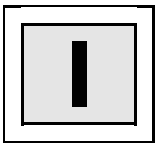
PART I RESEARCH DESIGN



Discovering Facts, Testing Theories

AIM

In this chapter, we look at what positivism is, whether survey methods and quantitative data analysis are positivist, and whether it matters if they are. By the end of the chapter, you should:

- Be clear what a social survey is
- Understand the role of surveys in discovering facts (descriptive research) and testing theories (explanatory research)
- Know what is meant by 'positivism' and be aware of the implicit association between positivist social science and quantitative survey methods
- Appreciate the relation between theory and observation and how this affects attempts to test theories against factual evidence
- Understand the phenomenological critique of quantitative methods
- Be aware of Marxist and feminist critiques of surveys and quantitative methods as 'oppressive'

The chapter also includes an appendix outlining the development of ten hypotheses which will be tested in our survey of smoking.

Introduction

This book introduces you to one of the major research techniques of the social sciences – the social survey. This is an approach to research which has often been criticized in British sociology. It is not unusual to come across sociologists who refuse to have

anything to do with surveys and quantitative data, and relatively few have ever carried out a survey or got involved in the statistical analysis of data.

British sociology's antipathy to quantitative methods

In the early 1980s, Frank Bechhofer published a report which claimed that many sociologists felt a 'profound distaste and contempt' for quantitative methods of research. He later demonstrated this with an analysis of articles published in four of Britain's leading sociology journals, in which he showed that two-thirds contained no quantitative data at all, and that only 16 per cent used any serious statistics. He concluded that 'the majority of the profession' in Britain was 'unable to read huge portions of the research literature'.

Frank Bechhofer, 'Quantitative research in British sociology', *Sociology*, vol. 30 (1996), pp. 583–91

This antipathy to survey methods can get passed on from one generation of sociologists to the next. Teachers tell their students that quantitative research involves mindless 'number-crunching', or that questionnaire surveys are superficial and 'empiricist', and students accept these claims, for many have a fear of numbers and need little encouragement to stay away from all the tables, graphs and percentages found in this sort of research.

Early in our study of sociology, therefore, many of us are put off this approach to social research even before we have learned what it involves. This is a pity, for it means we miss out on a potentially powerful and exciting research tool. Like all research techniques, survey methods have their problems, but we hope to demonstrate to you that these are not so severe as to rule out their use.

Empiricism and positivism

Empiricism is the philosophical tradition which believes that (a) the world consists of objects (b) these objects have their own characteristics and properties which exist irrespective of what we think they are like, and (c) our knowledge of these objects is developed through direct experience of them.

Positivism is a variant of empiricism. Positivists endorse empiricists' belief that there is a real world of objects that we can know only through experience, but they add to this some additional rules about how such knowledge is to be achieved. We shall outline the basic principles of positivist sociology a little later in this chapter.

What is a social survey?

A social survey is a method of gathering information about a specified group of people (a 'population') by asking them questions.

- Sometimes every member of the target group will be included in a survey, but more often, a *sample* of people is selected from the group, and their answers are taken to be representative of everybody in the group. For example, in our Smoking Survey, just 334 adults were interviewed out of a total target population of around quarter of a million in Brighton.
- Survey questions are usually standardized, so that everybody is asked about the same things in the same way. This does not mean that everybody is asked exactly the same questions (in our survey, for example, there would be little point in asking non-smokers how many cigarettes they smoke per day), but questions are worded in the same way for all respondents, and are asked in the same order. These questions are put together in the form of a *questionnaire* which may be administered by an interviewer or which may be completed by participants themselves.
- Information is collected on any or all of the 'three A's' – people's *attributes*, their *attitudes* and their *actions*. Surveys typically gather information on personal attributes (such as people's sex, age or occupation), on their attitudes and values (such as whether they favour restrictions on smoking), and on their activities and behaviour (such as whether they smoke).
- Surveys are not usually interested in what any one individual has to say, but are rather aimed at *generalizing* about groups or whole populations. Results are usually produced in number form, as *statistics* – so many per cent do this, so many per cent think that, and so on.

A social survey, therefore, can be defined as *a technique for gathering statistical information about the attributes, attitudes or actions of a population by administering standardized questions to some or all of its members*.

What are surveys used for?

Social surveys usually aim to do one or both of two things:

- They try to *discover facts about a population* (e.g. we might want to know how many people smoke, how many smokers would like to give up smoking, and so on). We can call this *descriptive research*, for the aim is to describe a social phenomenon, and to measure its incidence in a population.
- Surveys may also try to *find evidence about some of the likely causes of people's behaviour or attitudes* (e.g. Why have so many adolescent girls taken up smoking in recent years? Does cigarette advertising encourage people to smoke?). This can be referred to as *analytical* or *explanatory research*, for it aims to explain why people think or act as they do by identifying likely causal influences on their attitudes and behaviour.

Descriptive surveys may be almost completely atheoretical. This is often the case in market research where the aim is to find out whether people like a product, or which product they prefer to buy, but there is no attempt to analyse *why* certain groups chose one product over another.

Analytical surveys, on the other hand, are driven by theoretical questions. Here the aim is to collect evidence which supports or contradicts some *hypothesis* about the causes of people's behaviour or attitudes. This normally means collecting information which will enable us to *compare* one group's answers against another.

Hypotheses

Hypotheses are statements about what our theoretical propositions lead us to expect to find. They enable theories to be tested by predicting patterns of observations that should occur. Hypotheses therefore predict patterns of association in observed data as a means for testing causal theories.

We should not exaggerate the distinction between descriptive and analytical surveys, for the difference between them may not be very sharp in practice:

- Many surveys set out *both* to discover facts, *and* to test some causal propositions. The same survey might be interested in discovering how many people smoke (a descriptive question) and why smokers took up cigarettes in the first place (an analytical one).
- Descriptive surveys can be used to help us *develop* theories and hypotheses that we can then go out to test in later analytical research.

Problems of method and problems of methodology

Sociologists who are sceptical about the use of survey methods doubt whether they should be used to describe facts or to test theories, for they reject the idea that survey researchers can simply go out and 'gather facts' in the way that we have been suggesting.

To understand what is at issue here, it will help to distinguish problems of *method* from problems of *methodology*.

- Problems of method are *technical* problems to do with whether research tools are used properly.
- Problems of methodology are more *philosophical* and relate to whether it is possible or advisable to use such tools in the first place.

Most critics of social surveys and quantitative data analysis see the problem as one of methodology rather than method. They are not really interested in whether a survey has been carried out 'well' or 'badly' – they are more concerned to demonstrate that the research should not have been carried out in this way at all.

Methods and methodology

'The term "methods" is normally reserved for the technology of research, the actual tools by which data are gathered and analysed, while "methodology" refers to the logic or philosophy underlying particular methods.'

John Hughes, *Sociological Analysis: Methods of Discovery* (London: Nelson, 1976) p. 6

Technical problems of *method*

Technical problems of survey method concern the quality of the information that we gather in surveys. For example:

- Do our sampling techniques really give us a group of respondents whose answers represent the whole population from whom they are drawn?
- Do our questions get at the kind of information we want?
- Do our interviewing techniques unwittingly introduce a bias into the information that we gather?

When critics raise these sorts of concerns, they are worrying about the possibility that the facts that we gather in our surveys might be distorted, and that the empirical tests that we apply to our theories might in some way be inadequate. While such concerns must be taken seriously, there are procedures we can learn and rules we can follow to minimize these technical problems. We shall see in later chapters how to ensure that samples are likely to be representative, that interviews are not unduly biased, that measures are appropriate, and so on.

Philosophical problems of *methodology*

Such reassurances are unlikely to impress those critics for whom the problem is more philosophical than technical. Their concern is not that surveys might gather 'inaccurate information'; it is rather that survey researchers make a fundamental *epistemological* error when they assume that they can use these research techniques to go out and 'collect facts' in the first place.

Epistemology

Epistemology is that branch of philosophy which concerns itself with claims to knowledge. In other words, epistemology asks: 'How can we claim to know that something is true or false?'

The philosophical case against survey methods attacks on two fronts:

- It queries the way surveys claim to *collect information*, for it rejects the notion that 'facts' can simply be observed and recorded by survey researchers.
- It questions the way information is *analysed* once it has been collected, for it rejects all attempts to express social reality in the form of numbers and percentages.

Both lines of attack derive from the same philosophical source – namely, the *rejection of positivism* which swept through Western sociology in the 1960s and which has left its mark ever since. This philosophical attack on positivism resulted in the widespread rejection of the basic principles and assumptions on which quantitative techniques are based. We can always refine our tools, but there is not much we can do if the tools are rejected as being inappropriate for the job.

Is the problem really philosophical?

'It is my contention that, behind the war cry of positivism, attacks that have been parading as fundamental criticisms of the epistemological basis of survey research have very often been either criticisms of a practical technical nature – i.e. criticisms of bad survey research, which all of us would want to agree with I'm sure – or have raised problems [common to] *any* kind of data collection in social sciences.'

Catherine Marsh, 'Problems with surveys: method or epistemology?', in M. Bulmer (ed.), *Sociological Research Methods*, 2nd edn (London: Macmillan, 1984), p. 83

What is positivist sociology?

Comte's positive social philosophy

In the nineteenth century, the French social philosopher Auguste Comte suggested that a new 'positive' era had opened which had abandoned the fruitless search for magical 'hidden essences' or religious 'ultimate meanings', and had come to concentrate instead on *observing things as they are*.

In this positive stage of human development, people would accept as knowledge only those claims about the world which could be authenticated through direct experience – by observing them, touching them, or whatever. Faith in intangibles would be left to religion; science dealt only in facts.

Comte believed that because of the inherent complexity of its subject matter, the study of social life was the last area of human enquiry to make this transition from metaphysics to positive science. Comte suggested a name for it: *sociology*. He believed that this new science would evolve to study social issues *objectively*, by applying tried and tested scientific procedures of observation and measurement. It would concern itself only with facts, not opinions or beliefs or wishful thinking, and it would in this way come up with explanations for why things go wrong in society, as well as prescriptions for how to put them right.

Durkheim's sociological rules

Half a century later, Durkheim set out to bring Comte's promise of an objective science of society to fruition. It was Durkheim's contention that what social science studies is not individual behaviour, but collective phenomena (what he famously called 'social facts'). For example:

- Sociologists are not interested in why any particular individual breaks the law, but in why crime *rates* are so much higher today than they were 50 years ago.
- Social science has little to say about why you may or may not choose to move in with your boyfriend or girlfriend, but it is intensely interested in why *rates* of marriage have fallen so dramatically since the 1970s.

For Durkheim, then, social science is about discovering and explaining patterns and generalizations in whole populations, not about studying the unique features of particular individuals' lives. But how can we discover these patterns and find what is causing them?

Like Comte, Durkheim argued that all sociological knowledge must ultimately be based on the evidence of our *senses*. The facts are out there – the crime rate really *has* risen, just as the rate of marriage really *has* fallen. The task for social science is to find some suitable way of observing, classifying and measuring such facts objectively, without allowing our prior theories or prejudices to get in the way of what we find. Durkheim laid down a number of 'rules' about how we might achieve this:

- He told us we should study social phenomena in much the same way as we would study objects in the physical world – we should *eradicate our preconceptions* and look at the facts as they appear to us.
- If something cannot be directly measured, then we should find an observable indicator through which to measure it indirectly – just as a natural scientist measures heat by observing the movement of mercury in a thermometer, for example, so we may measure, say, social disintegration by linking it to *observable indicators* such as crime rates or rates of mental illness in a population.

Durkheim's comparative method

'We have only one way to demonstrate that a given phenomenon is the cause of another, viz., to compare the cases in which they are simultaneously present or absent, to see if the variations they present in these different combinations of circumstances indicate that one depends on the other... [T]he method employed is that of indirect experiment, or the comparative method.'

Émile Durkheim, *The Rules of Sociological Method* (New York: Free Press, 1938), p. 125

To establish causal links between phenomena, Durkheim advocated the use of *systematic comparison* (what he called 'the method of concomitant variation'). As in

the natural sciences, so in the social sciences, causation is established by comparing outcomes when a particular factor is present with outcomes when the same factor is absent:

- In the natural sciences, this comparative approach normally involves the use of *experiments* – we compare results in an 'experimental group' with those in a 'control group'.
- In social science, where experiments are rarely possible, we look for differences in social behaviour between groups by analysing *statistical patterns*.

Durkheim famously applied his comparative method to an analysis of official statistics on suicide rates in different countries at different times and across different social groups. This led him to identify clear patterns of difference – between married people and single people, men and women, the old and the young, Protestants and Catholics, the well educated and the poorly educated, in countries at peace and at war, in times of stability and times of economic tumult, and so on. Analysis of these differences then enabled him to come up with explanations for differing suicide rates, based on factors such as how strongly individuals are integrated into their social groups (married people are more integrated than singles, for example) and how successfully societies weather periods of change and upheaval.

Studying social facts by using surveys

Durkheim's *Suicide*, published in 1897, was the first important example of how a positivist social science can gather facts, classify them to reveal hitherto unknown patterns, and then develop explanations for them. Today, more than a hundred years later, we still do this. Sometimes, like Durkheim, we use official records, such as police crime records or family court divorce records. At other times, we generate new statistics using a social survey.

Social surveys are routinely used today to collect data on patterns of social behaviour, comparing one time period with another, or one type of society with another, or different social groups with one another, just as Durkheim did in his study of suicide rates. By collecting and collating survey evidence, we try to do two things:

- We seek to *measure objectively* 'things' like voting patterns, rates of social mobility or (as in our case) rates of smoking behaviour in different groups or populations. This is what we have called 'descriptive' research – documenting facts.
- We also try to analyse the results from surveys *to find evidence of causal links* between social phenomena, in much the same way as Durkheim did in his study of suicide statistics over a century ago. Like him, we employ a comparative method to see whether certain kinds of behaviour appear to be associated with particular social groups or characteristics. We have called this 'analytical' research – discovering causal associations by testing theories against facts.

Do you have to be a positivist if you want to do a survey?

There is no necessary correspondence between the use of quantitative survey techniques and a commitment to positivist philosophy:

- It is possible to be a positivist but to use other methods of research and analysis than social surveys – experimental and observational methods, for example, can be perfectly consistent with the basic rules of positivism;
- It is also possible to use survey techniques without endorsing all aspects of positivist philosophy. Indeed, most sociologists who carry out surveys or use statistical data would probably deny that they are 'positivists'.

Nevertheless, there is a connection between positivism, social surveys, and the use of statistics to analyse social phenomena. Most quantitative sociologists today are much more cautious than Comte and Durkheim were about the possibilities of measuring facts and testing theories – but that does not mean they think it cannot be done. We are just more aware today of the philosophical problems that we have to grapple with.

Reluctant positivists

'Much of sociology remains gently positivist at heart . . . a model of sociology which believes in a world external to the sociologist, which needs to be experienced in a systematic way. When a sociologist presents an account of his [*sic*] work, he is usually implicitly saying "the external world is like this: if you in the audience study it in the same way as I have done you will come to the same conclusions."'

Geoff Payne, Robert Dingwall, Judy Payne and Mick Carter, *Sociology and Social Research* (London: Routledge & Kegan Paul, 1981), p. 56

The (mildly) positivist assumptions on which survey research is based

Leszek Kolakowski (in *Positivist Philosophy,* Penguin, 1972) helpfully isolates the four key principles that define positivist philosophy:

- *Phenomenalism* The insistence that scientific knowledge has to be grounded in sensory experience of *phenomena*, or 'things'. If we cannot see, touch, smell, taste or hear something, either directly or indirectly, then we cannot study it scientifically.
- *Nominalism* The assertion that concepts are only labels for things and can never tell us more than can be gathered from experience. Labelling a group of people as

'working class', for example, does not itself tell us anything more than we already know about them – it just helps us classify them.

- *Unity of scientific method* The claim that all science should follow the same method of accumulating knowledge through direct observation and rigorous testing of theories against factual evidence.
- *Value freedom* The recognition that science cannot make ethical judgements about good and bad, right and wrong, because such evaluations cannot be justified with reference to knowledge based in experience.

Each of these principles is reflected to some degree in the assumptions on which quantitative survey methods operate.

1 The phenomenalist assumption in survey methods: Facts exist prior to, and independently of, research, and can be discovered by asking questions and recording answers systematically.

Survey researchers typically talk of 'gathering evidence' or 'collecting data'. This implies that the data – the factual evidence – exist 'out there' in the population, and that the task is to identify, classify and measure them accurately.

Strictly speaking, of course, the data do not 'exist' until we get people to answer our questions, and survey researchers understand this. But this approach to social research does assume that there are facts to be known about people's behaviour, attitudes and characteristics, and that these facts – 'phenomena' – have an existence before we ask our questions. It is in this sense that social survey research is 'phenomenalist', for it is premised on the belief that facts exist outside of the research process and can be discovered by it – even though this may not be as straightforward as classical empiricists seemed to imagine.

2 The nominalist assumption in survey methods: Theories guide the questions we ask, and theories can be tested against the evidence we find, but the facts themselves stand independently of the theories we may hold.

Survey researchers know that the way they collect facts about people will be guided by their theoretical interests and concerns. The way they frame their questions, classify people's answers and analyse their results will inevitably reflect their theoretical starting point. They nevertheless insist that none of this *determines* what they find – their concepts and theories give shape to their research, but they do not blind them to evidence that they did not expect to find, nor do they reveal facts that are not there.

The crucial role that theory plays in research derives from the deductive logic on which quantitative data analysis is based – we start out from theory, but we use factual evidence to test our theoretical generalizations. The assumption we make when we do a survey is that our theory guides what we are looking for, but that facts about people's lives determine what we find.

Karl Popper on the testing of theories

Positivists insist that scientific knowledge must come from experience (that is, observation). This implies that generalizations have to be built up by repeated observations (what philosophers call *inductive reasoning*). But this poses a problem, for no matter how many repeated observations you make, you can never be sure that the next one will not be different from the ones that preceded it. This 'problem of induction' has caused major headaches for positivist philosophers. How, they ask, can science develop watertight generalizations (causal laws) if scientific knowledge can only come from experience, and experience is never conclusive?

Karl Popper suggested a way out of this paradox. Instead of developing general theories on the basis of repeated observations, he said, we should *begin* with a theoretical generalization and then test it against observation (what philosophers call *deductive reasoning*). Rather than searching for evidence to confirm our theories (as inductive logic requires), Popper said science should make repeated attempts to prove theories wrong. An original hypothesis (or 'conjecture') can never conclusively be proved correct, but we can place reasonable levels of trust in theories which have successfully withstood repeated attempts at 'refutation'.

Karl Popper, *The Logic of Scientific Discovery* (London: Hutchinson, 1959)

3 The 'unity of science' assumption in survey methods: Survey data consist of responses to questions which can be analysed, in much the same way as observations in any other science are analysed, by means of statistical comparison.

When positivists insist that social science and natural science share the same method, they do not mean that they share the same techniques of investigation. Sociologists do not sit in laboratories heating up families in test tubes or dissecting social classes under a microscope. What they mean is that the *logic* of investigation (the 'methodology') is the same – that in social science as in natural science, we gather facts and we use them to test our theories.

All social scientists are aware that, unlike natural science (which studies *objects*), they are dealing with human *subjects*. While objects simply react to stimuli, human subjects initiate action – human behaviour is *motivated*. This means that if you want to know what 'causes' us to act in certain ways, you need to know something about the way we are thinking, and no natural science technique of observation is ever going to tell you that.

This difference between the unthinking objects of the natural world and the thinking subjects who inhabit the social world opens up research strategies to social scientists which cannot be used in the natural sciences. In particular, we can use *empathy* to understand how people may be thinking and feeling, and hence to develop plausible insights into why they are behaving as they are. There is obviously no equivalent to

this in the natural sciences where we can only ever analyse data from the outside looking in.

Most survey researchers acknowledge all this, and they therefore reject a strong version of the positivist postulate of the 'unity of science'. However, the fact that we can use empathic methods in the social sciences does not rule out the use of other, more observational methods such as surveys, provided they are appropriate to the kind of information we are trying to gather. Indeed, we might decide to use empathy to develop hypotheses which can then be tested using survey methods. The stand-off between so-called 'quantitative' and 'qualitative' approaches in sociology is a false dilemma – we can use both.

4 The assumption of value freedom in survey methods: The collection of facts is distinct from their evaluation, and the survey itself should be unbiased.

The principle of 'value freedom' is that the results of research cannot be used to demonstrate the superiority of any particular ethical or political argument. The reason is that you cannot logically derive an 'ought' statement from an 'is' statement – knowing what the world is like (facts) cannot tell you what it 'should' be like (values).

Suppose, for example, that our research shows that young people are encouraged by advertising to start smoking. Such a finding cannot justify us concluding that cigarette advertising should 'therefore' be banned. This is because the fact that advertising influences people to start smoking cannot tell us whether protecting the health of young people is more or less important than, say, protecting the rights of free speech (which are curtailed by any ban on advertising). The research finding helps *inform* the ethical debate, but it can in no way help to resolve it.

Many social researchers do use their results to try to bring about changes in public policy, and surveys are sometimes commissioned in the hope that they will produce evidence that will help one cause rather than another. But good survey researchers will always insist that if their results do not come out as hoped, the findings should still be published and should not be altered or censored. The facts, in the end, must prevail over one's personal values.

The research process itself is also assumed to be objective and impartial. In particular, it is assumed that there is nothing about the way that data are collected in a survey, or about the way they are subsequently analysed, that favours or discriminates against any group or interest in society. The survey is simply a tool, and as such it carries no bias.

Can facts be observed and recorded independently of our theories?

For the remainder of this chapter we shall consider how realistic and plausible each of these four propositions really is. We begin with the phenomenalist and nominalist assumptions in survey methodology. They raise the question of how far surveys can be used to collect facts about people's behaviour, beliefs and attributes without our theoretical ideas getting in the way of our observations.

The fundamental problem here is that the way we observe 'facts' about the world must to some extent reflect the ideas that we already hold about the reality we are observing. This means that theory does a lot more than simply guiding where we look – it actually helps shape what we see. This in turn means that scientific knowledge cannot after all be based in direct experience of the world around us, yet this is a fundamental axiom of the classical positivist tradition.

Is observation theory-dependent?

Have a look at figure 1.1. You probably see a staircase viewed diagonally from above. But keep looking at it, and suddenly you find that the image switches. You are still looking at a staircase, but now you are seeing it diagonally from below. As you continue to stare at this image, so your impression of what you are looking at keeps changing.

What this demonstrates is that our recognition of 'things' is not simply a function of their direct impact on our senses. What we see depends not only on the images which reach our eyes, but also on how our brains interpret these images. Observation, that is, depends crucially on *interpretation*.

This would seem to strike two mighty blows against the basic assumptions of empiricism:

- It suggests that knowledge of the world is not a function of raw experience. Our brain classifies the information which is fed to it through the various sense organs, which means that we have to learn how to 'see' things before we know what we are looking at.
- It casts doubt on the most basic assumption of empiricism, which is that 'facts' exist independently of how we look at the world. If observation depends on interpretation, then the objects that we experience in the world only appear the way they do because of what we *believe* we are seeing.

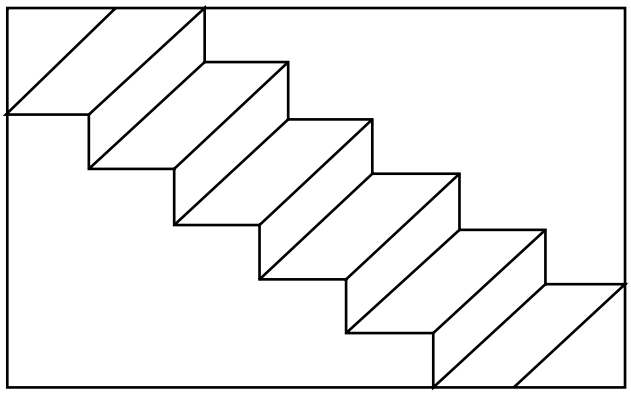


Figure 1.1 Perception depends on mental frameworks

Source: A. F. Chalmers, *What is This Thing Called Science?* 3rd edn (Buckingham: Open University Press, 1999), p. 6

We seem to be in deep trouble! Notice how we have started placing inverted commas around words like 'fact' and 'see'. Our faith that a world exists beyond our senses, and that it can be known through experience, is beginning to look very shaky – we are even beginning to doubt whether there are such things as facts.

Theory dependency is not theory determinacy

We learn to see things in certain ways by putting them into categories. That is, observation depends on prior *conceptualization*. In the process of observing things, we simultaneously *make sense of them* by fitting our experiences into a pre-existing conceptual framework. This means that if different people have different sets of concepts in their heads (for instance, as a result of being brought up in very different cultures), then they may well 'observe' the same thing in different ways.

However (and it is a big 'however'), this does not mean that we are free to interpret the world in any way we choose. There are appropriate and inappropriate conceptual frameworks for interpreting any given experience. Looking again at figure 1.1, for example, different observers might draw on different conceptual frameworks to claim that they are looking at:

- a set of straight lines
- a staircase
- a picture of a staircase
- a pattern which forms a holistic image (known as a 'gestalt' diagram)

We might accept any of these claims as factually correct – but there are millions of other claims that we would dismiss as incorrect. The object (in this case, the picture) sets limits on the range of interpretations that are appropriate.

Some enemies of empiricism suggest that there can be no objective knowledge of the world because we always have to interpret what we see, and interpretation is subjective. But this seems too strong a claim, for although there are always different ways of interpreting what we see, the range of possible interpretations is limited by the nature of the object we are looking at. *We cannot define reality in any way that we want, for while observation is mediated by the concepts which we have inside our heads, it is not determined by them*. What we see depends on the nature of what we are looking at as well as the way we conceptualize it.

This is important, for it means we can hold on to the basic assumption that there is a real world of objects, and that our knowledge of it depends on what these objects are like. Different observers may still disagree on what they see, but:

- *Observers will usually share some concepts in common* Science is a community which shares an agreed set of rules and procedures for observing and recording facts. Practitioners learn these rules and procedures as part of their training, so different scientists can generally agree on how to recognize evidence.
- *We cannot see what is not there* Scientists cannot simply make things up, for all scientific claims to knowledge have to be publicly tested against empirical evidence using these agreed procedures.

Can we use facts to test our theories?

We are not out of the woods yet, however! Critics have identified at least four additional problems with the position we have now arrived at:

- *Circular reasoning* How can we test theories against factual evidence if our recognition of the facts depends on our existing theories and concepts? Is there not a circularity here?
- *The 'myth' of falsification* Even if scientists agree that a theory has been contradicted by the facts, they often find ways of saving the theory from disconfirmation – tests are not as decisive as philosophers like Karl Popper suggest.
- *Paradigmatic orthodoxy* Even if scientists all agree on the rules for observing facts, this could simply mean that the whole community of scientists will be blind to any evidence that their collective training has not equipped them to recognize.
- *Epistemological pluralism* What happens if (as seems to be the case in sociology) the scientific community cannot agree on a set of rules governing the recognition of evidence?

Circular reasoning

Theories are always tested against evidence which is itself theory-dependent. We test the theory that water boils at 100 degrees Celsius, for example, by putting a mercury thermometer into boiling water and reading off the temperature on the tube – but this test itself assumes the validity of a second theory that claims that mercury expands at a uniform rate when heated! This is not, however, as big a problem as it might seem.

- The theory that we are testing may not be the same as the theories on which our factual observations depend (the theory about the boiling point of water, for example, is different from the theory about the expansion of metals which underpins our use of thermometers).
- A test will not work unless the real world makes it work (if the water is not boiling, the thermometer will not register 100 degrees). Just because our interpretation of events depends on our theories does not mean that our theories can produce successful test results out of the blue.

The 'myth' of falsification

Popper suggested that science should involve the repeated and rigorous attempt to falsify theories by looking for factual evidence that would disconfirm them. Critics have pointed out, however, that in the actual practice of science, we often try to save our theories from apparent disconfirmation. When we get a result we did not expect, we assume that something is wrong with the test rather than with the theory, and we set the results aside, dismissing our findings as a 'fluke' result.

Furthermore, scientists are often loathe to dispense with a theory, even if it has been falsified, unless there is something better to put in its place. Disproved theories can hang around for a long time until something better comes along to displace them.

Lakatos on 'sophisticated falsificationism'

'Contrary to naïve falsificationism, no experiment, experimental report, observation statement or well-corroborated low-level falsifying hypothesis alone can lead to falsification. There is no falsification before the emergence of a better theory . . . Thus the crucial element in falsification is whether the new theory offers any novel, excess information compared with its predecessor and whether some of this excess information is corroborated.'

Imre Lakatos, 'Methodology of scientific research programmes', in I. Lakatos and A. Musgrave (eds), *Criticism and the Growth of Knowledge* (Cambridge: Cambridge University Press, 1970), pp. 119–20

None of this means that we cannot test our theories, but it does mean that deciding when and whether a theory has finally been knocked over by the weight of evidence is a rather more convoluted and drawn-out process than Popper originally recognized. As the history of science readily confirms, false theories *do* get refuted by facts – it's just that it can take rather a long time and can involve a lot of argument.

Paradigmatic orthodoxy

Some critics of empiricism argue that scientists are so well socialized into the procedures and assumptions of 'normal science' that their basic theories only come under sustained criticism during extraordinary periods of scientific 'revolution'. Such revolutions occur when unresolved puzzles within a paradigm build up to such a point that eventually some brave soul suggests that everybody has been looking at things in the wrong way and proposes a completely different paradigm. Other than during these periods of revolutionary upheaval, however, facts are rarely allowed to disturb our theoretical orthodoxies.

Thomas Kuhn on the incommensurability of paradigms

'[T]he proponents of competing paradigms practice their trades in different worlds . . . Practicing in different worlds, the two groups of scientists see different things when they look from the same point in the same direction. Again, that is not to say that they can see anything they please. Both are looking at the world, and what they look at has not changed. But in some areas they see different things, and they see them in different relations one to the other . . . before they can hope to communicate fully, one group or the other must experience the conversion that we have been calling a paradigm shift. Just because it is a transition between incommensurables, the transition between competing paradigms cannot be made a step at a time, forced by logic and neutral experience. Like the gestalt switch, it must occur all at once (though not necessarily in an instant) or not at all.'

Thomas Kuhn, *The Structure of Scientific Revolutions*, 2nd edn (Chicago: University of Chicago Press, 1970), p. 150

For sociologists, however, paradigmatic orthodoxy has rarely been a problem, for sociology has no single paradigm (and, arguably, we never have had one). Our problem is not that facts go unrecognized due to a uniformity of perspective. It is rather that nobody can agree on a single set of rules by which facts might be identified in the first place.

Epistemological pluralism

The key problem for disciplines like sociology is that there are *too many* differences among practitioners regarding the way research should be carried out. Rival claims to knowledge jostle each other but rarely engage with each other, and readers go with whatever appeals to their prejudices and disregard the rest.

Basil Bernstein on the rivalry between sociological perspectives

'In a subject where theories and methods are weak, intellectual shifts are likely to arise out of the conflict between *approaches* rather than conflicts between *explanations*, for by definition most explanations will be weak and often non-comparable, because they are approach-specific. The weakness of the explanation is likely to be attributed to the approach, which is analysed in terms of its ideological stance. Once the ideological stance is exposed then all the work may be written off.'

Basil Bernstein, 'Sociology and the sociology of education', in J. Rex (ed.), *Approaches to Sociology* (London: Routledge, 1973), p. 154

Can social phenomena be objectively recorded, measured and analysed?

Just as natural scientists use various instruments to discover facts about the physical world, so social scientists try to gather facts about people's behaviour and attitudes by using survey instruments like interviews and questionnaires. From the 1960s onwards, however, 'phenomenologists' and 'ethnomethodologists' began to challenge the belief that 'social facts' can be collected in this way.

The nature of sociological accounts

Their starting point was to argue that the meaning of people's actions depends on the social context in which they occur. The 'same' action may be defined differently in different contexts, for the meaning of what we say and do is heavily dependent on where, when and with whom we do it.

Jack Douglas famously explored the implications of this for the analysis of suicide rates (in *The Social Meanings of Suicide*, Princeton University Press, 1967). He showed that an action resulting in one's own death may be interpreted by officials, relatives and others connected with the death as 'suicide' in one social context, but as

'accidental death' or 'misadventure' in another. The suicide statistics that Durkheim gathered cannot therefore be taken as 'objective indicators' of the 'actual' suicide rate, for deaths will have been defined in different ways in different situations, which means there is no 'real rate' of suicide for sociologists to explain. All that sociologists can do is develop an understanding of how coroners and others come to interpret what has happened.

The 'data' which social scientists observe and explain have already been interpreted once before, by actors themselves. There is no equivalent to this in the natural sciences, because objects in the physical world do not have any meaning attached to them until we give them meaning in the course of observing them. In the social world, by contrast, researchers are trying to study phenomena *which are already meaningful*.

What is ethnomethodology?

The prefix, *ethno*, refers to a group of people, a cultural group. Ethno*methodology* thus indicates an approach to sociology which is concerned to identify the methods used by people themselves for making sense of the world in which they live.

According to ethnomethodologists, what social scientists should be doing is producing 'second-order accounts' of how ordinary people create their own 'first-order accounts' of what happens in their world. In the case of suicide, for example, we should be looking at how deaths come to be recorded (by coroners, relatives and others) as 'suicides' in the first place.

In this way, ethnomethodologists have tried to turn sociologists away from a traditional concern with describing and explaining social phenomena, and towards a concern with how social phenomena are 'socially constructed' by actors themselves.

The social construction of survey data

From a phenomenological perspective, surveys do not *collect* facts about a population – they *create* them! This does not mean that survey researchers make up their findings. What it does mean is that they are inevitably engaged with their respondents in a *negotiation of reality*. The survey situation becomes a place where actors meet and negotiate meaning, and the researcher is just one of the actors:

- Respondents 'make sense of' the questions that are put to them and give what they consider to be an appropriate answer.
- The researcher in turn then 'makes sense of' the respondent's answer and classifies it to what he or she believes to be an appropriate category of reply.

The result of all this is not 'objective evidence' of some aspect of social reality. It is, rather, a new, negotiated account of social reality which is in principle no different from any of the other accounts which actors create in the course of their everyday

lives. Sociologists' accounts of social reality are in this sense no better than anybody else's.

Intersubjective meaning as a technical problem

The phenomenological critique of survey methods is dismissed by some survey researchers as a technical rather than an epistemological problem:

- Survey researchers recognize the importance of framing questions so that they 'make sense' to respondents. Phenomenological sociology can help by alerting us to the ways in which interviewers and respondents may misunderstand what the other really means to say.
- Researchers are also aware of the importance of classifying answers to questionnaires in such a way that respondents' intentions are respected. Again, phenomenologists can inform this process by showing how language is open to diverse forms of interpretation.

Seen like this, phenomenological sociology simply makes us more aware of the problems involved in ensuring clarity of meaning when doing a survey. Phenomenologists themselves, however, see their critique of survey methods as pointing to much more than mere technical difficulties which are in principle resolvable. For them, there is a fundamental problem in attempting to discover 'social facts' as if they exist over and above actors' own accounts of their social worlds. At the heart of this problem lies the survey researcher's search for quantifiable data.

The problem with numbers

Surveys aim to *measure* some specified set of behaviour or attitudes. A descriptive survey, for example, may be concerned to establish *how many* people smoke, just as an analytical survey may be concerned to estimate the *degree to which* advertising influences people to smoke.

Phenomenologists are quite happy for sociological accounts to use numerical measures where actors themselves make sense of reality in numerical terms. For example:

- A researcher may legitimately record how many cigarettes a smoker gets through in a day, for smokers themselves think in this way, and the question therefore 'makes sense' to them when they are asked it.
- There are also circumstances where it makes sense for researchers to record information using binary measures. For example, we might ask people whether or not they have smoked a cigarette in the last 24 hours, and their answers can be measured on a simple yes/no binary scale.

Suppose, however, we try to construct a scale measuring *how strongly* smokers desire to kick the habit. We might ask them to select an answer ranging from, say, 'very much', through 'quite a lot' and 'somewhat', to 'not much' and 'not at all'.

Alternatively, we might ask them to rank their desire to quit on a scale where '0' means they do not want to quit at all, and '10' means they are desperate to stop.

Systems of measurement like these are very common in survey research – but they drive phenomenologists to despair, for here numbers are being *imposed* by the researcher to produce an account which bears little resemblance to the way the actors themselves normally think and behave. People do not go around in their everyday lives telling their friends that their desire to stop smoking has just increased from 6 to 7.

When natural scientists measure the natural world by applying their own, constructed scales of temperature, weight, mass, or whatever, they do no violence to the reality they are studying, for the data have no inherent meaning to begin with. When social scientists apply their constructs to measure the social world, however, they are imposing a second-order account which smothers the first-order accounts of their respondents themselves – yet these first-order accounts should be what we are studying.

Numbers are not always meaningful

'Er... Good morning, O Deep Thought,' said Loonquawl nervously, 'do you have... er, that is...'

'An answer for you?' interrupted Deep Thought majestically, 'Yes, I have.'

...

'Though I don't think,' added Deep Thought, 'that you're going to like it.'

'Doesn't matter!' said Phouchg. 'We must know it! Now!'

...

'Alright,' said Deep Thought. 'The Answer to the Great Question...'

'Yes...!'

'Of Life, the Universe and Everything...' said Deep Thought.

'Yes...!'

'Is...' said Deep Thought, and paused.

'Yes...!'

'Is...'

'Yes...!!!...?'

'Forty-two,' said Deep Thought, with infinite majesty and calm.

...

'Forty-two!' yelled Loonquawl. 'Is that all you've got to show for seven and a half million years' work?'

'I checked it very thoroughly,' said the computer, 'and that quite definitely is the answer. I think the problem, to be quite honest with you, is that you've never actually known what the question is.'

Douglas Adams, *The Hitch-Hiker's Guide to the Galaxy* (London: Pan Macmillan, 1979), pp. 134–6

Is quantification necessarily invalid?

A pragmatic response to this critique might be to ask whether our measures help us describe or explain aspects of people's lives. The question then is not whether our numerical categories make sense to our respondents, but whether our measures successfully translate how they are thinking and acting into a simpler, numerical language.

We shall see in chapter 5 that there are various *tests of validity* we can apply to measurement scales to gauge whether they are tapping into how people actually think and behave. We can see, for example, whether people's answers to different questions are consistent with each other ('internal validity'), or whether the scores by which we measure their attitudes actually predict the way they behave ('external validity'). Good surveys do not use numbers mindlessly – they check whether the numbers represent a reasonable translation from actors' own beliefs and actions.

Provided they are properly validated, numerical indicators and scales can help us measure aspects of people's lives, even if actors themselves do not use or even understand them themselves.

Is the quantitative social survey a neutral research instrument?

The use of survey methods (for collecting facts), and of quantification (for analysing them), has been attacked by some critics on the grounds that surveys are oppressive instruments for collecting information, and statistics are oppressive forms of presenting and analysing it.

In the 1960s, American radicals suggested that mainstream sociology was biased in favour of the powerful. Positivist sociology's protestations of 'value freedom' – that it was only interested in gathering facts, and that it was neutral as between different interests and beliefs in society – were dismissed as an ideological smokescreen, and survey researchers in particular were berated for accepting research funds from government and big corporate institutions to carry out intelligence on behalf of the dominant interests in society.

Social research as an aid to repression

'The professional eyes of the sociologist are on the down people, and the professional palm of the sociologist is stretched toward the up people . . . he is an Uncle Tom not only for this government and ruling class but for any.'

Martin Nicolaus, speaking at the American Sociological Association conference in 1968 – quoted in Alvin Gouldner, *The Coming Crisis of Western Sociology* (London: Heinemann, 1971), p. 10

This line of criticism was subsequently taken up by Marxists and 'critical theorists' in the 1970s, and in the feminist social research methods literature of the 1980s.

Marxist critiques

There is no obvious reason why Marxists should shun survey methods, and not all of them have. Indeed, we shall see in chapter 3 that Marx himself used a questionnaire survey to gather information on the French working class. Nevertheless, there is a strong tradition within Marxism of criticizing social survey research as 'bourgeois' and 'ideological'.

- One argument is that surveys *classify* their information using categories derived from a bourgeois view of the world. Surveys reproduce existing ideological representations of reality, rather than challenging them, and in this way they help perpetuate the existing system of class domination.

The Marxist critique of official statistics

Big national surveys are expensive, and the state is one of the few players with the resources to carry them out. This means that surveys are conducted on those issues where the state needs information, and because the state's primary role is to support the interests of the capitalist class while ensuring the continued exploitation of the working class, this means that surveys get used as instruments of class rule.

Moreover, statistics produced by surveys use bourgeois categories to measure social phenomena. For example, the British census divides the population into 'social classes', but these bear no resemblance to what Marxists think are the 'real' classes of bourgeoisie and proletariat. The census categories confuse and distort the 'real' lines of class cleavage, and this helps disguise the relations of power and exploitation in society.

See Ian Miles and John Irvine, 'The critique of official statistics', in J. Irvine, I. Miles and J. Evans (eds), *Demystifying Social Statistics* (London: Pluto Press, 1979); Barry Hindess, *The Use of Official Statistics in Sociology* (London: Macmillan, 1973)

- A rather different argument is that surveys help the 'capitalist state' and its 'ruling class' gather information that can be used to maintain the 'oppression' of workers, ethnic minorities and other victims of the capitalist system. Just as workers in a factory or an office become 'objectified' in the labour process, so too do respondents in a survey when they are treated instrumentally as mere units of information. Surveys thus reflect and perpetuate the degradation of the human spirit under capitalism.

Critical theorists on positivist research techniques

'Insofar as contemporary life has been standardized to a great extent by the concentration of economic power pressed to the extreme and the individual is far more powerless than he admits to himself, methods which are standardized and in a certain sense deindividualized, are not only the expression of the situation but also the suitable means for describing and gaining insight into this situation.'

Max Horkheimer et al., *Aspects of Sociology* (London: Heinemann, 1973), pp. 122–3

Feminist critiques

While Marxists have attacked surveys as 'bourgeois', feminists have dismissed them as 'patriarchal'. The basic complaint is that quantitative sociology betrays an inherently 'masculine' way of seeing which prevents women's experiences from being expressed:

- Feminists have attacked the use of numbers (quantity) to express human experience (quality), arguing that women must be allowed to 'speak for themselves'. This requires methods which emphasize intuition, empathy and intersubjective understanding, rather than reducing subjective experience to percentages and charts.
- Survey methods are also criticized for treating women as objects. Surveys lock women into inferior roles in the inherently hierarchical researcher–respondent relationship, and some feminists have likened the research process to an act of 'rape' in which researchers take what they want for their own purposes, and then run away.

The critique of 'malestream' research

'The case that has been mounted against mainstream/"malestream" social research has been an important part of the project of women's studies; and within this, the dualism of "quantitative" and "qualitative" methods has played a central role. The use of "qualitative" research methods has been aligned with a feminist perspective, while "quantitative" methods have been seen as implicitly or explicitly defensive of the (masculinist) status quo.'

Ann Oakley 'Gender, methodology and people's ways of knowing', *Sociology*, vol. 32 (1998), p. 707

Are surveys inherently biased?

Some of these criticisms can be fairly easily answered. For example:

- If it is true, as Marxists have claimed, that the categories used to analyse survey data are commonly grounded in a 'bourgeois' view of the world, then it is open to Marxist researchers to go out and generate their own data using categories derived from their own theories. There is nothing inherent in the method of survey research itself that requires that respondents be classified in one way rather than another. Equally, there is no reason why organizations sympathetic to working-class interests – trade unions, for example – should not commission surveys to aid their objectives (indeed, they have often done just this).
- The feminist concern that surveys fail to capture people's subjective experiences could in principle be met by designing questions more carefully, or by training interviewers more rigorously. If surveys can successfully be used to study men, then there is no reason why they cannot also be used to study women (indeed, surveys have successfully been carried out on women's health, women's employment, and so on). By embracing 'qualitative' approaches and rejecting 'quantitative' ones, feminists reproduce the very gender stereotypes (males as 'rational', females as 'intuitive') that feminism has been so intent on challenging. Recognizing this, a number of feminist sociologists have recently argued that it is a mistake to equate feminism with qualitative approaches, and that survey methods should not be excluded from feminist research.

Problems of finance

Where there is a problem in survey research is in the sheer *expense* involved in carrying out a serious survey. Fieldwork can be cripplingly expensive, and the time taken to put the results into the computer, check them for accuracy and do the analysis adds to a hefty salaries bill. Unless you plan to do a small-scale local survey using in-the-street interviews (the strategy we shall adopt in our Smoking Survey), or a mail-out or telephone or internet questionnaire, it is unlikely that you will be able to carry out a serious survey without substantial financial backing.

This does raise a potential problem of bias, for it means that surveys tend to get carried out by those who can get access to large sums of money. This does not, however, prove the Marxist case that surveys are a tool of big business, for the principal source of funds for academic research in Britain is not private enterprise, nor the voluntary sector, but is the Economic and Social Research Council (ESRC).

The ESRC uses government money (£91.5 million for 2003–4) to fund research proposals from the academic community which have the support of expert academic referees. It is true that government does from time to time bring pressure to bear on the ESRC (this happened in the early years of the Thatcher premiership, and it happened again under Blair), but it is difficult to argue that social research in Britain has been subordinated to the interests of a dominant class when so much of the funding is dispensed by academics, many of whom are antipathetic to big business and the capitalist market system.

The ESRC responds to government concerns about the shortage of quantitative research skills

'We have become increasingly aware of a deficiency in the research skills of many of the UK's social science disciplines. This concern is reflected to us not only in the applications submitted to ESRC for funding, but also in the difficulties institutions have experienced in recruiting suitably qualified staff, and by government departments that have also experienced serious recruitment problems.'

ESRC *Postgraduate Funding Guidelines* (2001), available from the ESRC website, www.esrc.ac.uk

Conclusion: Muddling through?

In this chapter, we have identified four philosophical principles of positivism, and from each we have derived four somewhat watered-down assumptions on which quantitative survey research is usually grounded. These assumptions can be summarized thus:

- It is possible to discover facts about people's actions, attitudes and attributes by asking them questions and recording their answers systematically.
- The facts that we gather can be used to test our theories.
- Survey responses represent 'observations' which can validly be measured and analysed using statistical procedures.
- Questionnaires – the instruments for collecting facts in social surveys – are not inherently biased.

We have seen in each case that these assumptions can be challenged, but in each case we have also seen that the criticisms can be answered, at least to some degree. For example:

- While we have to recognize the impossibility of observing facts independently of the theories and concepts that help us interpret what we are looking at, this 'theory-dependency' of observation does not mean that what we see is *determined* by our prior ideas, or that we are free to define what we see in any way we choose. Recognizing that there are no 'raw facts' in social science does not mean that there are no facts at all against which to test our claims to knowledge.
- There are problems in testing theories against factual evidence, for the way we test theories itself assumes that certain other theories are correct, and scientists do not necessarily accept test results when their theories appear to have been falsified. But this does not rule out the possibility of testing theories against evidence. Theory testing may be problematic, but that does not mean it cannot be done at all.
- Attempts to quantify the findings of social research have been attacked by phenomenologists, who suggest that quantification violates the meaning which people

> invest in their actions, and by Marxists and feminists, who see the reduction of qualitative differences to a quantitative scale as anti-humanist and oppressive. Recognizing these dangers, we have nevertheless suggested that the use of numbers and statistics in social research need not result in mindless tabulation of data, or in bruising disregard for individual distinctiveness.

Philosophers have been concerned about the problems in positivist social research for a very long time, and they have exposed real difficulties which cannot be ignored. Every time we talk of the 'facts' we have discovered, or claim that some theory has been 'disproved' by our 'evidence', we are likely to be reminded that things are not this simple.

The pragmatism of the social researcher

'However erroneous it may be in philosophical terms, sociological practice does go on . . . we [the sociological profession] implicitly accept that the philosophical paradoxes can only be coped with by ignoring them in our own practice . . . there *is* a place for systematic empiricism and a kind of generalization and theory which guides sociological analysis of the external world, and which is continuously refined by research, not just by armchair speculation and library critique.'

Geoff Payne, Robert Dingwall, Judy Payne and Mick Carter, *Sociology and Social Research* (London: Routledge & Kegan Paul, 1981), pp. 58–9

All social research is fallible, and social surveys are no exception. It is not easy to do them well, and even when done well, they can never give you foolproof results. But this does not make worthwhile survey research impossible. There are rules and procedures that we can follow that will overcome at least some of the problems and which will improve our chances of producing reasonably reliable, valid and useful data. The rest of this book offers you a guide to these rules and procedures.

Appendix

Developing hypotheses

The literature search

The first step in any research project is normally to conduct an in-depth review of the existing literature on the topic. This is done for two main reasons:

- We need to *see what we already know* from previous research. It would be silly to carry out a study in ignorance of the existing store of research findings, so we review the literature to see where the gaps are in our knowledge so that we might attempt to plug them.
- We need to familiarize ourselves with current thinking about the topic so that we can *develop a set of research questions* which are relevant to the problems which the social science community is addressing. We therefore search the literature to find out more about the theories and conjectures which will drive our hypotheses.

The first step in developing our smoking survey is therefore to visit the library:

- We can do *keyword searches* on the library computer to find books and reports that have been written on the subject.
- We can turn to the internet, using *search engines* to locate websites containing relevant information, and then downloading any material that looked useful.
- We can use online *databases* to search for relevant newspapers articles or for papers in academic journals.

We can also try *contacting relevant individuals or organizations* to see what they can give us. When we started work on the Smoking Survey, for example, our students contacted ASH, who campaign in the UK for tighter regulation of smoking, and FOREST, who campaign for the right to smoke, and both organizations proved enormously helpful in providing material.

The research questions

Reviewing the various studies they had found, our students identified two main questions around which to base the smoking project:

1 What are the social factors which lead people to start and continue smoking despite increasing social pressures against it?

2 How do people's attitudes and beliefs about smoking relate to their actual smoking behaviour?

These two basic questions were then elaborated to provide us with ten hypotheses which we wanted to test.

> If you are developing your own survey on smoking, it would be a good idea to include some of these hypotheses as well as developing some others of your own based on the results of your preliminary library research. If you do develop others, try to keep them simple, for this will make it easier to operationalize them (a task we undertake in Chapter 3).

Hypotheses about social influences on smoking behaviour

Hypothesis 1: Parental socialization

Smokers are more likely than non-smokers to have had parents who smoked.

Previous research has reported that parental smoking has little influence on whether people take up smoking when they get older. A study commissioned by the Department of Health and Social Security and published by the office for Population Censuses and Surveys (OPCS) found: 'Smoking by parents during childhood had little association with their smoking behaviour and, moreover, had no effect on intention to give up' (A. Marsh and J. Matheson, *Smoking Attitudes and Behaviour* (London: OPCS, 1983), p. 90). Our first hypothesis aims to replicate this – will we too find no relationship with parental smoking?

Hypothesis 2: Peer group socialization

The more friends they have who smoke, the more likely it is that people will themselves smoke.

J. Krosnick and C. Judd ('Transitions in social influence at adolescence: who induces cigarette smoking?', *Developmental Psychology*, vol. 18 (1982), pp. 359–68) found that peer group pressures are a major factor in people's decisions to start – or quit – smoking. The causation may work both ways – if friends influence our smoking behaviour, it may also be the case that our choice of whether or not to smoke influences our choice of friendship networks. The 1983 OPCS survey found that smokers tended to interact mainly with other smokers, which suggests that continuance of smoking may lead people to seek out positive support or endorsement from others. Equally, non-smokers may prefer not to mix with people who smoke.

Hypothesis 3: Socialization through mass media

Regular exposure to positive media images of smoking and/or to media representations of smoking as 'normal' will positively reinforce the behaviour of smokers.

Much research has been done on the effects of television and other media on people's behaviour and beliefs. Although the results are often mixed, few people doubt that TV in particular can *reinforce* behaviour even if it does not initially *cause* it. Research in the US (reported in the Daily Telegraph, 27 Feb. 2001, p. 8) claims that young people whose favourite movie stars are shown smoking in films are up to three times more likely to smoke themselves, or to have pro-smoking attitudes.

Hypothesis 4: Socialization through subcultures

Membership of a distinct subculture where smoking is common provides smokers with a positive reference group and therefore reinforces their commitment to smoking.

Research on young people's use of tobacco, alcohol and illegal drugs by the Department of Health in 1998 (*Smoking, Drinking and Drug Use among Young Teenagers, Volume I: England* (London: HMSO, 1998) found that those who smoke are also much more likely to drink and use drugs, and this suggests that a distinctive youth lifestyle is associated with smoking. The association between smoking and drinking also seems to persist in older age groups.

Hypothesis 5: Stress

The more stressed people claim to be, the more they are likely to smoke.

The pro-smoking lobby group FOREST points to Australian research which found that smokers suffer less hypertension and lower rates of heart disease than those who have quit. This could indicate that smoking lowers stress levels (and smokers themselves often claim that smoking relieves stress). However, it is unclear whether high stress leads people to smoke, or people who smoke claim to be more stressed. This hypothesis expects to find an association between smoking and stress, but causation may run in both directions.

Hypotheses about the relation between attitudes and smoking behaviour

Hypothesis 6: Self-interest

Smokers will express greater tolerance of smoking than will non-smokers. Non-smokers will be more supportive of smoking restrictions than smokers.

This hypothesis assumes that we adopt values and opinions which 'fit' our self-interest. Smokers will resist tighter controls while non-smokers will support them. The 1983 OPCS survey found that both groups supported the principle of smoking regulation to protect non-smokers' rights, but they disagreed on outright bans in public places like restaurants and public transport: 'Attitudes to bans on smoking seemed to be guided by self-interest.' This hypothesis will test this claim.

Hypothesis 7: Age effect

Tolerance of smoking declines with age because young people are more inclined than older people to be tolerant of others' behaviour.

Although young people have grown up in a culture which is much less tolerant of smoking than it used to be, we hypothesize that many young people are nevertheless reluctant to be judgemental, and this will influence their attitudes about smoking as it does their attitudes about drug use, sexuality, and many other issues of personal choice and lifestyle (evidence of how permissiveness varies with age can be found in periodic results from the British Social Attitudes Survey).

Hypothesis 8: Social class effect

The higher somebody's social class and level of education, the less likely they are to smoke, and the less tolerant they will be of smoking.

Rates of smoking are lower in the middle classes than in the working class, and middle-class smokers are more likely to quit. There is a class gradient in smoking, both in the proportion of people in each class who smoke, and the amount that they smoke (N. Wald and S. Kiryluk, *UK Smoking Statistics* (Oxford: Oxford University Press, 1988)). The second part of the hypothesis predicts that, irrespective of whether or not they smoke, middle-class people will be more supportive of smoking restrictions because changes in public attitudes usually start at the top of the class system and trickle down.

Hypothesis 9: Zealous converts

Ex-smokers will become increasingly intolerant of smoking the longer they have given up.

This is a hypothesis based in reference group theory. When they first give up, ex-smokers may still identify with the norms and values common among smokers. The more time goes by, however, the more they will come to adopt the values and attitudes characteristic of non-smokers (we leave open the question of whether ex-smokers are ever likely to become as intolerant of smoking as those who have never smoked).

Hypothesis 10: Cognitive dissonance

Smokers will tend to deny that smoking causes harm to themselves or to others and will tend to assert its beneficial effects. These beliefs enable them to continue smoking.

This is another example of a hypothesis where causation runs in both directions – if you smoke, you will want to deny that you are causing harm to yourself and to others, and if you deny that your smoking is harmful, this will enable you to continue smoking. However, a study by Stephen Sutton found that smokers tend to *exaggerate* rather than deny the risks to their

health posed by smoking ('Are smokers unrealistically optimistic about the health risks?', *Risk and Human Behaviour Newsletter*, no. 1 (Mar. 1997), pp. 3–5), so we may find that our hypothesis is refuted.