Myth and reality: A response to Lynn on the determinants of Italy's North–South imbalances ☆

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ABSTRACT

In his article "In Italy, North–South differences in IQ predict differences in income, education, infant mortality, stature, and literacy," Richard Lynn claims to have found the reason causing the divergence between the Northern and the Southern regions of Italy. This article identifies the four main hypotheses formulated in his paper and presents significant evidence against each one of them. We claim that the evidence presented by the author is not sufficient to say that the IQ of Southern Italians is lower than the one of Northern Italians; that his analysis does not prove that there is any causal link between what he defines as IQ and any of the variables mentioned; that there is no evidence that the alleged differences in IQ are persistent in time and, therefore, attributable to genetic factors.

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Contents

1. Introduction

On a previous issue of *Intelligence* (Lynn, 2010b; pp. 93–100), Richard Lynn published an article entitled "In Italy, North South differences in IQ predict differences in income, education, infant mortality, stature, and literacy." As it is clear from the title, in this article Lynn claims to have found the reason causing the divergence between the Northern and the Southern regions of Italy. We do not agree with this theory and we present evidence against the hypotheses proposed by the author.

In Section 2, we briefly review the arguments presented by Lynn. In particular, we identify his four main hypotheses. The first one is that IQs in Italy are higher in the North than in the South. The second one is that IQ differences explain most of the per capita income differences within Italy. The third one is that regional IQ differences are correlated with other indicators such as infant mortality, stature, years of education and civic trust. The fourth one is that the differences in IQ Lynn claims to have identified have a genetic root and depend on the closer contacts the South had with countries from the Near East and Mediterranean Africa. Populations from these countries, Lynn argues, have lower IQs than Europeans.

In Section 3, we argue that the first three hypotheses suffer from substantial and methodological shortcomings, which are serious enough to invalidate the entire thesis, i.e. that persistent IQ differentials have determined persistent differences in income as well in the other indicators. On the basis of this evidence, we also challenge the fourth hypothesis proposed by Lynn, which is intrinsically linked to the first three ones.

Section 4 presents some concluding remarks on the methodology of social sciences. When scholars are interested in discovering the ultimate causative link between correlated variables, it is essential to address the problem of endogeneity. In-depth historical investigation can assist to solve this problem by helping to identify the right variables which need to be included in the model.

2. The thesis

As correctly emphasised by Lynn, there is a vast literature on the issue of why Northern and Southern Italy are characterised by such dramatic differences in *per capita income*. Among the explanations proposed, the most popular are the geographic ones, those relative to the different endowment of civic trust and social capital and those referring to the differential treatment of the two macro-regions by the Italian government. Lynn suggests that he has found evidence for a different explanation, the genetic one. In particular, he argues that *(i)* IQs are lower in the South and that *(ii)* this is due to genetic admixture with populations from the Near East and North Africa. In this section we outline the thesis by Lynn in more details.

Lynn begins by arguing that, as far as we know, the South has always been economically more backward than the North. This is done using evidence from Eckaus (1961), presented in Peracchi (2008), which shows that, in 1861, per capita income in the North was about 15–20% higher than in the South. Using a quotation by Putnam (1993), Lynn claims that the difference had increased to 50% by 1911, to then persist into the 1960s and into the 21st century. These data present a picture of initial divergence, followed by a substantial stabilisation of the differential.

In the second section of the introduction, Lynn offers a *tour d'horizon* of his previous studies which outline the existence of a positive relation between intelligence and income. He presents three sets of evidence. The first one includes studies arguing for the presence of this link at the individual level. The second one includes research supporting the existence of the link across different groups within the same country (including the group which is most relevant for his studies on Italy, that is regions). The third one includes papers presenting evidence on the existence of this link at the international level, i.e. that nations with higher average IQ are characterised by higher income.

In this section, Lynn also makes three claims that are essential for the rest of the paper. The first one is that socio-cultural, economic and other comparable factors have genetic components, a point also made in a large literature showing that both educational performance ad IQ are strongly genetically linked (see Petril & Wilkerson, 2000; Bartels, Rietveld, van Baal, & Boomsma, 2002; Kovas, Harlaar, Petrill, & Plomin, 2005 and Wainwright et al., 2005), and that the correlation between IQ and income also implies causation. To support this point,

Lynn refers to a paper by Schmidt and Hunter (1998) and claims that 'those with higher IQs work more efficiently and can supply goods and services with greater value than those with lower IQs, and, consequently, can command higher incomes' (Lynn, 2010b, p. 94).

The second one is that this causative link also extends to states, 'because populations are aggregates of individuals, and populations with higher IQs can supply goods and services with greater value than those with lower IQs, and hence command higher incomes' (Lynn, 2010b, p. 95). The third claim is that IQ is heritable at the level of a population and that a population is not a state or a region, i.e. a territorial aggregate of individuals, but a racial aggregation. The basic text where this hypothesis is presented and discussed is the world-encompassing review of differences in intelligence published by Lynn, 2006, *Race Differences in Intelligence*, where the author claims, for example, that although half of IQ deficit in black Africans can be explained by malnutrition, the other half is racially genetic.

Following this introductory section, the paper proceeds to examine three hypotheses relating, specifically, to the Italian case. The first proposition is that IQs in Italy are higher in the North than in the South. The only direct evidence on IQs in the Italian regions presented by the author regards the Piagetian tests reported in Peluffo (1962, 1964,1967). However, the results of these tests are not very highly correlated with the results of tests of intelligence, as the correlation obtained by Jensen (1980) and presented by Lynn is only equal to 0.49. Lynn does not use these tests in the rest of his study, as he prefers to rely on three different proxies. The first one, which he uses most extensively, is results in the 2006 PISA (Program for International Student Assessment) study of reading comprehension, mathematical ability and science understanding, administered to 15 year olds in 52 countries. Lynn suggests that this is a good proxy of IQ as the reading and the mathematics tests in the PISA study are, respectively, tests of verbal comprehension and of quantitative reasoning, which are both major components of general intelligence. Additionally, science understanding is highly correlated with general intelligence. The second proxy is the percentage of the population which was literate in 1880.[1] The third proxy is the number of 'significant figures' (i.e. those who have made significant contributions to science, literature, music and art) who have made significant contributions to science, literature, music and art) who were born in Northern, Central and Southern Italy between 1400 and 1950. These data come from the work by Murray (2003). The three proxies all indicate better results for the Northern regions than for the Southern ones. Scores in the PISA test are higher in the North and so is the number of 'significant figures' born there in the years between 1400 and 1950 and the literacy rate in 1880. Lynn concludes that this evidence is sufficient to state that IQ is lower in the South than in the North.

The second proposition which Lynn aims to test is that IQ differences explain most of the per capita income differences within Italy. Initially, he tests this hypothesis by presenting correlations between educational attainment in 2006 (which he calls IQ, as he claims that the results in the PISA test are a good proxy for IQ) and per capita income in 2003, finding a correlation of 0.937. Subsequently, Lynn argues that this

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[1] The data come from Tabellini (2007).

correlation also implies causation and does so on the basis of results from behavioural genetic research, known as genotype–environment correlation (Plomin, DeFries, & McCleam, 1990). These correlations between population IQ and per capita income 'arise through a positive feedback loop in which the population IQ is a determinant of per capita income and per capita income is a determinant of the population IQ' (Lynn, 2010b, p. 97). Lynn hypothesises the presence of this positive feedback loop in the Italian case without, however, trying to disentangle the two effects.

The third proposition is that regional IQ differences, or what Lynn claims to have measured as such, are correlated with other indicators such as infant mortality, stature, years of education and civic trust. The first variable is calculated using data on regional mortality in 1954–7, and 1999–2002 from Felice (2007a). The second variable is calculated using data on the statures of military conscripts born in 1855, 1910, 1927 and 1980 from A'Hearn, Peracchi, and Vecchi (2009) and from Arcaleni (2006). The third variable is measured as the number of years of education in 1951, 1971 and 2001 and is taken from Felice (2007a). The fourth variable is not calculated for the Italian case: in fact, Lynn simply quotes the results of a study at the international level and claims that this also applies to the Italian case. Once again, the strategy employed to prove this link is to use bivariate correlations, interpreted as showing a causative link on the basis of the genotype–environment correlation and of a seemingly plausible reasoning which, however, is not proved empirically.

In a last paragraph, Lynn presents his explanation for the presence of differences in what he refers to as IQ in the Italian regions. He discards the hypothesis that this may be due to 'selective migrations', as he suggests that migrations only started in the 1890s while differences in income and in 'IQ' (measured through the second and the third proxies described above) go back centuries. The explanation Lynn provides is, instead, a genetic one. He claims that 'populations of the North and South are genetically different and these genetic differences are related to differences in intelligence' (Lynn, 2010b, p. 98). He corroborates the first part of this statement using evidence from a study by one of the world leading geneticists (Cavalli-Sforza, Menozzi, & Piazza, 1994) which argues that the population in the North of Italy shows similarities with countries of Central Europe, while the inhabitants of Central and Southern Italy are more similar to those coming from Mediterranean countries. The second part of the statement is supported by his previous research, which shows that there are differences in IQ between Europeans and inhabitants of North Africa and the Near East, and that the latter have a much lower IQ. In Lynn's words, this 'explains the North–South gradient of IQ in Italy in which the regional IQs do not show a clear dichotomy between North and South but rather a gradient in which IQs decline steadily with more Southern latitude' (Lynn, 2010b, p. 99).

3. The problems with Lynn's thesis

The first argument put forward by Lynn is that IQs in Italy are higher in the North than in the South. The problem with this statement is that, in most of his study, the author does not use a direct measure of IQ but a proxy, namely results in the PISA tests. It is true that a high correlation between PISA scores and

Table 1
Per capita income and quality of public school in Italian regions.

Region	Per capita income (2003, current euros)	Quality of public schools
Friuli Venezia Giulia	20,750	6.99
Trentino	23,079	7.29
Veneto	20,338	7.09
Lombardy	22,639	6.99
Piedomont	20,519	6.56
Liguria	20,000	6.69
Emilia Romagna	22,439	7.26
Abruzzi	15,480	6.58
Campania	11,862	5.02
Apulia	12,030	5.81
Sardinia	13,722	6.51
Sicily	12,488	5.69
Pearson correlation		*0.885*

Sources: see text

the results of IQ tests has been reported (Rindermann, 2007). However, there are a number of factors which may affect the different performance of students in the PISA tests and which may have nothing to do with IQ. A first possible factor is school quality. There is a well-established literature dealing with regional differences in school quality in Italy, one which the author does not cite and seems to be unfamiliar with. The work by Checchi and Jappelli (2004), for instance, reports a quality score of public schools by regions in 1993 (both as perceived by parents and as measured by indicators of school resources). Table 1 clearly indicates the presence of a North–South gradient, with Campania, Apulia, and Sicily at the bottom. There is no doubt that differences in PISA scores are not just caused by school quality. The influential report by Coleman (1966) shows the presence of a strong correlation between family and social backgrounds and schools' performance. Yet, once again, this has nothing to do with racial differences in intelligence: in the case of Italy, the different results in the PISA scores may be due to different socio-economic conditions, not to regional differences in IQ.

The problems of using the literacy rate in 1880 as a proxy for IQ is analogous: the measure is undoubtedly a mere indicator of educational attainment, as, of course, no one would ever think that the IQ of the Southerners was so low that it prevented them from merely learning how to read and write. The reason literacy was so low in the Southern regions was that, until 1861, they formed a different state, the Kingdom of the Two Sicilies, which did not promote compulsory education, unlike the pre-unitarian states of Northern Italy. Once compulsory education was extended to the South (from 1861) and after adequate financial resources were spent for its provision by the Italian State (from 1911), the Southern regions converged in literacy (for an overview, see Felice, 2007a). The problem with literacy in 1880 laid merely in willingness and resources, as it does nowadays, when willingness and resources are enough to produce convergence in literacy, but not in more sophisticated measures of school attainment.[2]

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[2] It is worth noting that the lack of compulsory education in the Southern Kingdom may also be regarded as the ultimate reason for the higher illiteracy rates (for figures, see Felice, 2007b, p. 47) and lower reported IQ (Sowell, 1981; more recently te Nijenhuis, de Jong, Evers, & van der Flier, 2004) of Southern immigrants in the US. This is a further reason to properly consider historical and institutional differences when comparing people coming from different backgrounds.

Richard Lynn uses as a third proxy the number of 'significant figures' who were born in different parts of Italy between 1400 and 1950. We will discuss this proxy at greater length in a later part of this section. For the time being, it is sufficient to underline that the choice of significant figures made in Murray (2003) was the result of a rather arbitrary process, which can make conclusions derived on the basis of such data a self-fulfilling prophecy. Furthermore, it is once again difficult to determine whether this proxy measures IQ or human capital: if a potential genius in literature does not receive some basic education, it is unlikely that he will become a writer.[3] Lastly, even if one ignores the first two criticisms, the number of significant figures is hardly representative of the average level of IQ of a population: the number of significant figures tells us something only about the upper tail of the distribution of IQ in a population and nothing about its mean.

The second argument presented by Lynn is that IQ differences explain most of the *per capita* income differences within Italy. This statement presumes that regional imbalances in income have remained more or less unchanged over centuries (allowing for a possible increase due to the onset of industrialization and, thus, of modern economic growth), something which is hinted at by the author at the very beginning of his article (Lynn, 2010b, p. 93). However, this is not the case and the author does not cite the relevant literature. When he cites the estimates by Eckaus (1961) presented in the work by Peracchi (2008), Lynn fails to acknowledge that Peracchi only refers to them as half-century old 'guestimates' of regional income per capita. The reconstruction by Felice of regional GDP (see Felice, 2007b and his articles therein cited), as well as estimates by Federico (2003) for agriculture, and by Daniele and Malanima (2007) for mid-nineteenth century, indicates that regional differences at the time of Unification and until the eve of World War I were not so pronounced. Above all, the rankings between the Southern and the Northern regions changed too. At the end of the nineteenth century, Campania, Sicily and Apulia were richer than Veneto or the Marche. Evidence on heights also indicates that differences were not permanent: A'Hearn et al. (2009) show clear evidence of time-variation in the patterns of geographical variability of heights. Lynn cites this article, but he does not refer to this finding. Thus, the story is different from the one presumed by Lynn, as the pattern is one of variation rather than persistence. This particular pattern also invalidates Lynn's idea that permanent (i.e. racial) differences in IQ determine permanent differences in income. Differences in income were not permanent, implying that either they were not determined by IQ differences, or that IQ differences were not permanent and thus they were not attributable to racial factors. Obviously, this can also be extended to the third hypothesis formulated by Lynn: that regional IQ differences explain differences in education, infant mortality, stature, literacy and civic trust.

A further problem with the second hypothesis presented by Lynn is that there are substantial limitations to the statistical techniques used by the author. This problem also affects the results he obtains with regard to his third hypothesis, i.e. that differences in IQ cause differences in education, infant

mortality, stature, literacy, and social capital. Firstly, Lynn makes an incorrect use of proxy variables. The correlation between an unmeasured variable (in this case, IQ) and its proxy (results in PISA tests) is a necessary condition for the validity of a proxy, not a sufficient one. For the proxy to measure the effect of the variable it is replacing on another variable, it must also be the case that the proxy used is uncorrelated with other unobserved variables in the original regression equation. In this case, Lynn is trying to explain the variation in income and other variables using IQ. However, there are variables, such as school quality or socio-economic conditions, which affect income but are not included in Lynn's model. When Lynn replaces the variable 'IQ', with the proxy 'results in the PISA test', for the proxy to be valid, it should be the case that results in the PISA tests are not correlated with these other indicators. However, as shown in Table 1 for the case of school quality, the correlation between PISA scores and income may be due to the fact that both variables are correlated with school quality and socio-economic conditions, not to the fact that they are both correlated with IQ.

A related problem is that Lynn makes use of bivariate correlations, without dealing at all with the endogeneity problem or with possible omitted-variable biases. Even the genotype–environment correlation which should justify the interpretation of correlation as a causative link, is neither tested nor discussed in the Italian case. This is problematic, as alternative interpretations could be given to the results obtained. To give only some examples, the high correlation between civic trust and the high PISA scores may suggest that civic trust is caused by high PISA scores, but it can also suggest that high civic trust can lead to better PISA scores (for example, because communities characterised by higher social capital tend to promote education more than communities where people trust each other less). Furthermore, differences in education, as well as in stature and infant mortality could be determined by income. Above all, income is only one possible control variable. Others could be at stake and be even more important, for example civic engagement, or even the degree of industrialisation (which at the early stages was correlated with higher infant mortality, see the evidence in Felice, 2007b, p.115). In this respect, we agree with Wicherts, Borsboom, and Dolan (2009) who support the thesis that national IQ may be just another indicator of development. In view of their results, the authors argue that 'the evidential support that national IQ studies yield concerning evolutionary theories cannot be considered strong […]. On the contrary, the evidence is weak at best, and irrelevant at worst' (Wicherts et al., 2009, p. 95). This critique has been rebutted by Lynn (2010b), Rushton (2010) and Templer (2010). Yet, these authors fail to establish the ultimate cause of national differences in income and development, which, in turn, may determine, rather than be determined by, differences in IQ and brain size.[4]

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[3] The confusion of IQ and human capital is a problem which characterises all the three proxies used by Lynn and sufficient to draw skepticism on the article.

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[4] For example, the work by Diamond (1997) has argued that the reason why Sub-Saharan Africans and Australian Aborigines did not develop cattle was the lack of domesticable animals in their environment. Oddly enough, Diamond's work is cited by Lynn in his response to Witcherts et al., but only to state that 'the sole animal that we know for sure was tamed in Africa was the guinea fowl' (Diamond, 1997, p. 389; in Lynn, 2010b, p. 101). Lynn fails to say that, according to Diamond, this was because of luck rather than intelligence.

The statistical procedures adopted by Lynn are not acceptable, particularly if one does not share the author's *a priori* belief that the explanatory variable, IQ, is persistent through time and is genetically determined. This is the fourth crucial hypothesis of the paper. For Lynn, the peoples of the South have lower IQs because of their genetic admixture with populations from the Near East and Africa. We can accept the argument that, in broad terms, Southern Italians are genetically closer to populations from North Africa and the Near East. However, we do not accept the following argument, the one stating that they have lower IQ as a result of evolutionary factors. Firstly, it must be emphasised that ranking nations on the basis of IQ, as Lynn does, has been extensively criticised. For example, Ervick (2003) has challenged the reliability of the IQ test scores conducted by Lynn on the basis of the heterogeneity of their design and of the sample sizes. He also criticised the technique used by Lynn to aggregate results from different tests and the lack of control variables.[5] We tend to side with this interpretation and find the approach taken by Lynn and his co-authors incorrect. Secondly, even if one accepts that genetic differences exist and that countries can be ranked according to their IQ, one can reject Lynn's theory with regard to the North–South divide in Italy on the basis of the evidence from history. When peoples from Mediterranean Africa and the Near East colonised the South of Italy, they were culturally, technologically (and probably economically) more advanced than the populations of Central and Northern Europe. This is probably true for the Carthaginians and is certainly true for the Greeks who colonised the coasts of Southern Italy (the so-called Magna Grecia, where eminent figures such as Pythagoras and Archimedes lived), or for the Arabs, who colonised Sicily in the ninth century A.D. According to Lynn's reasoning (Lynn, 2010a,b) this economic success would suggest that people from Africa and the near East had *higher* IQ than the Germanic populations.[6] Hence, Southern Italians could benefit from genetic admixture with a population which was more, not less, intelligent than the one Northern Italians were mixing with. Thus, if there was any relation between race and culture in this long and interesting period, this would go in the opposite direction of the one presumed by Lynn.

It could be argued that the Arabs' technological development was due to cultural borrowing from the Greeks, who were Indo-Europeans (as the Germans), and thus genetically more intelligent than the Arabs (Hart, 2007, p. 250). Yet, even this argument does not support Lynn's reasoning for two main reasons. Firstly, Lynn acknowledges that 'Central and Southern Italy are more similar to Greece and other Mediterranean countries' and that the Greeks were genetically different from Germanic populations and closer to the Arabs (Lynn, 2010b, p. 98). Hence, even if the superiority of the Arabs was due to their 'cultural borrowing' from the Greeks, this occurred from a population which had greater genetical proximity to them than to the Germans. Secondly, even if one accepts the argument of 'cultural borrowing', this is by no means an automatic process. The Germanic tribes who conquered the Roman Empire entered in contact with the Greek culture no less than the Arab tribes and, yet, were far less successful in their ability to perform 'cultural borrowing'. Once again, if there was any relation between race and culture in this long and interesting period (which we do not believe to be necessarily the case), this would go in the opposite direction of the one envisaged by Lynn.

Between the XI and the XIII century things changed, for Italy as for the rest of the Mediterranean basin (see Malanima, 2009). Northern Italy emerged as more developed than the South, at least in cultural terms, a reversal which is hard to explain through the use of *persistent* factors. Professor Lynn cites the impressive number of 'significant figures' who were born in Northern and Central Italy between 1400 and 1950. The divide with the South is impressive, but there are at least two points to be made. Firstly, although we know where these figures hail from, we ignore their genetic origins. Secondly, even ignoring this first point, we have the feeling that this divide would have been as impressive if one compared the North to the rest of Europe at least with respect to the XV and the XVI century (the Renaissance period). Conversely, we suspect that in the following centuries the performance of Central and Northern Italians was much less spectacular as compared to the rest of Europe. In short, the world of the Renaissance period was characterised by an unparalleled number of significant figures concentrated in a handful of regions (most of all, in Tuscany) and in a few centuries. If differences in the rate of significant figures were on a racial basis, these would have been roughly evenly distributed over time, as well as between Northern Italy and its Germanic Northern neighbours. However, this did not occur. Hence, the evidence provided by the significant figures indicator is not at all definitive, and we even suspect that, if this indicator was further developed to allow for international comparisons, it could prove the contrary of what the author claims: that its unbalanced distribution is related to cultural and institutional differences, not to racial ones.

4. Concluding remarks

In the previous pages, we have argued that Lynn's thesis is based on a weak statistical methodology, that it is not supported by historical evidence and that the most important of his arguments — that racial differences determine a large part of differences in IQ — is probably wrong, at least when applied to the Italian context, where some races were culturally more advanced in some periods, while being more backwards in others.

In his article, Lynn frequently refers to loops, that is to a reciprocal feedback between differences in income and differences in IQ. As long as these references express a concern for the endogeneity problem — i.e. whether IQ differences determine differences in income, or vice versa — the argument is interesting. Unfortunately, it remains undeveloped. If properly addressed, this argument could lead to a refinement of Lynn's statistical instruments which,

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[5] A more recent and more elaborate critique is the one by Wicherts and colleagues (Wicherts, Carlson, Dolan, & van der Maas, 2010a,b; Wicherts, Dolan, & van der Maas, 2010), who cast serious doubts over the reliability of Lynn's estimates for Sub-Saharian Africa (the debate is still open: see also the reply by Lynn & Meisenberg, 2010).

[6] See the abstract of Lynn's response to Wicherts, Dolan, & van der Maas (2010): 'It is shown that contemporary differences in national and racial IQs can be identified at 10,000 years ago from differences in brain size, in making the Neolithic transition from hunter gathering to settled agriculture around 8,000 years ago, in the development of early civilizations around 6,000 years ago, and in scientific, mathematical, and technological advances during the last 2.5 thousand years' (Lynn, 2010a, p. 100).

we suspect, could yield radically different results from Lynn's ones. However, in order to find the right variables it is necessary to have a more accurate knowledge of the historical and social context than the one displayed by Lynn. *Variatis variandis*, this is true for the social sciences as a whole: historical and geographical investigation can provide scholars with the right instruments needed not to confuse correlation with causation and to avoid adventurous theorising. In this (negative) respect, Lynn's article is a prime example of the usefulness of history to the social sciences.

References

A'Hearn, B., Peracchi, F., & Vecchi, G. (2009). Height and he normal distribution: evidence from Italian military data. *Demography*, *46*(1), 1–25.

Arcaleni, E. (2006). Secular trend and regional differences in the stature of Italians, 1854–1980. *Economics and Human Biology*, *4*(1), 24–38.

Bartels, M., Rietveld, M. J. H., van Baal, G. C. M., & Boomsma, D. I. (2002). Heritability of educational achievement in 12 year olds and the overlap with cognitive abilities. *Twin Research*, *5*, 544–553.

Cavalli-Sforza, L. L., Menozzi, P., & Piazza, A. (1994). *The history and geography of human genes.* Princeton, N.J.: Princeton University Press.

Checchi, D., & Jappelli, T. (2004). *"School choice and quality," discussion paper 4748.* London: CEPR.

Coleman, J. S. (1966). *Equality of Educational Opportunity.* Washington, D.C: US Government Printing Office.

Daniele, V., & Malanima, P. (2007). Il prodotto delle regioni e il divario Nord-Sud in Italia (1861–2004). *Rivista di Politica Economica*, *97*(2), 267–316.

Diamond, J. (1997). *Guns, germs and steel: the fates of human societies.* New York: W. W. Norton.

Eckaus, R. S. (1961). The North–South differential in Italian economic development. *The Journal of Economic History*, *21*(3), 285–317.

Ervick, A. O. (2003). Review of IQ and the wealth of nations. *The Economic Journal*, *113*(3), 406–408.

Federico, G. (2003). Le nuove stime della produzione agricola italiana, 1860–1910: primi risultati ed implicazioni. *Rivista di Storia Economica*, *19*, 357381.

Felice, E. (2007a). *I divari regionali in Italia sulla base degli indicatori sociali (1871-2001)*, *67*(3–4), 359–405.

Felice, E. (2007b). *Divari regionali e intervento pubblico. Per una rilettura dello sviluppo in Italia.* Bologna: Il Mulino.

Hart, M. (2007). *Understanding human history: an analysis including the effects of geography and differential evolution.* Augusta, GA: Washington Summit Publishers.

Jensen, A. R. (1980). *Bias in mental testing.* London: Methuen.

Kovas, Y., Harlaar, N., Petrill, S. A., & Plomin, R. (2005). Generalist genes and mathematics in 7 year old twins. *Intelligence*, *35*, 473–489.

Lynn, R. (2006). *Races differences in intelligence: an evolutionary analysis.* Augusta, GA: Washington Summit Books.

Lynn, R. (2010a). Consistency of race differences in intelligence over millennia: a comment on Wicherts, Borsboom and Dolan. *Personality and Individual Differences*, *48*, 100–101.

Lynn, R. (2010b). In Italy, North–South differences in IQ predict differences in income, education, infant mortality, stature, and literacy. *Intelligence*, *38*, 93–100.

Lynn, R., & Meisenberg, G. (2010). The average IQ of sub-Saharan Africans: Comments on Wicherts, Dolan, and Van der Maas. *Intelligence*, *38*, 21–29.

Malanima, P. (2009). Pre-Modern European Economy. One Thousand Years (10th–19th Centuries). Leiden-Boston: Brill.

Murray, C. (2003). *Human accomplishment.* New York: Harper Collins.

Peluffo, N. (1962). Les notions de conservation et de causalit chez les enfants provenant de differents milieux physiques et socioculturels. *Archives de Psychologie*, *38*(1), 275–291.

Peluffo, N. (1964). La nozione di conservazione del volume e le operazioni di combinazione come indice di sviluppo del pensiero operatorio in soggetti appartenenti ad ambienti fisici e socioculturali diversi. *Rivista di Psicologia Sociale*, *11*, 99–132.

Peluffo, N. (1967). Culture and cognitive problems. *International Journal of Psychology*, *2*(3), 187–198.

Peracchi, F. (2008). Height and economic development in Italy. *American Economic Review*, *98*(2), 475–481.

Petril, S. A., & Wilkerson, B. (2000). Intelligence and achievement: a behavioural genetics perspective. *Educational Psychology Review*, *12*, 185–199.

Plomin, R., DeFries, J. C., & McCleam, G. E. (1990). *Behavioral genetics.* New York: Freeman.

Putnam, R. D. (1993). *Making democracy work.* Princeton, N.J: Chichester: Princeton University Press.

Rindermann, H. (2007). The g-factor of international cognitive ability comparisons: the homogeneity of results in PISA, TIMMS, PIRLS and IQ tests across nations. *European Journal of Personality*, *21*, 667–706.

Rushton, J. P. (2010). Brain size as an explanation of national differences in IQ, longevity, and other life-history variables. *Personality and Individual Differences*, *48*, 97–99.

Schmidt, F. L., & Hunter, J. E. (1998). The validity and utility of selection methods in psychology: practical and theoretical implications of 85 years of research findings. *Psychological Bulletin*, *124*, 262–274.

Sowell, T. (1981). *Ethnic America: A History.* New York: Basic Books.

Tabellini, G. (2007), personal communication with Richard Lynn.

te Nijenhuis, J., de Jong, M., Evers, A., & van der Flier, H. (2004). Are cognitive differences between immigrant and majority groups diminishing? *European Journal of Personality*, *18*, 405–434.

Templer, D. I. (2010). Can't see the forest because of the trees. *Personality and Individual Differences*, *48*, 102–103.

Wainwright, M., Wright, M. J., Geffen, M. J., Geffen, G. M., Luciano, L. B., & Martin, N. G. (2005). The genetic basis of academic achievement on the Queensland Core Skills Test and its shared genetic variance with IQ. *Behaviour Genetics*, *35*, 133–145.

Wicherts, J. M., Borsboom, D., & Dolan, C. V. (2009). Why national IQs do not support evolutionary theories of intelligence. *Personality and Individual Differences*, *48*, 91–96.

Wicherts, J. M., Dolan, C. V., & van der Maas, H. L. J. (2010). A systematic literature review of the average IQ of sub-Saharan Africans. *Intelligence*, *38*, 1–20.

Wicherts, J. M., Carlson, J. S., Dolan, C. V., & van der Maas, H. L. J. (2010a). Raven's test performance of sub-Saharan Africans; mean level, psychometric properties, and the Flynn effect. *Learning and Individual Differences*, *20*, 135–151.

Wicherts, J. M., Carlson, J. S., Dolan, C. V., & van der Maas, H. L. J. (2010b). Another failure to replicate Lynn's estimate of the average IQ of sub-Saharan Africans. *Learning and Individual Differences*, *20*, 155–157.