1 POSITIVIST RESEARCH

Chapter objectives

- To develop an understanding of the positivist research paradigm
- To consider the relationship between positivist research, quantitative methodology and experimental methods
- To outline the possibilities and limitations of positivist research

In this chapter, we will look at what is meant by *positivist* research, and consider how a positivist approach to research leads to the use of experimental and **quantitative** methods. We will also be introducing you to the idea of research **paradigms**. This is important because carrying out research involves an understanding of the philosophy that underpins the research – or '**paradigm**' – because this, in turn, determines the methodological approach taken. Positivism tends to underpin **quantitative** methodological approaches to research as we will see.

FINDING OUT ABOUT THE WORLD AROUND US

By the time we reach adulthood we know a lot of things, not only facts about the world around us, such as how to peel a banana and the age that children usually begin to walk, but we also have ideas and opinions on many topics. The branch of philosophy that looks at what knowledge is (its nature), the source of knowledge and the **validity** of knowledge, is called **epistemology**. Johnson and Christensen (2008) identify three sources of knowledge: experience, expert opinion and reasoning.

Experience

This is the first way that babies begin to learn about the world around them, as they explore the world via their senses. The idea that knowledge comes from experience is known as **empiricism** (Atkinson et al., 1996) and according to this way of thinking only the knowledge that we obtain through our senses can be said to be true. From this concept is derived the word 'empirical', the idea that a statement can be proved or disproved by observation, experiment or experience (Johnson and Christensen, 2008). Later on in the chapter we will see that positivist **methodology** relies on the collection of empirical

data; facts or information that has been derived by observation or experiment.

Expert opinion

The sum total of human knowledge would not grow very fast if we had to formulate our knowledge and understanding of the world by 'first principles' all the time. Much of our knowledge has been passed down to us from others. Among the sources of information are our parents, other family members, friends, educators and 'experts'. It is difficult to turn on the television or read a newspaper without encountering the ideas of experts. As we grow older we come to realise that not everything that we are told by experts is true or helpful. We learn to practise discernment and realise that sometimes expert advice can be contradictory. Nevertheless, learning from others remains an important source of information about the world around us.

Reasoning

Whereas empiricists argue that the only valid way to find out about the world around us is by observation, experiment and experience, adherents of rationalism consider that *reason* is the primary source of knowledge (Johnson and Christensen, 2008). Through the processes of thinking and reasoning, rationalists believe that it is possible to develop an understanding of a subject, without actually directly observing a phenomenon.

Atkinson et al. (1996) identify two main types of reasoning; deductive reasoning and inductive reasoning.

- *Deductive reasoning* is the process of drawing conclusions about something on the basis of prior knowledge known to be true. For example, one may agree that the following statement (premise) is true: 'Newborn babies cannot talk.' Then, given another statement, 'Baby John can say "DaDa"', it is possible to deduce that John cannot be a newborn baby. Deductive reasoning is only successful if the first premise is true.
- *Inductive reasoning* is when one draws conclusions about something on the balance of probability that a statement is true, based on what has previously occurred. For example, you may have noticed that every cat you have seen has a furry coat and from this you reason that it is probably true that all cats have furry coats. However, when using inductive reasoning it is always possible that the exception to the rule may come along, which will disprove the theory.

WHAT DO WE MEAN BY A 'PARADIGM'?

Research is about asking questions and seeking information to answer the questions that we pose. Influencing the questions that we ask and underpinning the research approach we eventually take are our ideas and conceptions about childhood and children. This understanding of children and childhood ultimately influences the research **paradigm** that we use.

It is worth taking some time to discuss what a **paradigm** is as it is a term that will be used frequently in this book. In common usage, a **paradigm** is an exemplar or a model. However

the term has come to mean something more specific when used in relation to research, mainly because of the work of Thomas Khun in the 1960s and 1970s (Hammersley, 2007). According to Mackenzie and Knipe (2006) a **paradigm** is a theoretical framework. They cite Bogdan and Biklen (1998: 22) as defining a **paradigm** as 'a loose collection of logically related assumptions, concepts and propositions that orient thinking and research'. Hughes (2001a: 31) describes a **paradigm** as a way of seeing the world that 'frames a research topic' and influences the way that we think about the topic. Similarly, Fraser and Robinson (2004: 59) describe it as a 'set of beliefs about the way in which particular problems exist and a set of agreements on how such problems can be investigated'. From this, it is clear that our choice of **paradigm** is important in influencing the **methodology** we choose, but it also shapes our perceptions of children and childhood as we will see.

Hughes (2001b) illustrates the connection between underlying beliefs and research **methodology** when he looked at a number of research studies into the influence and significance of the media in children's lives. He concludes that the way that the various research studies were conducted reflects the *model of childhood* held by the researchers, and that this underlying model influenced the research that was conducted. For example, researchers who held the underlying belief that children are like 'little sponges', uncritically absorbing messages from the media, asked the question 'what does the media do to children?' Researchers who saw children as more active, discriminating consumers tended to ask the question 'what do children do with the media?' (Hughes, 2001b: 356).

Although various authors (Hughes, 2001a; 2001b; Mackenzie and Knipe, 2006) have identified a number of **paradigms** that underpin research into children, Kumar (2005) suggests that the two main **paradigms** that form the basis of research in the social sciences are the *positivist approach* and the *naturalistic (interpretivist) approach* and it is these two **paradigms** (as well as post-structuralism) that we will be looking at in more detail in both this chapter and the next.

THE MEANING AND ORIGINS OF POSITIVISM

The positivist **paradigm** is one that has its roots in physical science. It uses a systematic, scientific approach to research. Hughes (2001a) explains that the positivist **paradigm** sees the world as being based on unchanging, universal laws and the view that everything that occurs around us can be explained by knowledge of these universal laws. To understand these universal laws we need to observe and record events and phenomena around us in a systematic way and then work out the underlying principle that has 'caused' the event to occur. An example of this process in action is the story of Sir Isaac Newton and the apple. It is said that Isaac Newton was walking in an apple orchard and saw an apple fall straight down to the ground. He started wondering about how far above the Earth the force of gravity had an effect and began to develop his theory of gravity. In this example the observed event was the falling apple and the underlying universal law was that of gravity (Keesing, 2008).

Scientific discoveries have been made since ancient times, for example as early as 4800 BC there is evidence that standing stones were being used for astronomical calculations in an area of Africa near the Sudanese border with Egypt (Lee, 2008). The positivist **paradigm**, however, is not just associated with scientific discovery; it involves the

application of scientific **methodology**. The development of the scientific method as a means of exploring the world around us probably emerged around the time of the European Renaissance (fifteenth and sixteenth centuries) and the Enlightenment (eighteenth century) (Fraser and Robinson, 2004).

THE SCIENTIFIC METHOD

In the section above we outlined that positivist researchers in the field of early childhood, and indeed other subject areas, have to make a basic assumption that what is being studied is subject to underlying, unchanging, universal laws. Johnson and Christensen (2008: 17) point out that positivist researchers also have to make other assumptions, including that they should operate within agreed norms and practices as well as the idea that it is possible to distinguish between more and less plausible claims and that science cannot provide all the answers.

The key features of the scientific method include:

1. Observation and collecting **data**
2. Looking for patterns and developing a theory
3. Forming a **hypothesis** to test the theory
4. Conducting research to test the **hypothesis**
5. Support or adjustment of the theory (Coolican, 2004).

These steps are often represented as a cycle or wheel (see Figure 1.1).

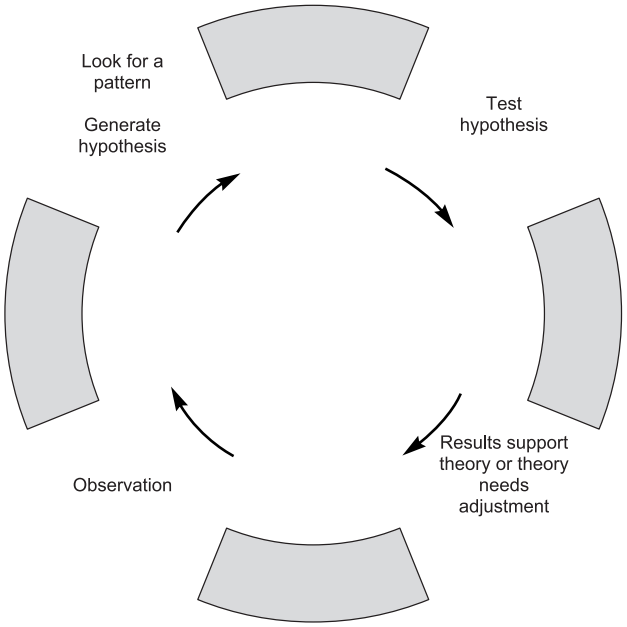

Figure 1.1 The research wheel

Within this framework Johnson and Christensen (2008) identify two different approaches: an *exploratory* approach and a *confirmatory* approach.

- The *exploratory approach* starts with the researcher making observations and searching for a pattern. If a pattern is found then the researcher puts forward a theory or idea about why this pattern occurs. This approach is sometimes known as the *inductive* method.
- The *confirmatory approach* is where a researcher starts with a theory about why a particular phenomenon is occurring and develops a **hypothesis** (a prediction) based on the theory. The next stage of this approach is when the researcher conducts an empirical investigation to test the **hypothesis**. If the **data** upholds the **hypothesis** then this supports the underlying theory. This approach is sometimes known as the *deductive* method.

You may find it helpful to look at the section on 'reasoning' earlier on in this chapter to remind yourself about inductive and deductive reasoning.

In reality these two approaches often work hand in hand with each other, as the following research in focus will show.

Research in focus

Ili et al. (2001) reported the findings of a longitudinal cohort study into the relationship between the number of respiratory infections children have and asthma. Previously, it had been observed that children from larger families and those who attended group day care seem to have a lower incidence of asthma. This led to the theory that children who were exposed to more infections as infants (from siblings or peers in nursery) were protected from acquiring asthma as they got older (Kelan and Weiss, 2001). From this theory, Ili et al. developed the hypothesis that the more upper respiratory tract infections (colds) that children had, the less likely they were to develop asthma. This hypothesis was tested by following up 1,374 children from birth until the age of seven years and recording the number of upper respiratory infections that they had before the age of three and whether or not they had been diagnosed with asthma by the age of seven. The findings confirmed the hypothesis.

This report contains elements of both the exploratory approach and the confirmatory approach. The initial observations about the link between respiratory infections could be said to be exploratory in approach, while the follow-up study of 1,374 children could be said to be confirmatory.

Can we use science to study children?

Before concluding this discussion on the scientific method, it is important to consider whether it is possible or desirable to use science to study children in the same way that science is used to study the physical world.

Up until the eighteenth century, children and childhood were not considered to be topics for scientific study, but from the time of Rousseau there is evidence that children

were subject to observation, although it was not until the late nineteenth and twentieth centuries that systematic, scientific observation of children took place. Chapter 9 of this book looks at the historical origins of child observation in more detail. The application of scientific **methodology** to social and psychological phenomena has, and continues to be, passionately debated. Whereas it is possible to use scientific methods to research the *biology* and *physiology* of children, as in the Ili et al. study, it is harder to see how these methods can be employed to investigate attitudes and feelings and the social world in general. This is a key criticism of positivist research.

Greig et al. (2007) consider the question as to whether we can legitimately use scientific methods to study children to be a pseudo debate. They point out that children are complex individuals in whom there is a highly sophisticated interplay between physical, biological, chemical characteristics and 'psychological' characteristics. In addition the environment does not act passively upon children, they are active agents able both to adapt to and alter their environment. The complexity of children and childhood is such that no single approach will be wholly satisfactory, and scientific **methodology** should be viewed as part of an eclectic approach to research about and with children (Greig et al., 2007). The scientific method is an especially important approach in research into children's physiology – after all, in testing a new treatment to be used on young children, it is vital that it has gone through a rigorous scientific process.

POSITIVISM AND THE QUANTITATIVE METHODOLOGICAL APPROACH

As we have seen previously, the positivist **paradigm** leads to a scientific, systematic approach to research and as such lends itself to the use of **quantitative methodology**. Researchers using a **quantitative** methodological approach usually (but not always) concentrate on the *confirmatory* stages of the research cycle, that is, the formulation of a **hypothesis** and the collection of numerical **data** to test this **hypothesis**. Thus, **quantitative methodology** aims to measure, quantify or find the extent of a phenomenon, as opposed to **qualitative methodology**, which is usually more concerned with describing experiences, emphasising meaning and exploring the nature of an issue (Coolican, 2004). Kumar (2005) describes the **quantitative** methodological approach as being a *structured* approach, in which all aspects of the research process are decided upon before **data** collection begins. The **qualitative** methodological approach is seen to be more *unstructured* with aspects of the research process subject to change in response to events as they occur. **Qualitative methodology** will be looked at in more detail in Chapter two.

Characteristics of quantitative research

Johnson and Christensen (2008: 34) outline the characteristics of **quantitative** research as follows:

- The confirmatory part of the research cycle is emphasised.
- Behaviour is seen to be predictable and regular.
- Common aims of research are to explain and predict.

- The researcher is interested in understanding general laws that apply to whole **populations** rather than particular groups.
- There is an attempt to study behaviour under controlled conditions with an attempt to isolate the effect of single variables.
- An objective approach is taken, that is, different observers should be able to agree to what is being observed.
- **Data** is based upon precise measurement using structured and validated **data** collection instruments.
- **Data** analysis aims to look at statistical relationships.

EXPERIMENTAL METHOD

We have seen that the confirmatory stage of the research cycle involves the testing of a **hypothesis**, an investigation of cause and effect. One way of doing this is by conducting an experiment. An experiment is a way of testing a **hypothesis** by precisely controlling the variables involved. It is very unlikely that students of early childhood will use an experiment in *their* research, but we will describe this method here as it will help you interpret the research findings of others.

Variables

Consider this imaginary piece of research. Members of staff in a local reception class have noted that children who come to them from one particular children's centre (centre A) appear to have attained a higher level of language development than children from another children's centre (centre B). Observations and records of children's language skills over a period of several years seem to support this view. The staff concludes that the difference is attributable to the higher quality of language interaction between the staff and children in centre A.

Reflection point

Thinking about the conclusion made about the two children's centres in the above scenario, do you consider that the conclusion is appropriate? What other factors might be involved?

There has been a flaw in the reasoning behind the conclusion made, because the findings may have nothing to do with the quality of language interaction at all. It may be that one centre drew children who come from an area of higher social disadvantage than the other. The children may have entered centre B with very poor language development compared with the children entering centre A. In fact, the quality of interaction in centre B may be better than centre A as the gap in language skills between the two groups of children may have actually closed while they were attending centre B. Factors that may affect the outcome of research in this way are called variables, and for appropriate conclusions to be drawn the variables have to be controlled. In this case, one would have had to look at the language development of the children on entry to the two children's cen-

tres as well as when they arrived in the reception class to have any chance of reaching a sensible conclusion. Even then, controlling for variables in 'real-life' situations such as this is near to impossible.

Atkinson et al. (1996: 17) define a variable as 'something that can occur with different values', so time, age, social class, gender, for instance, are all examples of variables. In an experiment, the researcher takes control over the variables that may affect the outcome of the research, and it is the *precise control* of variables that distinguishes an experiment from other scientific methods of enquiry.

For example, a teacher has a theory that children learn better in the morning when they are 'fresh'. She decides to conduct an experiment to find out if this is true. Before she starts her experiment she needs to make several decisions.

- *How will she measure 'learning'?* In this case the teacher decides that her measure will be the number of spellings remembered after 24 hours from a list of five spellings.
- *What will her **hypothesis** be?* In this case she decides that her **hypothesis** will be 'Children learning a list of five spellings in the morning will remember more spellings 24 hours later than children who learn a list of five spellings in the afternoon'. The number of spellings remembered is called the **dependent variable** because this is what is being measured and the **hypothesis** is that the number of spellings learned is dependent on the time of day. The time of day is known as the **independent variable** as it is not under the control of (independent of) the participant; it is manipulated by the experimenter.
- *What other variables need to be taken into account and how will they be controlled?* The teacher comes up with the following ideas.

Table 1.1 Showing possible sources of variation and how these will be controlled

Variable	*How it can be controlled*
Age of child	Children will be chosen between the ages of 6 years and 6 years 3 months
Gender of child	Half the children will be boys, half will be girls
Health of child	Only children who are fit and well will be tested
Language	Children whose first language is not English and who are not yet fluent will be excluded
Hunger	Efforts will be made to test the children approximately two hours after they have had either breakfast or lunch
Environment	The children will be tested in the same room, with noise levels kept to a minimum
The spelling list	The list will be the same for all children

Reflection point

Do you think the ability to remember spellings is the best way to measure *learning*? Are there *other* ways that you can think of that would enable this teacher to test her theory that children learn best in the mornings?

The key feature of an *experiment* is that the researcher tries to control as many variables as possible while only altering the **independent variable**.

Experimental design

The design of an experiment is the actual way that the experiment is put together. The simplest designs are similar to the one that we have just outlined; that is, there is one **independent variable** and one **dependent variable** (Atkinson et al., 1996).

In the hypothetical experiment outlined previously, the teacher decides that she will choose two groups of eight children, four girls and four boys, who fit in with the criteria outlined above. She gives one group the spellings in the morning, giving them 15 minutes to learn them. She tests them 24 hours later. She gives the spellings to the other group in the afternoon, again with 15 minutes to learn them and tests them 24 hours later. She makes sure that she gives both groups exactly the same instructions. This is known as an independent sample design; that is, that there are two different groups being tested under similar conditions (Coolican, 2004). The advantage of an independent design is that you can use the same 'test'. In this case, the same list of spellings was used, reducing the variance that could occur with different words. The disadvantage is that having two groups introduces other sources of variance, because individuals can differ according to a variety of dimensions such as personality, learning style, class, and culture. These variables, for which the researcher has not controlled, are sometimes called confounding variables (Johnson and Christensen, 2008).

The alternative to the independent sample design, which controls for individual differences, is the repeated measure design, where the same group is tested under different conditions (Field, 2009). In our example this would involve using a different set of spellings, which would introduce a source of variance.

One solution to the disadvantages to both of these designs is the matched pair design (Cardwell et al., 1996). In this design two groups of participants are used, but each participant in one group is matched as far as possible with someone from the other group, according to relevant variables. So in the hypothetical example we are discussing, each child would be partnered with another and matched according to variables such as level of mother's education, social class of the family and cultural background. Identical twins are often used as participants involving this sort of design because they are natural matched pairs.

Types of experiment

When we think of scientific experiments, we often think about laboratories and, indeed, many experiments in the field of child development have been undertaken in a laboratory situation, but experiments can be conducted in other ways. Coolican (2004) outlines the following experimental situations.

- **Laboratory experiments**. It is easier to control variables in a laboratory and some notable examples of research with children, such as Bandura et al.'s (1963) research on aggression have been undertaken in laboratories. Laboratory experiments have, however, been criticised because of the narrowness of the situations being investigated and the artificiality of the situation. Children, in particular, are unlikely to react the same way in 'real life' as they do in controlled laboratory situations.

Research in focus

Piaget (1896–1980) famously conducted a series of laboratory-based experiments designed to show that the way children think and reason is different from adults. Robson (2006) describes an experiment conducted by Piaget to demonstrate that young children under about the age of 7 find it very difficult to see things from another's point of view. The experiment involved a model of three mountains that was placed on a table top. The three mountains were different in colour and were easy to tell apart because one had a house on its summit, one had a cross and another was covered by snow. A toy doll was placed looking towards the mountains, with the child being 'tested' being placed looking at the model, but at an angle to the doll. The child was asked 'What can the doll see'? and given photographs of the three mountains taken from a variety of positions. Children of different ages were tested under the same conditions and it was found the children under 7 typically chose the photograph that represented the view that they could see. This was taken as confirmation that young children were egocentric, and cannot 'decentre' (Cardwell et al., 1996).

- **Field experiments**. These are carried out in naturalistic surroundings. In the memory experiment that we were discussing previously, the experiment would have been carried out in the children's school. Obviously, children react more naturally in a field situation, but it is more difficult to control sources of variance.
- **Natural experiments**. Sometimes it is possible to exploit a naturally occurring event for research purposes. For example, a nursery may introduce a key person approach and it may be possible to compare the time taken for new children to settle before and after the change. Coolican (2004) points out that this is a 'quasi' experiment as the researcher has no control over the **independent variable** (the change in policy).

CORRELATIONAL METHOD

Experiments are not the only way to conduct scientific research. Other non-experimental approaches that can be included within the positivist **paradigm** include correlational studies (Field, 2009). Correlational studies are used in situations when it is difficult, or impossible to use experiments, but the researcher wants to see if there is a relationship between two variables.

Consider this imaginary scenario. A researcher has a theory that childhood obesity is related to the amount of 'fast food' that a child consumes. It would be unethical to conduct an experiment where two groups of children are fed a diet consisting only of 'fast food', and the other group of children were not allowed to eat any 'fast food' at all. More indirect ways of looking at this issue need to be used so the researcher formulates a **hypothesis** that the more fast-food outlets there are in a town or city, per head of **population**, the higher will be the levels of childhood obesity.

In this study the **independent variable** is the number of fast-food outlets and the **dependent variable** is the percentage of overweight children (as recorded on school entry as part of the National Child Measurement Programme (DoH, 2008) for instance). An

important difference between a correlational study and an experiment is that the researcher does not manipulate the **independent variable**, but just measures it. In this example, the **hypothesis** is that there will be a positive **correlation** between the two variables, that is, the more fast-food outlets there are per head of **population**, the higher will be the percentage of childhood obesity. A negative **correlation** would involve one variable increasing as the other decreases. In this case there would be a negative **correlation** if the levels of obesity reduced as the number of 'fast-food' outlets increased. To conduct a correlational study, one needs to have variables that can be measured on a scale or counted, interval **data**, rather than **data** that describes categories such as male/female, hair colour and suchlike (Coolican, 2004).

It is important to note that, even if a positive **correlation** is found, this does not *prove* cause and effect. In the example we are using a positive **correlation** suggests an association between the number of 'fast-food' outlets and obesity, but does not prove that 'fast food' causes obesity. It may be that there is an intervening variable; for instance, there may be more 'fast-food' outlets in poorer areas, and that there are higher levels of obesity in areas of disadvantage.

VALIDITY AND RELIABILITY

Scientific method, with its rigorous control of variables, aims to produce findings that are valid and reliable. **Validity**, according to Blaxter et al. (1996: 200) 'has to do with whether your methods, approaches and techniques actually relate to, or measure, the issues you have been exploring'. **Reliability**, relates to how well research has been carried out. Findings are said to be reliable if other researchers can replicate the findings of a study by using the same methods (Blaxter et al., 1996).

The positivist **paradigm** starts with an assumption that 'the truth is out there'. **Quantitative methodology**, which derives from this, aims to improve ***validity*** by 'careful **sampling**, appropriate instrumentation and appropriate statistical treatments of **data**' (Cohen et al., 2000: 105). **Reliability**, using **quantitative** methods involves choosing measures that demonstrate 'consistency and replicability over time, over instruments and over groups of respondents' (Cohen et al., 2000: 117).

However, not everyone agrees that there is a universal truth, waiting to be discovered. An alternative viewpoint is that each individual interprets and understands the world around them differently, influenced by their social and cultural context and that there may be multiple explanations for actions (Hughes, 2001a). This point of view belongs to the interpretivist **paradigm** that is outlined in Chapter 2. Cohen et al. (2000) point out that discussions about **reliability** and **validity** should be framed by the **paradigm** and methodological approach taken. Thus, **reliability**, when using a **qualitative** methodological approach, involves trying to ensure that different researchers are consistent in the way that they interpret or categorise observations or interviews, or that the same researcher will show consistency over time (Silverman, 2005). **Validity** in **qualitative** research tends to relate to the extent that the research provides an authentic account of the participants' voices (Hughes, 2001a) as well as a reflexive account of the researcher's own role in the production of the **data** (Coffey, 1999). **Validity** and **reliability** are key concepts in research and are revisited throughout this book.

THE POSSIBILITIES AND LIMITATIONS OF POSITIVIST RESEARCH

In reading this chapter, we can see that positivism is an important **paradigm** in research. The positivist approach has led to advances in our understanding about children and childhood, particularly in the area of biology. We conclude this chapter by summarising the key possibilities and limitations of positivist research and the **quantitative** methodological approach that is informed by this **paradigm**.

Possibilities

- There is recognition that children and childhood are legitimate subjects for scientific study and this has led to real advances in our understanding, especially in the field of physiology and medicine.
- By applying highly controlled procedures and quantifying variables it is possible to obtain results that can help to refine theory.
- Because of the rigid control of variables, findings are generalisable, that is, the findings from the participants under study can be applied to a wider **population** (Robson, 1993).
- The emphasis on the strict application of scientific method and the control of variables means that the findings are seen as valid and able to be replicated by others.
- Positivism gives rise to **quantitative methodology** and the use of statistical analysis. In early childhood this approach has been valuable as the basis for the large cohort studies of children (see Chapter 5).

Limitations

- Because of the need to control variables, research on children is often undertaken out of context, so the holistic nature of children and childhood is lost (James, 2007). This is especially true if children are investigated under laboratory conditions, as their behaviour may be very different than in everyday, naturalistic situations.
- The need to control variables often leads to very small units of human behaviour being studied, for example, memory, attention and attachment, without regard for how all these aspects work together in an individual.
- Scientific methods, such as the use of highly structured questionnaires, may produce superficial information. If you *really* want to find out about the complexity of children and childhood(s) you need to use methods that delve deeper.
- Strict scientific method requires the researcher to be objective, but in 'real life' one does not find out about other individuals by remaining distant (Coffey, 1999).
- Objectivity may be an illusion anyway. As we will see in the next chapter, it is impossible to remove the influence of the researcher in the **data**-gathering process (Coffey, 1999).
- *Some* scientific research entails a degree of deception, with the participant not being told the real reason for the research. This raises ethical concerns, which will be discussed in Chapter 3.
- Scientific methods often put the researcher in a more dominant, powerful position than the participant. Coolican (2004) comments that the participants' behaviour may mirror this and adversely influence findings.

The next chapter will pick up further on some of these criticisms as we will be discussing interpretivism and then post-structuralism as **paradigms** that have developed as a response to positivism.

Key points from the chapter

- The decisions we make about the research process depend upon the **paradigm** we hold. A **paradigm** is a set of beliefs about the way in which particular problems exist and a set of agreements on how such problems can be investigated.
- A positivist **paradigm** is one that assumes that early childhood can be studied using the same scientific **methodology** as one would when studying the physical world, and that the subject being studied is subject to the same universal laws that govern the universe.
- Scientific method involves a cycle of investigation including the following stages: observation, identification of underlying patterns and generating a theory, forming a **hypothesis**, conducting research to test the **hypothesis**, and accepting or rejecting the theory.
- Positivism gives rise to **quantitative methodology**. This is **methodology** that involves the collection of 'scientific' **data** that is precise and based on measurement and is often analysed using statistics with the intention that the findings can be generalisable.
- One method used in positivist research is the experiment. The key feature of an experiment is that the researcher tries to control as many variables as possible while only altering the **independent variable**.
- Correlational studies are another scientific approach where the researcher looks for an association between two variables, but the **independent variable** is not manipulated.
- However, positivist research is not without criticism. It could be regarded as being very narrow and unable to demonstrate the holistic nature of children and childhood. The findings from positivist studies are often superficial and fail to contribute to a deep understanding of an issue. Finally, by applying research principles about the natural world to the social world of human beings, positivist research seems to ignore the complexity of human life and the difficulty of the researcher remaining objective and detached from the people with whom s/he is carrying out research.

Further reading

Coolican, H. (2004) *Research Methods and Statistics in Psychology.* 4th edition. London: Hodder Arnold. This book is helpful in describing experimental methods used in research.

Hughes, P. (2001a) 'Paradigms, methods and knowledge', in G. MacNaughton, S. Rolfe, I. Siraj-Blatchford (eds), *Doing Early Childhood Research: International Perspectives on Theory and Practice.* Maidenhead: Open University Press. This is a very useful chapter in outlining the major paradigms and associated methodological approaches that inform early childhood research.