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The Eugenic and Dysgenic Effects of War

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Wars appear to have had a eugenic effect during the evolution of the hominids because those with greater intelligence, stronger moral character and better health generally killed and replaced those weaker in these respects. It has frequently been argued that this relationship has reversed in modern times because those with greater intelligence, stronger character and better health were disproportionately sent to fight in wars. In consequence, they were most likely to be killed. However, the evidence for this is inconclusive. The present paper surveys the available evidence.
Key Words: War; Eugenics; Dysgenics; Intelligence

It has been argued that wars have had both eugenic and dysgenic effects. Eugenic effects are defined, following Galton (1883), as those that increase the genetic predisposition for desirable qualities such as intelligence, health and moral character in the population. Galton conceptualized health as including not only the absence of disease but also presence of physical and mental vigor; and he conceptualized moral character as a syndrome of personality qualities comprising a strong sense of morality and social obligation, integrity, trustworthiness and "zeal" for sustained work. The term *dysgenics* was coined by Leonard Darwin (1914), the son of Charles Darwin, as the opposite of eugenics to designate behaviors and social phenomena that reduce the genetic predisposition for intelligence, health and moral character in the population.

1. The Eugenic Effects of War in the Evolution of Hominids

The case for the eugenic effect of war is that during the evolution of the hominids men as individuals and as members of groups with higher intelligence, health and moral character, including within-group altruism and co-operation, frequently defeated, killed and replaced those less well endowed with these

qualities. Moral character, in this view, includes within-group altruism and cooperation. The group selection eugenic effect of war was first proposed by Charles Darwin in *The Descent of Man*, in which he wrote: "When two tribes of primeval men, living in the same country, came into competition, the tribe including the greater number of courageous, sympathetic and faithful members would succeed better and conquer the others"; thus "natural selection, arising from competition of tribe with tribe … would have sufficed to raise man to his high position" (Darwin 1871, p. 199).

The eugenic effect of war between tribes was also proposed by Jakov Novicow (1910), a professor at the University of Odessa, who wrote: "In war between tribes, the victors killed the conquered to the last man, then married the women. To a certain degree, the result was favourable to the race, but on the condition that no-one among the conquerors was killed". This contention was supported by Muller-Lyer (1930, p. 120), who reported that when the Caribs (the original inhabitants of the Caribbean) defeated neighboring groups, "they used to kill the men of conquered peoples and take the women for wives".

The case that war had a eugenic effect among tribes of *Homo sapiens* was extended by Alexander and Tinkle (1968), who appear to be the first to propose that warfare had a eugenic effect on *Homo habilis* approximately 2.5 million years ago. They argued that groups of *Homo habilis* engaged in warfare to secure better territory, that these conflicts continued in evolving hominids, and were the principal evolutionary pressure responsible for the increase in brain size and intelligence in the evolution of *Homo habilis* into *Homo sapiens.* They proposed that selection favored the survival of groups that had larger brains that enabled them to make improved weapons and devise better hunting skills and that these groups were also selected for group co-operation and altruism.

Bigelow (1969) presented similar arguments that warfare would have selected for the evolution of greater intelligence and altruism. He argued that the victorious tribes of men would have killed the vanquished men and taken over their females. The leaders of the victorious group would likely have had greater intelligence and intra-group altruism than the rest of the group and taken the best of the losing females, and this would have further enhanced the evolution of greater intelligence and intra-group altruism in groups that were successful in wars.

Wilson (1975, p. 573) endorsed the theory of group selection by warfare for the evolution of altruism and in his later book wrote that "War has been endemic to every form of human society, from hunter-gatherer bands to industrial states" and that war evolved "by selective retention of traits that increase the fitness of human beings" (Wilson 1978, pp. 101, 115).

The hypothesis that warfare was responsible for the evolution of greater brain size and intelligence in hominids was further elaborated by Pitt (1978), who argued that the improved tools and weapons of *Homo habilis* gave them greater power over predators and new food resources. This resulted in an increase in population sizes, producing greater competition and warfare between groups for limited resources. He noted that warfare is very unusual and, apart from humans, only occurs in the eusocial insects of ants and termites. He wrote:

> "Warfare implies killing mature con-specifics, a great rarity in biology. From a genetic viewpoint, it would seem that a species that develops this adaptation is, at best, severely handicapped. For the behavior to survive, it must offer some advantage to the individual. There must be a warrior who is willing, for whatever reason, to attempt to kill a con-specific. If the warrior is adequately armed to have some prospect of killing a con-specific opponent, then we must assume the opponent to be equally armed. The warrior therefore faces substantial risk of serious injury and impairment of his reproductive potential. This I believe is the main deterrent to killing a mature con-specific. Whether it be a territorial, dominance or mating battle, a contest is usually not elevated to the level where serious wounds are inflicted, because the aggressor is reasonably likely to be just as severely wounded himself. Although from an individual viewpoint, killing con-specifics would be an advantageous adaptation, because it would reduce competition and increase the availability of food and mates, in practice, the risk of injury or death and the ensuing loss of reproductive potential is so great as to disfavor such behavior. In order to adopt warfare as a normal, rather than aberrant behavior in certain circumstances, a group must overcome the deterrent the individual faces, namely the risk of serious damage to his ability to reproduce and raise his offspring... If we turn to man, or hominids, a solution to the deterrent problems follows easily: it lies in the ancient concept of the noble warrior who is conditioned to believe that his duty lies in being willing to sacrifice himself for the greater good of his group (tribe, nation, etc.). If the group includes his close relatives and there is a real threat to their survival, then this attitude can be given some logical support in traditional biological terms."

The argument that there has been warfare between groups of hominids from the time of *Homo habilis* has been supported by Liddle, Shackleford and Weekes-Shackleford (2012, pp. 3, 10): "The archaeological evidence for violence between early humans is indisputable" and "Among hunter-gatherer tribes, an average of 13% (based on archaeological evidence) and 15% (based on ethnographic data)

of men die due to warfare". Further evidence for the prevalence of war among hunter-gatherers has been given by Pinker (2002), who cites studies reporting that 90 percent of these are known to engage in warfare.

Meisenberg (2007, p. 195) has also suggested that war between hominids was sometimes eugenic. He writes that "perhaps we are as bright as we are because those with slightly lower IQs ended up in the cooking pots of those with slightly higher IQs" and "according to an old theory, we are as co-operative as we are because tribes of self-interested anti-socials were exterminated by tribes of warlike co-operators."

While the eugenic effect of war has generally been attributed to group selection, Meisenberg has also proposed that war has an individual selection eugenic effect because men who are successful in war are attractive to women: "Valiant warriors are respected by other men, and women love those men who are respected by other men … the decorated soldier makes an attractive mate" (p. 195), as a result of which they tend to have more children than the less valiant. In support of this thesis he cites the work of Chagnon (1988) in his study of the frequent warfare among the Yanomamö Indian tribes in the Amazon Basin that reported that 44 percent of the men had killed other men in these conflicts and that these had more sexual partners and offspring than those who had not killed. The effect of this would be an increase in the genes associated with success in war and these would likely have included genes favoring intelligence, health, physical prowess and altruism. The contention that soldiers are more attractive to women has been confirmed in the present-day United States by van Vugt (2012, p. 294): "We have recently found that military men have greater sex appeal, especially if they have shown bravery in combat."

The existence of inter-group violence and killing that can be considered a form of proto-warfare has been reported in a number of studies of chimpanzees (e.g., Durrant, 2011; Wrangham & Glowacki, 2012). Successful troops have gained the eugenic advantages of the expansion of territory (Durrant, 2011) and the abduction of females (Boesch et al., 2008). This has been described by Herbert (2015, p. 135): "Chimpanzees live in groups that regularly interact aggressively with other groups to protect or obtain territory, food or females... an appreciable number of male chimpanzees are killed or seriously wounded in boundary fights. Chimpanzee war has been offered as a model for human hunter-gatherer war and thus, by implication, for the evolution of modern warfare." The existence of proto-warfare in chimpanzees suggests that the human capacity for collective violence can be traced to the common ancestor of humans and chimpanzees and was present in the Australopithecines who appeared around four million years ago and well before the appearance of *Homo habilis*.

The most recent large scale eugenic effect of war occurred with the European colonization of the Americas, Australia and New Zealand from the sixteenth century onwards, in which Europeans largely replaced the indigenous peoples. Europeans have a higher average IQ (100) than the Native American Indians (86), Australian Aborigines (62) (Lynn, 2015), and New Zealand Maori (90) (Lynn, 2006). The effect of this European colonization was that the percentage of Europeans in the world population increased considerably (Cameron, 1993) and, presumably, the "genotypic" intelligence of the world population also increased.

2. The Eugenic Effects of Modern War

The case that modern wars have had eugenic effects has been made by a number of scholars. The German historian Otto Seeck (1895) advanced arguments summarized by Jordan (1915, p. 168) that "In war more weak than strong are killed and consequently, the average physical and mental strength of the nation is thereby enhanced." To support this contention, Seeck cited a number of instances where "a century or so after a calamity the nation bears its finest intellectual fruit", including Spain after the civil wars in the 16th century, Germany after the Thirty Years War in the 17th century, England after the Wars of the Roses in the late middle ages and Northern Italy after the civil wars at the end of the middle ages "which left southern Italy untouched, and yet it was northern Italy that gave the Renaissance to Italy, while the southern districts have hardly done anything at all for the glory of the nation", although he notes further that "the people of Naples and Sicily were of different and much less virile stock than the Florentines and Lombards".

The case that modern war has been eugenic was later advanced by Friedrich von Bernhardi (1911), a German army general:

> "War is a biological necessity of the first importance, a regulative element in the life of mankind which cannot be dispensed with, since without it an unhealthy development will follow, which excludes every advancement of the race, and therefore all real civilization. In war, the nation will conquer which can throw into the scale the greatest physical, mental, moral, material and political power, and is therefore best able to defend itself. War will furnish such a nation with favourable conditions, enlarged possibilities of expansion and widened influence, and thus promote the progress of mankind. Without war, inferior or decaying races would easily choke the growth of healthy budding elements, and a universal decadence would follow. Strong, healthy and flourishing nations increase in numbers. They

> require a continual expansion of their frontiers, they require new territory for the accommodation of their surplus population. Since almost every part of the globe is inhabited, new territory must be obtained at the cost of its possessors, that is to say, by conquest."

3. The Dysgenic Effects of War

It has also been frequently contended that modern wars have had dysgenic effects. It may be that the first to advance this thesis was the Spanish Augustinian friar, La Puente, who wrote in 1630 of "the cost of armadas and the sacrifices of soldiers sent to the Philippines", as a result of which "Spain may give up so many that she will be left desolate and constrained to bring up strangers' children instead of her own" (Jordan 1915, p. 161). Havelock Ellis (1908) also contended that Spain had suffered from the dysgenic effect of warfare:

> "War suffices to deplete the nation of its most vigorous stocks. The warlike nation of today … is the decadent nation of tomorrow. The martial ardour and success of the Spaniards lasted more than a thousand years. It was only at very great cost that the Romans subdued the Iberians, and down to the sixteenth century the Spaniards were great soldiers. The struggle in the Netherlands wasted their energies, the Spanish infantry that had been counted the finest in Europe went down before the French, and the military splendour of Spain vanished." (Jordan 1915, p. 161-2)

Charles Darwin (1871, p. 197) also contended that war has had dysgenic effects in modern societies:

> "In every country in which a standing army is kept up, the fairest young men are taken to the conscription camp or are enlisted. They are thus exposed to early death during war or are often tempted into vice, and are prevented from marrying during the prime of life. On the other hand, the shorter and feebler men with poor constitutions are often left at home and consequently have a much better chance of marrying and propagating their kind."

Several Americans have asserted that wars have had a dysgenic impact. This was contended by Benjamin Franklin, the scientist and founder of the University of Pennsylvania, who in 1783 suggested that war "diminished not only the population, but even the breed … for the army in every country is in fact the flower of the nation — all the most vigorous, stout and well-made men in a kingdom are to be found in the army. These men in general never marry" (Jordan 1915, p. 48). This view was endorsed in 1842 by James Brown Scott who wrote

that "History is but a commentary on the statement of Dr Franklin, for standing armies and their destruction in battle have sacrificed the fit to the unfit and ruined the nation on the battlefield… war deprives the nation of the most fittest" (Jordan 1915, p. 48).

In the nineteenth century several writers in France contended that war has a dysgenic effect. Villermé (1829) presented statistics showing that the Napoleonic wars had the effect of reducing the stature of French men from 1642 mm to 1544 mm, and attributed this reduction to the death of the fittest and tallest in the wars. Further statistics showing the reductions in height in French conscripts were published by de Chateauneuf (1833). He noted that the numbers of young men exempted from military service on the grounds of undersize or infirmity increased in the early nineteenth century, and from this he concluded that conscription of the more fit into the army and the death of significant numbers of these had impaired the genetic quality of the population. This contention was endorsed by Francis Galton who wrote that "the Napoleonic wars reduced the stature of Frenchmen to a notable degree" (Glad 2007, p. 207). Evidently, these early writers assumed that French soldiers were taller than non-combatants, in which case they also may have been more intelligent because stature and intelligence are associated with correlations of around 0.25 (Gale, 2005; Deary, Whalley & Starr 2009, p. 24).

Another French writer who maintained that war has dysgenic effects was Vacher de la Pouge (1896). He argued that war has had two dysgenic effects. First, it "diminishes the chances of reproduction of the chosen, at the same time assuring to the rejected an ample progeny. And second, infection with venereal diseases is widespread in conscripted armies, and this causes sterility and death".

In Russia the dysgenic effects of war were discussed in the early twentieth century by Jakov Novicow (1910) who, while arguing that war between tribes may have had eugenic effects (as noted above), also contended that wars between modern nations have had dysgenic effects:

> "War produces a selection, a choice of the worst. The young men strongest and most healthy go to war. Among its combatants, the most valiant take the lead. In consequence, the more perfect the individual, the greater his chance to be killed. In most battles, it is the best that fall. On the other hand, the feeble and sickly elements reproduce themselves while the flower of the nations is condemned to celibacy or to relations with prostitutes, leading so often, alas, to the most fatal results... Hence, after any battle, the number of fine men who might have had wives was always reduced. Here war produces a reversal of selection. And the

> pretended benefit of war, even in savagery, disappears wholly with the advent of civilization."

The many casualties in World War One gave rise to many assertions of the dysgenic effects of war. In Britain, Leonard Darwin, the president of the Eugenics Education Society of London, wrote in the first month of the war that attempts to justify the war as beneficial and consistent with Social Darwinism were wrong, and that the war did not promote "survival of the fittest". He asked, "Are the fittest now surviving? What section of our nation is more "fit" than the noble-minded, courageous, and healthy men who are now volunteering by thousands to go to war, where so many must die? I say unhesitatingly that war is dysgenic" (Darwin, 1914a). In an article in the *Eugenics Review*, Leonard Darwin stated that "Under modern conditions of mechanics and mobility, war is almost entirely dysgenic" and lamented that "those killed will not be average of the race, but the best type of the race" (Darwin, 1914b).

Another who contended that World War One was having dysgenic effects was Caleb Saleeby (1915): "The life which war demands is always the strongest and the fittest, the healthiest and the best … war involves 'reversed selection' in which the best are chosen to be killed, and the worst are preserved to become the fathers of the future".

In 1917, William Inge, the dean of St. Paul's Cathedral in London, wrote "Whatever the end of the war, Europe is ruined for my lifetime and longer; nearly one-fifth of the upper and middle classes of military age — the public school and university men from whom the officers are chosen, are dead" (Inge, 1949).

The same view was taken by Cattell (1937, p. 79): "There is little doubt that modern war is highly dysgenic, doing damage to the breed that is often irreparable under ordinary conditions … the bitter losses of the last war undermined the genetic constitution of the race." The same position was adopted by Ellis (2009, p. 58), who wrote of "the terrible damage done to the West by the two World Wars; the effects have been profound and far reaching — dysgenic, cultural intellectual and economic".

Similar views were taken in the United States. Early in World War One, David Starr Jordan published a book length treatment of the dysgenic effect of war in his *War and the Breed: The Relation of War to the Downfall of Nations* (1915). He began by asserting that "It is apparent that armies demand men above the average in physical efficiency. It is plain that the most energetic and intelligent among these make the best soldiers. It is recognized that those who fight best suffer the most in action, while the demands of battle cut off men in the prime of life from normal parenthood. This leaves the weaker elements to be fathers of the next generation … war promotes the waste of the fittest." (pp. 2, 35) Jordan gave

some figures for the numbers and percentages of men killed and wounded in 22 major battles between 1704 (Blenheim) and 1915 (the Somme), with averages of around 25 per cent. He argued that the American Civil War had similar dysgenic effects: "The flower of the people went into the war and of these a large part (20 to 40 per cent) died." (p. 195) "Of the students at the University of North Carolina, 57 per cent enlisted in the Confederate army, and 34 per cent of these fell in service." (p. 198). He wrote of World War One that "The number of losses rises high into the millions. All of these individuals had been selected for vigor and strength. The various armies engaged include the great body of the university men, athletes and skilled laborers… the future will show that war selection points downwards" (p. 99).

Jordan (1915, p. 90) noted that some had attempted to justify war as having eugenic effects as part of "the survival of the fittest" and hence as consistent with Social Darwinism, the application of Darwinism to competition between human societies, nations, races and institutions. Jordan wrote that these people have argued that "war is lauded as necessary to wipe out the meanest of his creatures, in small, weak, backward or peace-loving nations". But, he asserted, "this doctrine has no legitimate connection with Darwinism."

The many casualties in World War One prompted a number of other Americans to assert that war has a dysgenic effect. After four months of the war, Vernon Kellogg (1914) wrote that "War to the biologist seems, above all, stupid. It is racially dangerous. It is not only not natural selection, but its results are an unnatural reversed selection, giving no advantage to the conqueror, but many and terrible disadvantages to the victor as well as to the loser." He noted that even in peace time soldiers have higher death rates. Because of disease, "in the middle of the last century the mortality among the armies on peace footing in France, Prussia and England was almost exactly 50 per cent greater than among the civil population. In the last war of our enlightened country (the USA), the deaths from disease in camp were eight to one from the incidents in battle." He asserted that venereal diseases have been particularly virulent among soldiers:

> "…it is the cause of more hospital admissions than any other disease or group of diseases. It caused 31.8 per cent of the total inefficiency in the British army in 1910. The admissions to the hospital for venereal disease in the British army in India reached in 1895 as terrible a figure as 537 per 1000 men. Nor is the British army by any means the greatest sufferer from the scourge. The army of the United States has twice as many hospital admissions from the same cause. Russia has about the same as Great Britain, Austria and France less, and Germany least of all. It is obvious that venereal disease finds in armies a veritable breeding ground. That

> such disease is highly dysgenic, i.e. race deteriorating in influence, is indisputable … the most economical and most positive factor in human progress is good breeding. Race deterioration comes chiefly from its opposite, bad breeding. Militarism encourages bad breeding."

The same argument was advanced in World War One by G. Stanley Hall, President of Clark University: "Seven to ten millions of the soldiers now in the war, or training for it... are the most able bodied and intelligent potential fathers. Statistics can tell us approximately how many children would, on average, have been born of these men, had they stayed at home… thus the crop of the best babies, which is the most precious of all assets for both national and cultural prosperity, and on which national greatness depends more than on anything else, is greatly reduced" (Jordan 1915, p. 58).

Another American who contended that World War One had dysgenic effects was John Glad (2006, p. 30): "War as a destructive mechanism of natural selection became a frequently discussed topic when "the flower" of Europe's youth marched off to die *en masse* in the trenches of World War One."

In France, the dysgenic effects of war were discussed by Charles Richet, Professor of Physiology at the University of Paris:

> "In war, among men, natural selection is reversed, and conduces to the impoverishing of the race. First, the sick and infirm are exempted from military service. Those who are chosen are the halest and the heartiest. From a biological point of view, long wars are exhausting to a nation. All the able bodied population ends by being annihilated on the field of battle, and it is the weak and infirm cowardly who are left to carry on the race. Second, in times of peace, syphilis, alcoholism, and tuberculosis are inevitable results of all military establishments." (Richet, 1919)

The dysgenic effect of war has been reaffirmed by Rindermann (2018, p. 243): "the average and better educated and able men were recruited and therefore had a greater mortality risk, with consequences for the environmental and genetic conditions of the next generation."

4. The Fall of Classical Greece and of the Roman Empire

The German historian Otto Seeck (1895), who argued that war frequently has a eugenic effect because "in war more weak than strong are killed" (as noted in Section 1), also argued that the fall of classical Greece and of the Roman Empire was brought about by the continuous "rooting out" ("Ausrottung") of the best stock through continuous warfare.

Caleb Saleeby (1915) also asserted that the dysgenic effect of war contributed to the collapse of the Roman Empire: "The incessant drain of the right kind of stuff from the population of Rome, led to the production of that degenerate people who only wish for *panem et circenses* (bread and circuses). The recruiting officer rejected the halt and the blind, feeble minded, and the easily fatigued. The future was ruthlessly sacrificed to the present".

Jordan (1915) also contended that the dysgenic effect of war had contributed to the decline of the Roman Empire, whose wars brought about a "reversal of selection; *Vir,* the real man, went forth to battle and foreign invasion; *Homo*, the human being, remained on the farm and in the workshop and begat new generations. Men of good stock were replaced by the sons of slaves and camp-followers, the riff-raff of the army sucked in but could not use (p. 130). Jordan took the same view of the decline of Greece: "By such systematic killing off of men of initiative and brains, the intellectual level of a nation must necessarily be lowered more and more." (1915, p. 135) As these were killed, they were replaced by inferior stock, and this "resulted in the crossing of the Greeks with the barbaric races which flocked into Hellas from every side. The resident aliens, or metics, steadily increased in number as the free Greeks disappeared." (p. 143)

5. Evidence on the Dysgenic Effect of War

These contentions that modern wars have had a dysgenic effect is supported by evidence on the intelligence of combatants and non-combatants. In the two great wars of the twentieth century and in the Vietnam War there was conscription into the military, except for men with low intelligence who were considered unsuitable for military service. In the 1960s there was a draft in the United States in which young men were conscripted into the armed services. These were intelligence tested, and those with an IQ below 80 (approximately 9 percent of the population) were rejected (Jensen 1973, p. 62).

Similarly, in Hungary when there was conscription into the army in 1998, 16.6 percent were found unfit for military service, and the highest percentage of the unfit (43 per cent) came from the lowest of seven socio-economic classes, which had the lowest IQs (Klein et al. 2008, p. 591). The effect of this would have been that some of the more intelligent who served in the military would have died in war, while none of those with low intelligence who were not conscripted would have died.

Evidence suggesting a dysgenic effect of World War One in Britain has been presented by van Emden (2011) who states that approximately 732,000 men were killed, and that 28 per cent of these were married and left 360,000 children compared with the 1.464 million they would have had if they had survived and

had an average of two children.

A second reason for expecting wars to have had a dysgenic impact is that the more intelligent men in the military were frequently required to perform more dangerous duties where there is a greater probability of being killed. In the army, more intelligent men were more likely to be officers where the probability of being killed was greater than among the non-commissioned. This was particularly the case in the infantry where officers had to lead their men in hand to hand fighting and were particularly vulnerable to being killed. In Britain, the death rate of all soldiers serving in World War One was 13 percent, while among junior officers it was 20 percent (Hellen, 2013).

Studies showing that average IQs of officers were higher than those of other ranks are summarized in Table 1. The studies from Britain, Poland and Scotland are from World War Two. The IQ of officers in Scotland is for those killed in the war. The study from the United States given by Sailor (2006) estimates the average IQ of American enlisted soldiers during 1998-2005 at 105, compared to 98 for the national average. The officers had a higher average IQ, estimated at 117. In the 1990s, applicants to join the US armed services were intelligence tested and the military did not accept those with IQs below the 31st percentile, an IQ of 92 (Department of Defense, 1998; Sailor, 2006). These IQs are based on the AFQT which was used by Herrnstein & Murray (1994) in *The Bell Curve*. In a study of the United States military in 1988, officers had larger brain size than enlisted men, and brain size is a correlate of intelligence at approximately .33 (McDaniel, 2005) or .40 (Rushton & Ankney, 2009).

Table 1. *IQs of officers and other ranks.*

Country	IQ: Officers	IQ: Other ranks	Reference
Britain	124 (n=643)	105 (n=15,000)	Wysocki & Cankardas, 1957
Poland	123 (n=651)	103 (n=14,616)	Wysocki & Cankardas, 1957
Scotland	122 (n=33)	97.4 (n=5994)	Corley et al., 2009
United States	117	105	Sailor, 2006

In the air force, pilots and aircrew were selected for intelligence and during warfare had a high probability of being shot down and killed. In World War Two, the British and American aircrews had high mortality of over a hundred and forty thousand in the bombing raids over Germany (Churchill 1952, p. 469). They died at an average age of 22 years when few of them had children.

Two studies have reported that those who were killed in World War Two had higher than average IQs. In the first of these, Whalley & Deary (2001) examined

the lives of 2,792 individuals from Aberdeen born in 1921 and intelligence tested at age 11 years. Those who were alive in 1997 had an IQ of 102.0, and those who had died had an IQ of 97.7, but men with higher IQs had higher mortality during World War Two than those with lower IQs. In a second study, Corley, Craig & Deary (2009) report a Scottish sample of 470 in the army who were killed in World War Two and whose IQ at age 11 was 100.78. The mean IQ of those who served in the army and who survived was 97.42 (n = 5994). Thus those who were killed had an average IQ 3.36 points higher (statistically significant) than those who survived. However, a further group of those who did not serve in the army had an IQ of 100.45 (n = 33,635), higher than the IQ of 97.66 of those who served in the army. The authors suggest that the explanation for this may be that key personnel in war industry and the civil defence services were exempt from military service. This study did not include those who served in the navy or air force, who likely had higher average IQs than those in the army and possibly lower mortality.

These two studies show that those with higher IQs have greater mortality in war and that the impact of war is dysgenic. However, the magnitude of the IQ difference between those who were killed and those who survived is quite small. It is not certain whether the magnitude of this IQ difference was sufficiently great to have had a significant effect on the intelligence of the population.

6. Effect of World Wars One and Two on National IQs

Another approach to the problem of whether the impact of war is dysgenic is to compare the national IQs of countries that have suffered high mortality in warfare with those of countries that have remained at peace. If war has had a significant dysgenic impact, national IQs should be lower in countries that have suffered high mortality in warfare. The most recent calculations of national IQs are given in Lynn & Becker (2019, pp. 173-177). They give the following IQs (estimated for data quality and sample size) for the four major western countries that participated in World Wars One and Two: Austria (97.88), Germany (100.74), France (96.69) and Britain (99.12) and for two countries that did not participate in either of the two world wars: Switzerland (99.24) and Sweden (97.00). These results show virtually no difference between the IQs of the four countries that participated in the two world wars and the two neutral countries and suggest that these wars did not have a measurable dysgenic effect.

Four explanations for the apparent absence of a dysgenic effect of the two world wars can be suggested. First, the numbers of those with above average intelligence who were killed may have been too small to have had a measurable adverse effect on the quality of the gene pool. Second, although infantry officers and pilots were exposed to greater danger and suffered more casualties than

other ranks, it may be that other officers were exposed to less danger and had lower mortality, for instance those serving as medical, communication and intelligence officers. Third, some of those killed in war would have had young children. Van Emden (2011) states that 28 per cent of the British soldiers killed in World War One had children and these would have preserved the quality of the gene pool. Fourth, some of those with higher than average intelligence would not have been conscripted into the military because they were doing scientific or administrative work contributing to the war.

7. Conclusions

The arguments set out in section 1 that war had a eugenic effect during the evolution of the hominids is persuasive. The arguments set out in section 2 that modern war has had a eugenic effect during recent history are not persuasive. The arguments set out in sections 3, 4, 5 and 6 that modern war has had a dysgenic effect during recent history is inconclusive. The evidence that those killed in wars had higher than average IQs suggests a dysgenic effect, but the evidence that there is no appreciable difference in the national IQs of Austria, Germany, France and Britain that participated in World Wars One and Two, and those in Switzerland and Sweden that remained neutral, suggests that recent wars have not had a measurable dysgenic effect.

References

Alexander, R.D. & Tinkle, D.W. (1968). Warfare in early hominids. *Bioscience* 18: 245-268.

Bigelow. R.S. (1969). *The Dawn Warriors: Man's Evolution toward Peace*. Boston: Little Brown.

Boesch, C., Crockford, C., Herbinger, I., Wittig, R., Moebius, Y. & Normand, E. (2008). Intergroup conflicts among chimpanzees in Tai National Park: Lethal violence and the female perspective. *American Journal of Primatology* 70: 519-532.

Cameron, R. (1993). *Concise Economic History of the World*. New York: Oxford University Press.

Cattell, R.B. (1937). *The Fight for Our National Intelligence*. London: King.

Chagnon, N.A. (1988). Life histories, blood revenge and warfare in a tribal population. *Science* 239: 985-992.

Churchill, W.S. (1952). *The Second World War*, Vol. 5. London: Cassell.

Corley, J., Craig, A. & Deary, I.J. (2009). Childhood IQ and in service mortality in Scottish army personnel during World War II. *Intelligence* 37: 238-242.

Darwin, C. (1871/1913). *The Descent of Man*. London: Murray.

Darwin, L. (1914a). Letter. *London Times,* Sept. 12.

Darwin, L. (1914b). Eugenics and the War. *Eugenics Review* 6: 195-203.

Deary, I.J., Whalley, L.J. & Starr, J.M. (2009). *A Lifetime of Intelligence.* Washington, DC: American Psychological Association.

De Chateauneuf, C. (1833). Essai sur la mortalité dans l'infanterie francaise. *Annales d'Hygiène Publique et Médicine Légale* 5: 339-551.

de la Pouge, V. (1896). *Les selections sociales: Cours libre de science politique professé à l'Université de Montpellier, 1888-1889.* Paris: A. Fontemoing.

Department of Defense (1998). *Population Representation in the Military Services*. Washington, D.C.: Department of Defense.

Durrant, R. (2011). Collective violence: An evolutionary perspective. *Aggression and Violent Behavior* 16: 428-436.

Ellis, F. (2009). The inevitability of war. *Quarterly Review* 3: 53-59.

Ellis, H. (1908). *The Soul of Spain*. London: MacMillan.

Gale, C. (2005). Commentary: Height and intelligence. *International Journal of Epidemiology* 34: 678-679.

Galton, F. (1883). *Inquiries into Human Faculty and Its Development.* London: Dent.

Glad, J. (2006). *Future Human Evolution*. Schuylkill Haven, PA: Hermitage.

Glad, J. (2007). Eugenics and the Jew. *Mankind Quarterly* 48: 205-208.

Herbert, J. (2015). *Testosterone.* Oxford: Oxford University Press.

Hellen, N. (2013). Bloody sacrifice of the Eton rifles. *Sunday Times*, 17 February, p. 11.

Herrnstein, R.J. & Murray, C. (1994). *The Bell Curve: Intelligence and Class Structure in American Life*. New York: Free Press.

Inge, W.R. (1949). *Diary of a Dean: St.Paul's, 1911-1934.* London.

Jensen, A.R. (1973). *Educability and Group Differences*. London: Methuen.

Jordan, D.S. (1915). *War and the Breed: The Relation of War to the Downfall of Nations*. Boston: Beacon Press.

Kellogg, V. (1914). Bionomics of war: Military selection and race determination. *Social Hygiene* 1: 1-16.

Klein, B., Klein, S., Joubert, K. & Gyenis, G. (2008). Social cage: Socio-economic status and intelligence in Hungary. In: J. Raven & J. Raven (eds.), *Uses and Abuses of Intelligence*. Unionville, NY: Royal Fireworks Press.

Liddle, J.R., Shackleford, T.K. & Weekes-Shackleford, V.A. (2012). Evolutionary perspectives on violence, homicide and war. In: T.K. Shackleford & V.A. Weekes-Shackleford (eds.), *Oxford Handbook of Evolutionary Perspectives on Violence, Homicide and War*. Oxford: Oxford University Press.

Lynn, R. (2006). *Race Differences in Intelligence: An Evolutionary Analysis*. Augusta, GA: Washington Summit.

Lynn, R. (2015). *Race Differences in Intelligence: An Evolutionary Analysis*, 2nd revised edition. Augusta, GA: Washington Summit.

Lynn, R. & Becker, D. (2019). *The Intelligence of Nations.* London: Ulster Institute for Social Research.

McDaniel, M.A. (2005). Big-brained people are smarter: A meta-analysis of the relationship between in vivo brain volume and intelligence. *Intelligence* 33: 337-346.

Meisenberg, G. (2007). *In God's Image: The Natural History of Intelligence and Ethics.* Brighton: Book Guild.

Muller-Lyer, F. (1930). *The Evolution of Modern Marriage*. London: Allen & Unwin.

Novicow, J. (1910). *La Critique du Darwinism Social.* Paris: F. Alcan.

Pinker, S. (2002). *The Blank Slate*. London: Allen Lane.

Pitt, R. (1978). Warfare and hominid brain evolution. *Journal of Theoretical Biology* 72: 551-575.

Richet, C. (1919). *La Sélection Humaine.* Paris: Felix Alcan.

Rindermann, H. (2018). *Cognitive Capitalism: Human Capital and the Wellbeing of Nations*. Cambridge: Cambridge University Press.

Rushton, J.P. & Ankney, C.D. (2009). Whole brain size and general mental ability: A review. *International Journal of Neuroscience* 119: 692-732.

Sailor, S. (2006). http://isteve.blogspot.com/2006/11/average-iq-of-enlisted-men.html

Saleeby, C. (1915). The long cost of war. *Westminster Gazette*, Feb. 11: 1-12.

Seeck, O. (1895). *Geschichte des Untergangs der antiken Welt*. Stuttgart: Metzler.

van Emden, R. (2011). *The Quick and the Dead: Fallen Soldiers and Their Families in the Great War.* London: Bloomsbury.

van Vugt, M. (2012). The male warrior hypothesis: The evolutionary psychology of intergroup conflict, tribal aggression and warfare. In: T.K. Shackelford & V.A. Weekes-

Shackelford (eds.), *Oxford Handbook of Evolutionary Perspectives on Violence, Homicide and War*. Oxford: Oxford University Press.

Villermé, L.-R. (1829). *Annales d'Hygiène Publique et Médicine Légale* 1: 1-35.

von Bernhardi, F. (1911). *Deutschland und der nächste Krieg.*

Whalley, L.J. & Deary, I.J. (2001). Longitudinal cohort study of childhood IQ and survival up to age 76. *British Medical Journal* 322(7290): 1-5.

Wilson, E.O. (1975). *Sociobiology: The New Synthesis*. Cambridge, MA: Harvard University Press.

Wilson, E.O. (1978). *On Human Nature.* Cambridge, MA: Harvard University Press.

Wrangham, R.W. & Glowacki, L. (2012). Intergroup aggression among chimpanzees and war in hunter-gatherers. *Human Nature* 12: 5-29.

Wysocki, B.A. & Cankardas, A. (1957). A new estimate of Polish intelligence. *Journal of Educational Psychology* 48: 525-533.