Regional Differences in Intelligence and their Social and Economic Correlates in Finland

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Regional differences in IQ are reported for Finland showing that average IQs are highest in the south, containing the capital city of Helsinki. It is proposed that the selective migration of those with higher IQs to Helsinki has been the major factor responsible for the higher average IQ in the south. Regional IQs are positively correlated with the percentage of the population with tertiary education, mean income, and average male and female life expectancy; and negatively with the percentage of the population with average income less than 60% of the national median, the percentage of unemployment, and the rate of infant mortality.

Key Words: Intelligence; Finland; Regional differences.

Introduction

A number of studies have reported regional differences in intelligence within countries and their social and economic correlates. In the United States, a correlation of .32 between state IQ and per capita income was reported by Davenport and Remmers (1950). McDaniel (2006) reported a .028 correlation between state IQ and gross state product.

In further studies, regional IQ differences within countries and their correlations with educational attainment, per capita income, unemployment rates, infant mortality and related socio-economic phenomena have been reported for 13 regions of the British Isles (Lynn, 1979), 90 regions of France (Lynn, 1980), 12 regions of Italy (Lynn, 2010) confirmed for 19 regions of Italy (Templer, 2012), 5 regions of Portugal (Almeida et al, 2011), 18 regions of Spain (Lynn, 2012), 16 regions of Germany (Roivainen, 2012) and 31 regions of the

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People's Republic of China (Lynn & Cheng, 2013). It has generally been argued that the regional IQ differences are responsible for the socio-economic differences on the grounds that numerous studies have shown that IQs are causal determinants of these phenomena at the individual level. Thus, IQ has a high heritability in adults of approximately 70 to 80 per cent (Bouchard, 1993; Segal, 2012), and IQ in childhood predicts educational attainment, earnings and socio-economic status in adulthood (Jencks, 1972; Irwing & Lynn, 2006) and longevity (Deary & Der, 2006). In the present paper we contribute further to this research literature by examining regional differences in intelligence and their economic and demographic correlates in Finland.

Method

Data for regional IQs in Finland have been obtained from Pekkarinen et al (2009) derived from an intelligence test administered to 23,406 male military conscripts born in 1966 and conscripted in or around 1986. Finland has mandatory military service for young men at the age of 19 or 20 years, with the exception of a small number who are rejected because of poor health or are excused on the grounds of conscientious objection. From 1955 the conscripts have been given an IQ test called the *peruskoe* ('basic test'). The data given by Pekkarinen et al. consist of the percentages of conscripts in 477 municipalities whose average IQs were in the top 3 of 6 IQ bands (i.e. above average). From these data we have calculated the percentages of municipalities with above average IQs in the north, east, west and south (including Åland, the Swedish-speaking group of islands off the south coast) regions. These percentages give a proxy for the mean IQs in the four regions.

We also give regional data for a number of social and economic phenomena that previous studies have found associated with IQ. These are (1) the percentage of the population with tertiary education given by Ballas et al (2012);

(2) mean income in euros per month, 2010 (Statistics Finland, 2010); (3) the percentage of the population with average income less than 60% of the national mean taken from Ward (2009, p. 110); (4) the percentage of unemployment in 2010 (Statistics Finland, 2010); (4) infant mortality in 2010 measured as number of infant deaths in first year per 100,000 live births (Statistics Finland, 2010); (5) average male and female life expectancy for the years 2009-2011 (Statistics Finland, 2012); (6) migration to the region in 2012 calculated as the change per 1,000 of the population (Statistics Finland, 2012) (these figures do not conflate migration and natural increase because Helsinki and the other large Finnish cities in the South and West with high migration have the lowest birthrates).

Results

Descriptive statistics for the variables are given in Table 1. It shows that the South region (which includes Helsinki) has the highest average IQ, with 91 percent of its municipalities having above average IQs. The West region comes next, with 62 percent of its municipalities having above average IQs. This is followed by the East region, with 33 percent of its municipalities having above average IQs, and finally by the North region, with none of its municipalities having above average IQ.

The social and economic indicators for the regions show that these are broadly consistent with the IQ differences. The South region with the highest average IQ has the highest percentage with tertiary education, the highest average income as euros per month, the lowest percentage with income below 60 percent of the median, the lowest unemployment rate, and the lowest infant mortality (equal with the East). However, life expectancy of both males and females is highest in the West, and only second highest in the South.

Table 1. Data for IQ, social and economic phenomena in regions in Finland.

Variable	North	South	East	West
Percent of municipalities with above average IQ	0	91	33	62
Percent with tertiary education, 2010	24.4	31.6	23.0	25.9
Mean income euros per month, 2010	2868	2979	2783	2872
Income below 60% of median, 2010	14	11	17	13
Percent unemployment, 2010	7.7	6.6	9.2	6.8
Infant mortality, 2011	2.2	1.7	1.7	2.1
Life expectancy: males, 2009-11	75.3	76.8	75.3	77.1
Life expectancy: females, 2009-11	82.0	82.0	81.5	83.0
Migration to regions, 2012	0	5.3	-1.7	3.1

Table 2. Pearson correlations between social and economic variables in Finland

	IQ	Education	Income	Income <60%	Unemployed	Infant mort.	Life exp. male	Life exp. female
Percent with tertiary education, 2010	.85	1						
Mean income euros per month, 2010	.67	.96*	1					
Income below 60 % of median, 2010	-.55	-.90	-.97*	1				
Percent unemployment, 2010	-.38	-.78	-.88	.97*	1			
Infant mortality, 2011	-.79	-.35	-.08	-.09	-.27	1		
Life expectancy: male, 2009-11	.50	.69	.64	-.76	-.84	-.03	1	
Life expectancy: female, 2009-11	-.12	.31	.45	-.65	-.83	.62	.77	1
Migration to region, 2012	.69	.93	.92	-.96*	-.93	-.11	.89	.63

*p<.05

The correlations between average IQ in the regions (measured by the percent of municipalities with above average IQ) and the social and economic indicators are shown in Table 2. Average IQs in the regions are highly correlated with all the social and economic indicators. However, only correlation coefficients greater than .95 are statistically significant at p<.05 due to the limitation of power with only 4 cases, and most of the correlations do not reach this significance level.

Discussion

The results contain two points of interest. First, the average IQ in Finland is highest in the south, the region that includes Helsinki, the capital city. In this respect, regional IQs in Finland resemble those in the British Isles and France, where average IQs are highest in the capital cities. The explanation proposed for this is that over the course of centuries there has been migration from the provinces to the capital cities and there has been a tendency for these migrants to have higher than average IQs. These above average IQ migrants have settled in the capital cities, established families there, and transmitted their higher IQs to succeeding generations. A further effect has been that the selective migration of those with above average IQ has reduced the IQ of the population left behind, thereby increasing the regional IQ differences. The clearest evidence for this comes from Scotland, where Maxwell (1967) reported a follow-up study of 1,000 11-year-olds whose IQs had been tested in 1947. He found that by the age of 30, 17.2 percent had emigrated and that the IQ of these was 108.1. This implies a fall of 1.7 IQ points in the residual population in Scotland for that generation and, allowing for regression effects, a fall of approximately 1 IQ point a generation and 4 IQ points a century. This can explain why the mean IQ in Scotland during the years 1940-1975 was 2.7 points lower than that in England (Lynn, 1977, 1979). This result has been confirmed in the

most recent figures for national IQs given by Meisenberg & Lynn (2011) and Lynn & Vanhanen (2012, p. 29), in which the IQ in Scotland is estimated at 2.6 IQ points lower than in England.

Further evidence that migration is typically selective for intelligence comes from the United States where it has been shown   by   Tolnay   (1998)   and   Vigdor http://www.sciencedirect.com/science?_ob=ArticleURL&_udi =B6WMG-45R78MD-1&_user=10&_rdoc=1&_fmt=&_orig=search&_sort=d&_do canchor=&view=c&_searchStrId=976212235&_rerunOrigin= google&_acct=C000050221&_version=1&_urlVersion=0&_us erid=10&md5=054b84414053bf458857b8d4ddd87fc7-fn1#fn1 (2002) that blacks who migrated from the South to the northern states had higher educational attainment (a proxy for intelligence) than those who remained in the South, with the result that blacks in the northern states have an IQ about 10 points higher than those in the South. Thus, Kaufman & Doppelt (1976) report an average IQ of 90.5 for blacks in the northern states compared with approximately 85 for all American blacks and around 80 for those in the southern states. The reason that migrants from less affluent regions to more affluent regions tend to have above average IQs is probably that a higher IQ is needed to envision the advantages and find the resources to migrate. However, it may not be invariably the case that migrants always have higher IQs than non-migrants, for instance some people would argue that this is not true for non-European immigrants in the countries of Europe, or for Mexicans in the United States.

The theory that selective migration to the capital city has been a major reason for the high IQ in the southern region containing the capital Helsinki is consistent with evidence that there has been the greatest migration from the other regions into the southern region, shown in the bottom line of Table 1, and a correlation of .69 between net migration and IQ for the

four regions, shown in Table 2.

The second point of interest in the results is that the correlation matrix given in Table 2 shows that regional IQs are positively correlated with the percentage of the population with tertiary education, mean income, and average male and female life expectancy; and negatively with the percentage of the population with average income less than 60% of the national median, the unemployment rate, and infant mortality. These correlations replicate those reported for the regions of the British Isles and France. They all can be explained as effects of the IQ differences between the regions.

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