

Brain Structure and Aggression

Bio-psychologists believe that behaviour is caused by the structure and functioning of the nervous system, particularly the brain. They tend to believe that specific types of behaviour are related to specific structures in the brain. Aggression is believed to be associated with the limbic system (particularly the amygdala) and parts of the prefrontal cortex. The amygdala is involved with survival. It generates impulses to either run away or to attack if we feel threatened. It plays an important role in recognising emotions like anger or fear in other people, which can trigger fight/flight impulses in ourselves. The prefrontal cortex is involved in planning and decision making. To some extent, it determines how we act on the impulses coming from our amygdala.

All people use these brain structures when processing potential threats from others, and all of us have the potential to become aggressive because of our nervous systems. However, in unusually aggressive people it could be that the functioning of the limbic system or frontal cortex has been impaired, so they generate more aggressive impulses or they find it harder to control them.

Evidence for brain structures in aggression

Claim: the amygdala generates aggressive impulses in response to potential threats.

- Accept this claim because: (1) there is a correlation between amygdala size and aggression levels (Swantje et al, 2012); (2) impairments to amygdala functioning caused by alcohol make aggression more likely (Gorka et al, 2013); (3) removal of the amygdala results in a lack of aggressive responses in monkeys (Downer et al, 1961).

Claim: the frontal cortex controls how/whether aggressive impulses are expressed.

- Accept this claim because: (1) some violent offenders show evidence of brain abnormality in the frontal cortex (Raine et al, 1997); (2) violent offenders whose crimes are impulsive and unplanned often have lower activity in their frontal cortex whereas violent offenders whose crimes are planned and non-criminals do not (Raine et al, 1998).

Arguments against brain structure and an explanation of aggression

- The findings in this area tend to focus in specific types of violent offender (usually NGRI's or those who show problems in impulse control). The same conclusions may not generalise to other types of offender or to 'everyday' types of aggression.
- Where non-human animals are used, the findings may not generalise to humans, whose brains are structured differently.
- Whilst it is true that brain structure correlates with certain types of aggression, this does not show causality. Brain functioning may change as a consequence of aggression rather than being a cause.
- Even if brain structure is reliably associated with aggression this leaves open the question of how the brain came to be that way - this could be through genetics (nature) or alternately through brain damage, drug use, learning or the effects of the environment e.g. nutrition, neglect, abuse etc.