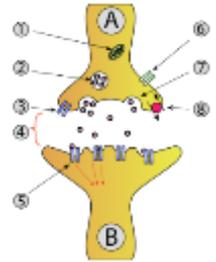


Outline and evaluate neural and/or hormonal mechanisms in aggression. (8 and 16 marks)



The hormone Testosterone is believed to influence aggression due to its action on the brain areas involved in controlling aggression. The more testosterone a person has the more aggressive they are believed to be. Scientists began researching the hormone as it was found that during puberty the sex hormones are the highest and as a result aggression levels were high.

A neural mechanism involved is serotonin. It is believed that low levels of serotonin can result in impulsive behaviour, aggression, depression and violent suicide.

A second neural influence is the neurotransmitter dopamine. The link with aggression is not as well established, however it is believed to be associated with a reward pathway in the brain that is engaged in response to aggressive events.

Lastly, a third mechanism is cortisol. It is thought to inhibit aggression by having a mediating effect on other hormones that are related to aggression.

There has been supporting evidence for the influence of testosterone. Research has shown that the exposure to certain stimuli increases testosterone levels and thus aggression as Klinesmith found that when participants assembled a gun, their testosterone levels rose as did their aggression toward others. This could have real-world applications as, for example, the USA government is debating whether gun ownership increases or decreases violence.

Animal research on mice has also provided support. It's been found that castrated mice are less aggressive but, if injected with testosterone, aggression increases. However this was a correlational study and it did use mice so the internal validity and support it provides would be affected as we cannot fully generalise to humans since we have different neural pathways to mice, such as mirror neurones. Nevertheless, the benefit of using animals is that they're less likely to be influenced by demand characteristics or investigator bias.

Research into testosterone can be labelled as Gender Biased as most studies have focused on males. However, Females also produce testosterone and Campbell indicated that females also show an increase in aggression during puberty which looks very similar to the peak in aggression exhibited by male teens as a result of testosterone. This suggest that we cannot rule out or diminish the effects of testosterone on aggression in females as the hormonal argument seems to do.

As for Serotonin, it has been supported from research into domestic pets as they have much higher serotonin levels. Though the problem here is that the findings might not directly link to humans as we have different brain structures.

To overcome this problem, Mann studied 35 healthy, human participants. He concluded that those given a drug to deplete serotonin levels scored higher on levels of hostility and aggression. This provides supporting evidence for the view on serotonin. Mann found the drug to not affect females as severely, thus hinting at potential gender differences that are not accounted for by the model of serotonin.

All neural and hormonal influences have been criticised for being reductionist as the complexity of human social behaviour means that a biological explanation is insufficient on its own to explain all the different aspects of aggression. For example, the mere presence or level of hormones or neurones are not sufficient in invoking aggression, as seen by a significant population of people that are not aggressive. Similarly, the role of social learning has shown to provide a big influence and it is clearly known that the endocrine system consists of a complex array of communication pathways, none of which act independently. These biological mechanisms therefore cannot provide a holistic account as it is likely that hormones and the environment interact to bring about an aggressive response.

Charlie cooper

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Lastly, Dopamine was studied by Kennedy and he did find evidence for a reward pathway being engaged in mice showing dopamine to be a positive reinforcer. Nevertheless, this may suggest that dopamine is more of a consequence of aggression and not a cause.