

## 2 Research, Theory and Method

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### KEY

- Theory, method and analysis are closely interconnected. Decisions about one affect the others.
- Data are never theory-neutral: which data are collected and how they are interpreted depend on one's theoretical perspective and preconceptions.
- Theories can be constructed from concepts and relationships, and concepts measured using indicators. Indicators need to be evaluated in terms of their validity and reliability.
- Social research is a social process and can be studied sociologically.
- There is no one best research design. The choice depends on the research question and the resources that the researcher has available.

## 2.1 INTRODUCTION

In the previous chapter, it was suggested that **theory** is a vital part of social research, helping us to see the world in different ways and to ask new questions. In this chapter, we shall look more closely at the relationship between theory and data and at how the methodological tools that are described in the rest of the book fit into the research process. By 'theory' in this chapter is meant the 'middle-range' theories that aim to explain a range of observations, not the perspectives and world views in which they are embedded, as explained in the previous chapter.

Social research involves constructing theories, designing appropriate research methods, collecting data and analysing the data. This chapter considers the relationship between these activities and especially the link between theory and data. It describes the strategies of **induction**, **deduction** and **falsification**, defines **validity** and **reliability**, and distinguishes between concepts (the ingredients of theories) and indicators (the way one measures concepts).

## 2.2 THREE INGREDIENTS OF SOCIAL RESEARCH

There are three major ingredients in social research: the construction of theory, the collection of data and, no less important, the design of methods for gathering data. All of them have to be right if the research is to yield interesting results. We can see these three ingredients in most accounts of good research.

Goffman (1959; 1961; see also Chapter 1) spent much of his career exploring the social world of organisations. He writes about hotels, schools, prisons and hospitals. But what is *theoretically* interesting about such places? As a sociologist, his concern is with one of the fundamental problems of sociology, how social relationships are co-ordinated and regulated. He notes that in many 'establishments', there are common features in the ways employees present themselves to the 'customers' and that this presentation is not just an issue for the individual employee; it is a collective effort. He uses an analogy based on the theatre. In a theatre, a performance is given on stage, but the activity out front is only possible because of the efforts of those who work backstage. In the same way, Goffman argues, the performance of hotel porters, prison officers, mental hospital orderlies, and so on, relies on the support of other members of the staff. He cites as an example his observations in a hospital ward, where he says that the more experienced doctors are able to display their apparently superior ability because they have spent time the previous night 'studying up on the chart', and because this work is shared out between them so that they all support each other in creating a good impression for the benefit of the trainee.

In a medical hospital the two staff internists may require the intern, as part of his training, to run through a patient's chart, giving an opinion about each recorded item. He may not appreciate that his show of relative ignorance comes in part from the staff studying up on the chart the night before; he is quite unlikely to appreciate that this impression is doubly ensured by the local team's tacit agreement allotting the work-up of half the chart to one staff person, the other half to the second staff person. (Goffman, 1959: 83)

Goffman's theories about the presentation of self in organisations are intended to be applied across many social settings, indeed, to all 'establishments'. That is, his work is not just about the behaviour of people at the Ritz Hotel or in Nether Poppleton Mental Hospital, but about these places and all similar ones. Of course, he could be wrong, but, like a good researcher, he sticks his neck out and asserts that he has found something that is to be found in all 'establishments'. There will be more to say about testing such generalisations later, but for the moment it is important to note that it is a sign of good research that it concerns itself with 'regularities' which transcend the specifics of time or place.

The second ingredient of social research is the collection of data. Theories ought to be firmly based on data if they are to be useful in understanding the social world. What does Goffman do? As the quotation above illustrates, Goffman does provide data to test his theory, much of it splendidly unexpected. He uses data from his own meticulous observations obtained during periods of study of life in institutions, and he uses data from other people's observations, including from novels and even etiquette books.

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Which brings us to the third ingredient: the design of methods of data collection which accurately report on the social world. One of the problems with Goffman's work is that, although the data are vividly described, the methods he used to gather his data and to select his examples are not very clearly or explicitly explained. As a consequence, it is hard to be sure that his observations are typical. A second example, concerning crime statistics, will show the importance of understanding what a method of data collection involves.

Crime statistics apparently show that working-class youth commit more crime than middle-class youth (e.g., see the review in Braithwaite, 1981). A generation of sociologists tried to devise and test theories to explain this observation (e.g. Cloward and Ohlin, 1960; Quinney and Wilderman, 1977; Schur, 1971). Some suggested that working-class youth had more opportunity to commit crime and therefore succumbed more often. Others proposed they had fewer opportunities to pursue success and riches through legitimate channels and so were forced to turn to crime. Yet others argued that working-class and middle-class youth were located in different sub-cultures with different norms and that the working-class sub-culture permitted or even encouraged law breaking.

These different explanations assumed that the official crime statistics were correct. Increasingly, however, criticisms of these statistics accumulated. For example, the basis of the statistics is 'crimes known to the police'. And the police only know about crimes that they themselves have spotted or are reported to them by the victims. If the police patrol working-class areas more than middle-class areas (a reasonable strategy if the statistics show more crimes amongst working-class youth), they will tend to notice more crime in working-class areas. They will also find it easier to apprehend working-class youth for criminal acts. It was thought that one way around these biases in criminal statistics is to interview a sample of young people and ask them, in confidence, whether they have themselves been involved in any crimes. Interestingly, the rate of self-reported crime showed little difference between middle- and working-class young people (e.g. Short and Nye, 1958). Chapter 14 discusses crime statistics and the collection of such self-report data in more detail.

These criticisms of official statistics and the results of self-report surveys presented sociologists with a new set of data and suggested a quite different sociological problem: why working-class youth are *convicted* of crime more often than middle-class youth. Theories began to be proposed which focused not so much on 'criminal' activities, but on the activities of the police and their role in apprehending youth (e.g. Pearson, 1983). Thus new methods of data collection produced new data and new theories.

There are two alternative conclusions which we could draw from the example of crime statistics:

- 1 There is one right way of looking at the social world and that social research strives to find this way. If we find that crime statistics offer a biased view, other, more valid methods of data collection must be found to get us closer to the truth. Empirical reality is treated as the privileged source of our theoretical understanding of the social world. In its starkest form, this is the position known as empiricism.
- 2 The alternative position denies that one can ever read off theories from observations of the social world. What we as social researchers see as 'empirical reality' is a consequence of the theories that we bring to bear in organising our understanding of it. In short, theories are treated as the privileged source of our understanding of empirical reality. For example, we might conclude that attempts to discover the 'real' or 'true' crime rates among working- and middle-class youth will never be finally successful: different theories suggest different definitions of 'crime rate'.

## 2.3 CONSTRUCTING THEORIES

In this and the previous chapter, we have stressed the importance of theoretical frameworks and of middle-range theories. But what exactly is a theory?

### 2.3.1 WHAT IS A THEORY?

A theory highlights and explains something that one would otherwise not see, or would find puzzling. Often, it is an answer to a 'Why?' question. For example, why are some people poor and others rich; why are so many people unemployed in Western capitalist societies, and so on. Thus, one characteristic of a theory is that it can be used as an explanation.

Suppose that someone proposed a theory of unemployment – that the rate of unemployment depends on current interest rates, for example. Then the theory could be offered as a reasonable (if partial) answer to a question about why there are now so many people unemployed: interest rates are high. Of course, we might want to know quite a lot more than this in answer to the 'Why?' question. It would be interesting to know just what the mechanism connecting interest rates and unemployment rates is supposed to be, what counts as a 'high' interest rate, and whether there is anything that could be done to reduce interest rates and thus rates of unemployment. Nevertheless, the theory that interest rates and unemployment are connected does offer a

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**TABLE 2.1****Suicide rates in selected countries**

Source: WHO:  
[http://who.who.int/mental\\_health/Suicide/suicide\\_rates.html](http://who.who.int/mental_health/Suicide/suicide_rates.html)

COUNTRY	YEAR	MALE	FEMALE
Bahamas	1995	2.2	0
Greece	2002	4.7	1.2
the UK	2002	10.8	3.1
Italy	2001	11.1	3.3
Spain	2002	12.6	3.9
the United States	2001	17.6	4.1
Sweden	2001	18.9	8.1
Denmark	2000	20.2	7.2
France	2001	26.6	9.1
Austria	2003	27.1	9.3
Finland	2003	31.9	9.8
Sri Lanka	1991	44.6	16.8
Hungary	2003	44.9	12.0

solution to what would otherwise be a puzzle and is not obvious from straightforward common sense, both characteristics of good theory.

As well as providing explanations, theories often provide predictions. For example, if the interest rate is dropping, and the theory is correct, it would be possible to predict that the unemployment rate will also fall.

One of the most famous sociological theories is Durkheim's theory of suicide. Individual acts of suicide are almost always puzzling. Often the first thing families and friends ask after a suicide is, why did he or she do it? But as Durkheim ([1897] 2002) observed, suicide is also puzzling on a wider, societal level. Overall suicide rates in different communities and countries vary widely, yet within any one community they tend to be fairly constant from one year to the next (see Table 2.1). Why is there such variation between the rates in different communities?

Statistics on the suicide rates in particular countries are available from the World Health Organisation. There has been a considerable amount of research on how such suicide rate statistics are constructed and what they mean (e.g. Atkinson, 1978). This work indicates that there is no simple relationship between official statistics on suicide and a 'real' rate of suicide; indeed, just like crime statistics, the research raises deep questions about the process of labelling certain deaths as 'suicides'. However, again just like crime statistics, the statistics themselves, however they may be constructed, are social facts that warrant sociological investigation.

Hungary, for example, has a very high suicide rate compared with other European countries. Hungary has also been experiencing rapid economic

growth and a major change in cultural and political values since the break-up of the Communist bloc. We might guess that Hungary's high official suicide rate is caused in some way by these rapid social, cultural and economic changes. This statement certainly answers a 'Why?' question. But as a theory, it is still lacking.

One problem is that, as it stands, it refers only to Hungary. A statement relating to a single case, such as Hungary, would not normally be considered to be a theory. A theory needs to be able to cover a range of settings. But we could look for other countries also experiencing rapid socio-economic changes and see whether they too have high suicide rates. If we found several such countries, we would have a more impressive theory and one that represents a general pattern or 'regularity'.

For example, Sri Lanka has also been subject to major disturbances in the last few years and its suicide rate is also very high (see Table 2.1). Indeed, after some thought and some delving into suicide statistics, one might suppose that 'the rate of suicide increases in times of rapid social and economic change', a conclusion which Durkheim also proposed and which he explained using the concept of anomie. Anomic suicide, according to Durkheim, results when society's regulation of the individual through normative controls breaks down and this is likely to happen where there is social and economic instability.

### 2.3.2 INDUCTION AND DEDUCTION

The process that we have just worked through, of finding a single case and observing a relationship, then observing the same relationship in several more cases and finally constructing a general theory to cover all the cases, is known as **induction**. It is the basic technique for moving from a set of observations to a theory and is at the heart of sociological theory construction. Once a theory has been formulated, it can be used to explain. For example, the theory about suicide rates being high in countries with high rates of social and economic change can be used to explain why the Russian Federation has a high suicide rate (the rates for the Russian Federation are 69.3 for males and 11.9 for females (WHO, 2005)). This process, starting with a theory and using it to explain particular observations, is known as **deduction**. Deduction takes the data about a particular case and applies the general theory in order to deduce an explanation for the data. Thus induction is the technique for generating theories and deduction is the technique for applying them (see Figures 2.1 and 2.2).

For the sake of defining the terms, we have discussed induction and deduction as though they are quite distinct. Logically, that is true. But in the course of doing research they often are intertwined. First, one has an idea for a theory, perhaps by contemplating the common features of a set of cases and inducing a theory. Then one checks it out against some data, using deduction. If the theory doesn't quite fit the facts, induction is used to construct a slightly more complicated, but better theory. And so on.

Figure 2.1 Theory construction by induction

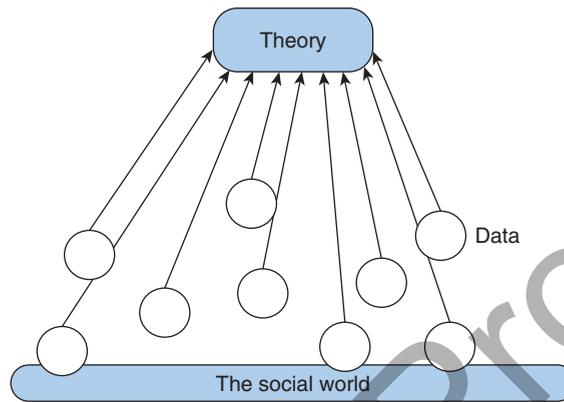
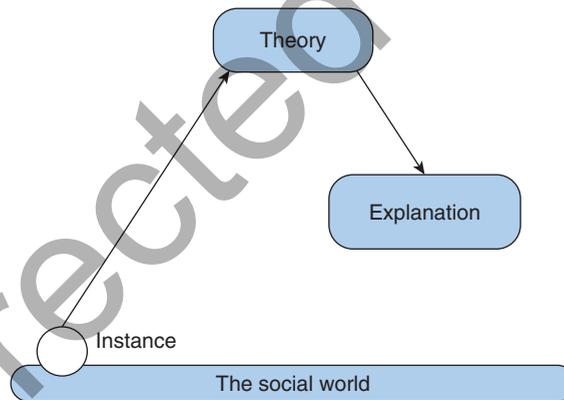


Figure 2.2 Theory use by deduction



It is important to realise that *induction is not foolproof*. It is certainly possible to construct erroneous, misleading or over-simple theories by induction. For example, induction has led us straight to the theory that high suicide rates are the product of economic and social change. Unfortunately, this isn't the whole story. Finland has a high rate of suicide compared with other industrialised nations, yet it has not experienced great political or economic changes recently.

This counter-instance can be put to good use, however. The theory can be extended in scope and deepened in its explanatory power if we look to see what characteristic Finland has which might explain its high rate. The answer, as Durkheim argued from his data, is that economic and social change is only one influence on suicide rates. The degree of social integration that is encouraged by the dominant religion is also important. He suggests that Catholic countries tend to have families with closer ties, leading to more support for

individuals and more disapproval by the society of suicide. This is the reason, he argues, that Protestant countries, such as Finland, tend to have higher suicide rates than otherwise similar Catholic countries.

### 2.3.3 FALSIFICATION

This leads to another important aspect of theory construction, the strategy of **falsification**: always look for the awkward cases. If we had stuck with the cases that fitted the original theory about the significance of social and economic change, that is, if we had looked no further than Hungary and Sri Lanka, we would not have formulated the wider theory that brought in the religious dimension.

Falsification as a strategy is important for two reasons. First, by directing attention to 'awkward cases' it helps to improve theories. Second, it has been argued that it is a useful criterion for what should count as a theory. The criterion is that it must be possible *in principle* to falsify a theory. That is, it must be possible to imagine some data which, if found, would demolish the theory.

The preceding theory about suicide rates being linked to economic and political change may not be a good theory, but by the criterion of falsification, it is at least a theory. It is possible to imagine some data that would destroy the theory: a single case of a country experiencing great changes but having a low suicide rate would do. But consider the statement, 'People who kill themselves are suicides'. This is *not* a theory. First, the statement is not an answer to a 'Why?' question. Second, it is impossible to think of data which would falsify it. In fact, this statement is a definition of suicide, not a theory.

One of the problems of research is that the search for falsifying observations is in principle never-ending. No matter how much data one collects that fits the theory, it is always possible that a falsifying instance might turn up next. The consequence is that there is an asymmetry about a researcher's confidence in theory: one can be quite sure that a theory is wrong if there are any data which falsifies it, but one cannot be sure that a theory is right, because there may yet be some data which will disconfirm it. Scepticism is therefore the right attitude to assertions that this or that theory is correct.

## 2.4 CONCEPTS AND RELATIONSHIPS

Durkheim writes, in *Suicide*:

The fact that economic crises have an aggravating effect on the suicide tendency is well known ... Even fortunate crises, which have the effect of raising a country's prosperity, have an effect on suicide like economic disasters ... Every disturbance of equilibrium, even though it may involve greater comfort and a raising of the general pace of life, provides an impulse to voluntary death. (Durkheim, [1897], 1985: 108–9)

**Figure 2.3** A theory about a cause of high suicide rates

Durkheim is arguing that there is a causal link between economic crises and suicide rates. Crises cause ('have an effect on') suicide. Such causal statements are often shown graphically, with arrows to mean 'cause'. Figure 2.3 illustrates Durkheim's theory in this way.

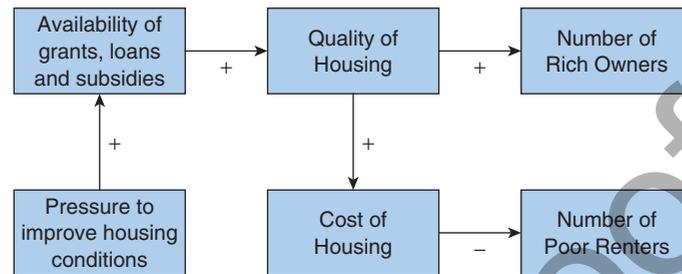
Figure 2.3 can be read as saying that there is a causal relationship between economic conditions (the occurrence or absence of economic crisis) and high or low 'suicide rates'. We call the things in boxes **concepts** and the lines between the boxes, **relationships**. Theories are composed of concepts linked by relationships.

In this example about suicide, there are only two concepts and one relationship. But most theories are a lot more complicated. Let us turn from suicide to a rather different example, 'gentrification'. Poor housing areas become 'gentrified' when run-down homes occupied by poor people are taken over by the relatively rich. The process of gentrification has been studied in a number of urban research programmes in the US and the UK (e.g. Smith and Williams, 1986; Ley, 1996) and is interesting because it is an example of the unintended consequences of apparently beneficial social policies.

The theory goes like this. Social planners and politicians attempt to improve a poor locality for its residents, by providing favourable loans, redevelopment grants and so on. The effect is that the overall quality of the area improves. This raises the value of the housing and makes properties not yet improved particularly attractive to developers. The price of housing goes up and with it the rents charged by private landlords. If rents are controlled, landlords take advantage of rising market prices to sell their property. The rise in housing costs pushes the original, poorer residents out and they are replaced by richer owners. The poor neighbourhood has been gentrified, displacing the established residents, often to even poorer housing stock.

Figure 2.4 summarises the theory as a diagram. Each box represents a concept and each line a causal relationship. The causal effect can either be positive or negative. For example, as the quality of the neighbourhood rises, the price of housing rises also – a positive effect. As the price of housing rises, the number of poorer residents falls – a negative effect.

If you wanted to test a theory like this, it would be difficult to do it all at once. It is too complicated; there are too many relationships to consider (although some of the most recent statistical techniques, such as those mentioned at the end of Chapter 20, can help). Instead, it is best to break the

**Figure 2.4** A theory of gentrification

theory down into parts, each covering just one relationship. So, one might test the causal relationship between the Quality of Housing and the Cost of Housing and then, separately, the relationship between the Cost of Housing and the Number of Poor Renters. Each such part is known as a **hypothesis** and it is hypotheses that researchers generally test and try to falsify.

## 2.5 TESTING THEORIES

So far, this chapter has been concentrating almost entirely on theories. It has been argued that theories are things that aim to explain puzzling observations. They are composed of one or more hypotheses, each of which consists of concepts linked by relationships. Theories must be capable of being tested, or falsified. Now we must move on to examine in more detail what is involved in testing a theory.

In order to test a theory, we need to compare the predictions it makes with measurements made of the social world. For example, we need to see whether, as the Quality of Housing increases, so does the Number of Rich Owners, which is what the theory of Figure 2.4 predicts. However, this is more difficult than it seems because concepts cannot be measured directly. Before Quality of Housing can be assessed, one has to have some definition of 'quality' and some means of applying that definition to actual neighbourhoods.

### 2.5.1 INDICATORS

In general, in order to test theories, there must be a way of measuring each concept, that is, for each, there must be an **indicator**. An indicator is a method of measurement that aims to measure the concept accurately. If we want to test the hypothesis that the Quality of Housing was related to the Value of Housing, we would need independent indicators for both these concepts. The value of

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housing could be measured by averaging the asking price for houses for sale (but there would still be some issues to settle: What is to be counted as a 'house'? What about a property which has tenants? What if the price actually paid for property is less than the asking price? and so on). An indicator for 'Quality of Housing' is more difficult to devise. One indicator that would not be suitable is the value of the housing, for this would then be confusing measurement of the two concepts. One approach might be to consult a panel of experts, such as estate agents, surveyors or lawyers and ask them to assess the quality of the housing. Another way would be to conduct an attitude survey of the general public. A third way would be to rely on some more direct measure, such as the average number of months since the exterior woodwork was repainted. Obviously, there is room for debate and for careful thought about the right choice, and factors such as the cost of the research and the speed with which data can be obtained will need to be considered as well.

### 2.5.2 VALIDITY AND RELIABILITY

Naturally, researchers want their indicators to be as good as possible. That means that the measurements that they make should be **valid** (accurately measuring the concept) and **reliable** (consistent from one measurement to the next). For instance, suppose that you want to measure people's consumption of alcohol (a concept). You choose to do this using a questionnaire in which you will ask respondents to tell you how much they drank during the last month. In fact, this is not a good indicator of alcohol consumption. People tend to under-report consumption – they say that they drink less than they actually drink – casting doubts on the validity of the indicator. Also, people have difficulty remembering in detail what they were doing as long as a month ago. This means that if you were to ask someone repeatedly over the course of a few days what they had drunk during the previous month, it is quite likely that they would give you different answers, just because they were not remembering consistently. The indicator is not reliable.

In order to know whether an indicator is valid and reliable, we need to understand how it works, that is, the way the indicator measures its concept. Consider two of the indicators mentioned in the previous section. Official statistics measure suicide rates in as much as they record the decisions of coroners' courts, bodies which apply procedures laid down in legal statute for assigning causes of death. Coroners, of course, do not have direct access to the cause of death; they themselves use a set of indicators and a body of 'theory' – common sense and legal knowledge – to decide whether a particular death is the result of suicide or some other reason (Atkinson, 1978; Kitsuse and Cicourel, 1963) and this needs to be recognised when we use the indicator. The quality of housing in a neighbourhood may be measured by an indicator consisting of the average time since house exteriors were painted because houses in

poor condition are rarely repainted, while houses which are in good condition and are being looked after by their owners tend to be repainted regularly, as soon as the paintwork begins to show signs of age.

### 2.5.3 MEASUREMENT THEORIES

As these examples show, the validity and reliability of an indicator will depend on the adequacy of the way in which it measures its concept. One way of thinking about an indicator is that it links a concept (e.g. Quality of Housing) with observable facts (e.g. average time since repainting). The adequacy of this link depends on a theoretical proposition, known as the indicator's **measurement theory**. The measurement theory for the indicator of housing quality is the proposition that 'houses in poor condition are rarely repainted, while houses which are in good condition and are being looked after by their owners tend to be repainted regularly, as soon as the paintwork begins to show signs of age'.

Like any other theory, a measurement theory can, and should be tested. The more it is tested against data, the more confident one can be in the adequacy of the indicator that relies on that theory. But like all theories, measurement theories can still eventually turn out to be wrong or incomplete. What are the consequences of using an incorrect measurement theory?

One consequence could be that we are led to draw the wrong conclusions when inducing theories from observations. This is what happened in the case mentioned at the beginning of this chapter, that working-class youth seemed to be committing more crime than middle-class youth. The measurement theory implicit in using official crime statistics to measure crime rates (that official statistics validly measure the number of criminal acts committed) turned out to be false. The effect of using the wrong measurement theory was that incorrect theories that attempted to account for a spurious differential crime rate were constructed.

Another consequence of using incorrect measurement theories is that one may falsify correct theories or fail to falsify incorrect theories, because the indicators are not measuring the concepts properly. This has the unfortunate implication that if a theory is apparently not corroborated by the data, we do not know whether this is because the theory is in fact wrong, or whether it is because the measurement theories on which the indicators rely are incorrect. Of course, the solution to this dilemma is to test the measurement theories.

However, this can lead to trouble. As a good researcher, you will want to test your hypothesis. You therefore devise some indicators for the concepts in your hypothesis. But before using the indicators, you need to satisfy yourself about the adequacy of the indicators. To do this, you need to investigate the measurement theories on which they are based. This will involve devising indicators to test the measurement theories. These indicators will themselves rely on measurement theories ... We seem to have embarked on an endless task!

## 2.6 SOCIAL RESEARCH AS A SOCIAL PROCESS

The answer to this conundrum comes from the fact that research is never conducted without reference to other studies. It can always rely on previous knowledge and previous experience. This means that rather than having to justify every measurement theory and thus every indicator, researchers can call on other people's work.

Social research, like other scientific work, is situated within a 'paradigm' (Kuhn, 1970), a scientific tradition. The paradigm influences research in several ways (see Chapter 1). The problems researchers tackle are derived from sociological perspectives which, although in constant flux, have been fashioned through a hundred years of sociological thought. The indicators we use and the measurement theories on which they are based have been honed by many previous researchers through thousands of projects. Instead of having personally to test every measurement theory you use and having to justify every theory you mention, you can rely on standard indicators, standard concepts and standard theories.

Linking new research to the existing paradigm is one of the functions of the 'references' that are sprinkled through journal articles. These references not only acknowledge previous work (saying, in effect, 'the idea I am mentioning is not my own invention, but was previously proposed by someone else'), but also and more importantly, borrow the authority of earlier research (saying, 'it is not just me who thinks this research method, this hypothesis, etc. is correct, but also the person I am citing'). Chapter 24 discusses the techniques of writing and referencing in more detail.

This is just one example of the way in which we, as sociologists, can examine the social processes that contribute to the construction of sociological knowledge. There is no reason to exempt sociology or science in general from investigation by sociologists (Barnes et al., 1996).

Learning about how to do social research is thus not just a matter of becoming proficient at some technical skills, although knowledge of technique is very important. It is also about learning the culture of social science so that you can become a proficient member of the social scientific community.

## 2.7 CHOOSING A RESEARCH DESIGN

One of the basic questions that researchers have to ask themselves is what kind of research design is appropriate to their research problem. In the following chapters, you will be introduced to a variety of research techniques commonly used by sociologists. You might wonder why this variety exists and how one can choose between the different designs. This section will review the choices and suggest which is most appropriate for which problems. But there are no hard and

fast rules: as we shall see, it depends on the research question, the availability of data, and the researcher's own skills and preferences.

There are three basic choices that can be made: quantitative versus qualitative; cross-sectional versus longitudinal; and case versus representative.

### 2.7.1 QUANTITATIVE AND QUALITATIVE

Quantitative research is research that aims to measure using numbers. Typical forms of quantitative research are surveys, in which many respondents are asked questions and their answers are averaged and other statistics calculated; and research based on administrative data, where, for example, the number of people who have been patients in a hospital each month is counted. On the other hand, qualitative research most often describes scenes, gathers data through interviews, or analyses the meaning of documents. In both types of research, one is measuring the social world, but in quantitative designs, the aim is to create a numerical description, perhaps through a process of 'coding' (see Chapter 17) verbal or textual data. In qualitative designs, one creates an account or description, without numerical scores.

One advantage of quantitative data is its relative precision and lack of ambiguity. To use a simple example, it is quite clear what we mean when we say that a respondent is 19 years old. The qualitative equivalent, which might be the observation that 'the young man walked into the room with a swagger' is 'richer' but less precise. Another advantage is the opportunity that quantitative data affords for summarisation and analysis using statistical tools. Thus quantitative data is particularly appropriate for representative studies (see below). However, it is generally not very helpful if one is interested in testing for causes and effects. While quantitative data can be used to discover associations, such as that people who are sick are more likely than the healthy to be unemployed, quite complex designs have to be used to shed light on which is the cause and which is the effect: for instance, is it that sick people find it harder to get a job, or that people who are unemployed tend to get less exercise and eat poorer food and so become sick more often – or is there some third factor that influences both people's health and their chances of employment? Qualitative data often makes it easier to follow cause and effect, since one can track people through their lives or ask them to tell them their life histories.

In practice, the distinction between quantitative and qualitative is not absolute. Even in qualitative studies, it is common to count how many of those one is studying fall into one or other category. For instance, in a study of the homeless, in which a dozen men are interviewed on the streets, one might find that about half regularly use hostels: a quantitative description of the sample. And even in large surveys, it is not uncommon to record respondent's replies verbatim when they answer questions such as 'Why did you move to this accommodation?'.

## 2.7.2 CROSS-SECTIONAL AND LONGITUDINAL

This distinction is about whether the data are collected at more or less one moment in time ('cross-sectional') or over a period of time, repeatedly observing or interviewing the respondents ('longitudinal'). A typical social survey is cross-sectional: all the respondents are asked the same questions at the same time (in practice, there may be differences of a few days between the first and the last responses, but the design assumes that this time period is irrelevant). A case study that, for example, follows the development of a controversial topic in science over a period of twenty years as various theories are proposed, tested and rejected (e.g. Collins, 2004) is a longitudinal design. The advantage of cross-sectional designs is that they can be completed quickly and that they can involve large samples. Longitudinal designs obviously take longer, because they extend over a time period, and it is more difficult and more expensive to involve large samples. One also has to worry about drop-out, or 'attrition', when some members of the sample withdraw from the study, die or move away. This is an important problem especially in quantitative research because a sample that had the right composition at the start of the study may become biased as a result of attrition (see Chapter 9).

Despite such problems, the great advantage of longitudinal research is that one can directly study process and mechanism: that is, how one thing is affected by or depends on another.

## 2.7.3 CASE AND REPRESENTATIVE STUDIES

A case study is one in which a particular instance or a few carefully selected cases are studied intensively. Usually there is no attempt to select a random or a representative sample of cases. Instead, the cases are ones that are interesting for their own sake, or sometimes are exceptional in some way ('unique case studies'). In contrast, a representative study strives to select for study a large number of cases or respondents who are chosen so that it is possible to infer from the features of the sample to the population as a whole. For instance, a typical opinion poll will have more than 1000 respondents, chosen using random or quota sampling methods (see Chapter 9) so that the average opinion of the sample can be used as a good guide to the average opinion of the whole population.

The advantage of the case study design is that the research can be much more detailed than would be possible if one were studying a large sample, but the corresponding disadvantage is that it is much difficult and often impossible to generalise the findings. For example, one cannot know whether the findings from a study of protests against the erection of mobile phone masts in Fife, Scotland (Law and McLeish, 2007) can be applied to explain a mobile phone mast protest in Surrey, still less a protest about the construction of an additional runway at a London airport. The difficulty of generalising may seem a major limitation of case studies, but they can still be valuable when one is

**TABLE 2.2** Types of research design

			<b>EXAMPLE</b>
Quantitative	Cross-sectional	Case	Studies of particular organisations or settings (see Chapter 6)
Quantitative	Cross-sectional	Representative	Large social surveys (see Chapter 19)
Quantitative	Longitudinal	Case	Historical studies of nations or groups (see Chapter 15)
Quantitative	Longitudinal	Representative	Panel and cohort studies (see Chapter 19)
Qualitative	Cross-sectional	Case	Focus group studies (see Chapter 12)
Qualitative	Cross-sectional	Representative	Cross-national comparative case studies
Qualitative	Longitudinal	Case	Ethnography (observation) of small groups and settings (see Chapter 14)
Qualitative	Longitudinal	Representative	Studies of small societies and groups, by interviewing informants (see Chapter 13)

wanting to try to falsify a theory using a deductive research strategy. Law and McLeish (2007) compared the findings from their research on the Fife mast protest with an extant theory of protest (the 'New Irrational Actor Model') and concluded that this theory was not a good explanation of what they observed. Studies of this kind are called 'critical case studies'.

The preceding discussion has shown that there is no one best design. Each has its strengths and weaknesses. If we cross-tabulate the three dimensions of research design, we get eight possibilities. Table 2.2 lists these possibilities and typical examples of the types of research that might use each.

If you are selecting a research design, consider with the help of Table 2.2 whether a quantitative or qualitative, cross-sectional or longitudinal, a case study or a representative design is likely to yield the most informative data. In addition, you should consider practical issues, such as getting access to the sample, the costs of doing the research, and the time that would be involved. These issues are considered in more detail in the following chapters.

## 2.8 SUMMARY

In this chapter, we have seen that what makes social research different from mere data collection is that it is an activity conducted within a research community. This community provides a body of theory in which the research needs to be located. Sociological theory, like all theory, aims to be explanatory, answering 'Why?' questions. It also aims to be general, offering explanations that transcend the particularities of time, space, or personal circumstance.

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Theories are generally constructed through induction, extracting the common elements of many specific instances, and are applied to explain other instances by means of the logic of deduction. Theories are made up of hypotheses, individual statements that relate together theoretical concepts.

Theories must be susceptible to falsification, that is, they must be framed in such a way that they could be proved wrong. Testing a theory involves choosing indicators for each of its concepts, using the indicators to collect data, and comparing the data with predictions made from the theory. An indicator should be valid and reliable. This can be determined by examining the measurement theory on which it is based. However, in practice, most researchers most of the time use standard indicators which have been developed and used by other sociologists before them and whose validity is largely unquestioned.



### DISCUSSION QUESTIONS

- 1 What is the best way of measuring the amount of crime that is committed each year?
- 2 Give a definition of what you mean by ‘theory’. Compare your definition with the definitions in this chapter and in Chapter 1, and with definitions offered by other sociological authors. Why is there such a lot of disagreement about these definitions?
- 3 When is it best to be inductive and when deductive?
- 4 Is there any connection between the ‘deduction’ described in this chapter and the deduction that detectives do to find criminals?
- 5 Give some examples of statements or propositions that cannot be falsified, even in principle (if possible, take these examples from newspapers or other popular media).
- 6 Describe the measurement theory that underpins the measurement of social class using a person’s occupation.

### PROJECTS

- 1 See if Durkheim’s theories of suicide still fit data about current suicide rates. For this, you will need a table of suicide rates by country (see the weblink in Table 2.1), and data on changes in economic performance and on religious affiliations by country (these are produced by national

and international statistical offices and can also be found on the world wide web. For example, you can download a table of gross national product per person (GNP per capita) from <http://tinyurl.com/26g32f> and numerous statistics about countries for the world from the CIA World Factbook, <http://tinyurl.com/jor92>).

- 2 This chapter has suggested a particular model of social enquiry, one which proposes that social research involves theories, data, indicators and theory testing. In some ways this model can be regarded as itself a theory – a theory about social research. Like any theory, it ought to be capable of being compared with data.

For this project, you should locate in the library a recent issue of one of the major journals in your field. In sociology, this might be one of the *Sociology*, *Sociological Research Online*, *Sociological Review*, the *British Journal of Sociology*, the *American Sociological Review* or the *American Journal of Sociology*. Find an article in your chosen issue that looks interesting. Read the article closely to see the way in which the author puts forward his or her argument. Write down, in as few words as you can, the theory being advanced in the article. List the concepts that are used in the theory. For each concept, identify the indicators that the author uses. For each concept and indicator, briefly suggest what the implied measurement theory is.

For some articles, these steps are easy to carry out. In other cases, you may find the theory, the concepts or the indicators hard to pin down. Is this because there is something amiss with the research being reported in the article, or because the model of social enquiry proposed in this chapter does not fit the research in the article you have been examining?



## RESOURCES

Hammersley (1993) *Social Research: Philosophy, Politics and Practice* includes a useful set of readings related to this chapter, with an emphasis on qualitative research.

Hollis (2002) *The Philosophy of Social Science: An Introduction* provides a clear introduction to the philosophy of social science.

Smith (2005) *Philosophy and Methodology of the Social Sciences* is a comprehensive collection of readings.

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Two older books are also still useful: Hughes (1976) *Sociological Analysis: Methods of Discovery*, Chapters 1 and 2, addresses many of the issues touched on in this chapter in more detail, and Stinchcombe (1968) *Constructing Social Theories* is very good on forms of social theory and how theories are constructed.

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Uncorrected Proofs