ points lower than men, we also test the sex difference hypothesis.

2. Method

2.1. Overview

The purpose of this study is to examine general mental ability in 608 adults ranging in age from 17 to 65 years from four communities in Serbia to extend the national IQ data base because the only previous study of Serbian IQ was on 15-year-olds. We also test for any Muslim/non-Muslim and male/female differences.

2.2. Participants

The sample characteristics and test scores are shown in Table 1. The first three data sets ($N = 204$) were gathered in 2006–2007 from Novi Pazar, a city and municipality located in the Sandžak region of Southern Serbia as part of an ongoing series of anthropological fieldwork studies involving extensive personal interviews (e.g., Rushton, Čvorović, & Bons, 2007; Čvorović, 2004; Čvorović, Rushton, & Tenjevic, 2008). The fourth data set ($N = 404$) is from Belgrade.

According to the 2002 census data, the population of the municipality of Novi Pazar numbered 85,996 people and was composed of 65,593 Bosniaks (Serbian Muslims) and 17,559 Eastern Orthodox Christians. The city of Novi Pazar had a population of 54,604 and is the main economic and cultural centre of the Sandžak region. The town of Tutin, around 44 km from the city of Novi Pazar, is a mix of rural and urban areas with 16,000 people, of whom 98% are Muslims. Finally, Belgrade, the country’s capital, has a population of 1.6 million people, comprising 3.6% of the territory of Serbia and 21% of the Serbian population. It is the central economic hub of

the country and the capital of Serbian culture, education and science, and is 97% Orthodox.

2.3. Instruments

The Raven’s Standard Progressive Matrices (SPM) test is probably the most well-known, most researched, and most widely used of all culture-reduced tests. Its popularity is evident from the fact that it has been used in well over 1000 studies (Raven, Raven, & Court, 1998). It measures reasoning ability, general intelligence and Spearman’s g (Jensen, 1998; Raven et al., 1998). The SPM consists of 60 diagrammatic puzzles, each with a missing part which the test taker attempts to identify from several options. To ensure sustained interest and freedom from fatigue, each problem is boldly presented, accurately drawn, and, as far as possible, pleasing to look at. No time limit is set and all testees are allowed to complete the test. Reliability and validity remain high across a wide variety of populations. Retest reliabilities with an interval of approximately one year between administrations are between .83 and .93 (Raven et al., 1998).

2.4. Procedures

The participants were recruited through contact with various community organizations such as mosques, churches, political parties, and school administrators. In the Novi Pazar samples, about 80% were legally employed but many others earned income via black market activity. About 62% had completed high school and/or gone to college compared to 55% for the national average. In the Belgrade sample, except for the 18-year-old high school students, all were employed, with regular average income around 40,000 dinars per month (about USD 750), which makes them about average for the country as a whole, or slightly higher than average (the average salary in Serbia was 33,000 dinars per month, higher in Belgrade). For the 18-year-olds, several schools were selected from all parts of Belgrade, including the suburbs. Participants were not paid for their participation, but small gifts such as coffee for adults and candy for children were given to participants who were contacted by the second author (JC) who went door to door and/or to administrators who facilitated contact with the participants. A relaxed attitude was conveyed by the investigator who followed procedures that had worked well in a previous study by the authors with Serbian Roma (Čvorović et al., 2008). For example, the subjects were told the author was carrying out a research project on the characteristics of the people in the region. In order to avoid pressure and gain a maximum score, no time limit was placed on completing the test. The following information was recorded for the present study: age, sex, religion, and residence community.

2.5. Data analysis

Not included in the analyses reported here are the data also collected on 159 individuals from Novi Pazar who had been administered the Colored Progressive Matrices (CPM; Raven, Court, &

Table 1
Sample characteristics and test scores.

Sample	Age	Males			Females			Sex combined			IQ
		N	Mean	SD	N	Mean	SD	N	Mean	SD	
Novi Pazar Christians	22–60	40	48	9	27	44	8	67	46	9	83
Novi Pazar Muslims	17–60	48	44	10	15	47	10	63	44	10	84
Tutin Muslims	22–65	41	54	5	33	49	7	74	52	6	97
Belgrade Christians	17–50	289	47	8	115	48	7	404	47	8	90

Raven, 1995). The CPM is an “easier” test. It consists of 36 items and is made more attractive and less difficult by being in color. It has the effect of spreading out the scores of the bottom 20% of the general population. The CPM is typically given to young children, mentally impaired adolescents, and the elderly, and had been used in a previous study by the authors with the Serbian Roma (Rushton et al., 2007; Čvorović et al., 2008). After the CPM was found to be easy for most of the participants, the SPM was substituted. When the CPM scores were converted to SPM scores using the Manual’s conversion table (Raven et al., 1998, p. 71, Table SPM 4), they gave much lower scores for these adults, perhaps because of ceiling effects (SPM equivalents = 41 vs. 48; percentiles = 10th vs. 31st; IQs = 81 vs. 93). Hence, the analyses reported here are limited only to those participants who completed the SPM ($N = 608$).

3. Results

Table 1 shows the number of correct responses for each of the four samples (out of 60), separately for males, females, and then sex-combined, as well as the age ranges, sample sizes, percentile equivalents from the 1993 American standardization (Raven et al., 1998, p. 77, Table SPM 13), and IQ equivalents. The average for the total sample of 608 is 48 items correct, which is at the 31st percentile with an IQ equivalent of 93. If an adjustment is made for the increase in American norms of two IQ points a decade (Lynn, 2006, p. 5) from the standardization of 1993 to the approximate date of the Serbian study (2007 = 14 years), the Serbian IQ is reduced to 90. If a further reduction is made of two IQ points because the American IQ is 98 due to the inclusion of African Americans with a mean IQ of 85 (Lynn, 2006, p. 5), the final best estimate of the Serbian IQ is 88. There were no sex or religious differences (males = 90, females = 90; Muslims = 91, Christians = 89; $F_s < 1.00$, ns).

4. Discussion

The results showed three points of interest. First, the Serbian IQ of 93 obtained in this study on adults using the Standard Progressive Matrices (or 88 after correction for the secular trend and use of American norms), is very similar to the IQ of 89 obtained in the one previous study in Serbia by Moyles and Wolins (1973) on 15-year-olds using the Colored Progressive Matrices. The IQ results also accord with those on the other ages and tests reviewed in Section 1. As such, the results refute any claim that the previous national IQ data for the Balkans are not replicable or generalizable. This is important to establish given the controversial nature of this kind of research. A second finding is that no differences were to be observed between Muslims and Christians. This implies that the lower IQ scores found for the Muslim countries (Lynn, 2006; Lynn & Vanhanen, 2006) is a racial characteristic and not due to religion per se. Third, no differences were found between men and women in either means or standard deviations.

Why should the IQ scores and educational attainments be lower in the Balkans than elsewhere in Europe? One hypothesis raised in Section 1 is that the people in this region are a hybrid population, comprising a genetic mix between the European Christians and the Turkish Muslims who, like other South Asian/North African populations, average an IQ of less than 90. In the Balkans such a mixed population might have occurred because of the occupation of large territories in southeast Europe by Turkey for a number of centuries during the time of the Ottoman Empire (1521–1919). In support of this hypothesis is that in Greece, which was also occupied by the Turks for 200 years, the contemporary Turkish and Greek populations are genetically quite similar as shown by Cavalli-Sforza

et al. (1994) in their genetic linkage trees. Greeks were found to be more closely related to Iranians and other southwest Asian peoples than they were to Italians, Danes, and the English. This genetic similarity is also apparent for intelligence, for which the IQ of 90 in Turkey is in the range of 85–94 for Serbia, Croatia, Romania, Bulgaria, and Greece.

Another possible explanation for the lower IQ in the Balkans is selective migration and attrition during the long decades of war and occupation by Ottoman, Nazi, and Communist regimes. It is typically the elites who are most able to flee and/or who bear the brunt of political executions (Weyl, 1967). This appears to have been true during the Balkan Wars, beginning with the Serbian defeat on the field of Kosovo in 1389, where a great killing wiped out the nobility and knights and left the Serbs as a peasant nation (Stavrianos & Stoianovich, 1963). Similarly, communist persecution was aimed largely at the property owning classes (Weyl, 1967).

More research is called for. The present study’s limitations are those found in many other studies of national IQs. For example, the sampling was far from ideal in terms of representativeness of either populations, gender balance, or test materials, although it is worth noting that both the Novi Pazar and Belgrade samples averaged slightly higher in years of education, level of employment, and earnings than the national average. A question for the future is whether these differences in IQ scores are related to other life-history and demographic features of the population (Rushton, 1985; Templer, 2008; Čvorović, 2004).

Even a few years ago, reporting a mean IQ of 90 for any population group would have been considered not only an absurdity but also an injustice (Nell, 2000). Yet new empirical work continues to accumulate finding that the world mean IQ is 90, and that mean IQs of 70–90 are typical of many regions of the world (Lynn, 2006; Lynn & Vanhanen, 2006). Mean IQs as high as 100 are seldom found outside of European and East Asian population groups. It is of interest to find a slightly lower score in Southeastern Europe.

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