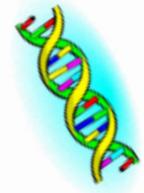


Discuss genetic factors involved in aggressive behaviour. [8 and 16 marks]

One gene said to be linked with aggression is monoamine oxidase A (MAOA). MAOA regulates the metabolism of serotonin in the brain and it is known that low serotonin levels are associated with aggression and impulsive behaviour. MAOA was first found to link with aggression in a study on mice as those mice lacking in the gene were excessively aggressive.



In addition, another potential genetic influence was found by Sandberg. He concluded, using both animal research and human observations, that those with the XYY Karyotype showed a greater number of aggressive behaviours. It has been found by Theilgaard that 1 in 1000 males are XYY. However she did not find conclusive evidence to prove Sandberg's claim as aggression levels fluctuated and so, males who are XYY may seem more aggressive but these tendencies do not mean they would readily perform aggressive acts.

Twin and adoption studies have also been used to determine the influence a person's genetic makeup has over aggressive behaviour as they can be used to disentangle the influence of nature and nurture. If MZ twins (who share 100% of their DNA) are more alike than DZ twins (who only share 50%) in terms of their aggressive behaviour, then this suggests a strong genetic influence.

Research studies have supported the idea of a genetic influence. It has been found in studies using twins that nearly 50% of the variance in aggressive behaviour could be attributed to genetic factors. Furthermore, adoption studies have also provided support as one study found that adopted boys with criminal convictions had biological parents with criminal convictions. These boys were clearly aggressive due to genetic factors and not their rearing environment.

However, the link is not as simple. This is because studies have shown that the highest rates of violence in adopted children occurs when both the biological AND adoptive parents are aggressive. This supports the idea of a gene-environment interaction. Further support for this interaction comes from a study into the MAOA gene. The gene was found to also interact with the environment as children with high levels of MAOA were more likely to be anti-social, but only if they'd been maltreated as children.

This idea of a gene-environment interaction may be explained because of the idea that not just one single gene contributes to a behaviour but rather genes combine together and different ones are expressed depending on certain environmental pressures. This evidently provides criticism for the view that genetics alone contributes to aggression by highlighting it as a reductionist view as it ignores the influence of the environment (which is shown to be important from the evidence above and evidence from theories such as SLT) or biostructure (as demonstrated to be influencing in a study on Phineas Gage). It therefore cannot alone provide a complete explanation for aggression.

Additionally, there is the problem with gender differences, especially relating to MAOA. Most of the studies are conducted on males as it is a sex-linked gene and so it is easier to discover which alleles are acting as males only have one copy of the gene. Thus there have been no in-depth studies of this gene in females so we cannot generalise and assume it functions in the same way. This could reduce the internal validity of the theories into a genetic basis.

Lastly there is the issue of determinism. If this theory argues that our aggression is pre-programmed, it is stating that we are passive victims of our genes and thus ignores free will. Also, if aggression is purely biologically determined then people cannot be held responsible for their actions and this may have further implications for the legal system and makes the study into the genetic factors of aggression a controversial and socially sensitive topic. In fact, there was an Italian appeal court in 2009 to cut the sentence of a convicted murderer by one year on the grounds that he had a version of the MAOA gene. However, it may also work the other way, leading to higher sentences on the basis that people with particular genes cannot be cured and will remain a risk to society for longer

Overall, there does seem to be substantial evidence supporting a genetic influence but the methodological flaws and conflicting research perhaps shows that a diathesis-stress model may be more appropriate with genetics causing a pre-disposition for aggression but certain environmental circumstances triggering the onset of the behaviour.