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Book Review

The Nuffield Report on Genetics and Human Behaviour

Reviewed by Alison Hills

The Nuffield Council on Bioethics is an independent body established to consider the ethical implications of developments in medicine and biology, and to compile reports on these issues to promote public understanding and to assist policy-makers. The *Nuffield Report on Genetics and Human Behaviour* ("the Report") was compiled by a working party consisting of experts in the law, philosophy, medical genetics and other fields, under the chairmanship of Professor Bob Hepple, in consultation with professionals in behavioural genetics, public organisations and members of the general public. The novelty of the report is that it is not concerned with diseases and clinical disorders, but with the ethical and legal implications of the study of the genetics of variation within the normal range of behaviour. The Report is very well-produced and clearly written, and is a useful introduction to behavioural genetics and the associated ethical and legal problems, about which it makes many useful policy recommendations. I will begin by summarizing each section of the report, before making some more detailed comments on the philosophical chapters, concerning the ethical implications of behavioural genetics.

After the introduction, which gives a historical account of the relationship between behaviour genetics and eugenics, the second section of the report introduces the key ideas in genetics. It gives a clear account of what is DNA; what are genes; and how genes influence behaviour. This chapter should help to dispel the popular myth of "genetic determinism", the view that our genes determine our phenotype. Very few genes are sufficient to determine a characteristic, most traits are determined by a number of genes together with some environmental factors. This section of the report distinguishes different research methods into behavioural genetics. Quantitative genetics gives a measure of heritability, a measure of how much the variation of a given trait in a population depends on genetic variation (heritability of 0.5 means that half the variation of a given trait in a given population is due to genetic variation in that population), but it gives no information about which genes influence a given trait. Molecular genetics promises to give more specific information about the relationship between particular genes and particular traits, but is a much less developed science than quantitative genetics. In many cases, we know how much the variation of a given trait in a population depends on genetic variation, but we do not know

which genes influence that trait.

The third section of the Report illustrates the conclusions of the second section, by summarizing current scientific knowledge of the heritability of certain behavioural traits (antisocial behaviour, sexual orientation, personality and intelligence) and of the genes that influence those behaviours. The heritability of most human traits is in the 0.4-0.6 range, with some (e.g. intelligence) more heritable than others (e.g. antisocial behaviour), but little is known about the specific genes that influence these traits. The Report specifically comments on the ways that genetic research has been reported in the media, criticising the presentation of research into sexual orientation as the discovery of a "gay gene". This is deeply misleading, suggesting that there is a single gene that is uniquely responsible for sexual orientation, whereas it is much more likely that a number of genes combine with environmental factors to increase the chances that a person will have a particular sexual orientation. The misreporting of behavioural genetics contributes to public confusion about genetics, and to public fears about the possible misuse of genetic research, and is, as the Report makes clear, deeply irresponsible.

The final section of the Report discusses the legal and ethical implications of research into behavioural genetics, with a specific focus on research into traits within the normal range of behaviour.

The Report considers that genetic information about behaviours that fall within the normal range should not be used by employers or by insurers. It is argued that someone whose trait is within the normal range can be held legally responsible for their action, even if it is known that the trait is influenced by genetic factors, but that those factors can be considered as mitigation. This is parallel to the way that environmental factors, such as the influence of medicine, drugs or alcohol, affect legal responsibility. The Report also discusses the issue of moral responsibility, and rightly argues that a proper understanding of behavioural genetics need not undermine a conception of humans as free and rational. If our genes together with our environment determine what character traits we have, it might seem that we cannot be held morally responsible for what we do, because it is not true that we "could have done otherwise". The Report rejects a conception of "free will", according to which a free choice must be independent of your character and constitution, and instead argues that your choice is free if your action is the outcome of your choice, and your choice is the outcome of your deliberation about what to do. It is compatible with this conception of free choice that your choice may be free even though your character is determined by your genes and your environment; research on behavioural genetics does not cast doubt on free will or moral responsibility.

The chapter on genetic selection discusses the moral implications of choosing one's children on the basis of behavioural traits in the normal range; for example, preferring children with a higher IQ over children whose IQ is in the normal range (whilst recognizing that this possibility is beyond our scientific capabilities at the moment). The Report's recommendations in this area are conservative: aborting a foetus because it has some unwanted trait that is within the normal range is morally unacceptable; as is rejecting an embryo to implant in IVF on the basis of its traits when those traits are within the normal range. These recommendations would no doubt be endorsed by public opinion, which tends to be conservative about these matters; but one might have hoped that the Report would give some convincing arguments to support public opinion and to defend its recommendations in this area. For example, the Report states that that the abortion of a foetus on these grounds is morally unacceptable is the "consensus in clinical genetics and in public opinion" (13.65). But since, as the Report admits, abortion is typically thought to be permissible in some circumstances, namely when the foetus is discovered to have an abnormal trait

such as Down's syndrome, there needs to be some explanation of why abortion is permissible in one case but not in another.

One way to distinguish the cases is by making a clear distinction between a disease such as Down's syndrome and a normal trait such as an IQ within the normal range, and to argue that this distinction is morally significant: it is permitted to abort a foetus which has a disease, but not a foetus which has a normal trait. To say that a trait is normal is to evaluate it positively and to say that it should be preserved, it might be argued, whereas to say that a trait is abnormal or a disease is to evaluate it negatively, and to say that it need not be preserved. But the Report admits that it is difficult to make a clear distinction between diseases and normal traits (13.41-3). The Report itself distinguishes normal from abnormal traits statistically (a "normal" trait is a trait within the range shared by 95% of the population), and no assumption is made that "normal" traits are good (pp. xix-xx). It is not obvious why traits that are within a range shared by 95% of the population should be preserved, whereas unusual traits should not. The Report does not fully justify its claim that abortion of a foetus on the basis of some genetic factors ("normal" ones) is morally unacceptable, when abortion is permissible on the basis of other genetic factors. Of course, this does not mean that there is no justification for this recommendation, but that the Report's conclusions in this area are not fully supported by its arguments.

The Report considers that the arguments against selecting embryos for implantation in IVF treatment on the basis of normal traits are weaker than the arguments against aborting a foetus for the same reasons, because in selecting one embryo rather than another you do not terminate a potential human life (13.66). This argument relies on the claim that a foetus that is aborted is a potential human life, whereas an embryo that is not selected is not a potential human life. But the embryos that are not selected are potential human lives, as the Report in fact admits: "Embryos are allowed to grow to the eight-cell state, at which point one or two cells are removed for genetic testing. The remaining cells of the embryo still have the potential for normal development" (13.58). Of course, when embryo selection takes place, the embryos are at a much lower stage of development than is a foetus when abortion is considered. But it might well be argued that this is a difference of degree (of stages of development) not a difference of kind (a difference between terminating a potential human life and terminating something that is not a potential human life), which does not warrant treating the two cases differently.

The reasons in favour of permitting embryo selection relate to parental autonomy: parents should be permitted to choose what their offspring are like genetically, just as they can choose in what environment to raise them. The arguments against selection are: that selecting against certain traits may express disapproval of those traits; that allowing such selection will undermine social equality by allowing the rich to produce enhanced children; and that parents should be willing to accept their children for themselves, whatever they are like. The Report admits that these arguments against selection are not very strong provided that a society is careful not to allow certain traits to become socially stigmatised, nor to allow the class-structure of the society to entrench, and seems to suggest that the arguments that have been considered favour permitting embryo selection for normal traits. But its conclusion is that such selection is not permissible, that the case for it "has not been made" (13.78). Those who thought that a society should permit people to do what they freely choose to do unless it can be shown why they should not will be disappointed that the Report appears to suggest that embryo selection should be prohibited unless it can be shown why it should be allowed. Of course, the Report's recommendations might nevertheless be justified; there might be strong arguments not considered by the Report that

selecting embryos within the normal range is morally unacceptable. But the recommendations are not fully supported by the arguments given in the Report. The ethical implications of genetic testing and selection are discussed in an earlier Nuffield Report, *Genetic Screening: Ethical Issues*, (especially sections 8.20-8.22), but the brief arguments given there are addressed specifically to testing for severe disease, not genetic selection for normal characteristics, and so cannot straightforwardly be used to support the recommendations of this Report.

The Nuffield Report is a very useful introduction to behavioural genetics and the associated ethical and legal problems. It should help to raise the level of public understanding of the influence of genes on behaviour, and we may hope that its recommendations on responsible reporting of research into behavioural genetics will further raise the level of public discussion. Whilst the most significant ethical questions concerning behavioural genetics (such as whether it is permissible to select embryos for particular traits) are raised by technologies that are not yet within our capabilities, it is important to debate publicly these questions now, and the Nuffield Report makes a significant contribution to this debate.

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