CHAPTER 3

SOME BASIC CONCEPTS IN PSYCHOLOGICAL RESEARCH

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Some Basic Concepts in Psychological Research

Like other occult techniques of divination, the statistical method has a private jargon deliberately contrived to obscure its methods from non-practitioners. (G.O. Ashley)

Learning Objectives

- To examine the basic vocabulary of research.
- To examine some of the range of quantitative and qualitative methods.
- To understand the way that terms are used in research.
- To examine the debate over the nature of quantitative and qualitative research and the tension between them.
- To understand the various forms of variables.
- To introduce the concept of measurement and type of measurement.
- To introduce the concept of design and types of design.
- To introduce the concept of hypothesis generation and testing.
- To examine some of the ways that psychological data can be transformed into meaningful summaries.
- To discuss what each type of summary can be used to describe.

KEY TERMS

- Case studies
- Central tendency – mean, median and mode
- Design – temporal precedence, covariation alternative explanations
- Dispersion – maxima, minima, range, variance, standard deviation
- Display – graphs, tables
- Distribution – normal, skew, kurtosis
- Ethnography
- Grounded theory
- Hermeneutics
- Hypotheses – alternative, null
- Interviews

- Levels of measurement – nominal, ordinal interval/ratio
- Observation
- Phenomenology
- Populations and samples
- Variables – independent, fixed, random, dependent, confounding

Learning about research methods is like learning a new language, and learning a new language cannot start without understanding some basic rules and equipping ourselves with some basic vocabulary. This chapter will outline some of that vocabulary. Firstly, we will discover the language of quantitative research and examine some fundamental concepts that comprise the vocabulary on which we can build fluency in any area of statistical data analysis. We will then look at the ways in which qualitative methods allow us to approach research questions differently, not simply as a non-numerical alternative to quantitative methods, but as valuable ways of addressing the investigation of topics.

WHO TAKES PART IN RESEARCH?

Populations

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In psychology, quantitative research is almost exclusively carried out on **samples** drawn from **populations**. Here the term population has a slightly different meaning from the one we use in everyday speech. It need not refer only to people or creatures, for example the population of London, or the population of hedgehogs in Huddersfield. In research, we can also refer to a population of objects, events, procedures or observations. A population is thus an aggregate of things.

We must always clearly define the population we are interested in, but we may not be able to describe and enumerate it exactly. For example, we might want to know the average IQ of psychology students, but who are these people? At any one time, the population of psychology students may contain people of different sexes, ages, socioeconomic and ethnic background, etc. Also, at one time, every psychology lecturer has been a psychology student. The researcher needs to provide a precise definition of a population and the constraints on that definition (such as time and location) in order to draw valid inferences from the sample that was studied, to the population being considered. Statistics that we will consider when taken from populations are referred to as population parameters. They are often denoted by Greek letters: the population mean is denoted by μ (mu) and the standard deviation denoted by σ (lower case sigma).

Samples

Even if a population can be defined, it will usually contain too many individuals to study, so research investigation is commonly confined to one or more samples drawn from it. A good sample will contain the information that the population does, so there must be an effective relation between the sample and the population. One way of providing this is to ensure that everyone in the population has a known chance of being included in the sample, and also it seems reasonable to make these chances equal. We also want to be certain that the inclusion of one population member does not affect the chance of others being included. So the choice is made by some element of chance, such as spinning a coin, or in large populations and samples by use of tables of random numbers. These are widely published alongside other tables used in statistical analysis.

VARIABLES

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Variables are things that we can measure, control or manipulate in research because they can have more than one value. There are different types of variables, and we can consider numerical variables such as IQ, where the values would be the score measured, or non-numerical variables such as sex (values are male or female). Types include independent, fixed, random, dependent and confounding.

Independent

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Independent variables are those that could have an effect on other variables. For example, it is possible that, as people get older, their short-term memory becomes less effective, and we could test that by comparing the performance on a memory test of several people who are deemed to be young adults and older adults. The variable that may be having an effect here is the age of the people being tested.

Fixed

A fixed variable is one where we have specific set values for the independent variable included in the study. For example, in our aging and memory study, although age changes every year, at the moment in which the participants take part they each have a particular measured age. Therefore, we can fix our variable ‘age’ in terms of specific groups, such as 18–25 and 65–75.

Random

In the study on aging and memory, we could fix our values at the age ranges in the fixed variable example. This might be representative of the aging process, but there are many more values available with the variable 'age'. With a variable that has many values, we would not necessarily wish to use every value, and could randomly select values from it. With age, this might not be appropriate as we wish to see the effect that aging has; a random selection of age groups does not necessarily give us the structure we need for our independent variable and we would prefer to use a fixed set for our variable.

Dependent

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A **dependent variable** is one that might be affected by the variations in the independent variable. In our memory study, the independent variable, age, might have an effect on short-term memory; our dependent variable is the scores achieved on a memory test. So a dependent variable is one whose values may *depend* on the different values in the independent variable.

Confounding

In some cases, there are variables that can affect the outcome, but which are not strictly part of the study. For example, in our memory study it might be thought that the effect of aging could be altered by certain types of drugs, so we might want to exclude people who are on certain types of medication. Or it may be that even though there is an established sex difference in memory, this difference varies with age (see Bleecker, Bolls-Wilson, Agreus and Meyers, 1988), so we might want to ensure that we have equal numbers of men and women in our samples of each age group to ensure we can compare them to see if this is the case. In this way, we **control** for **confounding variables**.

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LEVEL OF MEASUREMENT

Variables differ in the way they can be measured, firstly in the amount of error that is inherent in the measurement (we will examine this later with respect to specific types of measurement) and secondly the amount of information that can be provided by a variable. This last is referred to as the type of measurement scale.

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Variables are classified as nominal, ordinal, interval or ratio, and this distinction is referred to as the **levels of measurement**. Each variable that we might investigate in psychology has a set of characteristics that indicate their nature, as a separate characteristic, irrespective of what we might do with them.

Nominal variables allow for only categorisation into named sets, and all we know is that individual items belong to some distinctively different categories, but there is no quantifying or ranking of items. So we can know whether individuals are male or female, but there is no indication that being in one category is better than the other (irrespective of your personal feelings!). We can know whether one category has more in it than another, so we can know the **frequency** of each category.

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Ordinal variables are those in which we place items in rank order in terms of which has less and which has more of the quality represented by the variable, but not how much more. A typical example of an ordinal variable is socioeconomic status. We know that middle class is higher than working class but we cannot say that it is, for example, 30% higher.

Interval variables not only give rank order but also quantify and compare the sizes of differences (or interval) between them. Temperature is an interval scale. A temperature of 50 degrees is higher than a temperature of 40 degrees, and the increase from 40 to 50 degrees is half as much as an increase from 20 to 30 degrees.

In addition to all the properties of interval variables, *ratio* variables have an identifiable absolute zero point, thus they allow for statements such as 100 kg is two times more than 50 kg. Typical examples of ratio scales are measures of time or space. For example, as the Kelvin temperature scale is a ratio scale, not only can we say that a temperature of 200 degrees is higher than one of 100 degrees, but we can correctly state that it is twice as high, though this does not apply to the Fahrenheit scale. The zero point must be meaningful, and 0 degrees Fahrenheit is arbitrary. Most statistical data analysis procedures we use in psychology do not differentiate between the interval and ratio properties of the measurement scales and the distinction is unimportant.

One way to remember the distinction between different levels of measurement is to compile them all into one example. The one I liked to use when learning the differences is the idea of a foot race. There is a certain number of people who will take part, some professionals and some amateur, the numbers of whom are measured on a nominal scale, the number of different types of people, or the frequency with which each type is counted is the nominal category of measurement. When the race is ended, all the people will have finished in a particular order, first, second, third, etc.; these are ordinal numbers and in the ordinal category of measurement. Each person will have finished in a certain time and we can place them in

order due to this, but also we can say that one person's time is less than another's so they have intervals between them that can be measured in seconds, or even minutes for a long race.

In psychology, although there may be more scope for flexibility than other sciences, we still need a systematic approach to research. If we are to make statements about human behaviour, we must do so in the light of good methods or we are simply speculating.

QUANTITATIVE RESEARCH DESIGN

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Most empirical quantitative research belongs clearly to one of two general categories. In correlational research we do not (or at least try not to) influence any variables, but only measure them and look for relations (**correlations**) between some set of variables, such as weight and cholesterol level. If we see a relationship, we might conclude that being overweight causes high cholesterol levels, but it could be just as valid to say that high cholesterol means it is difficult to lose weight or prevent it going up. So correlation research does not seek to establish causal relationships between variables, just the strength and direction of the relationship.

In experimental research, we manipulate some variables and then measure the effects of this manipulation on other variables; for example, a researcher might have participants deliberately increase their weight and then record cholesterol level (not the most ethical of studies!). Only experimental data can conclusively demonstrate causal relations between variables. For example, if we found that whenever we change variable *A* then variable *B* changes, then we could conclude that *A* influences *B*. Data from correlational research can only be interpreted in terms based on some theories that we have; correlational data cannot conclusively prove causality.

In order to claim causality we need three elements:

- Temporal precedence
- Covariation of cause and effect
- No alternative explanation

Temporal Precedence

In order to be able to say that one thing caused another, the first thing has to happen before the second. This might not be quite as easy as you think and it could be a classic case of chicken and egg. For example, our study of weight and blood must establish which state happened first, the obesity or the high cholesterol.

Covariation

As well as establishing that our cause happens before the effect, we need to show that there is actually a relationship between them. In logic, we would express this as

if *A* then *B* if not *A* then not *B*

So we can observe that whenever *A* is present, *B* is too and whenever *A* is absent, *B* is too, thus we have demonstrated that a relationship exists between them. However, this might not be reasonable. For example, in the days before family planning and probably electric lighting and widely available heating, more babies were born in the months of July to September (in the northern hemisphere). They are also the months when, in Europe, storks migrate. A plausible explanation might be that storks deliver babies… hmm. So, it can be dangerous simply to accept the causality of a relationship without examining the veracity of its nature. Simply because one thing happens before another, or seemingly at the same time, does not mean there is a relationship between them.

Alternative Explanation

So, with a relationship between two variables, we can show one happened before the other, but we still do not know that the relationship is a causal one. There is always the possibility that there is another variable/factor that is causing the outcome. This is the 'missing variable' problem, allied to the idea of extraneous or confounding variables, and is the core of internal validity.

Internal Validity

For research that measures the effects of treatments or interventions (independent variables), internal validity is a primary consideration. It is the ability to be able to say that your manipulation of the variables has led to an observed difference, such as it changes memory performance (a mnemonic strategy) or lower cholesterol (a new drug), for example. But there may be many reasons, other than our intervention, why memory scores may improve or symptoms may reduce. So we need to ask whether our observed changes can be attributed to our manipulations of differences in the levels of our independent variable and not to other possible causes.

Plausible alternative explanations or threats to internal validity can include flaws in design, such as testing only one group of people (there may be something special about this group that makes the results peculiar to them) or several groups

of people who may not be comparable. There are also social threats, threats that arise because social research is conducted in real-world contexts where people will react not only to what affects them, but also to what is happening to others around them (see the section on demand characteristics in Chapter 1).

In order for us to argue that we have demonstrated internal validity, we have to eliminate the plausible alternative explanations. This can be done by making our research design as good as we can get it, minimising flaws. It can be demonstrated by ensuring that it is possible to find the same results again when the study is replicated, ensuring that our findings are reliable.

Replicability and Reliability

In order for quantitative research and its findings to be accepted, there must not only be no meaningful alternative explanation, but it must also be possible to find the same effect if the research is repeated in the same circumstances. This repetition is called **replicability**. A study is only replicable if the researcher clearly exposes his or her procedure to people reading about it. This means explaining how the design of the study was arrived at, how the sample was drawn, how the data was collected, etc. Everything pertinent to someone repeating the study must be explained. If this can be done, and the study can be repeated with (statistically) similar results, then the findings are said to be reliable. In order to make causal statements about the research findings, any procedures and instruments must have **reliability**, that is, must be stable and/or repeatable, and unbiased.

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We will encounter reliability and validity in more detail when we look at psychometric measurements.

The final point about the utility and application of causal relationships is that of external validity.

External Validity

Remember in Chapter 1 when we discovered that experiments have been criticised for lack of ecological validity? Well, many researchers using quantitative methods, in particular experimentation, attempt to ensure that the setting for the experiment has ecological validity: that is, they attempt to ensure that the experimental procedures resemble real-world conditions. This is linked to the concept of external validity, but should not be confused with it. External validity means whether

or not experimental results can be generalised to a real-world situation. A study may possess external validity but not ecological validity, and vice versa.

If we have drawn a representative sample from our population, we should be able to generalise any findings from the sample to the population. However, it is not always possible ensure that the sample is truly representative. One way of improving external validity is to improve the sampling procedure used. We will look at sampling more thoroughly in the chapter on surveys, as it is crucial to that method.

Demonstrating external validity can be done by carrying out the study in a variety of places, with different people and at different times. So, external validity will be more credible, the more replications of the study are performed

So, now we have determined what a causal relationship is, what elements do we also need in our quantitative research? Well, there are more things we need to consider before setting off to examine our psychological data.

HYPOTHESES

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In order to find an answer we have to know what the question is. A hypothesis is a formal way of expressing a question as a prediction that can be tested. It is a highly **operationalised** statement, or rather two statements, expressing the questions we have about our variables and their relationships. One statement describes what the relationship might be, the other describes all other possible outcomes with respect to the variables. For example, a structured statement about our aging and memory study could be 'there will be a difference in performance on short-term memory tests between 25 year olds and 65 year olds'. Note that there is no prediction that the difference is positive or negative. This would be called the alternative or research hypothesis, the one that you would carry out the study to investigate, denoted H_1. We could, however, due to previous research and clinical findings, suppose that there will be a difference in our age groups, and make our alternative hypothesis read '25 year olds will be better at a short-term memory test than 65 year olds'. So our hypothesis has a direction; when we look at how to test hypotheses statistically (see Chapter 5) we will see why that makes a difference, but for now remember that we call research hypotheses directional or non-directional depending on what the prediction is. The other type of hypothesis is called the **null hypothesis**. This is a hypothesis that states there will be no effect

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of the independent variable on the dependent variable. For example, '25year olds and 65 year olds will not show any difference in memory test performance'.

Statistically, we test the null hypothesis and, if we can reject it, we seek evidence that we can support the alternative. So there is a logic in testing that has grown out of the form of science known as the hypothetico-deductive model, the traditional model of how science operates. Scientists begin with a theory or an observation, deduce a hypothesis, and then gather evidence to test the hypothesis. If the hypothesis is confirmed, the theory is assumed to be correct or useful. We observe and generate ideas, develop testable hypotheses, systematically observe and measure, and analyse data, thereby testing the hypotheses. This describes the whole process of quantitative research, but, as you might guess, there is a lot left out in between each bit! In the next chapters, we will discover how to do each of these pieces of the model. Firstly, a word about how to handle the data collected in quantitative research.

HANDLING STATISTICAL DATA

It is clear that many things about the way we live our lives have been altered by the advent of computers. No matter what we might think about this, it is certain that the analysis of large banks of numerical data has been aided by the use of computer programs (note the use of the American spelling to distinguish computer *program* from television or research *programme*!). The program most used in psychology is SPSS (Statistical Package for the Social Sciences) as it is relatively easy to use and contains some very powerful analytical tools. However, a package is only as good as the people using it and teaching others how to use it, and your university department will provide instruction in its use. The best way to learn how to use SPSS is being shown by someone who knows how to use it. This book will not therefore include detailed instructions in how to use SPSS, but will use 'screenshots' from running an SPSS analysis to illustrate the ways in which the package will show the analysis and how to navigate through it. There are other popular packages that you may encounter; the major competitors to SPSS are Minitab and SAS. However, once familiar with one package it is usually easy to transfer those skills to using another.

So, now we have discovered some of the basic vocabulary of quantitative research, examining how we use terms in different ways to everyday language, we need to look at how these concepts are used to describe and summarise data in the other major approach to psychological research, qualitative methods.

There are ways of collecting information that is not intended to be subject to statistical manipulation. The two approaches differ mainly in their fundamental purpose, as the aim of the qualitative researcher is an overall understanding of phenomena by stressing intriguing features and only possibly generating hypotheses. This can be contrasted to quantitative research, which tests predictions about events and assumes a certain level of isolation from other phenomena. Due to this, and various debates around this difference, we may be forgiven for thinking that there are two sorts of method – qualitative or quantitative – and that the two are mutually exclusive, that using one means that a researcher cannot or will not use the other. It may even be amusing to think that there is a fight going on about which is better. In fact, there is only one sort of method – the best one to investigate the question that is posed by some experience or incident. This correct method may even be a mixture of quantitative and qualitative techniques, and this should not be thought of as some sort of methodological sacrilege. The only problem that should be facing researchers is how to choose the most appropriate method. This will never be a simple yes–no decision, but a consideration of the benefits that every technique can bring. We should not choose qualitative methods simply because quantitative analysis is difficult, or discard qualitative because it lacks control and precision. Both of these reasons can be challenged, as statistical analysis has become so much easier to perform with the arrival of computers, and qualitative methods have rigour and precision if carried out systematically. There is even a position in which many researchers employ a mixed methodology because both approaches have value. In the next section, we will look at some of the range of qualitative methods, and examine this so-called tension between the methodological approaches a bit more closely.

It might be useful, when trying to decide on a methodological approach, to distinguish between the general assumptions involved in undertaking a research project (qualitative, quantitative or mixed) and the data that is collected. At the level of the data, there are really little difference between the qualitative and the quantitative. But, at the level of the assumptions that are made, the differences can be profound.

QUALITATIVE AND QUANTITATIVE DATA

In consideration of the data derived from qualitative and quantitative methods, there would seem to be a fundamental difference: qualitative data consists of

words and quantitative data consists of numbers. In fact, those differences are not as deep-seated as first thought and there are several reasons for this:

1. All qualitative data can be coded quantitatively. We can assign numbers to anything that appears to be qualitative. For example, in surveys, questions are often included that take the format 'Please add comments'. The responses to these can be categorised and then coded numerically. This retains a qualitative distinction between categories but allows at least descriptive quantitative analysis.
2. All quantitative data is based on qualitative judgement. Numbers cannot be assigned or interpreted without understanding the assumptions that underlie them. In questionnaires, using Likert scales (see the chapter on survey methods), we can have a response from 'strongly agree' to 'strongly disagree'. If a respondent ticks one level what does that mean? We have to assume that the respondent read the statement properly, understood the terms in the statement, understood the level of response he or she was making, and a host of other underlying issues. The numerical data has many assumptions underlying it as any qualitative response.

So, in some ways quantitative and qualitative data are indistinguishable. To ask which type is better may be meaningless. However, it also begs the question 'what are researchers arguing about?' Well, there is still plenty of debate left here.

If we agree that qualitative and quantitative data are similar, we have still only started an examination of the debate. In reality, the contention is about epistemological and ontological assumptions underlying the approach to research, rather than data. In other words, the differences lie in *why* we use a particular method rather than what the data and its analysis entail.

So let us examine another 'belief' about the difference in the approaches: quantitative research is confirmatory and deductive in nature, whereas qualitative research is exploratory and inductive in nature. Is this correct? Well, not necessarily. There is a lot of quantitative research that can be classified as exploratory as well, and qualitative research can also be used to confirm specific deductive hypotheses. Belief in this difference is not acknowledging that both approaches can be rich and systematic. The difference is not then methodological but philo-

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sophical: qualitative research makes assumptions under a different **epistemology** from quantitative research. Qualitative researchers set out to understand phenomena by viewing them in context. Quantification appears limited from this viewpoint, as it only looks at a portion of reality that should not be removed from the whole. This 'in-context' examination may mean becoming immersed in the situation by moving into the culture under investigation.

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There is also an **ontology** about the world where assumptions appear to be different. Qualitative research does not assume that there is a single unitary reality

that lies apart from our perceptions. Each of us experiences our own reality and therefore we must take into account the fact that the researcher's perception may be different from those researched, and each person involved has their own perception too. Therefore combining and summarising experience *across* individuals, in the way that quantitative research does, will not take into account a fundamental view of the individual, and the contribution of the researcher's own viewpoint.

Many qualitative researchers would not agree with some of the above, particularly about the connections between the data types. Of course, it is not possible to separate research assumptions from the data, and there is an argument that coding is simply the attempt of a quantitative researcher to impose those perspectives on qualitative data. However, a large majority of researchers who use qualitative methods have progressed to them from quantitative and believe that both can be used in harmony without imposing the values of one on the other.

No matter how we come to our conclusion about the use of qualitative or quantitative methods, it must be from the viewpoint of choice and information. Perhaps the major consideration here would be not whether we buy into one form or another, but which can approach the question in the best way. There is no resolution to this debate, but an informed choice is better than one driven by the need to fit with an uninformed standpoint. In that case, we had better inform ourselves about when and why we would choose qualitative methods.

WHY USE QUALITATIVE METHODS?

There are various reasons why we might choose to use qualitative methods. They allow us to approach research questions with flexibility and possibly allow access to participants who would not usually be comfortable taking part in more structured forms of research. Not only that, but the information derived from participants will be from their natural setting, placing them in natural context. Hence, qualitative research is interpretive and naturalistic, attempting to study psychological events in their natural settings, and interpreting meaning in context. It also acknowledges that there are several different ways by which we make sense of our environment. This last is often referred to as multiple realities, as we all have a different view of reality, and qualitative methods equip us more readily to access such subjective perceptions. However, there is also the danger that the researcher's own subjective perceptions will affect the process or outcomes of the research.

There are many ways that this can happen: a researcher's bias or personal involvement in the subject matter, or simply holding different views from the research participants, can alter the way in which the data is analysed and interpreted, or even how it is collected. To attempt to minimise this lack of neutrality there are theoretical tools that allow researchers to address any methodological and philosophical issues that may arise.

Reflexivity

No data collection can be truly neutral or free from the subjective perceptions of the data collector. This is a major criticism that qualitative researchers level at the experimental paradigm, that objectivity is impossible, so why attempt to achieve it? Conversely, qualitative research is criticised for the same thing, that it is too open to subjectivity and non-neutrality. The response is that qualitative research allows a researcher **reflexivity**. This means that the researcher acknowledges that he or she will affect the behaviour and interpretation of the behaviour of any system being observed or theory being formulated. Any observations cannot, therefore, be independent of the participation of the observer. Popper (see Chapter 1) said that reflexivity presents a problem for science, because, if a prediction can lead to changes in the observed behaviour, it becomes difficult to assess scientific hypotheses. In psychology, this causes a dilemma, as we are observing ourselves when we examine human behaviour. Qualitative researchers view this, not as a threat to the validity of the data and analysis, but as an opportunity to explore and reflect on their own views. In other words, researchers can afford to make critical reflections on the research process and their own input to it.

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Being a reflexive researcher means having awareness of:

- theoretical assumptions and how they affect the research;
- how the research methods are chosen and used;
- what impact the research has on participants;
- self-involvement and how this may shape the research.

We can see that qualitative research has, as a fundamental perspective, a self-awareness of how each of us affects the world, and, specifically, how our own interpretation can affect our judgments in research settings and interpretation. According to Willig (2001), personal reflexivity means that we have to reflect on how our personal values, experiences and beliefs shape the research and how the research has affected us. She then suggests there is an alternative epistemological

reflexivity in which we should think about whether the research question we have generated has limited the design and outcome and whether it could have been conducted differently. Would this have then have stimulated a different view of the phenomenon?

This all suggests that a qualitative researcher spends a lot of time on the reflection rather than the performance of research. This is not really the case, but each is given sufficient value in the process to ensure the research is of good quality. When, in quantitative research, value is given to the design, the representativeness of the sampling and the generalisability of the results, this is establishing, or attempting to establish, the reliability and validity of any subsequent interpretation. There is a similar set of processes in qualitative research that attempts to ensure its integrity.

VALIDITY IN QUALITATIVE RESEARCH

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Some qualitative researchers reject the concept of, and adherence to, validity that is fundamental to quantitative research. Qualitative research is unconcerned with the idea of an external unitary reality to which we can **extrapolate** our findings. If we are to reject the assumption that there is a reality external to our perception of it, then it does not make sense to be concerned with the falsehood of an observation with respect to an external reality. Therefore, we need different standards for judging the quality of research.

Guba and Lincoln (1981) proposed four criteria for judging the veracity of qualitative research and said that these reflected the underlying assumptions better than the concepts of reliability and validity that quantitative research applies:

- Credibility (analogous to internal validity). This involves establishing that the results of qualitative research are credible or believable from the perspective of the participant. The participant then is the only one who can judge this.
- Transferability (analogous to external validity). This is the degree to which the results of qualitative research can be transferred to other contexts or settings. In a quantitative research perspective, this would mean generalising to a population's parameters from a sample's statistics. The researcher may not be the person doing the transferring; therefore, it is the responsibility of whoever wishes to do this to ensure that it is done properly. The person who wishes to place the results in a different context to the original is responsible for making the judgement of how sensible the transfer is.
- Dependability (analogous to reliability). The quantitative view of reliability is based on replicability. To what extent are we sure we will find the same result on repetition of the research? This is based on a possibly erroneous assumption that we can create the same

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situation and control the environment to such an extent that the same conditions prevail. In order to estimate reliability, quantitative researchers construct various hypothetical concepts (such as **measurement error**) to try to get around this fact. Dependability, though, emphasises that the researcher must account for the changing context within which research occurs. The research is responsible for describing the changes that occur in the setting and how these changes affected the way the researcher approached the study.

- Confirmability (analogous to objectivity). Qualitative research assumes that each researcher brings a unique perspective to the study. Confirmability refers to the degree to which the results could be confirmed or corroborated by others. There are a number of strategies for enhancing confirmability, such as documenting the procedures for checking and rechecking the data throughout the study, and using several 'judges' of elements along the way. When the study is complete, a **data audit** could be conducted – an examination of the data collection and analysis procedures.

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TYPES OF QUALITATIVE RESEARCH

As with quantitative methods, there are a range of possible methods within the qualitative approach. This variety arises firstly from the focus of the research, which can range from an examination of one's own experience to others' experiences examined through their speaking or writing, behaviours or products. Secondly, there is variety in how data is collected, which can focus on the past (such as an examination of historical documents or archaeological findings) or on the present, as in observation or introspection. Finally, there are different ways of analysing data from the highly structured repertory grid to forms that are viewed as more empathic such as phenomenology or hermeneutics. The processes of design, data collection and analysis are discussed in more detail in later chapters but let us just look at a few examples of these variations

Ethnography

The ethnographic approach to qualitative research comes primarily from the field of anthropology. Anthropology is the study of people and their lives and cultures *in situ*, with a central concept being that of culture. This is interpreted as the evolved capacity to perceive the world symbolically, and to transform the world based on the perception of those symbols. Symbols are any material artefact of a culture, such as art, clothing or even technology. The ethnographer strives to understand the cultural associations of symbols. Ethnographic research is holistic, believing that symbols cannot be understood in isolation, but, instead, are elements

of a whole. The emphasis in ethnography is on studying an entire culture, but using the symbols as the process of accessing the culture. This 'culture' concept may be tied to notions of ethnicity and geography, but is actually broader and includes any group or organisation. Macro-ethnography is the study of broadly defined cultural groupings, and micro-ethnography is the study of narrowly defined cultural groupings. The most common ethnographic approach is participant observation in which the ethnographic researcher becomes immersed in the culture as an active participant and records extensive field notes.

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An ethnographer can adopt an emic or an etic perspective when studying the culture. An **emic** perspective is the study of the way the members of the given culture perceive their world, and is usually the main focus of ethnography, whereas an **etic** perspective is the study of the way non-members perceive and interpret behaviours and phenomena associated with a given culture.

Phenomenology

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Phenomenology is a philosophical perspective as well as an approach to qualitative methodology. It emphasises subjective experiences and interpretations of the world, so a phenomenologist sets out to understand how the world appears to others. However, there is an assumption that the researcher's own values and beliefs can be set aside, which is sometimes difficult to accept. Giorgi (1970) suggested that psychology approached from a phenomenological perspective provides an alternative paradigm to those found in an approach to psychology that follows methods of natural science.

Hermeneutics

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The theory and practice of interpretation, originally **hermeneutics**, referred to the interpretation and criticism of biblical texts. However, it now has come to mean the removal of obstacles which may prevent readers from gaining the proper understanding of a text and analysing the necessary conditions for understanding. In hermeneutics, unlike phenomenology, there is an assumption that the researcher brings his or her own values and beliefs to the research and the examination of language. Hermeneutics does not rely on a deterministic or causal view of cultural influence; it suggests that the individual is not passive and powerless in relation to the culture in which he or she is found.

Grounded Theory

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The purpose of **grounded theory** is to develop a theory about phenomena of interest. However, this is not in an intangible, abstract form, but rooted, or *grounded*, in systematic observation.

Grounded theory is referred to as a complex iterative process, which means we need to repeat processes, bearing in mind the findings or deliberations of the previous round of process. The research begins with the raising of *generative questions* that help to guide the research, but are not intended to confine the scope of the research to them. Data can be gathered and as this process happens, *core theoretical concepts* are identified together with tentative *linkages* between concepts and data. After this early, very open phase, the researcher engages in verification and summary, possibly leading to the evolution of one *core category*.

Analysis can take place in several ways:

- *Coding* is a process that allows categorisation of qualitative data and the description of the implications and details of these categories. Initially we can carry out *open coding*, considering the data in minute detail while developing some initial categories. Later, more *selective coding* allows systematic coding with respect to a core concept.
- *Memoing* is a process for recording the thoughts and ideas of the researcher as they evolve throughout the study.
- *Integrative diagrams* are used to group the detail together, to help make sense of the data with respect to the emerging theory. The diagrams can be any form of graphic that is useful at that point in theory development.
- By applying these analyses, a *conceptually rich* (or dense) theory emerges. New observation leads to new linkages that lead to revisions in the theory and more data collection, by which the core concept is identified and enriched. Grounded theory does not have a clearly demarcated point for ending a study but should lead to a well-considered explanation for the phenomenon of interest; this is our grounded theory.

The term ‘qualitative data’ covers a huge range of types of material, so perhaps the best way of examining it is to look at the ways in which it might be gathered.

QUALITATIVE DATA COLLECTION

In-Depth Interviews

In-depth interviews include both individual interviews as well as group interviews such as focus groups. In-depth interviews differ from direct observation primarily

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in the nature of the interaction. In **interviews**, it is assumed that there is a questioner and one or more interviewees and the interviewer will be probing to gain understanding of the ideas of the interviewees about the phenomenon of interest.

Unstructured interviewing involves direct interaction between the researcher and a respondent or group, but with no formal structured protocol or interview schedule. In addition, the interviewer is free to move the conversation in any direction of interest that may come up. Unstructured interviewing is useful for exploring a topic broadly, but there is a penalty for lack of structure. Each interview tends to be unique, with no predetermined set of questions asked of all respondents, it is usually more difficult to analyse unstructured interview data, effectively preventing comparison across respondents, making any construction of themes almost impossible.

Direct Observation

Direct observation does not involve the researcher actively questioning the respondent. This includes everything from field research, with the researcher living in culture, to examination of photographs.

Participant Observation

One of the most common methods for qualitative data collection, participant observation is also very demanding. It requires that the researcher become a participant in the culture or context being observed. If setting out to do this a researcher must consider how to enter and leave the context, what role to take, how to record the observations made, and how to analyse while still in the context.

At first glance, participant observation is a straightforward technique – we immerse ourselves in the subject being studied, and thereby gain understanding, perhaps more deeply than could be obtained by other means. Arguments in favour of this method include reliance on first-hand information, high face validity of data, and reliance on relatively simple and inexpensive methods. The hazards of participant observation as a data-gathering technique are an increased threat to the objectivity of the researcher, unsystematic gathering of data, reliance on subjective measurement, and possible observer effects (in that observation may distort the observed behaviour). However, these can actually be valued as important components of the approach.

Participant observation is particularly appropriate to studies of interpersonal group processes as long as, we as researchers, are clear about initial expectations and guard against the imposition of expectations on observations.

Case Studies

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A **case study** is an intensive study of a specific individual. For instance, Freud developed case studies of several individuals as the basis for the theory of psychoanalysis and Piaget produced case studies of his children to study developmental phases. There is no single way to conduct a case study, and combinations of methods are often used.

Diaries

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When the respondents themselves record data about what they are doing, or experience, they are writing a **diary**, a useful method. It is relatively cheap and relatively easy to administer. Diary methods have an established history in psychology, an example being an investigation of leisure behaviour by Harvey in 1990, in which time diaries were collected and analysed. Time diaries allow participants to record the total flow of activities and attendant perceptions. Such data can be studied at the macro and micro level. At the micro level, time points, individuals and events can be studied. At the macro level, it is meaningful to study subpopulations, bundles of time and aggregated events. Another example is the review of consumer time use by Robinson and Nicosia (1991). Their review highlighted studies in which diary use was prevalent and that identify certain aspects of consumer behaviour. However, the information is usually restricted to behavioural data, and difficult to verify, but there have been attempts to use diaries to expose perceptual responses to the environment. Here, however, the effect of diary keeping may itself be problematic. For example, Gavin (2006) describes a diary study carried out into the effects of hearing music that the participant had not chosen. Participants were directed to record accounts of episodes in which music was played in instances when they were not in control of the decision to play the music, and to record various items about the music, together with any effects on themselves. The data was analysed using a process of revealing themes inherent in the experience of the diarists. In addition to any other finding, the results also indicate some increased awareness of intrusive music, suggesting that some form

of priming has occurred. As a direct result of keeping the diary, participants' perception of music had been heightened and thinking had been shaped by the diary-keeping task.

HANDLING QUALITATIVE DATA

Whatever form of qualitative data collection is used, a very large bank of information can be gathered. This data must be handled and summarised in some way. In the same way that quantitative data analysis has been moved forward by the use of computer packages, qualitative researches also have at their disposal several programs to aid in their analyses. This is a much more recent development than in quantitative research as it has evolved from complex text retrieval packages, rather than being a natural progression from calculators! This does not mean that using a program has answered every qualitative research problem, and some researchers are concerned that the forms in which computer-aided analysis is carried out present more restrictions than not using them. However, some packages in current use tend to be 'light touch' in nature, providing simple, but rapid, text retrieval with any transformation being under the control of the researcher. So, in the same way as statistical packages have to be used by someone who knows what test they wish to perform, the qualitative packages have to be used in such as way as to aid and not guide (or constrain) the form of analysis.

When choosing a package we would need to know what sort of organisation of the data is required. A word processing package is fine for a descriptive level of coding, as it would allow the writing of notes in a margin, which is often the first step to analysing a transcribed interview. Sentences could then be coded into various categories and so on. This does not allow a great dept of analysis, though, and a few dedicated packages allow much more than simple coding of words or sentences. The Ethnograph package can aid in identifying and retrieving text from documents as it allows the researcher to segment the text and identify it with several codewords. It can even allow us to interrelate segments and identify ways in which they generate a further set of segments (see the chapter on thematic analysis). HyperQual, on the other hand, allows us to integrate text and illustrations, which can be helpful when analysing data from several diverse sources. However, the most popular package used in qualitative research is NUD*ist. This stands for 'Non-numerical Unstructured Data Indexing, Searching, and Theorizing', and I have often wondered how long it took the producers of the program to come up with words that fit the memorable acronym!

Nud*ist allows the user to 'flag' and search text in order to construct a structured hierarchical database index. The index itself can then be searched for linkages and hierarchical categorisations that indicate meaningful themes or syntheses. These can themselves then be added into the indexing to produce further categories, which in turn allow emergent theoretical positions to be identified.

Summary

In this chapter we have looked at some of the basic vocabulary of quantitative and qualitative research, examining how we use terms in different ways to everyday language. This has equipped us with some of the basic terminology encountered when starting out in research. We have also examined the debate about the use of qualitative and quantitative research and the so-called tension between them. We could conclude that this tension is nonsensical and that we are now equipped with the fundamental tools to allow us to choose the most appropriate method for research rather than being swayed by extreme advocates of one or the other.

The next part of the book will examine some simple forms of quantitative research and how to carry out and interpret experiments and other forms of research that yield numerical data.