**ERQ sample: Genetic similarity**

The following sample is a response to the question:

*Discuss how genetic similarities help psychologists in the study of genes and behaviour.* *Discuss*asksstudents to consider a range of arguments.

The sample response is an example of an exemplary response that should receive top marks. Comments about the essay are included below.

The highlighted areas of the essay demonstrate critical thinking.

**Sample essay**

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| **Essay content** | **Marker's comment** |
| When researchers study the potential genetic origins of behaviour, one of the places to start it by looking at families because families share similar DNA. It is often said that certain behaviours “run in families.”  Finding evidence of this is the first step in figuring out if a behaviour might be genetic.  To do this, researchers use three different types of research: family studies, twin studies, and adoption studies. | The introduction is linked to the question of genetic similarity and outlines the approach of the essay. |
| Family studies look at trends in behaviour over several generations in order to see if the behaviour “runs in the family.” Weissman did a 20-year study to see if major depression might be genetic. The study collected data on depressed patients and non-depressed participants.  All had children at the beginning of the study.  In the study, the original participants, their children and then their grandchildren were all assessed for major depressive disorder by a clinician.  The evaluation was blind to the child’s family history.  The study found that by 12 years old, almost 60% of the grandchildren in families with the disorder were showing signs of a disorder. Children had an increased risk of any disorder if depression was observed in both the grandparents and the parents, compared to children where their parents were not depressed.  This study seems to indicate a potential genetic link to depression. | Family studies are defined and the study is adequately described.  Although there are other details for this study that could be included, they are not necessary.  The importan thing here is to demonstrate understanding of the how family studies are used. |
| Weissman’s study is longitudinal, demonstrating change over time. They were able to gather prospective data, rather than relying on family history. Family studies are limited in that they can only look at around three living generations.  In order to go further back, they are reliant on family memory.  In the study of mental illness, often there are stories about older generations, but they lack an official diagnosis – or the diagnostic criteria have changed. Family stories are also anecdotal in nature and may be open to memory distortions. Although family studies indicate a potential genetic link to behaviour, there is no genotype studied – so it is not possible to determine if a specific gene might be responsible. In addition, family studies do not control for environmental factors. | Weissman't study is evaluated - and limitations of family studies are discussed. The final sentence could be unpacked a bit more. |
| Twin studies attempt to solve the problem of not identifying the genotype by using identical (MZ) and fraternal (DZ) twins. Although the genotype is still not identified, MZ twins have the same DNA and DZ twins do not.  Kendler carried out a study of over 15.000 twins. If MZ twins had a higher concordance rate for depression than DZ twins, it could be argued that depression might be genetic. In addition to filling in questionnaires about their mental health, the twins were also asked questions about their personal life experiences. Kendler found that MZ twins had a significantly higher concordance rate than DZ twins. Life experiences had no significant effect on the data, meaning that environmental factors did not play a significant role. | Twin studies are explained and an appropriate study is outlined.  Once again, the study is a bit more complex than this - looking at gender differences.  However, the responses demonstrates conceptual understanding relevant to the question. |
| Like family studies, twin studies are correlational and do not establish a cause and effect relationship.  In addition, no specific genes were identified in this study. There have been many twin studies that have similar results, so the findings are reliable.  However, there are some limitations. As no physiological measurement is taken, all data is self-reported. In addition, the interviewers did not officially diagnose the twins but instead accepted previous diagnoses.  That assumes that the diagnoses were valid and that those who were not diagnosed, actually do not have the disorder. However, the fact that the sample size is large helps to increase the reliability of the data.  Although this study attempted to rule out environmental factors, they were also self-reported.  Adoption studies are a natural experiment that allows researchers to more directly investigate the role of environment vs genetics. | Twin studies are evaluated - as is the study that was used as an example. |
| Adoption studies compare the behaviour of a child to both the biological and adoptive parents.  The idea is that if the behaviour is genetic, then the child’s behaviour should be more similar to the biological parent than the adoptive parent.  This assumes that the environment is different from the environment of the birth parents.  If the behaviour is more similar to the adoptive parents, who are not genetically similar to the child, then the assumption is that the behaviour is the result of environmental factors. Sorensen carried out a study on Danish adoptees to see if obesity might have a genetic origin. This was a longitudinal study that looked at children’s height and weight over a six-year period, as well as their adult weight.  The BMI was calculated and compared to the BMI of both the birth family (parents and siblings) and the adoptive family.  Sorensen found that there was a significantly higher correlation between the BMI of the adopted participants and their birth family than the adoptive family. | Adoption studies are explained and an appropriate example is described. |
| This study was reliant on school records for childhood data. In addition, parents and adoptive parents were contacted for information about their weight by questionnaire.  This may mean that the data is open to inaccuracies and demand characteristics.  However, a large sample was used to increase the reliability of the data.  Adoption studies also assume that the environment will be different in the adoptive home, but there is often a policy of selective placement in which a family is chosen that is similar to the birth family.  This may mean that the environment is not as well controlled as believed. Finally, there is that problem that adoptive children are not representative of a larger population.  Knowing that one is adopted may have an effect on one’s self of self. This means that it may be difficult to generalize the findings. | Limitations of adoption studies are discussed. |
| Prior to the Human Genome Project, psychologists were dependent on an indirect approach to studying the heritability of behaviour.  If the participants were genetically similar and had the same behaviour – whereas those that were not genetically similar did not have the same behaviour – then it was assumed that genes must be playing a significant role.  These methods help to build a hypothesis, but they are limited in their explanation.  Being able to map genes and their mutations has helped psychologists get a better understanding of the actual role of genes in behaviour. | The conclusion is appropriate and explains the value of using genetic similarity in forming hypotheses with regard to the origins of behaviour. |
| **Words: 1016** |  |