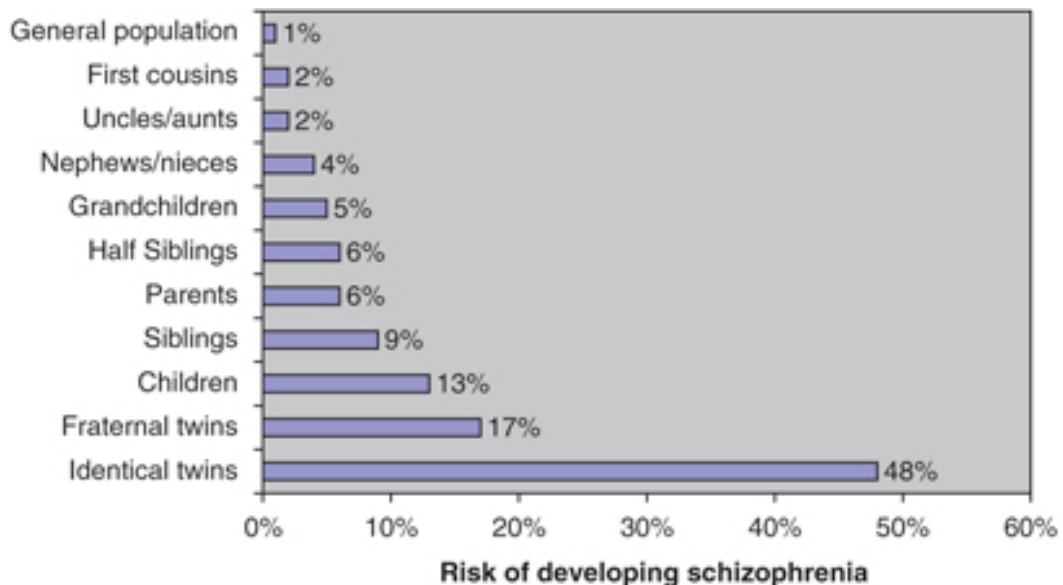


Title: Schizophrenia

Specification: Biological explanations for Schizophrenia: genetics, the dopamine hypothesis and neural correlates.

Q1 Label the percentages for each family member in Gottesman's (1991) study (AO1)



Q2 Fill in the gaps (AO1)

One family study was conducted by **Gottesman** in 1991. It has been found from family studies that schizophrenia is **more** common among biological relatives of a person with schizophrenia. Monozygotic twins are **identical** twins and fraternal twins are also called **dizygotic** twins. Monozygotic concordance rates are **48%** whereas dizygotic concordance rates are **17%**. Individual genes are also believed to be responsible for the **inheritance** of schizophrenia. Different studies have shown that different combinations of genes are responsible and so schizophrenia is aetiologically **heterogeneous**. Genes associated with increased risk include those responsible for coding of the function of the neurotransmitter **dopamine**. The Dopamine Hypothesis originally stated that an increase in the neurotransmitter dopamine in the subcortex (known as **hyperdopaminergia** in the subcortex), for example in the **Broca's** area, caused symptoms such as auditory **hallucinations**. Recently, the hypothesis has shown that low levels of dopamine can also cause symptoms of schizophrenia. There is **hypodopaminergia** in the cortex, where low levels of dopamine in the prefrontal cortex cause negative symptoms of schizophrenia. Finally, there are certain **neural** correlates with both positive and negative symptoms. The ventral striatum is associated with the reward of motivation in the brain. **Juckel et al. (2006)** found that there were **lower** levels of activity in this area in Schizophrenia which demonstrates that there is a neural correlate with this area and the negative symptom **avolition**. Positive symptoms can also have neural correlates. **Allen et al. (2007)** found that those patients with auditory hallucinations had lower activation levels in the **superior** temporal gyrus and the anterior cingulate gyrus.

Key terms: **Avolition, Superior, Hallucinations, Heterogeneous, Dizygotic, Hypodopaminergia, Gottesmann, Neural, Broca's, Identical, Allen et al., Inheritance, 48%, Dopamine, 17%, Hyperdopaminergia, Lower, More**

Q3 True or False (AO3)		
For each of these evaluation points, identify whether they are 'True' or 'False'		
A	Tienari et al. (2000) carried out a study in Finland. It was found that of the 164 adoptees whose biological mothers had been diagnosed with schizophrenia, 11 (6.7%) also received a diagnosis of the disorder, whereas just 4 (2%) of the 197 control adoptees (born to non-Schizophrenic mothers) did.	True
B	Large doses of amphetamines can cause the characteristic hallucinations and delusions of a schizophrenic episode.	True
C	Antipsychotic drugs increase the activity of dopamine in the brain, and these drugs increase symptoms like hallucinations and delusions.	False
D	Van Kammen, Docherty, and, Bunney (1982) found that the symptoms of schizophrenic patients often became better when they were given amphetamines.	False
E	There is evidence to suggest that psychological factors also play a role in schizophrenia, such as family functioning in childhood.	True

Q4 Apply the Knowledge (AO2)	
<p>Ricky and his wife Holly have been married for 3 years and are considering starting a family. However, Holly's mother has suffered with schizophrenia in the past and so did Holly's sister. Holly is worried that she will pass on a gene that will give their children schizophrenia later in life. Using your knowledge of the biological explanations of schizophrenia, explain the probability that Holly and Ricky's children will develop schizophrenia and advise them on this.</p>	
<p>Holly's sister inherited Schizophrenia from their mother. Gotteman's (1991) study shows that there is about a 13% chance of children inheriting schizophrenia from their parents. Holly's sister may have inherited candidate genes that are responsible for the coding for the functioning of dopamine. Depending on what symptoms Holly's sister and mother show these could cause hyperdopaminergia in the subcortex or hypodopaminergia in the cortex which causes schizophrenic symptoms; Holly, however, did not inherit schizophrenia. Gottesman's study shows that the risk of Holly and Ricky's children developing schizophrenia is about 2% when an aunt (Holly's sister) also has the disorder. Therefore, I would advise Holly and Ricky that the probability of their children developing schizophrenia is very small. I would also advise that even identical twins only have a 48% concordance rate, suggesting that psychological or environmental factors have a role to play in the onset of schizophrenia. So, if she provides a warm loving home for her children, they are less likely to develop schizophrenia.</p>	