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REVIEW ARTICLE

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Study on Relationship between Hormones and Aggression in Different Animals and Human

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INTRODUCTION

Although it seems that everybody understands what aggression is, yet there is considerable disagreement about how to define it. The published literature on human aggression show variations in definitions proposed. From the review of literature related to the conceptualization of human aggression, it is clear that three important distinctions should be made for proper understanding of the concept. The first is whether it should be defined simply interms of hurtful behaviour, or a persons hurtful intentions should be taken into consideration. Behaviourists have taken aggression as any behaviour that hurts others. The advantage of this definition is that the behaviour itself determines whether or not an act is aggressive. But this definition ignores the intention of person who does this act. Intentions have a central role in the judgments about aggression. In this context aggression can be taken as any action that is intended to hurt others.

MATERIAL AND METHOD

Testosterone is another attractive candidate for mediating aggression because males in of all ages, races and cultures are more physically aggressive than their female counterparts. In animals, testosterone is linked to social aggression. Reducing testosterone in the alpha male by castrating him eliminates his dominant social status, and restoring testosterone through injection causes him to regain his social status. However, administering testosterone to males with less social status does not usually allow them to take over the alpha male position, indicating that there is not a direct relationship between testosterone and position in the dominance hierarchy. There is some evidence in humans that high testosterone males are more likely to be socially aggressive, but no evidence that they are necessarily more violent. Often they are successful in professions that thrive on competition, such as successful leading of a company, running for president, or pursuing a sports career. Also, a few psychologists have suggested that females are not necessarily less aggressive than males; rather, they display a different kind of aggression. Females are more likely to show non-violent types of aggression such as ostracizing their peers or spreading false rumors with the intent to cause pain. Thus, while there does seem to be a connection between testosterone and physical aggression, a person's testosterone level will not necessarily be a good predictor of aggressive behavior.

Several lines of converging evidence indicate that the neurotransmitter serotonin plays a key role in mediating aggressive and violent behavior. Mice with a selective knockout of the serotonin 1B receptor show an increase in aggression. Similarly, depleting serotonin levels in vervet monkeys increases their aggressive behavior, whereas augmenting serotonin levels reduces aggression and increases peaceable interactions like grooming. Serotonin has also been implicated in human aggression. For example, pharmacological interventions that augment serotonergic efficacy have been shown to reduce hostile sentiment and violent outbursts in aggressive psychiatric patients. Also, people with a history of impulsively violent behavior, such as arsonists, violent criminals, and people who die by violent methods of suicide show low levels of the serotonin in their cerebral spinal fluid. These findings represent an interesting correlation, but it is important to remember that the direction of effect is unclear. It may be that aggressive behavior induces low serotonin levels in the cerebral spinal fluid rather than vice versa.

Measures of brain functioning such as the EEG have long suggested that violent criminals have impaired neurological processes, but the recent advancement of neuroimaging techniques has allowed researchers to examine violent offenders' brains in more detail. Adrian Raine and colleagues have conducted the largest and most thorough study to date, in which they used positron emission tomography (commonly called a PET scan) to compare brain activity in 41 convicted violent offenders to activity in 41 age matched control subjects. They found that the people convicted of murder had reduced activity in the prefrontal cortex and increased activity in sub-cortical regions such as the thalamus. This finding fits nicely with previous research showing that the damage to the prefrontal cortex impairs decision making and increasing impulsive behavior. Indeed, Raine's work

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is perhaps the best evidence yet that impaired brain functioning may underlie some types of violent aggression. However, it is important to remember that his subjects lie at the extreme end of a spectrum and may not be typical of most aggressors. Also, there are plenty of examples of people with prefrontal cortex damage who do not commit violent acts, so PET scans cannot be used to ferret out potential murders.

Table No-3

Inter-correlation Matrix among Females

	A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	Ex	Inh	Mob	Va	Pa	Ata
A	-	.01	.03	.1	-.04	.09	0	.05	-.16	.03	-.04	-.1	-.04	.07	-.11	-.29**	-.07	.08	.11	.22*
B			.06	0	-.04	.05	.12	.01	.16	-.15	.07	-.08	.06	-.16	.06	.13	-.05	-.01	0	.08
C				-.34**	-.01	.02	.24*	.09	-.03	-.17	-.28**	-.18	.26*	-.40**	.26**	.29**	.09	-.20*	-.25*	-.22*
D					.01	.28**	-.46**	-.05	.16	.09	.26**	-.02	-.44**	.47**	-.26**	-.35**	-.14	.15	.36**	.32**
E						.01	-.25*	.07	-.25*	.05	.03	.03	.15	.10	.11	-.05	.09	.11	.02	0
F							-.13**	.03	.13	-.03	.02	-.13	-.41**	.09	-.03	-.25*	.02	0	.06	.06
G								.08	.05	-.09	-.17	.11	.35**	-.25*	.13	.32**	.13	-.05	-.26**	-.21*
H									-.19	.05	-.27**	-.09	.25*	-.06	.33**	.02	-.01	-.07	.03	.02
I										-.01	-.04	-.07	-.11	.03	-.11	.12	-05	-.02	-.04	-.02
J											.08	.45**	.05	.09	-.06	-.07	-.09	-.12	-.1	.11
O												.14	-.26**	.28**	-.43**	-.15	-.03	.05	.15	.16
Q2													.12	.12	-.11	.05	.21*	-.04	-.07	.04
Q3														-.36**	.42**	.40**	.16	-.03	-.21*	-.20*
Q4															-.40**	-.39**	-.15	.09	.34**	.22*
Ex																.37**	.21*	-.09	-.21*	-.29**
Inh																	.25*	-.28**	-.38**	-.25*
Mob																		-.06	-.26**	-.15
Va																			.19	.09
Pa																				.42**
Ata																				