What will this chapter tell me?

Having had what little confidence I had squeezed out of me by my first forays into dating and my band's unqualified failure to have an impact on the musical world, as I reached adulthood I decided that I could either kill myself or get a cat. I'd wanted to do both for years but when I was introduced to a little 4-week-old bundle of gingerness the choice was made. Fuzzy (as I named him) was born on 8 April 1996 and has been my right-hand feline ever since. He is like the Cheshire cat in Lewis Carroll's *Alice's adventures in Wonderland*[1] in that he seemingly vanishes and reappears at will: I go to find clothes in my wardrobe and notice a ginger face peering out at me, I put my pants in the laundry basket and he looks up at me from a pile of smelly socks, I go to have a bath and he's sitting in it, and I shut the bedroom door yet wake up to find him asleep next to me. His best vanishing act was a few years ago when I moved house. He'd been locked up in his travel basket (which he hates) during the move, so once we were in our new house I thought I'd let him out as soon as possible. I found a quiet room, checked the doors and windows to make sure he couldn't escape, opened the basket, gave him a cuddle and left him to get to know his new house. When I returned five minutes later, he was gone. The door had been shut, the windows closed and the walls were solid (I checked). He had literally vanished into thin air and he didn't even leave behind his smile. Before his dramatic disappearance, Fuzzy had stopped my suicidal tendencies, and there is lots of research showing that having a pet is good for your mental health. If you wanted to test this you could compare people with pets against those without to see if they had better mental health. However, the term *mental health* covers a wide range of concepts including (to name a few) anxiety, depression, general distress and psychosis. As such, we have four outcome measures and all the tests we have encountered allow us to look at only one. Fear not, when we want to compare groups on several outcome variables we can extend ANOVA to become MANOVA. That's what this chapter is all about.

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[1] This is one of my favourite books from my childhood. For those who haven't read it, the Cheshire cat is a big fat cat mainly remembered for vanishing and reappearing out of nowhere; on one occasion it vanished leaving only its smile behind.

When to use MANOVA

Over Chapters 9–15 we have seen how the general linear model can be used to detect group differences on a single outcome. However, there may be circumstances in which we are interested in several outcomes and in these cases the simple ANOVA model is inadequate. Instead, we can use **multivariate analysis of variance** (or **MANOVA**). MANOVA can be thought of as ANOVA for situations in which there are several dependent variables. The principles of ANOVA extend to MANOVA in that we can use MANOVA when there is only one independent variable or when there are several, we can look at interactions between independent variables, and we can even do contrasts to see which groups differ from each other. ANOVA can be used only in situations in which there is one dependent variable (or outcome) and so is known as a **univariate** test (meaning 'one variable'); MANOVA is designed to look at several dependent variables (outcomes) simultaneously and so is a **multivariate** test (meaning 'many variables'). There is a fairly lengthy theory section to try to explain the workings of MANOVA, but for those of you who value the little time you have on Earth, skip this section and we'll look how to do MANOVA in SPSS and interpret the output. This process will lead us to another statistical test known as **discriminant function analysis** or just **discriminant analysis**.