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National IQs and their demographic correlates

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ABSTRACT

National IQs calculated by Richard Lynn on the basis of intelligence tests carried out in many countries of the world measure differences in average mental abilities of nations. His cold winters theory provides a reasonable theoretical explanation for the emergence of these differences. Lynn's database on national IQs is unique. Many researchers have already started to use national IQs in their studies exploring to what extent differences in average mental abilities of nations could explain national differences in various social phenomena. The purpose of this paper is to tell about the evolution and expansion of data on national IQs in the connection of the author's and Richard Lynn's joint efforts to explore to what extent differences in the wealth of nations and in other social conditions are related to differences in national IQs.

1. Introduction

My cooperation with Richard Lynn started in February 1999 when I contacted him and asked whether he could give me more information about his studies on racial differences in intelligence. I had assumed in my book *On the Evolutionary Roots of Politics* (1992), on the basis of some previous literature, that genetic diversity of individuals is behind the omnipresent inequalities in human societies (Vanhanen, 1992: 61–63). However, at this stage I was not yet aware of national and racial differences in intelligence. Later in the 1990s I became interested in national differences in intelligence when I wrote a review article ("The Consequences of Variable Intelligence") on Seymour W. Itzkoff's three books for *The Mankind Quarterly* (Vanhanen, 1994). I agreed with Itzkoff that social consequences of intellectual variability may be enormous and that they can be seen in all areas of human life. I noted: "The origin of social inequalities is in the fact that humans are not similar in their intelligence and other capabilities" (Vanhanen, 1994: 135). So I got an idea to explore to what extent the variation in socioeconomic development is correlated with the racial and geographical variation in intelligence, but a great problem was to find appropriate empirical evidence on national variation in intelligence.

Richard Lynn had studied national and racial differences in intelligence since the 1970s, but I became aware of his studies only in the late 1990s through his two articles published in *The Mankind Quarterly* (Lynn, 1991a, 1991b). Those articles inspired me. They

included information that I had been looking for, but I wanted to get data on average national intelligence from as many single countries as possible. Therefore I contacted Richard Lynn and asked whether he had more statistical information on racial and national differences in intelligence. In March 1999 he sent me his article "Geographical variation in intelligence" (Lynn, 1997). I noted that it includes exactly the type of data I had been looking for, although not data on all countries of the world.

I was impressed by Richard Lynn's theoretical explanation for the evolution of race differences in intelligence. He had argued that the "genetically based racial differences in intelligence must have arisen because the races evolved in different geographical locations, some of which exerted stronger selection pressures for an increase of intelligence than others" (Lynn, 1997: 274). The most important selection pressures were caused by cold winters outside Africa. The survival problems in the conditions of cold winters were cognitively demanding, particularly during the ice ages. People had to develop the skills required for hunting large animals and to learn how to build shelters, fabricate clothing, and make fires (Lynn, 1997: 275). His cold winters theory stresses that "the Caucasoid and Mongoloid peoples who evolved in Eurasia came to occupy a new niche which exerted selection pressure for improved intelligence to deal with the problems of survival in the cold northern latitudes" (Lynn, 1991b: 102).

Lynn's tables and estimations provided me material to estimate mean national IQs for 183 contemporary countries and to compare the relationship between the estimated national IQs and per capita income. In June 1999 I sent the list of my estimated mean national IQ values to Richard Lynn and informed him that correlations between national IQs and data on per capita income are moderate. He accepted my rough estimations as approximately correct,

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which encouraged me to write a paper for the 2000 IPSA world congress in Quebec. In December 1999 I sent the first version of this paper to him (Vanhanen, 2000). I also told him that I hoped to be able to extend this paper to a small book on the same subject. He supported the idea and suggested that we could cooperate in the book project. I accepted his proposal with great pleasure.

2. IQ and the wealth of nations

We started to collect material for our planned book, and in June 2000 Richard Lynn had already calculated national IQs for more than 50 countries on the basis of intelligence tests. My task was to seek data on dependent variables and to make statistical analyses. I also gathered data on racial divisions in 183 contemporary countries. They were intended to help us to estimate mean IQs for some countries from which Richard had not found results of IQ studies. Our central idea was to test the hypothesis that differences in the wealth and poverty of nations are causally related to the differences in national IQs.

I presented my IPSA paper "The Wealth and Poverty of Nations Related to IQ" in Quebec in August 2000 (Vanhanen, 2000). The correlations between the mean national IQs and some measures of per capita income varied from .381 to .689 over the period 1946–1997. My major conclusion was that the average general intelligence of the population provides the most powerful explanation for the differences in the wealth and poverty of nations and that it also offers a solid ground to evaluate prospects of economic growth in single countries.

The first results of our joint study were published in a co-authored article "National IQ and Economic Development: A Study of Eighty-One Nations" (Lynn & Vanhanen, 2001a). We tested the hypothesis that the intelligence of the population is a major factor determining national differences in economic development. This article covered 81 nations for which Richard had calculated national IQs on the basis of intelligence tests. The validity of the calculated national IQs was tested by correlating them with the attainment of adolescents for 30 of these nations in math and science obtained in the 1999 study of achievements. The correlation between national IQ and attainment in math was .904 and between national IQ and attainment in science .878. These high correlations were interpreted to show that national IQs are measuring cognitive capacity as expressed also in the ability to master math and science. Real GDP per capita 1998 in US dollars was used to indicate national differences in economic development. The Pearson product moment correlation between national IQ and real GDP was .733 in this group of 81 nations. It indicates a strong positive relationship between national IQ and per capita income, although many countries deviated significantly from the average relationship. Regression analysis was used to disclose which countries deviate most from the regression line and contradict the hypothesis. It was found that most of the countries with the largest negative residuals were socialist or former socialist countries, whereas most of the countries with the largest positive residuals were free market economies. The relationship between national IQ and per capita income is assumed to be causal for the reason that differences in average national intelligence have most probably evolved long before the emergence of contemporary differences in per capita income and economic development.

Another co-authored paper (Lynn & Vanhanen, 2001b) was based on national IQs in the total group of 185 countries. National IQs were estimated for 104 countries for which Richard had not been able to find IQ data. Dependent variables included data on GDP per capita, per capita GDP growth 1820–1992, real GDP per capita (PPP = purchasing power parity), real GDP per capita growth 1987–1998, GNP per capita, per capita GNP growth 1976–1998,

and GNP per capita measured at PPP 1999. Correlations were calculated separately for the group of 81 countries with measured national IQs and for the total group of 185 countries. In the group of 81 countries, the correlations between national IQ and the measures of per capita income vary from .535 to .759, and in the group of 185 countries from .463 to .730. The correlation between national IQ and per capita growth 1987–1998 was not significant, but in the cases of longer growth periods correlations are moderately strong (from .451 to .728). Thus the results of correlation analysis supported the hypothesis.

In our first book IQ and the Wealth of Nations (Lynn & Vanhanen, 2002), we explored the relationship between national IQ and the wealth of nations in greater detail. Richard explained the calculation of national IQs for 81 countries on the basis of one or more intelligence tests as well as the method used in the estimations of national IQs for 104 other countries on the basis of IQs of neighboring or other comparable countries. This method to estimate national IQs has been criticized, but we found out in our 2006 book by comparing estimated and measured IQs that the estimated IQs are close to the measured IQs. This comparison concerned 25 countries with measured IQs for which national IQs were estimated in our 2002 book. The correlation between the two data sets was .913 (Lynn & Vanhanen, 2006: 54–55). The calculated and estimated national IQs of 185 countries are listed in Table 6.5 in our 2002 book. The calculated national IQs of 81 nations are documented in Appendix 1 (Lynn & Vanhanen, 2002). The fact that two or more measures of the IQ were available from 45 countries made it possible to test the reliability of national IQs by correlating the two or the two extreme values with each other. The extremely high correlation .939 implies that the measure of national IQ has high reliability. The validity of national IQs was tested, as in the 2001a article, by comparing national IQs and educational attainments in math and science. The correlation between national IQs and mathematics achievement scores in 1999 is .881 ($N = 38$) and between national IQs and science achievement scores .868 ($N = 38$). These high correlations support the validity of the measures of national IQs.

The list of dependent variables measuring per capita income includes 1. GDP per capita (1820–1992) compiled by Maddison (1995), 2. GNP per capita (1976–1998), 3. GNP per capita measured in PPP (1995–1998), 4. GDP per capita measured in PPP (1987–1998), and 5. GDP per capita (1983–1998). The correlations between national IQs and these measures of per capita income test the hypothesis. In the group of 81 countries, Maddison's historical per capita estimates correlate with national IQs from .257 to .728. The four other measures of per capita income correlate with national IQs from .502 to .775. In the total group of 185 countries, most correlations are slightly weaker. The results of correlation analysis support the hypothesis that the intelligence of the populations has been a major factor responsible for the national differences in economic growth and for the gap in per capita income between rich and poor nations, although many countries deviate from the average relationship. The causal interpretation of this relationship is based on the argument that differences in national IQs have most probably preceded later differences in per capita income by thousands of years. Regression analysis was used to disclose the most extremely deviating countries. They provided hints about various environmental factors affecting the level of per capita income independently from national IQ. For example, of the 25 extremely deviant countries on the basis of the regression of Real GDP per capita 1998 on national IQ, residuals are positive for 18 countries and negative for 7 countries. Fourteen of the large positive outliers are high technology market economies and the other four include three oil producing countries (Kuwait, Qatar, and the United Arab Emirates) and a tourist country (the Bahamas). The seven largest negative outliers are socialist or former socialist

countries (Armenia, China, North Korea, Moldova, Mongolia, Ukraine, and Vietnam). These observations imply that the nature of a country's economic system and the availability of valuable natural resources may matter independently from national IQ (Lynn & Vanhanen, 2002: 135–147).

3. IQ and global inequality

The publication of our first book caused extensive discussion about the possibility to measure national differences in average intelligence satisfactorily and to explain differences in economic development by them (see, for example, Adler-Karlsson, 2002; Ervik, 2003; Miller, 2002; Richards, 2002; Rushton, 2003; Volken, 2003; Weede & Kampf, 2002). Several of the reviews were positive, but some of them were highly critical. We wanted to defend our arguments. First we intended to prepare an updated edition of the book, but quite soon we came to the conclusion that it was better to make a completely new book in which we extend our study to cover, in addition to per capita income, some other types of global disparities in human conditions.

We repeated and further developed our arguments in a conference paper "The Roots of Global Disparities in Human Diversity" (Lynn & Vanhanen, 2004). In this paper, six variables are used to measure global disparities: PPP gross national income per capita, income equality, adult literacy rate, tertiary gross enrollment ratio, life expectancy at birth, and the index of democratization (ID). They were combined into an index of the quality of human conditions (QHC). Data cover 170 contemporary countries. We hypothesized that the higher the level of national IQ, the higher the quality of human conditions as measured by the six dependent variables and their composite index QHC. The correlations between national IQ and the six measures of human conditions vary from .597 to .821. The correlation between national IQ and QHC is .858. It should be noted that although strong correlations support the hypothesized relationship between national IQ and various measures of human conditions, IQ does not impose a limit to equalize human conditions in all cases. Evidence shows that factors such as natural resources and income generating opportunities like tourism, when exploited, can increase human conditions in a country regardless of national IQ. In an article published in 2005 (Lynn & Vanhanen, 2005), we used national IQ to explain economic development in Asia and especially in East Asian countries. The crucial impact of national IQ was illustrated by comparing national IQs and data on per capita income in the group of 51 European, Asian, and African countries, from which group Latin American and Caribbean countries as well as former European socialist countries were excluded. The correlation between national IQ and PPP gross national income per capita 2001 was .831, which means that national IQ explains 69 percent of the variation in per capita income in this group of 51 countries. This analysis included only countries with measured IQs. Our new book *IQ and Global Inequality* was published in 2006. In this book, Richard explains again the measurement of the intelligence of nations, and all intelligence tests used in the calculation of national IQs are documented in Appendix 1. The reliability and validity of national IQs are tested by the same methods as in the 2002 book. The correlation between two extreme IQs in the group of 71 countries for which there are two or more scores was found to be .92, which indicates a high level of reliability. The correlations between national IQ and attainments in mathematics and science vary from .79 to .86, which support the validity of national IQ measurements (see also Lynn & Meisenberg, 2010).

In statistical analysis, some indicators of per capita income, literacy, higher education, life expectancy at birth, and democratization, which were combined into an index of the Quality of Human Conditions (QHC), are used to measure global inequalities from different perspectives. I refer only to some central results.

In the total group of 192 countries, the correlations between national IQ and the five components of QHC vary from .529 (democratization) to .754 (life expectancy). In the group of 113 countries with measured IQs, these correlations are slightly higher. Looking at the 160 countries with a population of more than 500,000 inhabitants in 2000, these correlations are even stronger, from .584 to .822. We concluded that moderate and strong correlations between single measures of human conditions and national IQ support the research hypothesis strongly.

The composite index QHC is most strongly correlated with national IQ. In the group of 113 countries with measured IQs the correlation is .805, in the group of 79 countries with estimated IQs .725, and in the total group of 192 countries .791. In the smaller group of 160 countries, the correlation is .839. The explained part of variation in QHC is so high that we considered it justified to conclude that large global differences in the quality of human conditions are associated with differences in national IQ. The countries with higher national IQs have been shown to have better human conditions compared to countries with lower national IQs (Lynn & Vanhanen, 2006: 181–182).

The analysis was complemented by correlating national IQ with some other measures of global inequalities. However, in these analyses data were not available from all countries of our study. Let us see some of these results reported in Chapter 8 of our 2006 book. It was found that the correlation between national IQ and UNDP's (United Nations Development Program) Human Development Index (HDI-2002) is .776 ($N = 176$); between national IQ and Gender-Related Human Development Index 2002 .849 ($N = 144$); between national IQ and Economic Growth Rate in 1950–2001 .747 ($N = 132$); between national IQ and the Gini Index of Inequality 2004 $-.538$ ($N = 146$); between national IQ and poverty (below \$2 a day) $-.653$ ($N = 93$); between national IQ and undernourishment $-.500$ ($N = 124$); between national IQ and maternal mortality ratio 2000 $-.730$ ($N = 149$); between national IQ and infant mortality rate 2002 $-.771$ ($N = 149$); and between national IQ and Corruption Perceptions Index 2003 .591 ($N = 132$). These examples imply that no matter how global inequalities in human conditions are measured, national IQ is correlated moderately or strongly with variables. However, it should be noted that in most of these cases national IQ explains only slightly more than 50 percent on the variation in dependent variables and in some cases clearly less than 50 percent, which indicates that a significant part of national disparities depends on other explanatory factors. The evidence limited to one point of time does not show whether national inequalities have become reduced or increased over time.

4. National IQ and human conditions

We were satisfied with the results reported in our 2006 book, but our research project was not yet over. Richard continued to gather data on new intelligence tests carried out in various countries, which made it necessary to correct some of the earlier national IQs and calculate national IQs for several new countries. I had applied national IQs to the study of democratization and argued that persistent global differences in the level and quality of democratization can be partly traced to differences in national IQs. The correlation between national IQ and the Index of Democratization (ID) varied from .575 to .616 in the period 2002–2006. Differences in average national intelligence seem to limit democratization, which means that all nations do not have equal chances to establish and maintain democratic systems (Vanhanen, 2009; see also Vanhanen, 2007).

We met in London October 2008 and discussed possibilities to continue our research project. It was evident that many researchers still rejected our theory and findings and especially the calculations

of national IQs, and mainstream publishers refused to publish anything on national differences in intelligence. We thought that ultimately empirical evidence will determine the destiny of theories. Therefore we should gather more evidence on national IQs and test its explanatory power to all kinds of disparities in human conditions. I suggested that we should write a new article in which national IQ is used to explain inequalities in many kinds of measurable human conditions. Richard accepted the idea, but in December 2008 he suggested that we should think about doing another book updating national IQs and correlates. I accepted his suggestion. So we started a new book project on national IQ and human conditions.

Richard has gathered more data on intelligence tests and calculated national IQs for several new countries. Besides, the finding of new intelligence tests made it necessary to correct some previous national IQs. I have gathered new data on more than 20 variables measuring variation in different aspects of human conditions from per capita income to happiness and life satisfaction. All variables seem to be moderately or strongly correlated with national IQ, which supports our hypothesis on national IQ's significant impact on human conditions. The purpose is to combine seven of these variables into an Index of Human Conditions (IHC). According to the preliminary results, the correlation between national IQ and IHC is .792 in the total group of 192 countries and territories and .841 in the group of countries with more than one million inhabitants ($N = 153$). The explained part of variation is 63 percent in the total group and rises to 71 percent in the group of bigger countries. Data on small countries may be less reliable than data on bigger countries, which may explain the fact that correlations in the total group of countries are slightly weaker than in the group of bigger countries.

5. Discussion

Richard Lynn has explored geographical and racial variation in intelligence since the 1970s and he has gathered more data on relevant intelligence tests carried out in the world than any other single researcher or research institution. On the basis of intelligence tests, he has calculated national IQs, which are intended to measure the average intelligence of nations and which are comparable from country to country. His database of national IQs has continually expanded since 2000. This database on national IQs is unique and the only one in the world. Consequently, many researchers have started to use national IQs in their own studies, and it is justified to predict that their use will increase in the future when social scientists realize that many kinds of social problems and global inequalities in human conditions are causally related to the evolved human diversity measured by national IQ. Researchers have not yet agreed on the causes of geographical and racial intelligence differences, and various explanations have been proposed (cf. Disease and intelligence, 2010; Eppig, Fincher, & Thornhill, 2010). Richard Lynn's cold winters theory provides one and I think the most convincing theoretical explanation for the evolution of geographical intelligence differences. Of course, there have been also other causes, but great climatic differences in the world may constitute the most dominant cause. This explains "the broad association between latitude or, more precisely, the coldness of winter temperatures and the intelligence of the races," as he notes (Lynn, 2006: 208). Social consequences of national intelligence differences reflected in human conditions are enormous. According to

our comparative studies since 2001, nearly all kinds of measureable national differences in human conditions are moderately or strongly related to national IQs. It should be noted that this concerns principally human conditions which are more or less under conscious human control. According to our interpretation based on present evidence, national IQ constitutes the most important causal factor in these relationships because genetically based differences in national intelligence most probably evolved before the emergence of contemporary differences in social conditions. Our central argument is that because of evolved human diversity reflected in national IQs, there are many kinds of persistent inequalities in human conditions.

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