

Neural and hormonal mechanisms in aggression

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Neural and Hormonal Mechanisms in Aggression Aggression in humans has been associated with low levels of serotonin and high levels of dopamine. Usually, serotonin has a calming effect, which inhibits aggression. When serotonin levels are low, this inhibitory effect is removed and people are less able to control their aggressive behaviour. Evidence for the importance of serotonin comes from two main sources.

Brown (1982) found that there were low levels of the waste products of serotonin in the cerebrospinal fluid of individuals who are prone to impulsive and aggressive behaviour. The second source of evidence is studies where participants were given the drug dexfenfluramine, which reduces levels of serotonin in the brain. Mann (1990) administered dexfenfluramine to male and female participants, and found that males displayed more aggressive response on a questionnaire.

A Meta analysis of 29 studies of serotonin and aggression showed that these studies consistently found evidence of low serotonin levels in antisocial children and adults. The levels of serotonin were particularly low in individuals who had attempted suicide, suggesting that low levels of serotonin lead to impulsive behaviour, one consequence of which is aggressive behaviour and, in some individuals, suicide. One of the consequences of low levels of serotonin is that the brain creates more receptors in an attempt to capture any serotonin that is available.

This has been shown to be the case in research by Arora and Meltzer (2003), who found elevated levels of serotonin receptors in people who had committed violent suicide, thus supporting the claim that normal levels of serotonin have an inhibitory influence on violent behaviour. Ferrari (2003)

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showed support for serotonin in aggressive behaviour in an animal study for rats. They allowed rats to fight at the same time every day for 10 days, and not on the 11th day. They found that rats learned from their experience and had raised levels of serotonin in anticipation of having to fight.

Serotonin explanation of aggression have been criticised as being reductionist. The link between serotonin and aggression is fairly well established in non-human animals, but the position is less clear in humans, particularly as aggressive behaviour in human is far more complex behaviour, and is subject to social learning, genetics and other factors. Testosterone has been associated with aggressive behaviour, although most studies have been correlational only. A Meta analysis carried out by Archer (1991) found a low positive correlation between testosterone levels and aggression.

A study by Kouri (1995), gave participant either testosterone or a placebo. They were told that, by pressing a button they could reduce the amount of cash that another participant was receiving. Those who had received the testosterone pressed the button more than those with the placebo. An advantage of this study is that it made use of the experimental method, so allowing the researchers to demonstrate a cause-and-effect relationship as researchers manipulated the presence of testosterone to see its effect on aggressive behaviour.

An explanation of why testosterone and aggression are linked is the challenge hypothesis. This proposes that testosterone levels only rise above the base level in response to social challenges, such as threats to reproductive success. However, Mazur (1985) criticizes this explanation, <https://assignbuster.com/neural-and-hormonal-mechanisms-in-aggression/>

claiming that individuals only act to assert dominance, which can be expressed in many different ways, of which aggression is one. There is also a gender bias in research on testosterone and aggression, as research typically tends to concentrate only on the role of testosterone on males.

However, Archer (2005) found that the association between testosterone and aggression was even stronger for females. An additional problem is that research evidence is far from conclusive, with some studies showing no significant difference between violent and non-violent criminals (Bain et al. 1987), although another study found that most violent criminals had higher testosterone levels than less violent criminals (Kreuz and Rose 1972). This suggests that among individuals who are already predisposed towards violence, testosterone may be an additional influence that makes aggressive behaviour more likely.