

Educability  
& Group  
Differences

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Arthur R. Jensen

\$10.00

In this pivotal analysis of the genetic factor in intelligence and educability, Arthur Jensen argues that those qualities which seem most closely related to educability cannot be accounted for by a traditional environmentalist hypothesis. It is more probable, he claims, that they have a substantial genetic basis. Educability as defined in this book is the ability to learn the traditional scholastic subjects, especially the three R's, under ordinary conditions of classroom instruction.

In a wide-ranging survey of the evidence, Professor Jensen concludes that measured IQ is determined for the most part by an individual's heredity. He reasons that the present system of education assumes an almost wholly environmentalist view of the origins of individual and group differences. It is therefore a system which emphasizes a relatively narrow category of human abilities.

While the existing body of evidence has many gaps and may not compel definitive conclusions, Dr. Jensen feels that, viewed all together, it points strongly and consistently in the direction of genetics.

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## THE AUTHOR

Since 1957 Dr. Arthur R. Jensen has been on the faculty of the University of California in Berkeley, where he is now Professor of Educational Psychology and Research Psychologist at the Institute of Human Learning. A graduate of U.C., Berkeley, and Columbia University, he was a clinical psychology intern at the University of Maryland Psychiatric Institute and a postdoctoral research fellow at the Institute of Psychiatry, University of London. He was a Guggenheim Fellow and a Fellow of the Center for Advanced Study in the Behavioral Sciences. His research has been concerned mainly with experimental psychology of human learning, measurement and structure of individual differences in mental abilities, genetic and environmental determinants of intellectual development, and causes of individual and group differences in scholastic performances. He has contributed more than one hundred articles and chapters, many of them frequently reprinted, to psychological and educational journals and books.

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"Arthur Jensen is unique—a first-rate social scientist who has grappled with implications of human biological differences, and has gone on to make important and original contributions to the field of quantitative genetics. In all this he has kept his original purpose constantly in sight—how one can best serve the varied educational needs of children. His work has already brought about a revolution among educationalists, who until very recently, on the basis of ideology and misguided good intentions, had denied or ignored the existence of natural variation in ability."

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"The contents of **Genetics and Education** represent some of the most important work now going on in any field of social science. The preface alone is an important document in the sociology of social science. The issues dealt with here will be before us for a long time. One can only hope that the discussion of these issues continues on the high plane of responsibility and integrity set by Jensen's example."

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Professor Jay L. Lush  
Iowa State University

"Every educator owes it to himself and his students to peruse this compact presentation of a neglected half of the factors in education. The preface, describing the dramatic happenings since the famous **Harvard Educational Review** article, is an eye-opener on what progressive inquirers may still have to meet in a supposedly educated society. That Dr. Jensen proceeds with scientific carefulness and without fear or favor, rancor or rant, after this experience, speaks for him as a man as well as a scientist."

Professor Raymond B. Cattell  
University of Illinois

*Educability and Group Differences*

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# Educability and Group Differences

ARTHUR R. JENSEN

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*To the memory of Sir Cyril Burt*

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# Preface

*Educability and Group Differences* deals with the fact that various subpopulations (social classes and ethnic groups) in the United States and elsewhere show marked differences in the distributions of those mental abilities most importantly related to educability and its occupational and socioeconomic correlates. This book challenges some of the prevailing explanations of these differences, particularly those theories that involve exclusively social and psychological causative factors. The substantial genetic heritability of intelligence within European and North American Caucasian populations is now generally accepted by most scientists who have reviewed the evidence. Although one cannot formally generalize from *within*-group heritability to *between*-groups heritability, the evidence from studies of within-group heritability does, in fact, impose severe constraints on some of the most popular environmental theories of the existing racial and social class differences in educational performance. My review of this evidence, with its impressive consistency, does, I believe, cast serious doubt on the currently popular explanations in terms of environment. While the existing body of evidence has many gaps and may not compel definitive conclusions, it appears to me that, when viewed all together, it does point more strongly and consistently in the one direction than in the other. The gaps in knowledge suggest new methods, not yet tried, for testing genetic hypotheses of group differences, and these are described herein. Also, at this stage it still seems necessary to discuss some of the popular misconceptions and the non-scientific hindrances to the advancement of research in this field.

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If population differences, whatever their causes might be, are not superficial or easily eliminated, as probably most behavioral scientists would now agree is the case, the major question that arises concerns the educational and occupational implications of such differences. What are the possibilities for capitalizing on individual differences in the pattern or profile of abilities in improving methods of instruction? What are the prospects for discovering aptitude  $\times$  training interactions that will maximize overall achievement and minimize group differences? A growth model of scholastic achievement, along with the results of recent research on these questions, suggests that the prospects are poor for supposing that aptitude  $\times$  training interactions will diminish achievement differences within the context of traditional schooling, in which, by and large, there is essentially no substitute for intelligence as psychologists generally use the term. Finally, it is proposed for consideration that perhaps radically altered and diversified forms of education, both as to methods and goals, might be able to utilize a broader spectrum of human abilities in order to increase the personal, social and occupational benefits of education to a wider segment of our population than is now truly served by the prevailing educational system. So much by way of summary.

The background of the problems treated in the present volume is provided in my 1969 article in the *Harvard Educational Review*, 'How much can we boost IQ and scholastic achievement?', and, more fully, in the collection of my subsequent related articles (including the *HER* article) in the recently published volume entitled *Genetics and Education* (Jensen, 1972). A third volume, soon to be published, brings together a number of my writings on a wide variety of more specific theoretical and applied topics in this field.

Since the greatest amount of discussion, and surely the most heated, following my *HER* article (Jensen, 1969a) centered on the topic of race differences in intelligence, and since this topic was treated only very briefly in that article (taking up less than one-tenth of the total number of pages), I saw the need to take it up more thoroughly and to present a more detailed account of the issues and evidence. A number of opportunities were presented for me to do this, more or less, in various scientific symposia following my *HER* article, and it was from these that the present

for a symposium held in London on social implications of human differences, in which I was invited to discuss the educational aspects. This paper was then greatly elaborated when I was invited to prepare an extensive paper as the basis for a symposium on cultural and genetic determinants of educability at the International Congress of Applied Psychology in Liège, Belgium, in the summer of 1971. Comments and criticisms by the several highly qualified discussants in the symposium, who had received copies of my paper for detailed study beforehand, led to still further additions and changes. Some twenty or so copies of the typescript, under the title 'Genetics, Educability, and Subpopulation Differences', were then sent out to colleagues in psychology and genetics, with an invitation to make critical comments. Many responded with most helpful criticisms, usually of selected portions which fell within each critic's own speciality. I am most grateful for all their comments and advice. There are several to whom I am most specially indebted for their great generosity and thoroughness in corresponding with me so willingly and patiently about many technical matters. They contributed much to the improvement of my first draft of this book and to my own education on matters in genetics. I take this opportunity to thank them again: Professors Everett Dempster, John Loehlin, Peter Workman, and the late Sir Cyril Burt. The book's overall shortcomings must be accounted to me alone.

Though I always heeded expert advice on purely factual and technical matters, I usually kept my own counsel on matters of interpretation and judgment, and in such cases my helpful critics may not always find themselves in agreement, either with me or with each other. There are always differences among investigators working on the frontiers of a field. They differ in their weighting of items of evidence, in the range of facts in which an underlying consistency is perceived, in the degree of caution with which they will try to avoid possible criticisms of their opinions, and in the thinness of the ice upon which they are willing to skate in hopes of glimpsing seemingly remote phenomena and relationships among lines of evidence which might otherwise go unnoticed as grist for new hypotheses and further investigations. On all these points we differ in varying degrees, and my own inclination is perhaps to be somewhat less conservative than would be some other students in dealing with the central topics of this book. My

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own reading of the history of science, however, leads me to believe that conservatism in generating hypotheses and in seeking means for testing them has not made for progress as often as a more adventurous approach.

The nature of scientific 'proof' is poorly understood by most non-scientists. It is surely not an either-or affair, and in fact the term 'proof' is actually inappropriate in the empirical sciences. Proof exists in formal logic and pure mathematics, which, as Bertrand Russell pointed out, are one vast tautology in which certain consequences are formally derived from fundamental definitions, axioms and postulates according to set rules, which, when strictly followed, constitute the proof of the conclusion. Empirical science operates quite differently. It aims to find the best explanation of phenomena by ruling out other alternative explanations on a probabilistic basis. Progress consists of weakening the explanatory power of one or more competing hypotheses and strengthening that of another on the basis of objective evidence. It is a most complex process into which enter consideration of the basic assumptions underlying a given theory, the range of phenomena that can be comprehended by one theory as opposed to another, and the number of *ad hoc* hypotheses (and the extent of their mutual inconsistency) that must proliferate to take care of each new failure of a theory's predictions as the evidence mounts. On all these grounds, in my opinion, a largely genetic explanation of the evidence on racial and social group differences in educational performance is in a stronger position scientifically than those explanations which postulate the absence of any genetic differences in mental traits and ascribe all behavioral variation between groups to cultural differences, social discrimination, and inequalities of opportunity – a view that has long been orthodox in the social sciences and in education.

Questioning this doctrine of egalitarian environmentalism is often regarded as unrespectable and is therefore eschewed by some researchers who may regard the key issues as improper or scientifically unrewarding territory for exploration. The exercise of intellectual fastidiousness is an attraction to many who engage in research, and indeed it is one of the virtues. But sheer respectability when it becomes a motive or a goal in itself, in scientific research is crippling and deadening. Preordained notions and inhibitions concerning what is and what is not respectable grist for research

are intrinsically antithetical to scientific investigation. The existing research taboos concerning racial genetic differences and the design of studies that could lead to rejection of the null hypothesis are not in the main externally imposed; they are self-imposed restrictions of individual scientists who apparently fear the outcome of unrelenting research on the problem.

Scientific knowledge advances from lesser to greater levels of probability, and most complex subjects do not make this ascent in one leap. Statements such as 'Circumstantial evidence does not constitute scientific evidence', do, I believe, misrepresent the process of science. Though they indeed contain an element of truth, they permit the overly simple interpretation that there are two clear-cut categories of evidence – 'circumstantial' and 'scientific' – while in fact all we ever have as scientists is circumstantial evidence which varies along a probabilistic continuum in quality and quantity and theoretical consistency. What emerges finally as scientific truth is a preponderance of self-consistent evidence which points to one theory to the exclusion of others. In complex subjects this is a gradual process punctuated by ambiguities and doubts, gaps and inconsistencies, as the work progresses and a preponderance of evidence favors certain key hypotheses and leads to the abandonment of others. The future of research on the causes of individual and group differences in mental abilities may be likened scientifically more to the detective work of a Darwin, patiently collecting and sifting and fitting together the myriad pieces of the jigsaw puzzle bearing on his theory of evolution, than to Archimedes suddenly shouting 'Eureka!' in his bath when he discovered the explanation of floatation. The models of biology fit the behavioral sciences better than do those of classical physics.

This book was written with mainly behavioral scientists and educational researchers in mind. I have presupposed only a familiarity with basic statistical concepts that are common background in these fields. But it is these very concepts that create considerable difficulty in properly explaining the nature of the evidence and arguments to the man in the street. Secondary schools unfortunately do not ordinarily include in their science curricula the elementary concepts of probability and statistical inference, or the properties of the normal distribution, or the understanding of correlation and the differences between correlational and experimental methods, or even how to interpret graphs, all of which are

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fundamental tools for properly understanding research in the behavioral sciences. One always has some trepidation about the message conveyed to readers who are not at home with the tools. An admirable popular treatment of some of the main themes of the present work which presupposes no technical background whatever is the highly readable little book by Professor Eysenck (1971). It is a good example of popular science writing, avoiding the technical yet being accurate, and could well serve as a non-technical introduction to the present work and as a fair summary, albeit not in my own style, of some of the major issues treated herein for readers who might shy away from the more quantitative presentation of data and theoretical formulations in this book.

There are some major conceptions and misconceptions, however, that must be made clear for all readers of this book right from the outset. Some critics have unjustly linked these misconceptions to my name in their use of the term 'jensenism'. I think this must be righted lest the reader begin with quite erroneous preconceptions of the essential message of this book. Since I did not coin the word 'jensenism', I do not know all the meanings that it may have acquired in the popular press. To the best of my knowledge, 'jensenism' was coined by the *Wall Street Journal*, shortly after the publication of my *HER* article. It has since been used in the popular press and elsewhere (e.g., the *Bulletin of the Atomic Scientists*, March, May 1970) as a term intended to summarize the user's interpretation of one or another aspect of my article: the failure of large-scale compensatory education programs, the theory of the inheritance of mental abilities, the hypothesis that not only individual differences but social class and racial differences in intelligence involve genetic as well as environmental factors, and that mental abilities may be viewed in terms of two broad categories (called Level I and Level II) which are differentially correlated with social class and might have useful implications for instruction in scholastic skills. Some of my most vehement critics, however, have used the term pejoratively. Professor Lewontin, for example, likened 'jensenism' to Jansenism, named after Bishop Jansen in the seventeenth century for his 'pernicious heresy . . . of total depravity, irresistible grace, lack of free will, predestination and limited atonement' (Lewontin, 1970a, b; Jensen, 1970d).

If 'jensenism' has any valid meaning at all, from my own

standpoint, what it means is a biological and genetical view of human kind and of human differences – both individual differences and group differences. For me, ‘jensenism’ is the bringing to bear of this genetic viewpoint upon understanding some of the problems of education. The genetic view of man has often been badly misunderstood in this context, and 99 percent of the heated debate I have seen in the three years since the publication of my *Harvard Educational Review* article I believe reflects this misunderstanding. Much of the emotional reaction I attribute to the fact that a generation or more of social scientists and educators have been indoctrinated to ignore genetics, or to believe that genetic factors are of little or no importance in human behavior and human differences, or to think non-genetically or anti-genetically. Any attempt by anyone to introduce into this scene theory and research on genetics as it relates to vital educational and social problems was destined at first to meet hostility and rejection.

The modern genetic view of man calls for a revolution in our thinking, in our whole orientation. It demands on everyone’s part an even more drastic reorientation of thinking than was required by other historical revolutions of thought, such as the Copernican, Darwinian, and Einsteinian revolutions. The Mendelian revolution (and Fisher’s pioneering extensions of Mendelian genetics to polygenic systems) is already established in biological science, but it has not yet filtered into other domains. The Mendelian revolution, if it can be called that, has not yet influenced social scientists on any large scale; it has not characterized the thinking of our social policy makers, and it is totally foreign to the general public, which in terms of thinking genetically in the modern sense is surely at the flat earth stage of scientific sophistication. The educational task that is called for is awesome. Major revolutions of thought are generally absorbed most slowly and imperfectly.

The genetic view of man stands in sharp contrast to the prevailing views that dominate most people’s thinking. One class of anti-genetic view can be characterized as social elitism and racism. These old-fashioned beliefs are quite out of touch with modern genetics; they are now more political and ideological than scientific. They are based on typological notions of genetics, and not on statistical and stochastic conceptions of continuous variation. They are apparently ignorant of the genetic facts of random segregation and recombination of genes, or of the fundamental principle that

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the properties of an individual depend upon the state in which he finds himself and not upon the state from which he is derived, or the fact that social classes and races are discrete systems of classification imposed upon what in nature are not at all discrete but rather continuous gene pools which vary statistically. This mistaken typological thinking proclaims 'like begets like' but ignores the other half of genetic fact – that 'like also begets unlike', due to segregation and recombination of genes in the creation of every individual. In a profound sense, social elitism and racism deny individuality, the very individuality that is in fact insured by genetic mechanisms.

There is another class of anti-genetic misconceptions which shares many characteristics in common with the first class of erroneous thinking I have just described. It can be called egalitarian environmentalism. Like social elitism and racism, it too ignores the facts of genetics, and it too denies individuality if you follow its reasoning all the way. And similarly, it is more political and ideological than scientific. It denies genetic variability, at least with respect to certain characteristics, usually behavioral, and insists that the environment alone – usually the social environment – makes the person and all the behavioral differences among persons. It may at times pay a kind of lip service to genetics, which is often seen as ceasing in importance after the moment of conception, but its conclusions invariably deny the importance of genetic factors in human behavioral differences. It may also wear the guise of 'interactionism', based on the truism that the individual is a product of the interaction of genetic and environmental factors, but always with the implication that the genetic factors are more or less totally submerged or obscured by environmental influences.

Much of the debate and fulmination surrounding my *HER* article, I submit, was a result of most persons knowing only these two mistaken views and feeling that their only choice was the one or the other. Most well-intentioned persons have deemed it necessary to put down the first view at all costs and to defend the second. Often it was viewed as the battle of the 'good guys' versus the 'bad guys'. I have been opposed to both these views. The antidote to both is to *think genetically*, that is to say, in the most fundamental sense to think about yourself, about other persons, and about groups (your own group and other groups, whatever they may be) in ways that are consistent with already

well-established modern principles of genetics. In short, I am saying we should get abreast of the Mendelian revolution.

Just what does this mean? Let us get down to specific points. First and most important, it means that you and everyone else (except monozygotic twins) are genetically unique. The probability that even any two siblings (other than MZ twins) will inherit the same genotypes (i.e., the individual's total genetic 'blueprint') is less than 1 in 73 trillions! So if we are to think realistically in terms of what we know from genetics, we must recognize uniqueness and individuality. A genetic corollary of this is that *you* are not your *parents*. Parents do not transmit their own genotypes to their off-spring, but only their genes, and a random selection of only one half of them at that. Each offspring is a new assortment, a new combination of genetic material, and thus we see great variability among members of the same family, probably much greater variability than most persons would like to acknowledge. The average amount of genetic variability *within* families is only slightly less than the genetic variability *between* families. By the same token, nature has seen to it that your children will not be *you*. Perhaps here is the crux of the revolution called for by Mendelism in our thinking and in our attitudes. This is what must sink into our consciousness: the disassociation of our individuality, our genetic uniqueness, from our biological role as mere transmitters of randomly segregating and recombining genetic materials which indeed obey statistical laws but which are not 'us'. When you have children, you don't make what you want; you take what you get. Since genes obey statistical laws, it may be possible to predict probabilistically what you will get, and you can be statistically assured of the variance as well as the mean. These ideas are admittedly hard to grasp, especially when they come face to face with our long-conditioned proclivities toward personal possessiveness regarding our ancestry and our future descendants. But the first lesson of Mendelism, it seems to me, is the distinction between the individual *qua* individual and his quite separate biologic function as a mere transmitter of nature's (not his own) genetic material. The difficulties of thinking in these terms are often exemplified in the emotional attitudes expressed in discussions of artificial insemination.

This distinction between the individual and the particular gene pool from which the unique combination forming his genotype