

Behavioural Genetics: Why Eugenic Selection is Preferable to Enhancement

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ABSTRACT *Criminal behaviour is but one behavioural tendency for which a genetic influence has been suggested. Whilst this research certainly raises difficult ethical questions and is subject to scientific criticism, one recent research project suggests that for some families, criminal tendency might be predicted by genetics. In this paper, supposing this research is valid, we consider whether intervening in the criminal tendency of future children is ethically justifiable. We argue that, if avoidance of harm is a paramount consideration, such an intervention is acceptable when genetic selection is employed instead of genetic enhancement. Moreover, other moral problems in avoiding having children with a tendency to criminal behaviour, such as the prospect of social discrimination, can also be overcome.*

I. Introduction

Recent discoveries in human behavioural genetics indicate putative associations between specific genetic markers and a range of complex traits, including criminal tendency.¹ Unlike many such projects dogged by retractions, one subset of criminal tendency research has produced compelling results: the correlation of mutations in the monoamine oxidase A gene and criminal behaviour within a Dutch criminal kindred. If this research proves valid, questions will inevitably arise about the moral acceptability of couples using reproductive technology to avoid having a child with criminal tendency.

In this paper, we employ this Dutch criminal kindred research to discuss the morality of selecting against criminality in future children. After briefly tracing the history and controversy of eugenics and behavioural genetics research, we summarise the theory that biochemical pathways involving monoamine oxidase can influence a person's chances of engaging in criminal behaviour at some point in their lives. We then utilise this example to argue (drawing on Parfit's non-identity problem) that choosing children without mutations in their monoamine oxidase A genes is acceptable, particularly if genetic selection technology is employed over genetic enhancement. This is because genetic selection is more immune than genetic enhancement to arguments depending on concepts of harm to the child.

However genetic selection remains subject to other objections not met by the use of this technique, which could affect its 'immunity' to arguments based on harm to the child. Therefore, we consider potential problems such as the child's right to an open future, privacy and parental expectations. We also consider arguments derived from social harms, such as diversity and discrimination.

We conclude that if used in a controlled and appropriate way with due concern for possible outcomes, genetic selection to avoid criminal tendency is morally justifiable.

II. Behavioural Genetics and Eugenics

Research into genetics and criminality is, of course, haunted by the spectre of eugenics. From the late 19th century until after the Second World War, this movement in Europe and North America aimed to enhance the genetic pool. Proponents of eugenics desired to eradicate ‘genes for’ those complex behaviours deemed undesirable, such as criminality, psychiatric disease and mental retardation. They sought to encourage those judged to have a superior genetic constitution to reproduce, whilst discouraged the ‘genetically unfit’ from so doing — sometimes involving involuntary sterilisation.²

In the United States, the first sterilisation law was passed in Indiana in 1907. Over the next ten years, fifteen more states passed legislation which empowered them to sterilise ‘habitual or confirmed criminals, or persons guilty of some particular offence, like rape.’³ A statute in Iowa went so far as to require the sterilisation of ‘twice-convicted sexual offenders, of thrice-convicted other felons, and of anyone convicted just once of involvement in white slavery’.⁴

Following the human rights abuses of the Second World War and, eugenic practices of this nature rapidly and justifiably fell from favour. Not only was this movement based on questionable normative assumptions, it was bad science and exemplified crude genetic determinism.⁵ Heredity is clearly not the sole causal determinant for human behavioural and mental traits, and state fair charts declaring that ‘unfit human traits such as feeble-mindedness, epilepsy, criminality, insanity, alcoholism, pauperism and many others run in families and are inherited in exactly the same way as colour in guinea pigs’⁶ were rightly abandoned.

Following the discrediting of determinism, statutes sanctioning sterilisation of various groups (including criminals) were gradually repealed. However, attempts to establish a link between biology and criminal tendency continued during the 1960s and 1970s. For example, researchers aimed to establish a link between criminal tendency and the XYY karyotype; and criminal tendency and testicular size. These studies again were liable to criticism from an epistemological perspective, providing more shady milestones in the history of behavioural genetic research.⁷

Given the bleak history of behavioural genetics, public concern with research into criminal tendency is certainly understandable. It is likely that genetic influences on behaviour, if they exist at all, are so complex that any research undertaken will always be prone to a low level of accuracy.⁸ This tendency to low accuracy may even lead to results derived from researcher bias (such as racism) rather than scientific rigour.⁹

Yet despite public concern, research into genetic influences on criminal tendencies has failed to decline. In fact, recent research suggests that a link between genetics and criminality is not only possible, but likely. And with the recent completion of the Human Genome Project, it is possible that more genes will be discovered to significantly influence our behaviour. In one family at least, this already appears to be the case.

III. The Dutch Family Criminal Kindred

III.1. Disproportionate Displays of Criminal Behaviour

The most compelling evidence of a genetic link to a form of criminal behaviour derives from the criminal profile of a Dutch family. For over 30 years, this family had recognised a disproportionate number of male family members exhibiting aggressive or violent criminal behaviour; including arson, attempted rape and exhibitionism.¹⁰ Further, male relatives who never displayed this aggressive behaviour did not express *any* type of abnormal or criminal behaviour.¹¹ These observations prompted clinical geneticist Hans Brunner to search for a suspected 'aggression gene' in this family.¹² He observed that this aggressive and violent behaviour was specific to certain males in the kindred, and did not appear to be related to environment.¹³ So far, Brunner has recorded fourteen men, spanning five generations, as exhibiting this characteristic behaviour.

The aggressive males in this family were also found to have mild mental retardation, whilst those who did not ever behave in such a manner exhibited 'normal' intelligence.¹⁴ This led Brunner to hypothesise that inheritance of this behaviour was X-linked. That is, the gene carrying the specific mutation is present on the X-chromosome, and as such will only manifest when not masked by a normally functioning copy of the gene on another X chromosome. As they carry only one X chromosome, male family members are more likely to exhibit this behaviour than females. Female family members are, however, liable to bear 'affected' sons.¹⁵

Yet while it appeared likely that there was an X-linked gene influencing the occurrence of this behaviour, it took some time for the specific gene to be found.¹⁶ This was achieved using five affected males from the family, female members of the family (those suspected to be both carriers and non-carriers) along with unaffected and unrelated control individuals. The outcome of this linkage analysis was the identification of the likely region for the abnormal gene in this family, namely the Monoamine Oxidase (MAO) region.

III.2. The Monoamine Oxidase Hypothesis

The MAO region consists of two genes encoding two enzymes: monoamine oxidase A (MAOA) and monoamine oxidase B (MAOB). If they function as they should, these enzymes assist in the breakdown of neurotransmitters in the brain;¹⁷ a process vital to the functioning of the nervous system. Enzymes like the MAOs are required to degrade neurotransmitters after they have performed their desired task. Brunner *et al.* suggested that in the Dutch family, MAO activity might be disturbed in those displaying deviant behaviour. This hypothesis was supported by urine analysis indicating a higher than normal amount of neurotransmitters being excreted by aggressive males — an observation consistent with a reduction in the functioning of MAOA.¹⁸ A mutation was then identified in this family that resulted in the complete absence of functional MAOA enzyme.

A deficiency of MAOA results in a build up of neurotransmitters. Once they reach abnormal levels, this is thought to increase the probability of a person demonstrating an excessive, even violent, reaction to stress — a theory also demonstrated in knockout