

IQ, Socio-economic and Intellectual Achievements of Ashkenazi Jews.

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Ashkenazi (European) Jews have high average earnings, educational attainment, socio-economic status, and intellectual achievements. It is proposed that these can be at least partially explained by their high average IQ, which is estimated at 110. The Mizrahim (Oriental) and the Ethiopian Jews have lower IQs, estimated 91 for the Mizrahim and 70 for the Ethiopian Jews. There have been three principal explanations offered for the high average IQ of the Ashkenazi Jews. These are the Eugenic, the Persecution, and the Discrimination hypotheses. All provide plausible explanations and it may well be that all three of the factors they point to have contributed to this remarkable phenomenon.

Key Words: Ashkenazi Jews; IQ and Jewish achievement; Hypotheses re Jewish achievement; Eugenics and Jewish intelligence; Persecution and Jewish intelligence; Discrimination and Jewish intelligence.

Ashkenazi Jews in North America, Europe and elsewhere have been remarkably successful in their socio-economic and intellectual achievements. During the twentieth century, they have surpassed non-Jews in average earnings, socio-economic status, and in high level intellectual achievement indexed by the award of the Nobel prize, the Fields medal for mathematics, the Turing prize for computing, the Pulitzer prize for literature and similar distinctions. These achievements have been extensively documented by sociologists and economists. However, the possibility that the high Jewish socio-economic and intellectual achievements might be attributable to their higher average IQ has virtually never been discussed. There is no entry for intelligence in the 17 volume *Encyclopedia Judaica*, and only one paper on the intelligence of the Jews has been published in the *Jewish Journal of Sociology* and the Jewish journal *Commentary*.

Even among psychologists, the question of whether Jews

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have a high IQ has rarely been considered. It has occasionally been asserted that Jews have a high IQ; e.g., MacDonald (1994, pp.188-190) and Eysenck (1995, p.159): "as far as Jews are concerned, there is no question that they score very highly on IQ tests." But the alleged high Jewish IQ has never been systematically reviewed. The objective of this paper is to present such a review and consider how far this (if it exists) may have contributed to the high Jewish socio-economic and intellectual achievements.

Studies of Jewish Intelligence

A literature search for studies of Jewish intelligence was carried out on Psychinfo, ERIC, Scopus, PsychNet, ISI Web of Science, and Web of Knowledge. Results were obtained for five countries and are summarized in Table 1. The IQs are the medians and are calculated in relation to non-Jewish white means set at 100 with a standard deviation of 15. Many of these studies compared Jews with non-Jewish whites tested at the same time, but others report Jewish means compared with standardization test norms collected some years before the Jewish sample was tested. In these studies the Jewish means are adjusted for the "Flynn effect" (the name given to the secular increase of intelligence, which means that IQs need adjustment for the year when the test was standardized). These increases have been about 3 IQ points a decade for Wechsler IQs, about two IQ points a decade for verbal IQs and about four IQ points a decade for non-verbal (performance) IQs. Stanford-Binet IQs have been increasing at about 2.5 IQ points a decade (Flynn (1984) and Progressive Matrices IQs for school age children at about 2 IQ points a decade. Hence Jewish IQs obtained later than the standardization have been reduced to allow for this.

The full data for the 49 studies summarized in Table 1 are given in Lynn (2010). Given here are the salient details of the results. Most of the studies come from the United States and these are given for three periods: 1920-39, 1944-60, and 1970-2008.

It can be seen that the IQs obtained by Jews have increased during the course of the twentieth century and into the early twenty-first century. In the first 14 studies

published between the years 1920-39, Jewish children obtained a median IQ of 101.5. In the next nine studies published 1944-1960, Jews obtained a median IQ of 107. In the last nine studies published 1970-2008, Jews obtained a median IQ of 111. The correlation between the year of publication and IQ is 0.59 and is statistically significant at $p < .01$, showing that Jewish IQs have increased significantly over this period. It appears that in the earlier studies Jews were handicapped, probably largely because many of them were relatively recent immigrants who were impoverished, had poor nutrition and health, and many spoke Yiddish as their first language. In the second period 1944-60, some of them were apparently still handicapped by speaking Yiddish because in 1959 Levinson (1959) reported that Jewish children who spoke only English obtained an IQ 6 points higher than those who were bilingual in English and Yiddish, and most of whom will have spoken Yiddish at home and English as a second language at school. The results from the last period 1970-2008 (IQ of 111) should probably be regarded as the true Jewish IQ.

Table 1. Jewish IQs in five countries

Country	Years	N studies	IQ
USA	1920-1937	14	101.5
USA	1944-1960	9	107
USA	1970-2008	9	111
Britain	1927-2006	5	110
Canada	1964-1978	2	109
Israel	1957-1978	9	106
Poland	1926	1	111

These IQs have been obtained from a number of different tests measuring general intelligence defined as reasoning and verbal comprehension abilities (also known as fluid and crystallized intelligence, respectively). In addition, there have been 8 studies that have included measures of

visualization-spatial IQs and these have found that the Jewish IQ averages 100 on this ability.

The five studies of the IQ of Jews in Britain give an average of 110, virtually identical to the 111 of the American studies published 1970-2008. The two studies of Jews in Canada published in 1964 and 1978 give an average IQ of 109, virtually the same as the 107 of the American studies published between 1944-1960.

The nine studies of the IQ of Jews in Israel are for Ashkenazim and give an average of 106. This is a little lower than the 109-111 range in the United States, Canada and Britain. Possibly the explanation for this is that many Ashkenazi Jews in Israel come from Russia and are only partly Jewish. It has been possible for those with one Jewish grandparent to obtain permission to emigrate from Russia and substantial numbers of these took advantage of this opportunity. The one study for Poland is based on Polish immigrants in the United States that found that the children of Jewish immigrants from Poland had an IQ 11.4 IQ points higher than the children of non-Jewish Polish immigrants (Hirsch, 1926). Taking all these results together, an IQ of 110 can be adopted as the best reading of the IQ of Ashkenazi Jews.

It has not been possible to find any studies of the IQ of Jews in Germany, but it appears to have been recognized that Jews have high intelligence. In the nineteenth century, according to Baker (1974, pp. 44, 46), Nietzsche (1844-1900) wrote of "the extraordinary intellectual resources of the Jews of the present day." In the early twentieth century the Jewish physician Martin Englander (1902, p.11-12) contended that Jews are on average more intelligent than non-Jews and have larger heads, although they have inferior physique. During World War One the suggestion that Jews are more intelligent than non-Jews appeared to have been confirmed with the publication of a study by Nemeck (1916) in which he analyzed the scholastic records of 1549 15-18 year old school students. He reported that Jewish students were on average superior in all academic subjects, including math, physics, chemistry, languages, history and geography.

According to Eysenck (1995), there were some early studies finding that Jews had higher IQs than non-Jews and Hitler had these suppressed.

In addition to these general population studies, there have been four studies of American college students that have compared Jews to Jews at the same college. These are shown in Table 2, in which the Jewish IQs are given in relation to white gentile college students' means of 100 (SD 15). In the first of these, Cohen (1927) published a study of the intelligence of native born Jews and white gentiles at Ohio State University. Comparing 193 freshmen from each group, she found that Jews had an average IQ 4.7 IQ points higher than non-Jews and noted also that Jews were 3 per cent of the population of the state, but 7 per cent of the student body. The two next studies also found Jewish students obtained higher average IQs than white gentiles. However, the last study by Shuey (1942) for native born Jews and gentiles at Washington Square College in New York showed virtually no difference. She also presented data showing that included foreign born who had approximately the same negligible difference. Possibly the more intelligent Jews in New York secured admission to more prestigious colleges.

Table 2. IQs of Jewish college students in the United States

College	N Jews	N Non-Jews	Jews' IQ	Reference
Ohio State	193	193	104.7	Cohen, 1927
Columbia	82	65	113.7	Garrett, 1929
Pittsburgh	158	158	102.7	Held, 1941
Washington Sq	1171	538	100.8	Shuey, 1942

Jewish Socioeconomic Achievement

Jews were discriminated against to greater or lesser degrees throughout Europe until the early years of the nineteenth century. In the first decade of the century they were liberated in much of Europe by Napoleon, while in

Britain and Russia discrimination against Jews was relaxed during the course of the nineteenth century. Jews rapidly took advantage of the new opportunities and began to outperform non-Jews in business and the professions. In the early years of the century, Jews became prominent in banking, and by the second half of the nineteenth century they were over-represented among leading bankers in Austria by a factor of 11 (i.e., Jews were approximately 3.5 per cent of the population and 40 per cent of the bankers), and in Germany by a factor of 50 (i.e., Jews were approximately 1 per cent of the population and 50 per cent of the bankers). By the middle of the century the Rothschild banks with branches in Frankfurt, London, Paris, Vienna and Naples were collectively the most powerful in the world.

Table 3. Over-representation of Jews among physicians and lawyers

Country	Years	Physicians	Lawyers
Austria	1883-1910	14.7	17.7
Benelux	1930	2.7	2.3
Britain	1985	6.6	9.5
Canada	1991	9.2	4.5
Germany	1918-33	16.0	25.0
Hungary	1920	12.0	10.1
Poland	1931	5.6	3.3
Soviet Union	1928-39	11.1	-
United States	2000	5.3	4.8

In the late 19th century, Jews were over-represented among university students by factors of 4.9 in Austria, 5.0 in Hungary, and 3.6 in Russia. This indicates that by this time Jewish families had greater financial means than non-Jews to send their sons to universities and the sons had the higher intelligence needed to enter them.

In the twentieth century, Jews became over-represented among physicians and lawyers in all countries where they

were present in significant numbers. This is shown in Table 3, which gives the factors by which Jews were over-represented.

Jews have also been over-represented among cognitive elites, such as Nobel Prize winners. The magnitude of their over-representation for these over the entire period (1901-2009) during which Nobel Prizes for science, literature and economics have been awarded is shown in Table 4.

Table 4. Over-representation (OR) of Jews among Nobel Prize winners

Country	Nobel OR	Country	Nobel OR
Austria	24	Hungary	25
Balkans	23	Italy	320
Benelux	22	Latin America	220
Britain	6	Poland	8
Canada	35	Russia	33
Denmark	270	South Africa	16
France	19	Switzerland	60
Germany	31	United States	10

Jews in the United States

In the first half of the twentieth century there were approximately 6 million Jews in continental Europe. Nearly all of these perished or left continental Europe. Those in Britain and Switzerland survived, and so also did a number in the Soviet Union. In the United States the number of Jews was negligible until the 1880s, when they began emigrating in large numbers from eastern Europe. By the 1920s there were approximately 6 million Jews in the United States and this number has remained approximately constant up to the present day. As a proportion of the population, however, the percentage of Jews has declined from approximately 3.5 per cent in the 1920s to approximately 2.0 per cent in the first decade of the twenty first century. The reasons for this were

that Jews had low fertility and the non-Jewish population has grown from large scale immigration.

As early as 1909, Jews were over-represented at Harvard and from 1919 in other elite Ivy League colleges. Some figures illustrating this are given in Table 5. By 1919 the faculty at the Ivy League colleges became so concerned at the numbers of Jews that they changed the admissions criteria. Hitherto, applicants were admitted on the basis of their performance in cognitive (intelligence-like) tests. To reduce the numbers of Jews gaining admission, the colleges introduced other criteria, including “character qualities” and regional quotas from the whole of the United States. As the majority of Jews lived in New York City, this reduced the number of Jews admitted so that by the 1950s the proportion of Jews in the Ivy League colleges was held at 23 per cent. At that time Jews were approximately 2.3 per cent of the population, and hence they were over-represented at the Ivy League colleges by a factor of approximately 10. At this time, the Ivy League colleges were for men only. The “seven sisters” given in the last row of Table 5 designate the elite colleges for women (Radcliffe, Vassar, Smith, etc).

Table 5. Percentages of Jews in Ivy League colleges

Year	College	Percent Jews
1909	Harvard	6
1919	Harvard	20
1919	Columbia	40
1920	NY City College	90
1952	Harvard	24
1957	Ivy League	23
1957	Seven Sisters	16

By the 1950s, Jews were out-performing white non-Jews in virtually all criteria and occupations. As shown in Table 6, in 1957 and 1990 more than twice as many Jews had college

degrees, compared with white non-Jews; and the average incomes of Jews were about 25 per cent higher than those of non-Jewish whites, with the exception of the military.

Table 6. Jews and non-Jews with College Degrees (percentages) and average incomes

		1957	1990
Jews	College Degrees %	20	47
Non-Jewish Whites	College Degrees %	9	21
Jews	Average incomes	4,900	36,700
Non-Jewish Whites	Average incomes	3,600	28,100

The over-representation (OR) of Jews in the professions found in the 1960 census is shown in Table 7. Jews were over-represented in all of the ten professions, except military officers. It is interesting to note that Jews were less over-represented in the professions that require visual-spatial abilities (i.e. architects, engineers and artists), as would be expected from the lower visual-spatial abilities of Jews relative to their high verbal and reasoning abilities.

Table 7. Overrepresentation (OR) of Jews in the professions (1960)

Occupation	OR	Occupation	OR
Psychiatrists	5.8	Lawyers	3.3
Dentists	4.0	Architects	1.7
Mathematicians	3.8	Artists	1.4
Doctors	3.7	Engineers	1.1
Writers	3.4	Military	0.5

Jews in the United States have been highly successful in business and finance. Every year, *Forbes Magazine* publishes a list of the richest four hundred Americans. In the year 2000,

25 per cent of these were Jews, while in 2009 32 per cent were Jews. At those times, Jews were approximately 2 per cent of the population.

There are three ethnic groups of Jews in Israel, namely the Ashkenazi from Europe (this includes the Sephardic), the Mizrahi or Oriental from North Africa and the Middle East, and the Ethiopian or black Jews who immigrated from Ethiopia. As shown in Table 8, the three groups differ considerably in their IQs and in their socio-economic status, earnings, receipt of Nobel prizes, and percentages unemployed. Social scientists in Israel routinely attribute this to discrimination by Ashkenazi against the other two groups. None of them mention that the explanation might lie in IQ differences.

Table 8. Jews in Israel

	Ashkenazi	Mizrahi	Ethiopian
IQ	106	91	70
Professions:1986:%	36	15	-
Earnings:2001	13,000	9,100	-
Nobel prizes	6	0	0
Unemployed: 1995: %	9	9	41

Theories of Jewish success

By the first two decades of the twentieth century, it had become increasingly obvious to many people that Jews have been exceptionally successful and theories began to be advanced to explain Jewish success. A few people have proposed that Jews are more intelligent than non-Jews, but most people preferred other theories. Five principal theories have been advanced to explain Jewish success. These are (a) strong motivation theory; (b) family and ethnic networks; (c) marginal man theory; (d) special aptitudes theory; and (e) luck. Several writers have asserted that Jewish success is attributable to more than one of these characteristics.

(a) *Strong Work Motivation Theory*. This states that Jews are

strongly motivated to work hard and achieve success. Some authors have asserted that Jews have a strong form of the Protestant or Puritan work ethic, a commitment to work as a moral and religious obligation. This theory had been proposed by Max Weber as the source of the economic advance of the Protestant nations from the seventeenth to the nineteenth centuries. Houston Stewart Chamberlain (1912, pp. 492-3) asserted that the principal reason why Jews had become "a disproportionately important and in many spheres actually dominant constituent of our life" was that Jews have an innate "abnormally developed will," by which he probably meant what today we would call strong motivation.

The German economist Werner Sombart (1919) attributed Jewish success to their religion fostering a strong work ethic that gave them exceptional will-power. He described this as *des Eigennutzes* (self-interest) and *Abstraktheit ihrer Geistesbeschaffenheit*. (It is difficult to determine the meaning of this second concept; it has been translated as "the abstractness of their *mental constitution*," But one of my German friends advises me that it does not mean anything to do with intelligence.) Sombart also proposed that because Jews have been migratory for many centuries and generally had no land or property, they valued money and this ultimately led to their pre-eminence in banking.

In Russia in the 1920s, it was so obvious that Jews were prominent among the elite that people began to discuss why this should be. In 1929 Larin published a book on this question and advanced the explanation that the hard life of Jews in previous centuries had produced "exceptional energy" (Slezkine, 2004, p.252). A variant of this theory is that Jews have a strong work ethic, and this has received some confirmation from a study carried out in the United States by Lenski (1963). He concluded that Jews are like white Protestants in possessing "individualistic, competitive patterns of thought and action linked with the middle class and historically associated with the Protestant ethic or its secular counterpart, the spirit of capitalism." Catholics and blacks, he argued, have "the collectivist, security-oriented

working class patterns of action, historically opposed to the Protestant ethic.”

A further variant of the strong work motivation theory is that Jews attach a high valuation to success. This has become a cultural norm in Jewish families. Parents bring up their children to achieve and socialize them to value success. Thus, “success is so vitally important to the Jewish family ethos that we can hardly overemphasize it... we cannot hope to understand the Jewish family without understanding the place that success for men (and recently for women) plays in the system” (Herz and Rozen, 1982, p.306). Jews attach a lot of importance to study and education, and this socializes the children for educational and academic success: “Jewish youth used to spend long years bent over their books in an attempt to break out of the narrow circle of restrictions” (Slezkine, 2004, p.252). Rutland (1988, p.259), writing on the success of Jews in Australia, has proposed that one of the reasons for this is that they “were highly motivated to create a new and more secure life for themselves,” which gave them “the willingness to work hard.”

The Harvard historian Stephan Thernstrom and his wife assert that the achievements of the Jews are “the product of cultural values that they have brought with them and transmitted from generation to generation over a very long time” (Thernstrom & Thernstrom, 2003, p.98), although the Thernstroms fail to give any evidence that Jews have the requisite cultural values for educational and socio-economic success. Gary Becker, the Nobel Prize winner for economics, is another who has pondered the problem of why Jews have done so well and has concluded “I believe that the high achievement and low fertility of Jewish families are explained by high marginal rates of return to investments in the education, health and other human capital of their children that lower the price of quality relative to quantity.” (Becker, 1981, p. 110). Translated from economists’ jargon, this means that Jews have fewer children and devote more effort to their health care and to giving them a good education. He does not offer any explanation for why Jews do this, but we are left to infer that this is part of their

values.

(b) *Strong Family and Ethnic Networks*. Houston Stewart Chamberlain (1912, pp.492-3) asserted that the Jewish religion (Judaism) inculcated "the idea of physical race-unity and race purity" that leads Jews to support each other through strong family and ethnic networks. In 1929 Larin in Russia proposed that because Jews have experienced discrimination for many centuries they have developed "an unusually strong sense of solidarity and a predisposition towards mutual help and support".. Slezkine (2004), who quoted this opinion, agreed and has confidently asserted that "there is no doubt that their entrepreneurial success has been due to a combination of internal solidarity and external strangeness" Slezkine (2004, pp. 43, 252).

(c) *Marginal Man theory*. This theory was advanced by Thorstein Veblen (1919). Hollinger (2002, p.145-6), who has described Veblen as "the most creative American social theorist of the early twentieth century", summarizes Veblen's theory as follows: "The partial liberation of Jews from traditional Judaism yields a sceptical temper The combination of withdrawal from Jewish tradition and only partial assimilation into non-Jewish society endows the intellectual Jew with the virtue of detachment. Sceptical, estranged, alienated, the liberated Jew was ideally suited for a career in science and scholarship. This Marginal Man, this 'wanderer in the intellectual no-man's land,' could see 'unmediated facts' that were less readily observed by minds still clouded by traditional Judaism, Christianity, local customs, tribal idols, or other pre-modern forms of reference".

There are, however, several reasons for regarding Veblen's theory as implausible. First, as we shall see repeatedly throughout this article, Jews are good at everything, not only at science for which a "sceptical temper" and "detachment" may be required. Second, as Jews ceased to be marginal in the second half of the twentieth century, their success in all walks of life increased in the United States and Britain, as shown in the chapters on these two countries.

(d) *Special Aptitudes*. Several writers have proposed that Jews possess a number of special aptitudes that have been ingredients of success. High creativity has sometimes been advanced. For instance, Lewis Bernstein Napier (1934) attributed German anti-Semitism to the Jewish superiority and the inability of Germans to compete: "the German is methodical, constructive mainly in the mechanical sense, extremely submissive to authority, a rebel or a fighter only by order from above", whereas "the Jew, of the Oriental or Mediterranean race, is creative, pliable, individualistic, restless and undisciplined." Napier seems to be groping towards the idea that Jews are more creative than non-Jews, but it is difficult to say whether he had any notion that they might be more intelligent. Rutland (1988, p.261) suggests that Jews have strong imagination, a concept akin to creativity: "imagination is another essential ingredient in business success as new products must be conceived, new ways of doing things conjured up, and ways round problems solved. As a result of persecution and discrimination, Jews have always tended to be innovators and have come up with new ideas in science, commerce and industry, as well as in the arts."

Daniel Moynihan (the former United States Senator) and Nathan Glazer (the Harvard sociologist) (1970, p.153) discussed why Jews have done so well in real estate in New York. They advanced the thesis that Jews have "exceptional skill in financial and business management, derived from a long history in business, that has unquestionably served many Jews well in a field that is incredibly complex and laden with pitfalls" (Moynihan & Glazer, 1970, p.153). It did not apparently occur to them that this "exceptional skill in financial and business management" could be an expression of high intelligence. They seemed to believe that it is a particular kind of aptitude independent of intelligence and, presumably, transmitted down the generations according to Lamarckian principles of the inheritance of acquired characteristics.

The British historian Paul Johnson (2004, p. 253) has written that "the great Jewish strength lay in the ability to

take quick advantage of new opportunities, to recognise an unprecedented situation when it arose and devise methods of handling it. Christians had long learned how to deal with conventional financial problems, but they were slow to react to novelty.” There is of course no special ability “to take quick advantage of new opportunities.” The ability he describes is intelligence.

The American historian S. Steinberg (1981) suggests that Jewish craft and trading skills and high literacy level were the main factors accounting for Jewish success, but these too are expressions of intelligence. Why have Jews been so good at chess? Rubinstein (2004) has discussed this and begins by suggesting that “great ability at chess appears to be an innate gift of some kind. There is universal agreement among experts that by constant practice, study, and lessons with outstanding players someone can improve ...but that it is impossible to improve dramatically if the inherent ability is lacking – just as it is impossible for a tennis player to improve enough by practice to compete in the finals at Wimbledon unless he or she possesses the innate tennis ability of a great player (2004, p.36)... It may be therefore that Jews are genetically good at chess” (p.39). This is very likely true in so far as Jews have a high level of general intelligence and some of them devote this to chess. Good chess players have high intelligence that they have directed into acquiring expertise at the game. An investigation I carried out in collaboration with Marcel Frydman of the University of Mons in Belgium (Frydman & Lynn, 1992) of 33 tournament level young chess players aged 8-13 found that they had an average IQ of 121, showing that a high IQ is required to do well in chess. Aljosha Neubauer (2006) of the University of Graz in Austria has also found that tournament standard chess players have high IQs.

(e) *Luck*. Godley (2004) asserts that the socio-economic success of Jews who migrated to Britain and the United States between 1880 and 1914 has been largely due to luck. According to this account, Jews were just lucky that they went into the garment industry and that this happened to

expand in the middle and later decades of the twentieth century. This is surely the least plausible explanation for Jewish success. It can hardly be luck that has made Jews in many countries the highest earning ethnic group, greatly over-represented in the professions, among top chess and bridge champions, and among Nobel Prize winners.

(f). *Multi-factor theories.* Many of those who have written on Jewish success have proposed multi-factor theories incorporating several attributes. The American sociologist Paul Burnstein (2007) proposes five explanations of why Jews have done so well. These are “getting more education and working long hours, faith that emphasizes pursuits in this world as opposed to the afterlife, mutual assistance through the self-help organizations they long maintained in the Diaspora, marginality that made them skeptical of conventional ideas and stimulated creativity that led to intellectual eminence and, often, economic success, and social capital, the ability to secure benefits through membership in networks and other social structures.” The Irish economist Cormac O’Grada attributes Jewish success to “bourgeois virtues such as sobriety, a desire to succeed, a dislike of violence, an emphasis on education and learning, and high self-esteem” (O’Grada, 2006, p. 162).

Neither of these eclectics mentions intelligence as a factor in Jewish success.

How to explain the high Jewish IQ

As we have seen, the high Jewish IQ has been well documented, and so also have been the high achievements of Jews in education, earnings, the professions and business, and in the award of prestigious prizes for intellectual achievement. The obvious first line of explanation for the high achievements of Jews is that they have high IQs, because it is well established that IQ is an important determinant of achievement in all fields (except sport, in which Jews do not excel). This brings us to the question of how Jews have acquired their high IQ. Many social scientists have been reluctant to consider that Jews could be genetically superior to non-Jews. For instance, Jencks (1969) has written that “Jewish children do better on IQ

tests than Christians at the same socio-economic level, but very few people conclude that Jews are genetically superior.” And more recently Burnstein (2007) has written that “there are three major reputable social-scientific explanations of why Jews do so well – I emphasize “reputable” and “social-scientific” to exclude genetic explanations...”.

However, as Jensen (1973, p.60) observed in a response to Jencks “the fact that very few people might suggest a genetic factor in the Jewish v. non-Jewish IQ difference (which averages about 8-10 IQ points), however, does not make it an unreasonable hypothesis that genetic factors are involved in this subpopulation difference”. A strong genetic component to the high Ashkenazi IQ has more recently been argued by MacDonald (1994), and by Cochran, Hardy, & Harpending (2006).

There are five reasons to believe that there must be a substantial genetic basis for the intelligence differences between the four Jewish peoples and between these and the non-Jews among whom they have lived. First, the numerous twin studies that have been carried out in Europe, India and Japan, and with blacks and whites in the United States, have all found a high heritability of intelligence in national populations (these are reviewed in Lynn, 2006). It is improbable that these high heritabilities could co-exist with the absence of any heritability for the differences in the intelligence between the four Jewish peoples and between these and the people among whom they have lived.

Second, the three Jewish peoples in Israel occupy a similar environment with the same access to health care and schooling, but the intelligence differences between them are pronounced. For instance, Jewish children with European parents and with Mizrahim parents who were brought up in the same kibbutzim have approximately the same 15 IQ point difference as those brought up by their parents. Similarly, each of the pairs of Jews and various non-Jews shown in Table 1 has lived in the same societies and environments and are therefore matched for environmental inputs. From this it can be reasonably assumed that the IQ differences between the pairs are largely genotypic.

Third, it is doubtful whether any environmental theory can explain the remarkable achievements of the Ashkenazim. Much has often been made of the importance attached by Jews to education, but Levinson and Block (1977) found that 400 Jewish 4-6 year olds in the United States had an IQ of 111, just about the same as that of Jewish adults. If education were a factor responsible for the high Ashkenazi IQ, their IQ advantage should become greater after several years in school, but it doesn't.

Environmentalists such as Storfer (1990) have argued that the high intelligence of the Ashkenazi Jews is attributable to the better infant care and stimulation provided by Jewish mothers. It may well be that Jewish mothers provide an excellent environment for nurturing the intelligence of their children, as suggested by their low rates of infant mortality, but this does not mean that the high IQ of the Ashkenazim can be attributed to this favorable early environment. There is now widespread acceptance of the principle of genotype-environment co-variation which states that the genes for high intelligence tend to be associated with favorable environments for the optimum development of intelligence (Plomin, 1994). Thus, intelligent women who are pregnant typically refrain from smoking, drinking excessive alcohol and taking drugs because they are aware that these are likely to impair the growth of the brain and subsequent intelligence of the babies they are carrying. Intelligent parents tend to provide their children with good quality nutrition because they understand the general principles of what constitutes a healthy diet, and a healthy diet is a determinant of intelligence. Intelligent parents are also more likely to give their children cognitive stimulation, which is widely believed to promote the development of the intelligence of their children. This principle operates for populations. The populations with high intelligence (such as the Ashkenazim) provide their children with the double advantage of transmitting favorable genes to their children and of providing them with a favorable environment with good nutrition, health care and cognitive stimulation that enhances their development. Conversely, the children of the

less intelligent populations tend to transmit the double disadvantage of poor quality genes and a poor quality environment. Thus, the principle of genotype-environment co-variation implies that differences in intelligence between the populations for which the immediate cause is environmental are also attributable to genetic factors that contribute to the environmental differences.

Fourth, other environmentalists such as Majoribanks (1972) have argued that the high intelligence of the Ashkenazi Jews is attributable to the typical “pushy Jewish mother”. In a study carried out in Canada, he compared 100 Jewish boys aged 11 years with 100 Protestant non-Jewish white boys and 100 white French Canadians and assessed their mothers for “Press for Achievement”; i.e., the extent to which mothers put pressure on their sons to achieve. He found that the Jewish mothers scored higher on “Press for Achievement” than Protestant mothers by 5 SD units and higher than French Canadian mothers by 8 SD units and argued that this explains the high IQ of the children. But this inference does not follow. There is no general acceptance of the thesis that pushy mothers can raise the IQs of their children. Indeed, the contemporary consensus is that family environmental factors have no long term effect on the intelligence of children (Rowe, 1994).

Fifth, a final pointer to a genetic basis for the high Ashkenazi IQ is their high prevalence of myopia (near-sightedness), an error of refraction in which near objects can be seen clearly but distant objects appear blurred. It has been shown in a number of twin studies that myopia is largely genetically determined (Post, 1962; Sorsby, 1951). There is a correlation of around 0.20 to 0.25 between myopia and intelligence. This correlation has been found in many studies reviewed by Cohn, Cohn and Jensen (1988), who also show that this is an *intrinsic* correlation that is present within families, such that adolescents with high IQs have a greater prevalence of myopia than their siblings with lower IQs. Jensen proposes that the reason for this relationship is *pleiotropy*; i.e., a gene or genes that are responsible for myopia also increase intelligence. Consistent

with this theory is the fact shown by Post (1962) that the prevalence of myopia is highest in East Asians (Chinese and Japanese), intermediate in Europeans, and lowest in blacks, and hence the prevalence of myopia in these three major races runs parallel to the differences in intelligence

The significance of the association between myopia and intelligence is that there is a high prevalence of myopia among the Ashkenazim. This association was found by Pearson and Moule (1927) in London schoolboys among whom myopia was present in 13.3 per cent of a sample of 900 Jews but only 2.3 per cent in a sample of 10,416 non-Jews. This result was confirmed in another British study by Sourasky (1928), who reported that 43.2 per cent of a sample of 1,649 Jewish boys aged 6-14 failed a reading test as compared with only 21.7 per cent in a sample of 600 non-Jews. The main reason for the difference was "the rather higher incidence of myopia among the Jewish children" (p.211). He noted that the higher incidence of myopia among the Jewish children was present among 6 year olds and did not increase with age so that "it is apparently not produced by the excessive amount of close work done by Jewish boys". It can be inferred from these studies that the gene or genes responsible for myopia and high intelligence are more frequent in Ashkenazi Jews than in non-Jewish Europeans..

For all these reasons it is impossible to avoid the conclusion that there must be a substantial genetic basis for the intelligence differences between the three Jewish peoples and between the Jews and the people amongst whom they have lived. There is no reason to suppose that the intelligence of the original Jews who lived in Palestine was any different from that of the other Semitic peoples of the Near East. The high intelligence of the Ashkenazim must have evolved as a result of their different experiences after the diaspora. Three principal theories have been advanced to explain how this has come about. These are the Eugenic, Persecution, and the Discrimination Hypotheses.

The Eugenic Hypothesis

The *Eugenic Hypothesis* states that the Ashkenazim have

practiced eugenics and it is this that has been responsible for raising their intelligence. Eugenics consists of customs and practices that promote a greater number of surviving children of the more intelligent (and of those with other desirable qualities such as good health and sound moral character), as compared with the less intelligent. The greater reproductive success of the more intelligent can occur in two ways. First, by differential birth rates such that the more intelligent have greater numbers of children than the less intelligent. Second, by the children of the more intelligent surviving to adulthood in greater numbers than the children of the less intelligent. If either of these two conditions is present, the more intelligent will have more children surviving to adulthood than the less intelligent, and are more likely to reproduce and transmit more copies of their genes for high intelligence to the next generation. The effect of this is to increase the proportion of genes for high intelligence in the population.

A good case for the eugenic hypothesis as an explanation for the high Jewish IQ has been made by MacDonald (1994, pp.184-8). He notes, first, that Judaism has had a long tradition of according high status to scholars and to wealth, and that the wealthy have been enjoined to marry their daughters to scholars. Thus, the Tannaim advises that “under all circumstances a man should sell everything he possesses in order to marry the daughter of a scholar, as well as to give his daughter to a scholar in marriage...never should he marry his daughter to an illiterate man” (MacDonald 1994, p.184). These “eugenic marriages” brought wealth and intelligence together and normally produced relatively large numbers of surviving children because in historical times the wealthy had greater numbers of surviving children than the poor, largely because they were able to provide them with better nutrition and health care. The effect of this would have been that the more intelligent would have had more surviving children than the less intelligent, and hence the intelligence of the Jews would increase over the generations.

Second, Jews also practiced negative eugenics (the

limitation of the reproduction of the less intelligent) in so far as at some times they restricted the marriages of the poor. This occurred when the people amongst whom the Jews lived placed a limit on the numbers of Jewish marriages allowed each year, which was widespread throughout Austria and Germany in the eighteenth century. A third factor mentioned by MacDonald (1994, p.184) is that poor (and less intelligent) Jews were more likely to defect from Judaism, thereby raising the average level of intelligence of the remaining community.

A fourth eugenic factor may have been the requirement of Christian clergy to be celibate for much of the last two thousand years. It is a reasonable assumption that the Christian clergy had above average IQs, and especially higher verbal IQs, since the church was the principal avenue of advancement for intelligent children, through which they were able to acquire positions of considerable power as bishops, abbots and so on. However, clerics were required to be celibate and this obligation (although not always observed, as in the case of Abelard and Heloise, a few of the popes, and a number of more lowly priests) would have reduced the intelligence of the Christian populations because a proportion of the most intelligent were consequently childless in each generation. In contrast, Jewish rabbis were encouraged to marry young and have children, and this would have increased the intelligence of the Jews relative to that of Christians. A fifth factor may have been that the intelligent rabbis were frequently physicians and with their medical knowledge would have been better able to care for the health of their children.

The eugenic hypothesis also seems to provide a persuasive explanation for the high IQ of the Ashkenazim as compared with the non-Jewish peoples amongst whom they lived. The effect of Jewish eugenic customs would only need to be quite small in each generation to explain the Ashkenazim IQ of 110. These eugenic customs appear to have been in place for some 2,000 years during which they would have had to raise the Jewish IQ from 84 (the average IQ of Arabs in the Near East given in Lynn, 2006) to 110;

i.e., 26 IQ points. This works out at an increase of 1.25 IQ points per century and 0.3 IQ points per generation. The impact of eugenic customs in producing IQ gains of this magnitude seems quite plausible.

The eugenic hypothesis also seems to provide a reasonable explanation for the high verbal IQ and more moderate visualization-spatial IQ of the Ashkenazim. The scholars and rabbis to whom wealthy Jews were enjoined to marry their daughters would have had high verbal IQs required to master the Torah and other sacred Jewish texts, but would not have had high visualization-spatial IQs. Hence the genes for high verbal intelligence would have been increased but not the genes for high visualization-spatial intelligence, bringing about the high verbal-lower visualization-spatial IQ profile typical of Ashkenazim. It is known that there are some genes that determine general intelligence and other genes that determine verbal ability and visualization-spatial ability (e.g. Kovas, Harlaar, Petrill and Plomin, 2005). It would have been the genes that determine general intelligence and verbal ability that would have been especially enhanced by Jewish eugenic customs.

However, the eugenic hypothesis may have difficulty in explaining why the Ashkenazim have a substantially higher average IQ than the Mizrahim and the Ethiopian Jews. Possibly these eugenic customs were less complied with among the Mizrahim and the Ethiopian Jews, but it has not proved possible to find any evidence for this. MacDonald (1994, p.198) offers an explanation for the low IQ of the Mizrahim in Yemen. He suggests that Yemen was so poor and rural that there were too few Mizrahim for them to form a class of money-lenders and tax farmers, and that they suffered intense persecution “generally considered to have been the most extreme in the Muslim world”. He does not mention less adherence to eugenic customs among this group or among the much more numerous and wealthy Jewish community of Baghdad who in the years from 762 provided court doctors and officials and who in 1170 numbered about 40,000. It may be that for some reason eugenic customs were less practiced among the Mizrahim, or

that some other explanation is required such as that they were less persecuted and discriminated against than the Ashkenazim. The Ethiopian Jews have just the same IQ as other Negroid peoples. Perhaps the explanation for this is that they did not practice the eugenic customs of the other Jews.

The Persecution Hypothesis

The *Persecution Hypothesis* states that gentiles have persecuted Jews for some 2,000 years, that in these persecutions Jews were frequently killed, and that it can be surmised that the more intelligent Jews have been able to avoid being killed because they have foreseen the danger in good time and moved to a more friendly country, or gone into hiding, or paid ransom to their persecutors to spare them. It has been the less intelligent Jews who have been killed. This theory has been discussed by MacDonald (1994, p.192), although he prefers to call it the *Gentile Selection Hypothesis*. In support of this theory, there is no doubt that Jews have frequently been persecuted and killed by gentiles in Europe in large numbers and on numerous occasions: see in particular Costello & Kagan (1994) and Barnaav (1998). In 1012 the Jews were expelled from Mainz and those who remained were burned at the stake. Similar expulsions and retribution for those who failed to leave took place in Bavaria and Austria in 1298, when it is estimated that approximately 100,000 Jews were killed. In the fourteenth century, Jews were expelled from France (1394). In the first half of the fifteenth century Jews were expelled from Austria (1422), Cologne (1426) and Brandenburg (1446). In the second half of the fifteenth century Jews were expelled from Spain (1492), Naples (1493) and Portugal (1496). In the sixteenth century Jews were expelled from most of Italy, beginning with their expulsion from the Kingdom of Naples in 1510. Pope Pius V expelled the Jews from all the Papal states except Rome in 1569. In 1571 Jews were expelled from Tuscany except for the ghettos in Florence and Sienna, and in 1597 the Jews were expelled from Milan. The persecution of the Jews in Russia began in 1881 following the assassination of the Tsar. One of the assassins was identified

as a Jewish woman and the assassination was widely believed to be a Jewish conspiracy. A final major persecution of the Ashkenazi Jews occurred in the 1930s in Germany and early 1940s in German occupied Europe.

While it is difficult to show conclusively that the more intelligent Jews have tended to survive these persecutions, it is a reasonable conjecture that this is likely to have been the case. There are occasional instances where this has been recorded. For instance, Weinryb (1972) states that in the Cossacks' attacks on the Jews in Russia in 1648 it was the poor Jews, who were unable to flee or to pay ransom, who were disproportionately killed. The hypothesis posits that the rich Jews who survived were more intelligent than the poor Jews who were killed, and this is a reasonable hypothesis considering the association between intelligence and earnings that has frequently been found (for a review, see Lynn and Vanhanen, 2006). In recent times, there is a fair amount of evidence that during World War Two there was a tendency for the more intelligent Jews to avoid being sent to the concentration camps. The Germans allowed Jews to emigrate in the 1930s on payment of large sums and these could have been paid more easily by the more intelligent. Blom, Fuks-Mansfeld and Schoffer (1996) note that during the Nazi occupation of the Netherlands in World War Two about 25,000 Jews escaped deportation to the concentration camps and that these were largely middle class. A number of countries such as Turkey, Britain and the United States accepted only or mainly qualified professionals and academics as refugees. Other Jews escaped the concentration camps by getting to neutral Spain, Switzerland and Turkey, by going into hiding, or by forging gentile identity papers, and all these require a modicum of intelligence.

The *Persecution Hypothesis* provides a reasonable explanation for why the Ashkenazi Jews have acquired a high IQ while the Mizrahim and the Ethiopian Jews have not acquired such high IQs. The explanation is that the Mizrahim and the Ethiopian Jews were not persecuted as much as the Ashkenazim.

The Mizrahim were fairly well treated in the Near East and North Africa. As Bertrand Russell (1945, p. 323) noted: “Christians persecuted Jews, especially at times of religious excitement; the Crusades were associated with appalling pogroms. In Mohammedan countries, on the contrary, Jews were not in any way ill-treated”. Similarly, in contrast to their frequent persecutions in Europe “the Jews found it easier to live and prosper in Islamic territories (Johnson, 2004, pp.176, 181). Nevertheless, over the course of 2,000 years, the Mizrahim did suffer some persecution, sufficient to raise their IQs somewhat higher than those of the non-Jewish peoples among whom they lived. It can be posited further that the Ethiopian Jews were not persecuted, so their IQ remained the same as that of other Negroid peoples.

The *Persecution Hypothesis* can also explain why the Ashkenazi Jews have acquired their pattern of high verbal, mathematical and reasoning abilities but weaker visualisation and spatial abilities. Those with high verbal IQs were the ones that acquired status and wealth, and they would have been able to use these to avoid being killed during pogroms because they would have had the money and connections enabling them to escape.

The Discrimination Hypothesis

The *Discrimination Hypothesis* states that Europeans discriminated against Jews by limiting the kinds of occupation they were permitted to pursue. The theory has been set out by Cochran, Hardy and Harpending (2006). It states that Jews were generally not allowed to own land and work as farmers, or to work in the craft trades such as stone masons, blacksmiths, carpenters, thatchers, wheelwrights, cartwrights, coopers (barrel makers), fletchers (arrow makers), etc. The discrimination against Jews largely began around the thirteenth century. Until then “they suffered from no explicit economic restrictions; they were farmers, laborers, craftsmen, merchants, artisans, peddlers; if any occupation was characteristic of them it was wholesale trade and certain branches of the textile industry” (Roth, 1946, p.103).

From the thirteenth century, Jews were excluded from

the craft trades that were controlled by the guilds. The guilds were religious as well as trade associations and excluded Jews on religious grounds and as unwelcome competitors. Jews were allowed to be money-lenders, to open banks and charge interest on loans, which was prohibited to Christians, to work as tax collectors and import-export merchants, and to deal in second hand goods as peddlers. Those who were money-lenders, tax collectors and import-export merchants made a reasonable living and were able to rear children who survived to adulthood. Those who worked as peddlers would have found it hard to make much of a living and thus have been less able to rear children. Throughout historical times and up to around 1880, people had high birth rates and high infant and child mortality rates, and in general the more affluent and more intelligent had more children who survived to adulthood, but this selection differential would likely have been greater for Jews.

Although difficult to prove, the *Discrimination Hypothesis* is plausible. There is no doubt that Jews have frequently been discriminated against in Europe for some 2,000 years. Even a small tendency for the more intelligent Jews to overcome this discrimination would be sufficient to increase the average Ashkenazim IQ to the level of around 110 that it has become in the twentieth century. The *Discrimination Hypothesis* also provides a plausible explanation for why the Ashkenazi Jews have acquired their pattern of high verbal, mathematical and reasoning abilities but weaker visualisation and spatial abilities. To succeed as money-lenders, tax farmers and import-export merchants, Jews would have needed strong verbal, mathematical and reasoning abilities to assess the risks and make the calculations. The greater survival of Jews who had these abilities would have increased the genes responsible for them. These Jews would not have needed strong visualisation and spatial abilities. By contrast, the many non-Jews who worked as craftsmen would have needed strong visualisation and spatial abilities. Hence there would have been selection pressure for strong visualisation and spatial abilities in non-Jewish craftsmen but not in Jews, bringing about the

distinctive cognitive profiles of the two peoples.

Cochran & Harpending (2009) are advocates of the *Discrimination Hypothesis* as the solution to the problem of the higher intelligence of the Ashkenazim and the lower intelligence of the Mizrahim. They propose the following explanation: “The Jews of Islam, although reproductively isolated, seem not to have had the necessary concentration of occupations with high IQ elasticity. Some had such jobs in some of the Arab world, in some periods, but it seems it was never the case that *most* did. In part this was because other minority groups competed successfully for these jobs - Greek Christians, Armenians, etc., in part because Moslems, at least some of the time, took many of those jobs themselves, valuing non-warrior occupations more highly than did medieval Christians. In fact, to a large extent, and especially during the last six or seven hundred years of relative Moslem decline, the Jews of Islam tended to have ‘dirty’ jobs. These included such tasks as cleaning cesspools and drying the contents for use as fuel - a common Jewish occupation in Morocco, Yemen, Iraq, Iran, and Central Asia. Jews were also found as tanners, butchers, hangmen, and other disagreeable or despised occupations. Such jobs must have had low IQ elasticity; brilliant tanners and hangmen almost certainly did not become rich. The suggested selective process explains the pattern of mental abilities in Ashkenazi Jews - high verbal and mathematical ability but relatively low spatio-visual ability. Verbal and mathematical talent helped medieval businessmen succeed, while spatio-visual abilities were irrelevant” (Cochran, Hardy & Harpending, 2006).

The *Discrimination Hypothesis* provides a plausible explanation for why the Ashkenazi Jews have acquired a high IQ while the Mizrahim and the Ethiopian Jews have not acquired such high IQs. The Mizrahim and the Ethiopian Jews were not discriminated against so much as the Ashkenazim. The Mizrahim were comparatively well treated in the Near East and North Africa, although they did suffer some discrimination, sufficient to raise their IQs somewhat above those of the non-Jews among whom they lived. The Ethiopian Jews were not persecuted, and their IQ remained

the same as that of the surrounding Ethiopian peoples. The Eugenic, Persecution, and the Discrimination Hypotheses all provide plausible explanations for the high Ashkenazi IQ, and it may well be that all three have contributed to this remarkable phenomenon.

References

- Baker, J.R.
1974 *Race*. Oxford: Oxford University Press.
- Barnaav, E.
1998 *The Historical Atlas of the Jewish People*. London: Kuperard.
- Becker, G.
1981 *Human Capital*. Chicago: University of Chicago Press.
- Blom, J.C. Fuks-Mansfeld, R.G. & Schoffer, I.
1996 *The History of the Jews in the Netherlands*. Oxford: Littman.
- Burnstein, P.
2007 Jewish educational and economic success in the United States: a search for explanations. *Sociological Perspectives* 50: 209–228.
- Castello, E.R. & Kagan, U.M.
1994 *The Jews and Europe*. Edison, NJ: Chartwell.
- Chamberlain, H. S.
1912 *Foundations of the Nineteenth Century*. New York: John Lane.
- Cochran, G. & Harpending, H.
2009 *The 10,000 Year Explosion*. New York: Basic Books.
- Cochran, G., Hardy, J. & Harpending, H.
2006 The natural history of Ashkenazi intelligence. *Journal of Biosocial Science*, 38, 659-693.
- Cohen, I.L.
1927 *The Intelligence of Jews as compared with non-Jews*. Columbus: Ohio University Press.
- Cohn, S.J., Cohn, C.M.G. & Jensen, A.R.
1988 Myopia and intelligence: a pleiotropic relationship? *Human Genetics* 80: 53-58.
- Englander, M.
1902 *Die auffallend häufigen Krankheitserscheinungen der jüdischen Rasse*. Vienna: .L.Pollak.
- Eysenck, H.J.
1995 *Genius* Cambridge University Press, Cambridge.
- Frydman, M. & Lynn, R.
1992 The general intelligence and spatial abilities of gifted young Belgian chess players. *British Journal of Psychology* 35: 233.
- Godley, A.
2004 *The Emergence of Ethnic Entrepreneurship*. Princeton, NJ: Princeton University Press.

- Held, O.C.
1941 Comparative study of the performance of Jewish and gentile college students on the American Council Psychological Examination. *Journal of Social Psychology* 13: 407-411.
- Herz, F.M. & Rozen, E.J.
1982 Jewish families. In McGoldrick, J.K.Pearce & J.Giordano (Eds) *Ethnicity and Family Therapy*. New York: Guilford Press
- Hollinger, D.A.
2002 Why are Jews pre-eminent in science and scholarship? The Veblen thesis reconsidered. *Adelph* 2: 145-162.
- Jencks, C.
1969 Intelligence and race: what color is IQ? *New Republic* 10-11: 25-29.
- Kovas, Y., Harlaar, N., Petrill, S.A. & Plomin, R.
2005 Generalist genes and mathematics in 7-year-old twins. *Intelligence* 33: 473-489.
- Lenski, G.
1963 *The Religious Factor*. New York: Simon & Schuster.
- Levinson, B.M.
1959 A comparison of the performance of bilingual and monolingual native born Jewish preschool children of traditional parentage on four intelligence tests. *Journal of Clinical Psychology* 15: 74-76.
- Levinson, B.M. and Block, Z.
1977 Goodenough-Harris drawings of Jewish children of orthodox background. *Psychological Reports* 41: 155-158.
- Lynn, R.
2006 *Race Differences in Intelligence: An Evolutionary Analysis*. Athens, GA: Washington Summit Books.
- Lynn, R.
2010 *The Chosen People: Jewish IQ and Achievements*. Washington Summit Publishers.
- MacDonald, K.
1994 *A People that Shall Dwell Alone*. Westport, CT: Praeger.
- Majoribanks, K.
1972 Ethnic and environmental influences on mental abilities. *American Journal of Sociology* 78: 323-337.
- Moynihan, D. & Glazer, N.
1970 *Beyond the Melting Pot*. New York: Random House.
- Napier, L.B.
1934 Introduction. In A. Ruppin (Ed) *The Jews in the Modern World*. London: Macmillan.
- Nemeck, O.
1916 Zur psychologie christlicher u judischer schuler. *Beitrage zur Kinderforschung* 128: 1-24.

- Neubauer, A., Grabner, R.H. & Stern, W.
2006 *How much g is needed to play chess successfully?* Proceedings of the 7th Annual Conference of the International Society for Intelligence Research.
- O'Grada, C.
2006 *Dublin Jewish demography a century ago*. Dublin: UCD School of Economics.
- Pearson, K. & Moule, M.
1927 The problem of alien immigration into Britain, illustrated by an examination of Russian and Polish Jewish children. *Annals of Eugenics* 2: 111-244.
- Plomin, R.
1994 *Genetics and experience: The interplay between nature and nurture*. Thousand Oaks, CA: Sage.
- Post, R.H.
1962 Population differences in visual acuity. *Social Biology* 9: 189-212.
- Rowe, D.C.
1994 *The Limits of Family Influence*. New York: Guilford Press.
- Rubinstein, W.D.
2004 Jews in grandmaster chess. *Jewish Journal of Sociology* 46: 35-44.
- Russell, B.
1945 *A History of Western Philosophy*. New York: Simon & Schuster.
- Rutland, S. D.
1988 *Edge of the Diaspora: Two Centuries of Jewish Settlement in Australia*. Sydney: William Collins.
- Shuey, A.M.
1942 Differences in performance of Jewish and non-Jewish students on the American Council Psychological Examination. *Journal of Social Psychology* 15: 221-243.
- Slezkine, Y.
2004 *The Jewish Century*. Princeton, NJ: Princeton University Press.
- Sombart, W.
1919 *Die Deutsche Volkswirtschaft im neunzehnten Jahrhundert*. Berlin: Springer.
- Sorsby, A.
1951 *Genetics in Ophthalmology*. London: Butterworth.
- Steinberg, S.
1974 *The Academic Melting Pot: Catholics and Jews in American Higher Education*. New York: McGraw-Hill.
- Steinberg, S.
1981 *The Ethnic Myth: Race, Ethnicity and Class in America*. Boston: Beacon Press.
- Storfer, M.D.
1990 *Intelligence and Giftedness*. Jossey-Bass, San Francisco.
- Sourasky, A.
1928 Race, sex and environment in the development of myopia. *British Journal of Ophthalmology* 12: 17-212.

Thernstrom, A. & Thernstrom, S.

2003 *No Excuses*. New York; Simon & Schuster.

Veblen, T.

1919 The intellectual pre-eminence of the Jews in Modern Europe.
Political Science Quarterly 34: 33-42.

Weinryb, B.D.

1972 *The Jews of Poland from 1100 to 1800*. Philadelphia: Jewish
Publication Society of America.