

Is Brain Aggression a Mystery?

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Abstract

Aggression is a safety valve for anger. It is an obnoxious emotion. Aggression is a consequential prophylactic aggravation, in which both the patient and the physician are at risk. Clinical, neurologic, and/or mentally ill persons prone to get aggression. Aggression is an introvert and a negative word for a healthy human being. When it triggers, it changes the behavior of a person from normal to frustrate. Being human, we don't understand how our brain reacts to emotions like aggression. Our brain is a befuddling organ, many things are going on there, and some of them are mysterious. Sometimes we think aggression is adaptive, helping people and animals guard their homes against intruders and protect their children from threats. Still, these aggression problems arise when taken too far, which escalates abnormally and becomes violent. We are daily facing many things, but all have different reactions for the same things, some react normally while others react aggressively for the same things, it shows the brain has a mystical response for the person. There is considerable evidence that the limbic-dorsolateral prefrontal and orbitofrontal network facilitates the activation and inhibition of aggressive behaviour.

Keywords: Aggression; Limbic-Dorsolateral Prefrontal; Orbitofrontal; Serotonin; Epinephrine; Testosterone; Altruistic Aggression; Displaced Aggression; Micro Aggression; Passive-Aggression; Relational Aggression; Weaning Aggression

Introduction

A good clinical approach puts aggression in the broader [1].

Feminine and masculine, play an important role in aggression [2].

There are multiple theories that seek to explain findings that males and females of the same species can have differing aggressive behaviours. Male aggression gravitates pain or physical injury, but female aggression towards psychological [3]. Epinephrine is a stress hormone that is released by the adrenal system but concern as a neurotransmitter [4].

Serotonin improves mood and reduce feelings of anxiety [5].

Serotonin is stored in blood platelets, is released during agitation, vasoconstriction, where and acts as an agonist to other platelets [6].

Recent work involving re-uptake inhibition with 5-HT in patients with dementia have suggested improvement in behavioral disturbances [7].

There are some hypotheses of specific adaptations for violence in humans.

It is ambiguous what behaviors are selected for violence [8].

Testosterone activates the subcortical areas of the brain to produce aggression [9].

Archive

The organizer for the crime of aggression based on their participation in aggression committed by a State without providing a detailed definition of this crime [10].

The International Criminal Court which provided setting out the conditions under which the Court shall exercise jurisdiction with respect to this crime [11].

The Rome Conference also take up recommendations for a provision on aggression [12].

At the eighth session, the Working Group requested the Secretariat to prepare a paper on the subject [13].

Mental illnesses like bipolar disorder, Schizophrenia, depression and personality disorders like anti-social, borderline personality disorders are highly associated with aggressive behaviour.

Anger and aggression

Species-typical behaviours-Many related to reproduction (e.g. gain access to mate).

Amygdala and prefrontal cortex play important role in regulating aggressive behaviours. Lesion or damage to these areas may lead to aggressive and violent behaviour.

Studying shed new light

The “fight or flight” response is under the control of amygdala of the brain. It also plays a decisive role in memory. Amygdala mediates innate emotional behaviour through olfactory stimuli. Exalted heart rate, high BP, as well as blinking of the eye reflexes indicate fear [14]. When a person experiences danger, the amygdala stimulates the brain of the situation to avoid it in the future. When the prefrontal cortex is activated, the subject is more able to control his aggressive impulses. It is scientifically proven that the cerebral cortex is less active in murderer [15].

Brain regions that credit include (area 1) amygdala and the (area 2) prefrontal cortex.

Hormones influence aggression

Sex plays an important role in aggression. Aggression, the natural funny feeling of man, the antagonism of each one against all and of all against each one, is an inborn, independent, characteristic, unique that constitutes a most powerful obstacle to culture. Regrate, hate, fear, anger, shame and sadness are the negative categories of emotions and leverage aggression. Aggressive behaviour is normally managed with medication and/or behavioural access.

Testosterone is one of the major hormones involved in producing aggression Serotonin sets the body's internal clock. Hormonal responses.

Catecholamine

Norepinephrine, as with other catecholamine, itself cannot cross the blood brain barrier.

Pathway

These are derived from the tyrosine, and from phenylalanine. 50% Catecholamines linked to plasma proteins. Catecholamines are epinephrine (adrenaline), norepinephrine (noradrenaline) and dopamine. Tyrosine is created from phenylalanine by phenylalanine hydroxylase. Epinephrine increases glycogenolysis and increase sugar. It arouses glycogenolysis in muscle. Epinephrine stimulates lipolysis and triglycerides are hydrolysed into a glycerol and three fatty acids. Adrenaline and nor-adrenaline are secreted in large quantities on exposure to cold.

The catecholamine increases the muscular activity and produces shivering. These hormones increase the blood sugar levels by inducing glycogenolysis in muscle. Epinephrine stimulates lipolysis.

Role of serotonin

Serotonin is a neurotransmitter present in the nervous system of the gastrointestinal tract.

Release of serotonin in prefrontal cortex activates it and inhibits aggressive behaviour.

It is synthesised specifically in the brainstem, Merkel cells and receptor cells in the tongue. Serotonin is kept in reserve in blood platelets. Low serotonin leads to depression. The release of serotonin in the prefrontal cortex activates this region, and some investigators believe that the serotonergic input to this region is responsible for the ability of serotonin to inhibit aggression and risky behaviour.

Roles of testosterone

Several vertebrate brain structures complicated in the control of aggression. They are expensively furnished with sensory receptors, and bind with hormones in general and steroid hormones in particular There is a clear association between a male's aggressiveness with androgen such as testosterone, The rise and fall of aggressiveness depends on the natural fluctuations in testosterone levels in all vertebrates. Castration has been established to reduce aggression dramatically. Injection of testosterone into the blood-reinstates aggression.

Testosterone: It is the main sex hormone in males [16]. Testosterone plays a key role in blossoming of testes and prostate, secondary sexual characters in males [17]. Testosterone is involved in prevention of osteoporosis [18,19]. Testosterone contains a keto and hydroxyl groups at positions three and seventeen respectively [20]. Testosterone is secreted primarily by the testicles of males and low in the ovaries of females [21]. Testosterone, production is about 20 times greater in men [22,23].

Alcohol and aggression-Side effects and risks

Alcohol has been one of the causative agents in causing aggressive events in an individual's life. It also has been one of the major factors in creating conflicts in families and also reduced quality of life of people consuming alcohol [24].

External agents like substances i.e. alcohol, cannabis etc may directly cause aggression by disrupting cognitive mechanisms.

Mechanisms of alcohol use and violence: High thoughts

Alcohol directly affects physical and cognitive function of an individual [25] Alcohol may encourage aggression or violence by disrupting normal brain function [26]. Preventing violence by reducing the availability and harmful use of alcohol [27]. Alcohol causes aggressive behavior [28,29]. Experiencing violence can lead to the harmful use of alcohol [30,31]. Violent behavior including delinquent behavior, sexual violence and suicide [32]. Alcohol promotes aggressive behavior by affecting self-regulation, attention, information processing, and decision- making [33].

Factors associated with alcohol use and aggressive behavior

Individual factors associated with an increased probability of alcohol-induced aggression are: High underlying irritability, Lack of empathy [34]. Various studies have estimated that up to 50% of alcohol- dependent men display violent behavior [35,36]. Chronic drinking behavior in 1 year before the offense did not differ between violent and non-violent criminals [37,38]. High alcohol consumption therefore seem to approval aggressive behavior more strong [39,40]. The effect of alcohol consumption on aggressive behavior likely to be influenced by psychological factors also [41]. Aggressive behavior is a result of the disruption of cognitive mechanisms [42]. Clarification include the impairing effects of alcohol utilization on behavioral control [43]. Stress-dampening [44,45] and the awareness of socially relevant cues organization with aggression [46,47]. This altered processing is likely to have a meaningful impact on behaviour [48,49]. Sadness as an indicator of submission reduces the extent and intensity of aggression [50]. It is important to consider individual differences amongst alcohol-related aggressive behaviors [51]. Higher levels of aggression are predictive of alcohol-related aggression after encouragement [52-54].

Impact of alcohol and aggressive behavior-Need for better understanding

Across all countries, alcohol-related violence has many consequences, and pressures on health and public services. Corporeal Bruise, depression, anxiety, wakefulness produce health problems [55]. Harmful alcohol use is often cited as a method of coping with Consuming alcohol are problematic and produce agony in life [56]. Other longer-term health effects can include Drinking alcohol leads to suicidal tendency and delayed stress syndrome [57]. Kids always observe parents and looker-on violence, or between their parents are more likely to develop psychological and behavioral problems during childhood [58] and alcohol dependency later in life [59], increasing their risk of becoming perpetrators of violence. Alcohol-related violence within a family can affect the standards of life [60]. Case reports of self-injurious behaviors were reported due to aggression [61]. Mental illness in alcoholism can also be due to anger and aggression [62,63]. Attention seeking can be due to many factors. Biologically, serotonergic depletion [64]. Hedonists are linked to lack of impulse control and depression [65,66]. Alcohol induced psychotic disorders can also lead to violence due to underlying delusions and hallucinations.

Is aggression evolutionarily adaptive?

Human expressions, emotions and animal expressions are similarly evolved. The nature of animal aggression is for fighting over food, shelter, and mates or over territories. Human aggression is an innately evolved experience. It is not necessarily flexible to aggress in all circumstances.

The mechanisms that govern aggression: Violent or adverse action toward another May have evolved as explanations to recurring problems faced by their progenitors Aggression serves an important function in terms of both individual continuity as well as conceptive potential. Competition arises when assets are limited and animals must challenge in order to pull through and reproduce.

Chromosomes, genes and aggression

Absolutely, aggression is genetically determined.

Negative emotions cause aggression

Angry, bad mood, tired, pain, sick, or frustrated results in aggression. Negative emotions more likely cause aggression. Violent behaviour occurs due to poor grades in examinations, frustrated, unpleasant thoughts and feelings. Aversive events, negative thoughts that accompany aggression. Frustration brings negative effects and increases arousal. A person gets frustrated when his computer crashes while writing an important paper.

Alternate aggression

Relational aggression also known as alternative aggression.

Altruistic aggression

Altruism refers to a preparedness to make self-sacrifices for the welfare of others. People evidently have very large amounts in the extent to which they are disposed to be altruistic.

Anticipatory aggression

Aggressive actions damage all and are calculated across psychology's regulation Classical theories discuss the causes of aggression in the context of frustration, and pain. Positive affect cause aggression. Findings from emotional, intellectual and neurobiology have assembled to detail aggression's qualities.

Displaced aggression

An aggressive behaviour is directed at a person or other destination that is not the authority of the aggression-arousing stimulation or frustration.

Indirect aggression

Aim to hurt another without face to face dispute.

Emotional aggression

Hurtful aggression that branch from angry feelings.

Instrumental aggression

Wounding another to make good another.

Ethical dilemma of aggression research

Roughness is a diffuse occurrence and therefore its definition is also complex to operationalize. Notions of what is acceptable and unacceptable in terms of behaviours and constantly under review as values and social norms evolve. It is probably a matter of judgement. The wide diversity of moral codes, makes the violence the most demanding.

Break through treatment

Aggressive behaviour can be treated by psychotherapy, Antipsychotics (e.g. Risperidone, olanzapine, clozapine) A good choice to treat acute agitation-Benzodiazepines (e.g. lorazepam) Mood stabilizers (e.g. lithium, valproate, and carbamazepine).

Management

1. Set out clear understanding.
2. Build relation.
3. Show cultural sensitivity.
4. Avoid negative talk.
5. Don't take for granted or make discernment.
6. Be reassuring/boosting.
7. Keep away from power fights.
8. Supervise problems.

Violence risk assessment keep the patient safe:

- Insight-oriented psychotherapy
- Cognitive-behaviour therapy
- Supportive psychotherapy
- Behaviour modification
- Annoyance management

Management of aggression is mainly pharmacological. Mood stabilizers, Antipsychotics and Benzodiazepines are known to effectively decrease aggression.

Summary

Aggression is a negative feeling. It causes the human to physically and emotionally hurt others. Aggressive behavior can be triggered by several reasons including health, personal relationship, or family structure. However, it is found that gender differences play a key role

in aggressive behavior. Report suggests that men and women exhibit different kind of behavior patterns while displaying aggression. Aggressive behavior in men involve pain and are more physical compared to women. Moreover, hormones namely serotonin and testosterone also play an important role in aggression. Both these hormones have been linked with human aggression according to researches. In fact, many studies suggested that testosterone can be one of the potential factors behind the aggression of men. However, it is also found that alcohol is a potential agent that can cause a human being to exhibit aggressive behavior: Alcohol encourages aggressive behavior by acting as a barrier against decision making, information processing etc. However, aggressive behavior can be treated with the help of psychotherapy.

Conclusion

From the above information, it can be concluded that aggression is a negative feeling that can make a person violent. However, there are lot of factors that are responsible for triggering aggressive emotions which includes genes, chromosomes, hormones. It is found that disturbances in cognitive mechanism can also lead to aggression. Moreover, aggressive behavior can be triggered by alcohol consumption as well. It is known from the above information that there are different types of aggression caused by different reasons. However, aggression can be brought under control by the treatment of psychotherapy, mood stabilizers and many more. Therefore, it can be said that aggression is partly regulated by our brain.

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