Phobias: Genetic Causes

This activity will help you to:

- ❑ Recall research techniques used to trace genetic contributions to psychological disorders
- ❑ Interpret data from psychological studies
- ❑ Comment on data from genetic studies
- ❑ Assess the genetic theory of phobias
- ❑ Write essay commentary

Genetic Studies of Psychological Disorders

One way of finding out whether a disorder has a genetic component is to see whether it runs in families. If relatives of sufferers have a higher than average risk of getting the disorder themselves, then it may be that the disorder has a genetic component.

However, family members typically share similar environments. Consequently, increased risk amongst close relative may simply indicate that that are exposed to the same set of environmental risks.

An alternative approach is to do a twin study. This looks at the concordance (similarity) of twins with respect to the disorder being considered. Concordance rates are expressed as a percentage. The percentage is the probability of one twin having the disorder if the other already has it.

In a twin study, MZ (identical) and DZ (non-identical) twins are compared. Whilst MZ twins have a greater degree of genetic similarity, both types of twin pair grow up in identical environments. So if we discover that MZ twins have a higher concordance, this cannot be because their environments are more similar than those of DZ twins; it must therefore be because their genes are more similar.

When interpreting twin study data, we look for the following features:

Feature	**Interpretation**
MZ concordance is significantly higher than DZ concordance	The disorder has a genetic component
MZ concordance is same or similar to DZ concordance	The disorder is environmentally caused.
MZ concordance is 100%	The disorder is genetically caused
MZ concordance is significantly less than 100%	The disorder has an environmental component

On the reverse of this sheet is an extract from a table summarising twin study data on phobias. Read the table and then write a commentary explaining what it shows.

TABLE 6. Twin Studies of Simple Phobias, Social Phobia, and Agoraphobia That Met Criteria for Possible Inclusion in Meta-Analysis

Study	Year	Group Type	Diagnostic Criteria	N	Blind	Sex	Twin Resemblance for Monoz: Proband-Wise Concordance (%) MZ	DZ
Carey and Gottesman (52)[b]	1981	Clinical	DSM-III simple phobias	98	No	Male, female	13.0	8.0
Kendler et al. (53)[c]	1992	General population	DSM-III social phobia	2,163	Yes	Female	24.4	15.3
			DSM-III agoraphobia	2,163	Yes	Female	23.2	15.3
			DSM-III simple phobia, animal	2,163	Yes	Female	25.9	11.0
			DSM-III simple phobia, situational	2,163	Yes	Female	22.2	23.7
Neale et al. (54)[c]	1994	General population	DSM-III simple phobia, medical[d]	1,858	Yes	Female	—	—
Kendler et al. (55)	2001	General population	DSM-III social phobia	2,396	Yes	Male	12.6	9.8
			DSM-III agoraphobia	2,396	Yes	Male	12.2	12.2
			DSM-III simple phobia, animal	2,396	Yes	Male	15.9	7.7
			DSM-III simple phobia, situational	2,396	Yes	Male	21.2	6.5
			DSM-III simple phobia, medical[d]	2,396	Yes	Male	15.6	4.1

In the commentary you write…

You must:

- ❑ Explain what these findings tell us about genetic contributions to phobias
- ❑ Explain the extent to which this evidence supports or challenges the genetic theory of phobias

You should:

- ❑ Comment on whether the samples used affect our ability to make generalisations from this evidence

You could:

- ❑ Assess the extent to which the twin study methodology has flaws that affect the validity of the evidence obtained. You may find the information below helpful in doing this.

One of the grounding assumptions of the twin study methodology concerns the degree of similarity between the environments of MZ and DZ twins. Because both types of twin pair are born at the same time into the same environment it is assumed that each member of a twin pair is exposed to exactly the same set of environmental influences, regardless of zygosity. However, consider the following observations:

- ❑ *Even though genetically identical, MZ twins are not exactly the same. Their fingerprints are different. One twin is typically larger and more robust than the other. This difference is first observable during pre-natal development.*
- ❑ *MZ twins typically have a closer relationship than DZ twins.*
- ❑ *Parents of MZ twins often accentuate their similarity by dressing them similarly etc.*
- ❑ *DZ twins can be a girl and a boy. MZ twins are, by definition both female or male.*

Is it reasonable to assume that the environments of DZ twin pairs are as similar as the environments of MZ twin pairs?