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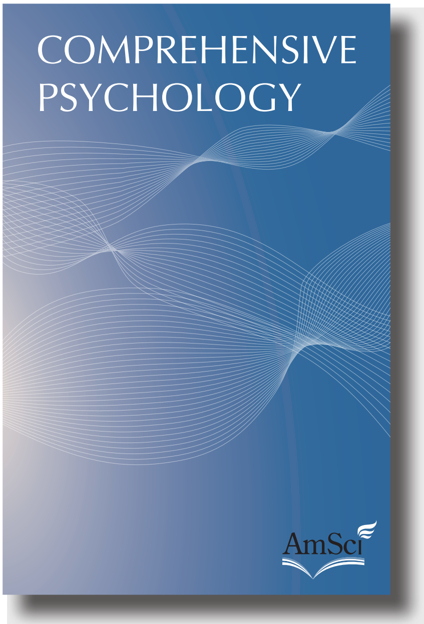

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Why do Northeast Asians win so few Nobel Prizes?[1]

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Abstract

Most scientific discoveries have originated from Europe, and Europeans have won 20 times more Nobel Prizes than have Northeast Asians. We argue that this is explained not by IQ, but by interracial personality differences, underpinned by differences in gene distribution. In particular, the variance in scientific achievement is explained by differences in inquisitiveness (DRD4 7-repeat), psychological stability (5HTTLPR long form), and individualism (mu-opioid receptor gene; OPRM1 G allele). Northeast Asians tend to be lower in these psychological traits, which we argue are necessary for exceptional scientific accomplishments. Since these traits comprise a positive matrix, we constructed a *q* index (measuring curiosity) from these gene frequencies among world populations. It is found that both IQ scores and *q* index contribute significantly to the number of per capita Nobel Prizes.

From ancient natural philosophy to modern physics, the history of science has been dominated by Europeans. It would not be controversial to state that the most distinguished scholars in the world post-1900 have been Nobel laureates and Fields medalists. Table 1 shows the number these prominent people by racial category, which is taken from Lynn (2007), and here extended to 2014. Table 1 shows that Europeans have won 0.6 Nobel Prizes and Fields Medals per million, whilst the Northeast Asians have won only 0.03 per million, which is about one twentieth of the Europeans' achievement.

However, Lynn and Vanhanen (2002, 2006, 2012) reported that Northeast Asians (Chinese, Koreans, and Japanese) have average IQs of 105. Initially, their national IQ estimates were severely criticized as "meaningless" or "deficient" (Barnett & Williams, 2004; Volken, 2003). However, the national IQs have been shown to correlate with striking consistency with other international achievement test scores such as PISA (Program for International Student Assessment; Rindermann, 2007; Lynn & Mikk, 2009; OECD, 2015) and also predict social phenomena, such as democracy, standard of living, and the prevalence of sexual diseases (Rindermann, 2008a, 2008b; Rindermann & Meisenberg, 2009).

China, Korea, and Japan have been reported to display not only higher national IQs (Lynn, 2006) than Europeans, but also international student assessments like PISA have consistently shown that they outscore European countries in school achievement (e.g., Lynn & Meisenberg, 2010; OECD, 2015). These factors being so, we would expect Northeast Asians to be excellent scholars, meaning that they would dominate scientific achievement measures such as Nobel Prizes. Clearly, this is not the case, and in this article we attempt to understand why not. We found that original scientific achievement is predicted both by extremely high IQ and by curiosity (the *q* index), and that Northeast Asians score lower in the latter than do Europeans, based on genetic measures.

Northeast Asians as Overachievers

We have shown that there are very few distinguished scholars in Northeast Asian countries in the previous section; even so, Northeast Asians outperform Europeans as stu-

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TABLE 1
Population Size (Millions) for 1950 (and 2000), Nobel Prizewinners, and Fields Medalists, and Total Achievements per 1 Million, 1906–2014 (from Lynn, 2007, updated)

Prizes	Population (millions)			
	African	European	Northeast Asian	South Asian & North African
	500 (800)	1,000	1,000 (1,500)	1000 (2,200)
Nobel Science	0	413	26	6
Nobel Literature	1	98	4	4
Nobel Economics	0	52	0	1
Fields: Mathematics	0	63	5	3
Total	1	626	35	14
Prizes per million	0.002	0.626	0.035	0.014

dents. Unz (2012) reported that although the Asian (meaning "Northeast Asian") population is about 5% in the U.S. in 2009, 28% of the top 0.5% of SAT takers were Asian Americans, which implies that Northeast Asians are more than five times overrepresented at the highest achievement student category. Moreover, during the 13 years after 2000, the U.S. Mathematics Olympiads champions have been 58% Asian. Also, the recipients of the Westinghouse-Intel Science Talent Search during 2002–2011 are 60% Northeast Asians (Unz, 2012). These numbers are much more than expected from the Northeast Asian IQ of 105. If we take a White population, their top 1, 0.1, and 0.01% should be equivalent to, respectively, 2.33, 0.29, and 0.04% for Northeast Asians. However, as we have seen, Northeast Asians are 5 to 10 times overrepresented in elite universities and 10 times overrepresented in various student awards. This implies that Northeast Asians are overachievers relative to their IQs.

Let us make a comparison with the situation of Jews in the United States. Their reported IQ is about 115 (Lynn, 2011), which is 1 standard deviation higher than gentile whites. They consist of 2.2% of the population, but 25% of the Ivy League university student body, 27% of the professors in law schools, 50% of the Westinghouse Talent Search in the 20th century, and 44% of Nobel laureates (Hu, 2011). In Germany before WWII, a Jewish population that was 0.8% of the total German population won 24% of the Nobel Prizes, about 30 times more frequently than gentiles (Lynn, 2011). Jews are very good students and at the same time good scholars. Conversely, Northeast Asians are exceptional students, but they make up only 8–9% of university professors in 2011 (National Center for Educational Statistics) and less than 5% of Nobel laureates.

Genetic Differences Among Populations

One possible way to investigate this question would be to use the research findings from previous international comparison of national personality (McCrae, 2002; McRae, Terracciano, *et al*., 2005; Schmitt, Allik, McRae, & Benet-Martinez, 2007; Bartram, 2013). This method is in line with Dutton, te Nijenhuis, and Roivainen (2014), who observed that the reason for fewer Nobel Prizes among Finns is caused by their smaller standard deviation in IQ and higher Conscientiousness and Agreeableness. However, we did not explicitly include the results from international personality research, since the national personality scores of the four research articles above did not correlate with each other to any substantial extent. In addition, the available research on national differences in personality is highly problematic. For example, Schmitt, *et al*. (2007) drew upon small samples (sometimes of under 30), making it difficult to make confident comparisons; it uses non-comparable samples ("community based" in Finland and Mexico and "students" or "mixed" in others, and the students were not age-controlled), it suffers from the problem of cultural differences affecting how the questions were answered (e.g., "worrying a lot" may be interpreted differently in different cultures), and it reaches conclusions that are incongruous with the body of research on racial differences in personality (e.g., Eap, DeGarmo, Kawakami, Hara, Hall, & Teten, 2008), such as that the Japanese are low and sub-Saharan Africans are high on Conscientiousness.

Instead, we used the differences in gene frequencies which are supposed to influence behavioral differences such as novelty-seeking, social anxiety, and fear of social exclusion. In this way, we have solid underpinnings for behavioral traits that do not depend on the assumptions of cultural differences.

Novelty-seeking

To become a successful scientist, one has to be interested in something novel, which requires intellectual curiosity. This kind of mentality is not required in student life, where theories and relevant facts are already systematically presented in textbooks. Rote memory is not, however, sufficient to become a good scientist. Some kind of novel perspective is necessary to extend or replace established ways of thinking. Certainly, it has been shown that academics who make an original contribution to their discipline, and especially creative sci-

entists, are high in Extraversion, an aspect of which is novelty-seeking (Simonton, 1988, 2009).

Increased dopamine release at synapses in the mesolimbic dopamine system mediates behavioral reinforcement, feelings of pleasure, and behavioral activation (this is the system that mediates the effects of psychostimulants like amphetamine and cocaine). The gene DRD4 codes for the D4 type dopamine receptors in the central nervous system. There are many different DRD4 alleles coding different numbers of 48 base pairs from two repeats to 11 repeats. Almost all alleles in East Asian populations are 2- and 4-repeats, while 7-repeats are found in about 20–30% of Europeans, Africans, and Polynesians. Some Amazonian tribes have more than 50% of this allele (ALFRED, 2015).

A longer repeat means a smaller number of dopamine receptors, hence, more stimuli are necessary for the carrier to feel satisfied. This makes individuals with longer repeats more attracted to novel ideas and experiences, which lead to novelty-seeking behavior. Especially, the 7-repeat allele has been recognized as the gene for novelty-seeking behavior and impulsivity (Munafò, Yalcin, Willis-Owen, & Flint, 2008). Around 40,000 years ago, humans expanded their habitat from the Near East to Europe, Asia, and eventually the Americas through Beringia. The fitness conferred by this gene should have been very large for migration since migration distance is correlated with the frequency of the 7-repeat allele (Cheng, Burton, Greenberger, & Dmitrieva, 1999; Matthews & Butler, 2011).

On the other hand, Ding, Chi, Grady, Morishima, Kidd, Kidd, *et al*. (2002) and Wang, Ding, Flodman, Kidd, Kidd, Grady, *et al*. (2004) claim that the most frequent 4-repeat allele was the original genotype and that 7-repeat allele emerged about 40,000 years ago after several mutations and expanded to the whole world. Moreover, Wang, *et al*. (2004) claimed that the 2-repeat allele evolved *from* the 7-repeat allele and expanded on the Chinese continent. They investigated the LD (Linkage Disequilibrium) near the gene locus and found that its frequency increased selectively. As described earlier, the frequency of the 7-repeat allele is more than 20% in Europeans, Middle Easterners, Polynesians, and Amerindians, but we currently observe this allele frequency at 0% in China, Korea, and Taiwan, and 1% in Japan. During the last 30,000 years, the 7-repeat allele may have been selectively removed from the population, quite possibly because it disturbs social harmony (Cochran & Harpending, 2009).

Social Anxiety, Fear of Exclusion, and Individualism

To construct a new theory or prove novel findings, it is not sufficient to have enough curiosity to hit upon a new idea; a great scientist must also pursue his novel idea with an independent mindset. In other words, great scientists have to be very independent minded, which is closely connected with the personality trait of individualism. In this regard, analyses by Simonton (1998, 2009) have found that more original thinkers are moderately high in aspects of psychopathic personality, such as low Conscientiousness and low Agreeableness, which they combine with very high intelligence.

Fincher, *et al*. (2008) investigated the risks of 10 major epidemics and then made an index of such risk factors in the world. They correlated this lethal epidemic index and the individualism index explained below and found that there was a substantial negative correlation between these two indexes ($r = -.69$, $N = 68$). One could speculate that the risks of these epidemics have shaped human psychology such that people at higher risk tend to refrain from contacts with outsiders or foreigners; i.e., they are more xenophobic.

A genetic correlate of social anxiety is the long and short alleles for the serotonin transporter gene 5HTTLPR. Long alleles transport serotonin more efficiently, which stabilize and lessen the anxiety of the carrier. It is well known that the frequency of the long allele is about 20% in Northeast Asians, while it is about 60% in Europeans. Chiao and Blizinsky (2009) reported that there is a substantial correlation between the risks of those epidemic diseases and the frequencies of the short alleles of 5HTTLPR. They argued that the conclusion of Fincher, *et al*. (2008) on epidemics is mediated by this genetic polymorphism. Their model of causation goes from the environmental factor to gene frequency of the local population and to behaviors or culture; in other words, from plague risks, to more frequent shorter alleles, to social anxiety and xenophobia.

There has been a report about A118G (OPRM1) as a genetic basis of the fear of social exclusion. G and A polymorphisms in this gene regulate μ-opioid receptors. A study showed that subjects with the G allele showed stronger unpleasant feelings (based on fMRI) when they were excluded in ball-toss games (Way, Taylor, & Eisenberger, 2009). Furthermore, Way and Lieberman (2010) found a correlation between the frequencies of G alleles in a population and the collectivism of the culture. They also reported that the G allele frequencies among Asian populations are in fact much higher than those in European populations. Also, the G allele in rhesus macaques has been reported to strengthen mother-infant attachment and to be associated with higher oxytocin levels when lactating (Barr, Schwandt, Lindell, Higley, Maestripieri, Suomi, & Hellig, 2008; Higham, Barr, Hoffman, Mandalaywala, Parker, & Maestripieri, 2011).

Individualism is defined as an identity focused on oneself (Hofstede, 2002). One has to decide what should be valued and hence pursued in life, which often leads excellent scientists into conflict with fellow researchers (Eysenck, 1995). People high in individualism actively seek for associations, friendships, and partners in a hor-

izontal relationship without a strong authority. Europeans score high on individualism, and science requires this individualistic mindset. When goals are defined by the state or the organization one belongs to, it is much more difficult to pursue private values.

The widely held belief that European societies are individualistic while Asian societies are collectivist in their value systems has been verified empirically. Individualistic mentality has been indexed by the Dutch comparative psychologist Geert Hofstede (1980, 2002), reporting a difference of 1.98 standard deviation between major European countries and six Northeast Asian countries Furthermore, it has been reported that other international individualism/collectivism surveys have produced very similar and consistent results (Diener, Gohm, Suh, & Oishi, 2000; Schimmack, Oishi, & Diener, 2005), such as the index by Triandis (1995) and Schwartz (1994). These studies show the uniqueness of the European individualistic culture. It is possible that high novelty-seeking and curiosity of Europeans may have been generated and strengthened by their individualistic culture. But, clearly, there are genetic underpinnings to individualism, and Northeast Asian culture is relatively low in individualism. This would limit the production of original scientific breakthroughs in Northeast Asia, whereas Europeans would not suffer from this limitation to the same extent.

Method

Measures

Proxies for novelty-seeking, social anxiety, fear of exclusion.—As explained in the Introduction, DRD4 is the percentage of the 7-repeat allele by country (ALFRED, 2015), and is a proxy for novelty seeking. 5HTT is the percentage of 5HTTLRP long form by country (Chiao & Blizinsky, 2010), a proxy for social anxiety. OPRM1 is the percentage of OPRM1 G allele by country (Way & Liberman, 2010), a proxy for fear of social exclusion.

Hofstede's index of individualism.—IDV is the individualism index by Hofstede (Hofstede, 2001; Hofstede, Hofstede, & Minkov, 2010). Hofstede administered a 14-item questionnaire to IBM workers worldwide about their personal values. His IDV index showed the degree of individualistic values held by those workers. As stated above, the validity of this measure and its consistency with other measures were reported in Diener, *et al*. (2000) and Schimmack, *et al*. (2005). Table 2 shows that the average value of IDV among 27 major European countries was 73.9, whereas that of six Northeast Asian regions was 24.3. National scores were standardized from the averages of IBM workers in each country so that the mean is 50 with a standard deviation of 25.

Prize winners.—The numbers of Nobel laureates of countries were taken from the official site of the Nobel

TABLE 2

IDV (Hofstede, Hofstede, & Minkov, 2002) Values and Genetic Frequencies for European and Northeast Asian Nations (*SD* difference = 1.98)

Europeans					Asians				
Country	IDV	DRD4	H5TT	OPRM1	Country	IDV	DRD4	H5TT	OPRM1
Australia	90		54.09		China	20	0	24.8	.58
Austria	55		56.35		Hong Kong	25	0		
Belgium	75				Japan	46	0.01	19.75	.63
Canada	80				Korea	18		20.55	.632
Denmark	74	.167	78.36	1.0	Singapore	20		28.76	
Finland	63	.061	57.55		Taiwan	17	0	29.43	
France	71		56.82	.86					
Germany	67		56.97						
Italy	76		51.46	.81					
Netherlands	80	.17	57.28						
New Zealand	79		56.97						
Norway	69								
Spain	51	.18	53.25	.96					
Sweden	71	.16	56.37						
Switzerland	66.5								
U. K.	89		56.02	.91					
U.S.	91	0.18	55.47						
M	73.9	.153	57.5	.91		24.3	.0025	24.6	0.61
SD	24.8	.085	16.2	.16					

Note DRD4 is the percentage of 7-repeat allele by country, 5HTT is the percentage of 5HTTLRP long form by country, OPRM1 is the percentage of OPRM1 G allele by country, all per million population. IDV is the individualism index by Hofstede (Hofstede, Hostede, & Minkov, 2010).

foundation. Although they count scholars' countries of birth, they are nearly parallel to the country where a researcher was mainly educated or conducted the most important academic work. To be congruent with our intention to analyze scientific achievement, we excluded Literature and Peace prizes and added the number of Fields medals (Wikipedia, 2015). To obtain the number of Nobel prizes per capita (per thousand), we divided these numbers above by the population sizes in the year 1950 (Heston, Summers, & Aten, 2015). Average national IQ scores of countries were taken from Lynn and Vanhanen (2012).

The q index.—An index of curiosity and independent mindset, called the *q* index, was derived by factor-analysis of the population frequencies of the alleles in novelty-seeking, low social anxiety, and low fear of exclusion: DRD4 frequencies were taken from ALFRED (2015), 5HTTLPR long allele frequencies (5HTT) were taken from Chiao and Blizinsky (2010), and OPRM1 frequencies were taken from Way and Liberman (2010). Since some countries had only one or two kinds of data, we imputed the missing data with their respective mean values, which is the simplest way to use all the information available (Little & Rubin, 2002). This simple procedure of imputation is known to give relatively conservative estimates of the factor scores, since it does not incorporate the information of covariance matrix of the variables. A single factor was extracted, explaining 58.6% of the total variance. The *q* index for each country was calculated as the weighted sum of means using the factor loadings, i.e., $q = (0.626)$ DRD4 + (0.626) 5HTT + (0.596) OPRM1.

Table 3 shows the descriptive statistics for the study variables and their correlations with the *q* index. It is apparent that all the variables associated with curiosity and independent-mindedness are positively correlated when comparing national-level data. Thus, e.g., countries with a high percentage of the population carrying alleles associated with novelty-seeking also have a relatively low frequency of the alleles associated with social anxiety. This method of using allele frequencies of human populations to predict associated phenotypic traits such as average IQ and height has been very successful (Piffer, 2013, 2014).

TABLE 3
Study Variables' Correlations with the *q* Index

Variable	1.		2.		3.		4.	
	r	*n*	*r*	*n*	*r*	*n*	*r*	*n*
1. DRD4		31						
2. 5HTT	.49*	20		34				
3. OPRM1	.78*	8	.49	13		15		
4. IDV	.40	20	.66‡	29	.78†	10		74

Note DRD4 is the percentage of 7-repeat allele by country, 5HTT is the percentage of 5HTTLRP long form by country, OPRM1 is the percentage of *OPRM1* G allele by country, all per million population. IDV is the individualism index by Hofstede (Hofstede, Hofstede, & Minkov, 2010). *n* represents the number of countries in the calculation of each correlation. $^*p<.05$. †$p<.01$. ‡$p<.001$.

Nobel Prizes and the q Index

To examine the importance of the *q* index for the number of Nobel Prizes, we step-wise regressed the per capita number of Nobel laureates and Fields medalists (per million people in 2000) on IQ (Model 1) and then IQ and the *q* index (Model 2). All of these statistical analyses were computed using the R statistical program (R 3.2.1 for Windows).

Results

The eigenvalues for the first three factors from the factor analysis of the allele frequencies by country were 1.75, 0.60, and 0.60; only the first factor was extracted. The factor scores (*q* index) for European and East Asian countries are shown in Table 4. The average *q* index of 19 European countries is 0.30, while that of seven East Asian countries and regions is −1.11. As discussed above, our relatively conservative estimate of the difference in their mean factor scores was 1.4, congruent with the results from two individualism indices (about 2 standard deviations difference) in Hofstede (1980, 2002) and Triandis (1995).

TABLE 4
The *q* Index for European and East Asian Nations

Australia	.03	China	−1.97
Austria	.09	Hong Kong	−0.58
Denmark	.45	Japan	−1.90
Estonia	.59	Macao	−0.58
Finland	.14	Mongolia	−0.66
France	.36	Singapore	−0.65
Germany	.11	South Korea	−1.35
Hungary	.52	Taiwan	−1.21
Israel	.72		
Italy	.05		
Netherlands	.40		
New Zealand	.11		
Poland	.27		
Russia	.07		
Slovenia	.12		
Spain	.92		
Sweden	.33		
UK	.50		
US	.40		
Average	.30	Average	−1.11

The result of the regression analysis of the number of prize winners per million on national average IQ scores and the *q* index is shown in Tables 5 and 6. There are 46 countries in the analysis. When we regressed the dependent variable only on IQ (Model 1), the model explained only 5% of the variance, whereas when we used both IQ and the *q* index as explanatory variables (Model 2), the model explained 19% of the variance in the number of Nobel laureates. In Model 2, coefficients

TABLE 5
Stepwise Regression: Number of Nobel Prizes (Per Million People) on IQ (Model 1) and IQ and q Index (Model 2)

Model	R	R^2	Adj R^2	*SE Est.*	Change Statistics				
					ΔR^2	ΔF	df_1	df_2	p
Model 1	.27	.07	.05	34.2	.08	.07	3.32	1	44
Model 2	.48	.23	.19	28.4	.004	.16	3.07	1	43

Note $n=46$. Model 1 comprised IQ, Model 2 comprised IQ and q index.

TABLE 6
Coefficients For Multiple Regression Coefficients

Model	Variable	Unstandardized Coefficients		Standardized Coefficients	t	p
		B	SE	β		
Model 1	(Constant)	−1.63	1.17		−1.39	.17
	IQ	.023	.013	.27	1.82	.075
Model 2	(Constant)	−3.11	1.19		−2.61	.012
	IQ	.039	.013	.45	3.05	.004
	q Index	.50	.17	.44	2.98	.005

of both IQ and the q index were positive and significant. Although the model explained only 19% of the total variance, the significance of the coefficients suggests that the q index indeed plays an important role for scientific accomplishment.

Discussion

This study examined the contrast between the outstanding scholastic achievement and the relatively poor scientific performance of Northeast Asians by devising the index of curiosity, q. Europeans obtain an average score of 1.4 above Northeast Asians on this factor.

The novel approach specified three genetic underpinnings of individualistic curiosity: DRD4 7-repeat, 5HT-TLPR long allele, and OPRM1. Then these gene frequencies were incorporated into the derivation of q indices of nations, as a measure of the tendency to be curious and independent-minded. Lastly, we found that the regression analysis showed that not only IQ but also the q index is important for a population to produce prominent scholars.

It is our argument that as Northeast Asian countries are lower on the q index than European countries, yet higher in intelligence, this would assist in explaining the surprisingly poor representation of Northeast Asian countries in terms of original scientific achievement. However, there are a number of alternative explanations that need to be discussed. First, it might be argued that until around World War II the standard of living was significantly lower in Japan than in Western Europe, and this would explain the poor representation of the Japanese in terms of Nobel Prizes and Fields Medals. However, this raises the question of why the Japanese should have had a lower standard of living if they had a significantly higher average IQ. A parsimonious explanation is that they were less innovative than Europeans due, in part, to lower q. Moreover, since around 1970 or earlier, the Japanese standard of living has equalized with and exceeded that of Western Europe, but even since this time, Japan has lower scientific achievement. The most frequently cited 10 scholars in 21 scientific fields in 2014 (210 in total) include only seven Japanese, while there were 18 British and 12 French scholars (Thomson-Reuter, 2015). Since the Japanese population (126 million) is more than the sum of those of the UK and France (120 million), Japan produces less than one-fourth the number of prominent scholars.

Second, it might be suggested that the Japanese IQ is more bunched toward the mean than the European IQ, due to high genetic homogeneity (e.g., Holtz, 1989, p. 117). This would lead to fewer high IQ outliers and so fewer per capita scientific achievements. However, it has been shown that scientific achievement requires both high intelligence and high q, so this is unlikely to be the entire explanation.

Third, it might be argued that only relatively recently has Northeast Asia developed a higher average IQ than Europe. Woodley, *et al.* (2014) have presented data indicating that there has been a dysgenic trend in intelligence in Europe since around 1900, due to a variety of factors including the higher fertility of less educated females since this time. They argue that until the Industrial Revolution wealth predicted fertility, meaning that average IQ increased each generation, until it was so high in Europe that the Industrial Revolution occurred. Clark (2007) has presented data showing that the same relationship between wealth and fertility existed in Northeast Asia, but it was not as pronounced, meaning that

Northeast Asian IQ climbed more slowly. Accordingly, it may be that in around 1800 Europe actually had a higher average IQ than did Northeast Asia and, in that the European decline in IQ is only hypothesized to have commenced around 1900, it may be that many of the 20th century's European Nobel Prize winners were born at a time when Europe's IQ was higher than that of Northeast Asia, explaining Northeast Asia's relatively poor per capita representation. But, again, even if this is true, it is unlikely that the *q* index has played no part, as Japan's per capita Nobel Prizes, e.g., is worse than countries with an average IQ of half an *SD* or more below the European mean (such as Ireland and Cyprus) and only slightly better than various other European countries with lower national IQ, such as Portugal and Romania (see Dutton, *et al*., 2014). Moreover, even if we only look at Prizes won since 1980, Japan and Korea still perform worse than European countries, despite higher living standards and higher average IQ (Japan and Korea have been awarded 17 and 0 Nobel laureates after 1980, respectively, while the U.K. and France have been awarded 22 and 19, respectively.)

Our findings suggest that not only general intelligence, but also various genetic differences among populations have played crucial roles in the progress of science. Future research could focus on the question whether the mean *q* index is the same for original populations and immigrant populations. For instance, all awards to Chinese prizewinners were awarded for work carried out at European institutes. Traditionally, Chinese culture has been more conservative than that of Europe and relatively unwelcoming of or even hostile toward new ideas and does not allow single researchers to be outstanding, which is often ascribed to the Confucian doctrine (Wade, 2014). This knowledge would enable us to decompose national academic attainments into influences of genetic factors and purely cultural transmissions.

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