

Biological Mechanisms in Aggression - Mark Scheme

Q1.

[AO1 = 2 AO3 = 2]

Level	Marks	Description
2	3 – 4	Findings are clear and accurate. Evaluation is clear and coherent.
1	1 – 2	Findings are clear but there is no evaluation, or, findings and evaluation are both incomplete / partly accurate. For 1 mark there is some detail of findings but no evaluation.
	0	No relevant content.

Possible findings:

- outline of findings of any study of genetic factors and aggression, eg family studies on the MAOA gene
- non-human animal studies, eg breeding aggressive dogs; gene knock-out studies in mice.

Any genetic study of aggression is acceptable but do not credit studies of the role of hormones.

Possible evaluation points:

- evaluation of findings, eg analysis of implication of findings; contradictory evidence
- alternative explanations; problem of demonstrating cause and effect
- methodological issues such as the validity of extrapolating from animals to humans.

Credit other relevant evaluation points.

Q2.

[O1 = 6 AO3 = 10]

Level	Marks	Description
4	13 – 16	Knowledge of genetic factors in aggression is accurate and generally well detailed. Discussion is thorough with effective use of evidence. The answer is clear, coherent and focused. Specialist terminology is used effectively. Minor detail and/or expansion of discussion sometimes lacking.
3	9 – 12	Knowledge of genetic factors in aggression is evident. There are occasional inaccuracies. Discussion is apparent

		with use of evidence mostly effective. The answer is mostly clear and organised. Specialist terminology is mostly used effectively. Lacks focus in places.
2	5 – 8	Some knowledge of genetic factors in aggression is present. Focus is mainly on description. Any discussion is only partly effective with some use of evidence. The answer lacks clarity, accuracy and organisation in places. Specialist terminology used inappropriately on occasions.
1	1 – 4	Knowledge of genetic factors in aggression is limited. Discussion is limited, poorly focused or absent, with little or no use of evidence. The answer as a whole lacks clarity, has many inaccuracies and is poorly organised. Specialist terminology either absent or inappropriately used.
	0	No relevant content.

Possible content:

- XYY genotype
- Genetic determination of testosterone levels
- The role of MAOA gene (linked to serotonin function in the brain)
- Genes for dopaminergic and serotonergic receptors

Discussion points:

- Research evidence to support the role of genetics – twin and family studies of genes and aggression eg MAOA gene; studies with non-human animals would also be relevant
- Problems of research into genes and aggression – defining aggression, confounding of environmental and genetic factors in family studies, many genes involved in aggressive behaviour.
- Evidence that challenges the role of genetics, such as hormones (testosterone) and social learning, though the focus should remain on discussion of the role of genetics

Credit other relevant material.

Q3.

Marks for this question: AO1 = 6, AO3 = 10

Level	Marks	Description
4	13 – 16	Knowledge is accurate and generally well detailed. Discussion / evaluation / application is thorough and effective. The answer is clear, coherent and focused. Specialist terminology is used effectively. Minor detail and / or expansion of argument sometimes lacking.
3	9 – 12	Knowledge is evident. There are occasional inaccuracies. Discussion / evaluation / application is apparent and mostly effective. The answer is mostly clear and organised. Specialist terminology is mostly used effectively. Lacks focus in places.

2	5 – 8	Some knowledge is present. Focus is mainly on description. Any discussion / evaluation / application is only partly effective. The answer lacks clarity, accuracy and organisation in places. Specialist terminology is used inappropriately on occasions.
1	1 – 4	Knowledge is limited. Discussion / evaluation / application is limited, poorly focused or absent. The answer as a whole lacks clarity, has many inaccuracies and is poorly organised. Specialist terminology either absent or inappropriately used.
	0	No relevant content.

Please note that although the content for this mark scheme remains the same, on most mark schemes for the new AQA Specification (Sept 2015 onwards) content appears as a bulleted list.

AO1

There is a long tradition of research into the neural (brain) and hormonal mechanisms underlying aggressive behaviour. Much of the early work was carried out on non-human animals, but over the last twenty years new technologies have allowed this to be extended into work with humans. Either approach is acceptable. Classic models such as the Papez-Maclean limbic theory involving structures such as the amygdala, septum, and hippocampus have been extended in order to account for conditions such as psychopathy and reactive aggression in humans; areas such as the amygdala, cingulate and prefrontal cortex have been implicated.

On the hormonal side most research has focused on the role of testosterone in human and animal aggression.

Candidates may introduce material on genetic factors in aggression. Such material cannot gain credit unless the implications for neural / hormonal mechanisms are explicit e.g. the association between genetic factors and levels of neurotransmitters such as serotonin and noradrenaline.

AO3

Discussion is likely to focus on research evidence from studies with humans and non-human animals, and the implications of findings. Relevant commentary could include the problems of defining aggression, the range of aggressive behaviours, and problems of extrapolating from animals to humans. Gender and cultural issues / reductionism / determinism and ethical issues etc could also be made relevant to this question.

Alternative approaches that focus on the role of aggression such as psychological, social, and cultural aspects, may be relevant if used as part of sustained and effective commentary on the role of neural and / or hormonal mechanisms.