Choosing the right statistical test

You need to know:

- The type of test you need (difference or correlation);
- The type of data you have (nominal or at least ordinal);
- Whether the data are related or unrelated.

1. What type of test do you need?

If the study is an experiment (or quasi experiment) then you are comparing two (or more) conditions and you want to know if they are different, then you need a TEST OF DIFFERENCE.

Example: Jane is comparing recall of an organised and a disorganised wordlist. She thinks the PPs will recall more from the organised list. Jane needs a TEST OF DIFFERENCE.

If the study is one in which you are measuring two variables and you are looking to see if there is a relationship between the measurements (e.g. if one rises the other falls), then you need a TEST OF CORRELATION.

Example: John has collected students Maths and Physics GCSE results. He thinks that students who score high on Maths will also score high on Physics (and vice versa). John needs a TEST OF CORRELATION.

2. What type of data have you collected?

Ordinal data are scores that can be arranged in order of size, but which are not measurements on a scale with equal units. Most of the time, Psychologists get ordinal data in their studies. Ask yourself: does every PP have their *own* score? Would it be possible for me me to arrange them in order? If the answer is 'yes', then you have data that are AT LEAST ORDINAL DATA.

Example: John has been measuring recall scores of words from a list. John has ordinal data because each PP has a recall score so it would be possible to arrange them in order from the highest to the lowest.

Example: Jaswinder has been counting how many PPs prefer Psychology or Maths. Jaswinder does not have ordinal data because each PP does not have a score; each PP is put into a category.

Nominal data are what you have if you have been counting the frequency of things in different categories. If you have been counting things and putting them in categories, you have NOMINAL DATA.

Example: Jaswinder has been counting how many PPs prefer Psychology or Maths. Jaswinder has nominal data because each PP she assesses is put into one of her categories. After collecting her data she has the frequencies of each preference.

When working out what type of data you have, start by asking 'is it 'AT LEAST ORDINAL?' If not, then it's NOMINAL'.

3. Are your data related or unrelated?

You have RELATED DATA of your data are pairs of scores that 'belong together'. This is usually because each pair of scores has come from the same person, for example, when you have used a repeated measures or matched PPs experimental design. If you don't have paired scores (usually because because independent groups experimental design was used) then you has UNRELATED DATA. In practice you only need to work this out for experimental or quasi-experimental studies. If it's a correlational study, then the data are always assumed to be RELATED.

Example: Jane is comparing the same PPs' recall of an organised and a disorganised wordlist. She has RELATED DATA because she has used a repeated measured design.

Example: Jeff is comparing the personality scores of criminals and police officers. He has UNRELATED DATA because his study uses independent groups.

Justifying your choice of test

Often, you will be given a scenario and asked how the data should be analysed. When choosing a statistical test you need to justify your choice fully. This means you must related your reasons for choosing the test directly to the scenario given in the question. If you do not do this, your answer will be regarded as 'generic' and will attract no marks.

Scenario

Researchers have content analysed witness statements obtained using standard interviews and cognitive interviews with different groups of witnesses. The number of correct assertions by each witness has been counted.

Justification of test

A TEST OF DIFFERENCE is needed because the researchers are comparing standard and cognitive interviews to see if they are different. The data are AT LEAST ORDINAL because each PP has their own score (number of correct assertions) and the scores can be ranked in order of size The data are UNRELATED because independent groups were used for the standard and the cognitive interviews. Therefore the researchers should use the Mann-Whitney U test.