EXPERIMENTS

Introduction

In the first unit of this module, we'll examine three research methods which share a common theme of **observation**. Each of the approaches basically involves watching people - although it is important to note that the way in which they do so in very different ways.

The first method of the unit is the **experiment** - an approach which is, in many ways, the odd cousin of the family (the one who still lives with his mum at 40 and purports a liking for 70s and 80s "classic" rock) - both because it is rarely used in sociology and because it actively tries to control the situation which it hopes to observe. We will then move on to examine **direct observation** and **participant observation**, two methods which attempt to examine human behaviour as it naturally occurs - and which form the backbone of mainstream sociological research.

By the end of this unit, students should be able to...

Define the three key types of observational research, and the different approaches to using them ***(AO1)***

Evaluate the usefulness and limitations of observational research with reference to the priorities identified in the previous unit ***(AO2)***

Examine the similarities and differences between the three main observational methods and the type of data they produce ***(AO2)***

Use named examples of sociological research to support and illustrate arguments ***(AO2)***

What is an Experiment?

1. *What are the terms which you associate with "an experiment".*
2. *In pairs, try to write a formal definition of experiment, with reference to the the textbox above.*
3. *Write down the names of any studies that you have examined so far in sociology which have used experiments.*

Perhaps the most straightforward definition of an experiment is as "a controlled observation" - the researcher manipulates an aspect of their participant's environment in order to assess the effect of this manipulation on their behaviour. **Bandura**, for instance showed children films of others playing aggressively with inflatable dolls and then observed their play to examine whether media violence would be imitated.

The process of conducting an experiment mirrors that of the natural sciences (chemistry, physics, geology, etc). It begins with the formulation of a theory about the social world, and a **hypothesis** - a testable statement - is formulated (for instance, *"watching violent imagery causes violent behaviour"*). Based on this, the researcher identifies the **dependent variable** (the factor which they want to measure) and the **independent variable** (the factor which they have hypothesised will affect the dependent variable). They then manipulate the independent variable and observe the affect on the independent variable.

It should be noted that an extremely important feature of experiments is that they are conducted under **controlled conditions**. If we are not careful, then the dependent variable will be affected not just by the independent variable, but by all sorts of other factors (such as age, gender, upbringing, mood and so on) - which are called **confounding** or **extraneous variables**. These can be extremely damaging they lead to uncertainty over which factor has produced the results of the study. Consequently, by controlling the research environment, the researcher is attempting to minimise the effects of confounding variables and ensuring that they can conclude that the IV has influenced the DV.

Summary of Experimental Design

4. *Summarise the experimental process as a diagram in the activity box above.*
5. *Using the Bandura, illustrate the key terms outlined above.*

Advantages of Experiments

✓ The key advantage of using experiments is linked to the degree of **control** present in the method. By carefully manipulating the research environment, and cutting off the influence of all variables but the one they are interested in, researchers are able to make very powerful **conclusions about cause-and-effect**; they are able to argue that one variable causes another one to change.

✓ This precise control - and the fact that variables are usually measured in carefully designed quantitative way - also means that it is very easy to set an experiment up in exactly the same way and repeat it. Furthermore, if the experiment is designed well enough, similar findings are likely to be produced. Consequently, experiments tend to be **high in reliability**.

✓ In using quantitative methods, experiments also eschew the need for the researcher to make any judgements or interpretations of the data. From one perspective, therefore experiments produce valid data as they tend to be **objective**.

✓ The use of experiments also closely **mirrors the methodology used in the natural science**. By working in this way, some researchers would argue that it is possible to be scientific - and thus produce a "better" type of knowledge. On a prosiac level, by operating a scientific way, sociology attracts more prestige - and with it funding!

Re-examine the Milgram's on Obedience to Authority (p8)

6. *How did Milgram find participants for his study?*
7. *Do you think that this approach will produce a sample which is typical (or representative). Try to explain your answer.*
8. *Support the claim that Milgram is unjustified in assuming that the results he produced in a lab will be true in the real world. What problem does this raise about experiments.*
9. *What were the two main ethical problems with the study?*
10. *Why was it necessary for Milgram to be unethical in this way? What criticism of experiments does this raise*
11. *Think of three issues of interest to sociologists (based on your study so far). How easy would it be to study these using an experiment. Explain your answer, and identify a related criticism of experiments as a sociological research method.*
12. *Which theoretical perspective is most likely to favour the use of experiments? Explain your answer carefully.*
13. *The use of experiments is far more prevalent in psychology. Why do you think this might be the case?*

Limitations of Experiments

It should be noted that, although the advantages of experiments are beyond doubt, they are **rarely used** in sociology (in fact, only one of the experimental studies we will examine is truely sociological) as they also have significant drawbacks - as was suggested in the previous activity.

- Perhaps the most damaging problem with applying the experimental method is they create **artificial** situations by taking people out of "the real world" and placing them in a laboratory. Consequently, we cannot expect any behaviour that we observe to be natural - and researchers must be careful about assuming that participants would behave in this way in everyday life. (In technical terms, we would say that the research lacks ecological validity).
- Furthermore, in designing an experiment, there is often a **tension between ethics and validity**. If a participant knows the purpose of an experiment, they are likely to alter their behaviour accordingly (how would participants have behaved if they knew that Milgram, for instance, was interested in obedience and not learning). Consequently, it is usually not possible to obtain fully informed consent when conducting an experiment.
- For some the very fact that **experiments manipulate people** necessarily raises ethical concerns. These are amplified when the topic of the study has the **potential to cause harm** to participants - and many of the topics of interest to sociologists have the potential to cause a great deal of harm.
- Behaviour in an experiment can also be skewed inadvertantly by the researcher (called the **Experimenter Effect**). The researcher is likely, for instance, have an idea about what they expect to find - and consequently, they may inadvertantly lead participants to behave in a certain way. The characteristics and identity of the researcher may also affect the findings - for instance, a participant might respond differently to male and female experimenters.
- Furthermore, even when participants are unaware of the purpose of an experiment, their behaviour is not necessary natural. It has been noted that people act differently simply if they know they are being watched - a problem called the **Hawthorne Effect**.
- There are also **practical** problems associated with using experiments as a research method. At a basic level - and unlike other quantitative methods - they are expensive and difficult to conduct, and the limited resources of many researchers therefore prohibits use of the method.
- Furthermore, most sociologists are interested in topics which are simply to big to explored in a laboratory setting. It would, for instance, be practically impossible to explore the affect of cultural deprivation on educational achievement using an experimental approach. It is **impossible to fit an entire society into a research lab**, and this is exactly what we would need to do to study many of these issues.
- In order to conduct a properly controlled experiment, the researcher must also identify all the variables which might affect their study and isolate them accordingly, so that the only thing which is causing the dependent variable to change is the independent variable. However, when we are studying something as large as society and human behaviour it is incredibly **difficult to identify all potential confounding variables**. Our behaviour is influenced by a massive range of factors (from current events, to the weather and if we got enough sleep last night), and it is unlikely that the researcher will be able to identify (nevermind control) all of these variables.
- **Interpretivists** are particular critical of experiments, arguing that they are entirely inappropriate in the study of human behaviour. Although they acknowledge the usefulness of the method in the natural sciences, they argue that the **subject matter of sociology (people) is fundmentally different**. Chemicals, for instance, are passive (they simply react to certain stimuli). In contrast, people are active; they have motives and attach meanings to events which affects their behaviour. Whilst a chemist doesn't have to worry about why a beaker of water decided to boil, the sociologist has to consider why people decide to behave in a certain way. Experiments have a serious limitation in this respect; they show what happens under certain conditions, but not why. Consequently, interpretivists would recommend methods which allow us to better understand peoples meanings, and explore the motives which underpin their behaviour (such as interviews)
- As with any structured, quantitative approach, experiments also suffer from **problems of imposition**. In designing the experiment, researcher selects the important variables and in doing so, discounts any others. It could, therefore, be argued that they are ignoring any possible explanations of behaviour which do not fit with their assumptions.

Using Named Examples: Milgram

Artificiality	
Ethics vs. Validity	
Causing Harm	
Ecological Validity	
Sampling	
Controlling Confounding Variables	

14. In all of your sociology modules, it is important that you use named examples to illustrate and back-up your arguments - and this module is no exception. To practice doing this, complete the table to the left using Milgram's study to illustrate each of the points about experiments

Types of Experiment

So far, we have assumed that all experiments as essentially the same. There are, however, different forms of the method - and each has it's own distinct advantages and limitations

Lab Experiments

The discussion so far in this topic has taken the stereotypical view of the experiment as conducted in an artificially created environment by a researcher in a white-coat. Technically this - the most controlled of approaches - is called a **lab experiment**.

Field Experiments

It impossible to study many of the topics of interest to a sociologists in a laboratory setting, and consequently researchers must conduct their studies in genuine social settings (for instance, in a school classroom). This is called a **field experiment**.

15. *Contrast laboratory and field experiments, evaluating them in terms of validity, control and ethics.*

Natural Experiment

The third, and final, type of experiment is the **natural experiment** - and has the distinction that, unlike the other forms of the method, the researcher makes no attempt to manipulate the environment of their participants. Instead, they take advantage of naturally occuring variables (for instance, testing the nature-nurture debate by studying identical twins who have been raised in isolation). This approach (which is also known as the comparative method) is, by far, the most common in sociology and can take many forms. Researchers can, for instance, compare individuals or large sociology groups using official statistics (see "Official Statistics" and Durkheim's study of suicide).

16. *With reference to the advantages and disadvantages of experiments, explain why natural experiments might be the most common form in sociological research.*
17. *Try to apply the concepts covered in this topic to each of the studies below. Summarise how each could be used in an essay on experiments in the table.*
18. *Many methodological issues involve trying to strike a balance between two factors. Which "balancing tricks" are raised in the choice between different types of experiment (think about what is gained lost as we move from lab to field, to natural experiments). Summarise these below.*

Example Experiments...

Elton Mayo: The Hawthorne Studies

The factory management of the Hawthorne Electrical Plant in Chicago hired Elton Mayo to study the links between working conditions and industrial output. Mayo decided to conduct an experiment to show how changes in factors such as lighting, heating and length of breaks affected work levels. He changed the working conditions and measured the resulting changes in productivity. For example, lighting levels were increased for one group of workers, decreased for another and left the same for a final group.

It was found that the worker's productivity increased regardless of how the researchers altered the working environment! In the case of lighting levels, all three of the groups of employees worked harder – even in the group where no change had been made. Initially the results made no sense, until Mayo realised that the employees were working harder not because of the changes in their environment, but because they were aware that they were being watched – and because they knew that Mayo would be reporting back to their boss on their work levels.

Rosenthal and Jacobson (1968)

In this study, yhe researchers were interesting in testing the hypothesis that some children perform badly at school because of teacher expectations and not because of their social background.

School teachers were asked to administer IQ tests on pupils, and told that these tests were designed to predict potential intellectual gains in children. Teachers were told casually the names of 20% the of the children who were expected to show exceptional intellectual gains in the year ahead. This 20% were, in fact, chosen at random by the researchers and rest of the children formed a control group. There was no real difference between the two groups of children.

The same IQ test was administered to the children on three more occasions over the next 18 months and the result indicated that those children from whom the teacher expected greater intellectual gains did, in fact, exhibit such gains. The researchers also found that the labelled children's school reports were much more favourable than those of the control group.

Cyril Burt: Twin Studies

In order to test whether intelligence was a product of nature or nurture, the British psychologist Cyril Burt located a number of monozygotic twins who had been raised seperately. He administered IQ tests and compared the results; finding that scores of each pair of twins tended to be extremely close. As the only factor that the twins had in common was their shared genetics - afterall, they had a different socialisation experience - Burt concluded that intelligence was, in fact, a product of genetic factors.

Burts work saw him rise to the status of one of the most influential and important educational psychologists of his time. However, by 1972 (a year after his death, his reputation was in tatters as the work of Leon Kamin had exposed the fact that Burt had manipulated (and in cases made-up) much of that he used to prove his hypothesis

Burt's findings are, consequently, now largely rejected. His methodology, however, demonstrates that using naturally occuring variables provides a means of applying the logic of experiments to the study of a topic which would be to impractical and unethical to study using a regular laboratory experiment.

Milgram	
Rosenthal & Jacobson	
Mayo	
Burt	

A Methodology See-Saw