

What will this chapter tell me?

We saw in the previous chapter that I had successfully conquered the holiday camps of Wales with my singing and guitar playing (and the Welsh know a thing or two about good singing). I had jumped on a snowboard called oblivion and thrown myself down the black run known as world domination. About 10 metres after starting this slippery descent I hit the lumpy patch of ice called 'adults'. I was 9, life was fun, and yet every adult I encountered seemed obsessed with my future. 'What do you want to be when you grow up?' they would ask. Would I be a surgeon, a lawyer, a teacher? I was 9 and 'grown up' was a lifetime away. All I knew was that I was going to marry Clair Sparks (more on her in the next chapter) and be a rock legend who didn't need to worry about such adult matters as having a job. It was a difficult question, but adults require answers and I wasn't going to let them know that I didn't care about 'grown-up' matters. Like all good scientists I drew upon past data: I hadn't tried conducting brain surgery, neither did I have experience of sentencing psychopaths to prison sentences for eating their husbands, nor had I taught anyone. I had, however, had a go at singing and playing guitar; therefore, I predicted I would be a rock star. However, even at this early age I realized that not all adults would appreciate the raw talent that would surely see me parading across the lighted stage in front of tens of thousands of people. Some of them might not think that rock stardom was a good career prospect. I needed to convince them. Adults tend to think money is important, so I decided I should demonstrate that rock stars earn more money than, say, a 'respectable' profession such as being a teacher. I could gather some teachers and rock stars, find out what their salaries were and compare them. Effectively I'd be 'predicting' salary from two categories: rock star or teacher. This would require a t -test. I didn't know about t -tests when I was 9. Happy days.

Looking at differences

So far we have tended to focus on relationships between variables; however, sometimes researchers are interested in looking at differences between groups of people. In particular, in experimental research we often want to manipulate what happens to people so that we can make causal inferences. The simplest form of experiment that can be done is one with only one independent variable that is manipulated in only two ways and only one outcome is measured. More often than not the manipulation of the independent variable involves having an experimental condition and a control group (see Field & Hole, 2003). Some examples of this kind of design are:

Is the movie *Scream 2* scarier than the original *Scream*? We could measure heart rates (which indicate anxiety) during both films and compare them.

Does listening to Andy's favourite music while you work improve your work? You could get some people to write an essay (or book) listening to my favourite music (as listed in the Acknowledgements), and then write a different essay when working in silence (this is a control group). You could then compare the essay grades.

Do diet pills work? Suppose we take two groups of people and randomly assign one group a programme of diet pills and the other group a programme of sugar pills (which they believe will help them lose weight). If the people who take the dieting pills lose more weight than those on the sugar pills we can infer that the diet pills caused the weight loss.

Manipulating the independent variable systematically is a powerful research tool because it goes one step beyond merely observing variables.¹ This chapter is the first of many that look at this kind of research scenario, and we start with the simplest scenario: when we have two groups, or, to be more specific, when we want to compare two means. As we have seen (Chapter 1), there are two different ways of collecting data: we can either expose different people to different experimental manipulations (*between-group* or *independent* design), or take a single group of people and expose them to different experimental manipulations at different points in time (a *repeated-measures* or *within-subjects* design). Sometimes people are tempted to compare artificially created groups by, for example, dividing people into groups based on a median score; however, this is generally a bad idea (see Jane Superbrain Box 9.1).

¹ People sometimes get confused and think that certain statistical procedures allow causal inferences and others don't (see Jane Superbrain Box 1.4).