12.1 Biological Explanations for Schizophrenia: Genetics and Neural Correlates: 10-minute Pack

AQA 7182 · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer all questions. For questions worth 4 marks or more write in full sentences. Total time guidance 10 minutes.

1 Outline one piece of genetic evidence from family studies that suggests schizophrenia has a hereditary component. Refer to concordance or relative risk in your answer and name the context.

(Total for Question 1 is 3 marks)

2 State the concordance rates for schizophrenia reported by Gottesman for monozygotic and dizygotic twins, giving the approximate figures and naming the study author and year, in the context of genetic evidence.

(Total for Question 2 is 2 marks)

3 Explain how hypodopaminergia in the prefrontal cortex might lead to negative symptoms such as avolition or reduced emotional expression. Use neurocognitive reasoning in your answer.

(Total for Question 3 is 4 marks)

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Mark scheme · 12.1 Biological Explanations for Schizophrenia: Genetics and Neural Correlates: 10-minute Pack

Question 1

states a relevant finding from family studies, for example higher concordance or increased relative risk for first degree relatives compared with the general population oe	**M1**
gives a comparative figure or clear example, e.g. siblings or children of a person with schizophrenia have a greater risk than population baseline oe	**M1**
explains why this supports a hereditary component, linking increased concordance or risk in relatives to shared genes oe	**A1**

Answer: Family studies show higher concordance or relative risk among first degree relatives than in the general population, for example siblings or children of someone with schizophrenia have a substantially increased risk; this supports a hereditary component because close relatives share more genes.

Question 2

states an approximate concordance for monozygotic twins, for example around 48% attributed to Gottesman 1991 oe	**B1**
states an approximate concordance for dizygotic twins, for example around 17% attributed to Gottesman 1991 oe	**B1**

Answer: Gottesman reported approximate concordance rates of about 48% for monozygotic twins and about 17% for dizygotic twins, reported in work summarised around 1991.

Question 3

states that hypodopaminergia in the prefrontal cortex means reduced dopamine activity in prefrontal regions oe	**M1**
links reduced prefrontal dopamine to impaired executive functions such as planning, motivation and working memory oe	**M1**
connects these cognitive impairments to observed negative symptoms, for example reduced motivation leading to avolition oe	**M1**
explains why this matters behaviourally, for example impaired prefrontal dopamine undermines goal-directed behaviour and emotional modulation, producing flattened affect and reduced initiation oe	**A1**

Answer: Hypodopaminergia in the prefrontal cortex means reduced dopamine activity in frontally mediated circuits, which impairs executive functions such as planning, motivation and working memory. These cognitive impairments can produce negative symptoms: reduced motivation and difficulty initiating actions can be experienced as avolition, while disrupted emotional regulation can lead to reduced emotional expression.

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