PSY.OPT25 Biological Explanations of Gender Development

Total Marks

AQA 7182 · Calculators not allowed · about 80 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Outline the distinction between 'sex' and 'gender' in the study of human development. Name which is usually used to refer to biological differences and which to social or psychological roles.

Outline the distinction between 'sex' and 'gender', and state which term refers to biological differences and which to social or psychological roles.

(Total for Question 1 is 2 marks)

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2 Outline what is meant by a sex-role stereotype in the context of gender development.

Outline the meaning of a sex-role stereotype as used in gender development research.

(Total for Question 2 is 2 marks)

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3 Explain what androgyny means in gender psychology and outline the purpose of the Bem Sex Role Inventory (BSRI).

Explain androgyny and outline the purpose of the Bem Sex Role Inventory in measuring gender characteristics.

(Total for Question 3 is 4 marks)

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4 Outline the chromosomal explanation for typical biological sex development, mentioning the usual sex chromosome pairs and how they determine gonadal development.

Outline the chromosomal explanation for typical sex development, including the usual sex chromosome pairs and their role in gonadal development.

(Total for Question 4 is 3 marks)

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5 Outline the role of hormones in biological explanations of gender development, referring to androgens and oestrogens in prenatal development.

Outline how prenatal hormones, including androgens and oestrogens, are said to influence gender development.

(Total for Question 5 is 3 marks)

6 Outline three typical psychological and physical features associated with Klinefelter's syndrome (XXY) that are used as evidence in biological explanations of gender.

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

(Total for Question 6 is 3 marks)

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7 Outline three typical psychological and physical features associated with Turner's syndrome (XO) that inform biological accounts of gender development.

Outline three features commonly associated with Turner's syndrome (XO) relevant to biological explanations of gender development.

(Total for Question 7 is 3 marks)

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8 Case study: Oliver is a 17-year-old assigned male at birth. He is taller than his peers, has below-average facial hair, struggles with language-based learning at school, and has reported low energy. A blood test shows lower than typical testosterone levels. Using your knowledge of Klinefelter's syndrome, explain how these features support a biological explanation of gender development. Refer to chromosomes and hormones in your answer.

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 8 is 6 marks)

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9 Explain one strength of using research on atypical sex chromosome conditions, such as Klinefelter's and Turner's syndromes, to support biological explanations of gender development.

Explain one strength of atypical sex chromosome research for supporting biological explanations of gender development.

(Total for Question 9 is 4 marks)

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10 Explain one limitation of biological explanations of gender development related to biological reductionism. Include why this limitation matters for interpreting research findings.

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

(Total for Question 10 is 4 marks)

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11 Identify one ethical or social issue raised by brain-organisation theories of gender (the idea that prenatal hormones produce 'male' or 'female' brain structures), and briefly explain a social implication of this issue.

Identify an ethical or social issue raised by brain-organisation theory and explain one social implication.

(Total for Question 11 is 4 marks)

12 Discuss biological explanations of gender development. In your answer include reference to chromosomal and hormonal explanations, evidence from atypical sex chromosome research, and evaluation points such as biological reductionism and social implications of brain-organisation theory. You should use both knowledge and evaluation, and apply examples where relevant.

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 12 is 16 marks)

Mark scheme · PSY.OPT25 Biological Explanations of Gender Development

Question 1

- **B1** defines 'sex' as biological characteristics, e.g. chromosomal and anatomical differences between males and females oe
- **B1** defines 'gender' as social or psychological roles/identities, e.g. cultural expectations about masculinity and femininity oe
- **Answer: Sex refers to biological characteristics such as chromosomes and anatomy; gender refers to social and psychological roles, identities and expectations.**

Question 2

- **B1** states that a sex-role stereotype is a widely held belief about typical behaviours, traits or roles for males and females oe
- **B1** gives an example, e.g. the belief that males are aggressive and females are nurturing oe
- **Answer: A sex-role stereotype is a common belief about typical behaviours or traits for men and women, for example that males are assertive and females are caring.**

Question 3

- **M1** defines androgyny as possessing a balance of masculine and feminine traits rather than being strongly gender-typed oe
- **A1** explains that androgynous individuals score highly on both masculine and feminine trait scales, indicating flexibility in behaviour oe
- **M1** states BSRI is a psychometric scale developed to measure masculine, feminine and androgynous traits (a list of personality characteristics) oe
- **A1** explains BSRI purpose: to classify individuals as masculine, feminine, androgynous or undifferentiated based on self-ratings of traits oe
- **Answer: Androgyny is having both masculine and feminine traits. The Bem Sex Role Inventory is a questionnaire that measures endorsement of masculine and feminine traits so people can be classified as masculine, feminine, androgynous or undifferentiated.**

Question 4

- **M1** states typical chromosomal pairs: XY for genetic males and XX for genetic females oe
- **A1** explains that presence of the Y chromosome, specifically the SRY gene, typically triggers development of testes, while its absence leads to ovarian development oe
- **A1** links gonadal development to later hormonal secretion that influences sexual differentiation oe
- **Answer: Typical chromosomal pairs are XY (male) and XX (female). The Y chromosome carries the SRY gene which usually triggers testes development; without it ovaries form, and the resulting gonads then produce hormones that drive further sexual differentiation.**

Question 5

- **M1** identifies androgens (e.g. testosterone) and oestrogens as important sex hormones influencing development oe
- **A1** explains that prenatal androgens promote male-typical physical development and influence brain organisation related to later behaviour oe
- **A1** states oestrogens contribute to female-typical development and that hormone levels and timing are critical during sensitive prenatal windows oe
- **Answer: Androgens such as testosterone promote male-typical physical and neural development prenatally, while oestrogens contribute to female-typical development; the levels and timing of these hormones during sensitive periods influence later sex-typical anatomy and behaviour.**

Question 6

- **B1** 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
- **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 7

- **B1** physical feature: short stature and ovarian dysfunction leading to low oestrogen and lack of typical pubertal development unless treated oe
- **B1** physical/medical feature: some physical differences such as webbed neck and cardiac problems commonly reported oe
- **B1** psychological feature: normal intelligence on average but some specific difficulties, for example in spatial and nonverbal tasks, which inform debates about biological influences on cognitive sex differences oe
- **Answer: Examples: short stature and ovarian dysfunction leading to low oestrogen; physical signs such as webbed neck and possible cardiac issues; average intelligence but potential difficulties with spatial and nonverbal tasks.**

Question 8

- **M1** identifies Klinefelter's syndrome (XXY) as a plausible diagnosis given the pattern of physical and cognitive features oe
- **A1** 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
- **M1** 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
- **A1** 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
- **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.**

Question 9

- **M1** identifies a strength, e.g. provides natural experiments allowing inference about biological causes oe
- **A1** explains that atypical chromosomes create clear biological differences (extra or missing sex chromosome) that correlate with physical and some cognitive/behavioural differences oe
- **A1** develops why this matters: such correlations increase confidence that genes/hormones have causal roles, since social experience alone is less likely to explain the consistent physiological differences oe
- **A1** gives a short example, e.g. XXY males often have lower testosterone and some language difficulties, linking biology to outcome oe
- **Answer: Atypical sex chromosome research provides natural experiments: chromosomal differences produce consistent physiological and some cognitive differences, for example XXY males have lower testosterone and language difficulties. This strengthens the inference that genes and hormones causally influence sex-typed traits, beyond social explanations.**

Question 10

- **M1** identifies biological reductionism as a limitation, e.g. reducing complex behaviours to chromosomes or hormones alone oe
- **A1** 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
- **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 11

- **B1** identifies an issue, e.g. the risk of stereotyping or legitimising gender inequality based on supposed brain differences oe
- **B1** explains a social implication, e.g. such claims could be used to justify excluding women from certain roles or to limit individuals' choices oe
- **B1** identifies a second linked point, e.g. ethical concerns about determinism or the potential misuse of biological findings by policymakers oe
- **B1** briefly explains why this matters, e.g. deterministic interpretations can reduce support for social change and reinforce discrimination oe
- **Answer: Issue: brain-organisation claims risk reinforcing stereotypes or legitimising inequality. Implication: such claims could be used to justify excluding people from roles or limit choices, and deterministic readings could reduce support for social change and increase discrimination.**

Question 12

- **Level 4** (13-16): 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.
- **Level 3** (9-12): 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.
- **Level 2** (5-8): 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.
- **Level 1** (1-4): Very limited knowledge and little relevant evaluation. Responses may be fragmented or largely descriptive without application. Little or no use of appropriate terminology.
- **Level 0** (0): No creditworthy content.
- **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.