10.1 Biological Explanations of Gender Development: 30-minute Pack

AQA 7182 · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions.

1 Outline three features commonly associated with Klinefelter's syndrome (XXY) relevant to biological explanations of gender development.

(Total for Question 1 is 3 marks)

2 Explain a limitation of biological explanations in terms of biological reductionism and why it matters for interpreting findings.

(Total for Question 2 is 4 marks)

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3 Discuss biological explanations of gender development, covering chromosomal and hormonal mechanisms, evidence from atypical sex chromosome conditions, and evaluation including reductionism and social implications.

(Total for Question 3 is 16 marks)

4 Apply biological knowledge to Oliver's case and explain how his features support a biological explanation of gender development, mentioning chromosomes and hormones.

(Total for Question 4 is 6 marks)

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Mark scheme · 10.1 Biological Explanations of Gender Development: 30-minute Pack

Question 1

physical feature: reduced testosterone levels, small testes and reduced facial/body hair oe	**B1**
physical/psychological feature: taller stature and possible learning difficulties, especially language-related problems oe	**B1**
psychological/behavioural feature: increased likelihood of less typical male-typical behaviours or problems with social confidence, used to suggest biological influence on gender-relevant traits oe	**B1**

Answer: Examples: reduced testosterone with smaller testes and less facial/body hair; taller stature plus possible language and learning difficulties; increased likelihood of reduced social confidence and fewer male-typical behaviours.

Question 2

identifies biological reductionism as a limitation, e.g. reducing complex behaviours to chromosomes or hormones alone oe	**M1**
explains that this ignores social, cultural and cognitive influences that also shape gendered behaviour oe	**A1**
develops why it matters: overemphasis on biology can lead to incomplete or misleading conclusions and overlooks interactions between biology and environment oe	**A1**
gives a brief implication, e.g. policy or educational decisions based solely on biological accounts may neglect social interventions that help individuals adapt oe	**A1**

Answer: Biological reductionism is a limitation because it reduces gendered behaviour to genes or hormones, ignoring social and cognitive influences. This matters because it can produce incomplete or misleading conclusions and may lead to policies that overlook useful social or educational interventions.

Question 3

Level 4 Knowledge of biological explanations is thorough and accurate. Discussion is evaluative and wide ranging, integrating evidence and critique effectively. Consideration of atypical chromosome research, biological mechanisms, biological reductionism and social implications is well developed and applied to examples. The argument is coherent and uses appropriate specialist terms.	**13-16**
Level 3 Knowledge is generally accurate with good coverage of main biological explanations. Evaluation is clear but may be less comprehensive or only partially integrated. Atypical chromosome evidence and social implications are mentioned and applied, though development may be uneven. Specialist terms used appropriately.	**9-12**
Level 2 Some relevant knowledge of biological explanations is present but limited in detail. Evaluation is present but superficial, with limited application of evidence. Discussion of atypical chromosomes or social implications may be brief or underdeveloped. Organisation and use of terminology may be inconsistent.	**5-8**
Level 1 Very limited knowledge and little relevant evaluation. Responses may be fragmented or largely descriptive without application. Little or no use of appropriate terminology.	**1-4**
Level 0 No creditworthy content.	**0**

Indicative content:

- AO1 content: Chromosomal explanations: typical XX and XY patterns, the role of the SRY gene on the Y chromosome in initiating testes development and subsequent hormone production.
- AO1 content: Hormonal explanations: prenatal androgens (e.g. testosterone) and oestrogens influence sexual differentiation of the body and are argued to influence brain organisation and later behaviour; critical sensitive periods are important.
- AO1 content: Brain-organisation theory claims hormones influence brain structures and future behaviour, producing some sex differences.
- AO1 content: Atypical sex chromosome evidence: Klinefelter's (XXY) and Turner's (XO) syndromes show reliable physical, hormonal and some cognitive/behavioural differences that link chromosomes and hormones to gender-relevant traits.
- AO3 evaluation: Strength - atypical chromosome conditions act as natural experiments providing convergent evidence for biological influence, increasing causal confidence about genes and hormones shaping development.
- AO3 evaluation: Limitation - biological reductionism: focusing on chromosomes and hormones can underplay social, cultural and cognitive factors and gene-environment interaction, leading to incomplete explanations.
- AO3 evaluation: Methodological issues: many studies are correlational, samples of atypical syndromes can be small and medically treated (hormone therapy), and psychosocial effects of being labelled may confound results.
- AO3 evaluation: Social implications and ethics: brain-organisation claims can be interpreted deterministically, risk reinforcing stereotypes or justifying inequality; careful communication and consideration of individual variability are needed.
- AO3 evaluation: Integration: a balanced account might recognise biological factors provide important influences via hormones and chromosomes but interact with socialisation and experience, so multi-factorial models are stronger.
- Application: use examples such as lower testosterone and language difficulties in XXY, ovarian dysfunction in XO, and how these examples both support biological influence and illustrate limits because not all individuals match stereotypes.

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Question 4

identifies Klinefelter's syndrome (XXY) as a plausible diagnosis given the pattern of physical and cognitive features oe	**M1**
explains that an extra X chromosome typically leads to reduced testosterone production and underdeveloped male secondary sexual characteristics, matching Oliver's low facial hair and low energy oe	**A1**
links language-based learning difficulties to common cognitive features seen in XXY, supporting a genetic influence on some gender-linked behaviours oe	**A1**
states that the chromosomal difference (presence of an extra X) provides direct biological evidence that genes and chromosomes influence physical and psychological sex-typed traits oe	**M1**
explains that these biological changes affect hormone levels which then influence brain development and behaviour, providing a mechanism for biological explanations of gender development oe	**A1**
concludes that Oliver's features illustrate how chromosomal atypicality and consequent hormonal differences can shape gender-relevant physical and behavioural outcomes oe	**A1**

Answer: Oliver's pattern fits Klinefelter's syndrome (XXY): an extra X usually reduces testosterone, explaining low facial hair and low energy, and is associated with language-learning difficulties. The chromosomal difference supports a biological account because genes alter hormone production, which in turn influences brain development and sex-typical behaviours.

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