

Confounding extraneous variables

You are learning how to...	In the context of...
<ul style="list-style-type: none"> • Distinguish between confounding and non-confounding extraneous variables • Identify confounding variables in example experiments 	<ul style="list-style-type: none"> ○ Experimental studies of social and cognitive psychology and individual differences.

In an experiment, we are interested in whether an IV we have manipulated has a causal effect on a DV we are measuring. We know that in any experimental situation there are many other **extraneous variables** present that might affect the DV but we don't need to worry about all of them. Most of those extraneous variables will have an effect that is **randomly** distributed throughout the DV measurements of both conditions. As a consequence we can assume that they affect the conditions of the experiment roughly equally, which means we don't really need to panic about them: at worst they will increase the 'noise' in our measurements, making them less accurate but not ruining our experiment. However, a few of the extraneous variables may potentially affect the DV measurements of our two experimental conditions differently (i.e. they may have a **systematic** effect on the IV). This is a big problem because if we don't spot them and make sure they are controlled, they will act as additional IVs. When we come to analyse the data, if we find that the DV scores in the conditions differ we may be unable to draw any conclusions (because we won't know which variable was responsible) or we may draw the wrong conclusions (because a variable was having an effect but we didn't realize it). Extraneous variables that have a systematic effect on the DV are called **confounding variables**.

In each of the following experiments, identify a confounding and a non-confounding extraneous variable. Explain the effect that the confounding variable might have had.

Fakedata & Fraud conducted an experiment into the effects of smell on the perceived attractiveness of food. PPs were asked to rate the attractiveness of a loaf of bread on a range of criteria. They recruited two groups of student PPs and arranged for them to attend experimental sessions in the Psychology department from 9.00am onwards. The first 20 PPs just rated the attractiveness of the bread. The next 20 did the same task while the smell of freshly baked bread was being piped into the room through a vent (they were unaware of this). The researchers found that ratings were higher in the 'bread scent' condition and concluded that the smell had the effect of enhancing the attractiveness of the food.

Researchers conducted an experiment to test the prediction that abstract words are harder for children to remember than concrete words. They selected 10 concrete nouns and 10 abstract nouns and then mixed them into a randomly ordered list. They presented the words one at a time on a screen, for two seconds each, to a sample of 8 year-old children. Immediately afterwards, the children were asked verbally to recall all the words they had seen. The researchers recorded how many of each type of word the children recalled correctly.

Extension task - A* grade

Use the concepts *extraneous variable*, *confounding variable*, *random error* and *systematic error* to explain...

- Why, if you use an independent groups design, you must randomly allocate PPs to conditions;
- Why using a repeated measures design is so problematic;
- Why it is a mistake to draw firm conclusions from quasi experiments.