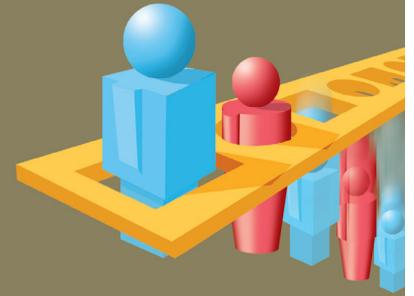


# Chapter 5

## Exploring the use of quantitative data-collection methods and analysis in the context of research



**By the end of this chapter you will be able to define and evaluate quantitative data and primary and secondary research methods (including questionnaires, structured interviews, content analysis, official and non-official statistics).**

## Primary quantitative methods

In this section we will discuss two different kinds of primary quantitative method: social surveys and content analysis.

### Social surveys

Lawson and Garrod (2009) define a survey as 'the systematic collection of information about a given population', which could involve using any number of different research methods. However, we can think about surveys as involving the large-scale collection of data using a questionnaire (or some variation thereof, such as a structured interview) — a list of written questions normally completed in one of two ways:

- **Privately** (with the researcher not present): This is called a **postal questionnaire** (even though it is not necessarily posted). Respondents write their answers without verbal guidance from the researcher.



- **Publicly** (in the presence of the researcher): This is normally called a **structured interview** and respondents usually answer a researcher's questions verbally.

The same questions could serve equally as a postal questionnaire or a structured interview, the main difference being how they are administered.

## Questionnaires

Questionnaires are used to ask two types of question: closed or open.

### Closed questions

Closed questions are also called closed-ended or precoded questions. The researcher provides a set of questions with answers from which the respondent can choose one (or sometimes more) that best represents their situation, feelings, beliefs and so forth (hence the idea of questions being precoded — the researcher limits the responses that can be given). A (very) simple example is one that asks the respondent to choose between two options (although it's always useful to include a 'don't know' option for those who have no opinion either way):

Do you own an iphone?	Yes	No	Don't Know
<b>Code</b>	<b>[1]</b>	<b>[2]</b>	<b>[3]</b>

**Variations** can be a bit more adventurous. For example, the respondent could be allowed the (limited) opportunity to fill in an answer.

<b>What is your favourite subject?</b>	
Sociology	
Physics	
Other (please specify)	

The inclusion of an 'other' option avoids the need for long lists (in this instance, a list of curriculum subjects). It also means the respondent can add something the researcher may not have considered.

Alternatively, a researcher could measure respondent **attitudes**:

<b>How strongly do you agree/disagree with the statement 'Sociology is the best subject I have ever studied'?</b>				
Agree very strongly	Agree strongly	Neither agree nor disagree	Disagree strongly	Disagree very strongly

There are further variations on the closed question theme, but their defining characteristic is that they allow respondents little, if any, scope to develop an answer beyond the categories preselected by the researcher. One advantage for the researcher is that the answer data is relatively easy to express statistically, hence such questions are used extensively to collect quantitative data.

### Open questions

Open (or open-ended) questions are different in that the researcher doesn't provide a set of answers from which to choose. Rather, the respondent can answer 'in their own words'. A simple example of an open question is:

- What do you like about studying sociology?

This type of question can probe a little deeper into a respondent's opinions and produces a (limited) form of *qualitative* data (although the main objective with open questions in a questionnaire is usually to *quantify* responses in some way). Questionnaires can, of course, contain a mix of open and closed questions.



Write a closed question to find out how many GCSE qualifications someone has.

### Strengths of questionnaires

- **Validity:** Although postal questionnaires rarely have much depth, one aspect which may give them greater validity than some other methods is their anonymity: because respondents never meet the researcher, questionnaires can more easily explore areas which are potentially embarrassing (such as sexuality) or incriminating than can other methods. If people can anonymously admit to crimes they've committed, for example, they may answer questions more honestly than they would have done in the researcher's presence; this can lead to greater validity because the research potentially measures what it set out to measure.
- **Interview/interviewer effect:** This type of effect occurs when the relationship between the researcher and the respondent creates a situation that **biases** the responses (such as when a respondent gives answers they think the researcher wants to hear). Postal questionnaires — because they involve no personal (face-to-face) interaction — avoid this potential source of bias.
- **Coding and quantification:** The use of precoded questions makes it much easier to quantify data, since the options available are already known, limited in number and (relatively) easy to count. However, although closed questions are easy to codify, this is not necessarily the case with open questions. The researcher may receive a wide variety of very different responses, each of which has to be categorised, coded and quantified.
- **Analysis:** Postal questionnaires are relatively quick and easy to code and interpret (in some instances, 'interpretation' simply involves counting responses).
- **Reliability:** A questionnaire is easy to **standardise**, which increases reliability because everyone answers exactly the same questions.
- **Sampling:** Postal questionnaires are useful when the researcher needs to contact large numbers of people quickly, easily and efficiently. The respondents also do



most of the time-consuming work by actually completing the questionnaire before returning it (or not, as the case may be).

### Weaknesses of questionnaires

- **Anonymity:** This can work both ways — it may encourage honesty, but if someone other than the intended respondent completes the questionnaire then research **validity** and **representativeness** will be affected.
- **Reliability:** Where the researcher is not present it's impossible to know if a respondent has understood a question properly or to check that the questionnaire has been completed correctly. The researcher also has to trust that questions mean the same thing to all respondents. These problems can, to some extent, be avoided by conducting a pilot study, but they can never be totally eliminated (for example, does everyone understand 'the fear of crime' in exactly the same way?).
- **Responses:** Response rates are generally low for postal questionnaires (only a small proportion of those receiving a questionnaire tend to return it to the researcher) which may mean a carefully designed sample becomes unrepresentative. Research **validity** may also be affected by a low response rate because it increases the chances of a **self-selected sample**. In addition, people may fail to respond to particular questions (missing them out completely, for example), or they may respond incorrectly to a question (e.g. by ticking two choices when only one was requested).
- **Validity:** The questionnaire format makes it difficult to examine *complex* issues and opinions. Even where open-ended questions are used, the **depth** of answers tends to be more limited than with almost any other method. This may mean the researcher fails to collect potentially significant and informative data.
- **Bias:** While we have to assume that, for ethical reasons, sociological researchers do not intentionally bias their research data, questionnaires may introduce *unintentional* bias in terms of question phrasing and content — and this will impact on data reliability and validity. Some problems here include:
  - **Ambiguity:** If a question has more than one meaning, people will effectively be answering different questions. For example, the question 'Do you agree that most people believe the prime minister is doing a good job?' is actually two questions; you could agree or disagree that the prime minister is doing a good job — but you could also agree or disagree with 'most people's belief'.
  - **Leading questions:** This type of question is one that suggests a required answer (as in the above question; by saying 'most people agree' the question challenges the respondent to go against the majority).
  - **Leading answers:** When giving respondents a range of possible answers it's important to ensure they are weighted equally. For example, the following possible answers are too heavily weighted in favour of a *positive* answer to the question posed.

How do you rate sociology as a subject?				
Brilliant!	Incredible!	Fantastic!	Marvellous!	Not bad

- **Precision:** If an option isn't precisely defined it will mean different things to different people. Does 'occasionally', for example, mean the same thing to everyone?
- **Hypothetical questions:** These questions require respondents to imagine themselves in a position they do not actually hold ('If you were the prime minister how would you run the country?') — and imaginary questions invariably produce imaginary answers.



Identify and explain two ways a pilot study can be used to test the reliability of a postal questionnaire.

### Structured interview

This involves respondents answering questions (both closed and, more rarely, open) read to them by a researcher.

#### Strengths

- **Reliability:** Problems or issues surrounding the research can be discussed between the participants. The interviewer can, for example, explain the objectives of the research and resolve any problems with understanding or answering questions. If a respondent is unable or unwilling to provide an answer, the researcher will be aware of the reasons for this and may be able to resolve them.
- **Representativeness:** Structured interviews avoid unrepresentative research caused by low response rates or self-selected samples. Response rates are invariably high (they should be 100%) because the researcher rather than the respondent actually writes down answers given to a question.

#### Weaknesses

- **Interview effect:** This occurs when a respondent tries to 'help' the researcher by providing answers designed to please or encourage — and if this happens research **validity** is lowered. Rather than answering honestly or accurately respondents simply provide answers they think the researcher wants to hear. This may not be done deliberately but may be caused by a **halo effect** — a situation Draper (2006) describes as occurring when the novelty of being interviewed, and a desire to reward the interviewer for giving the respondent the chance to experience it, may result in unintentionally dishonest answers.
- **Interviewer effect:** This refers to how the *relationship* between researcher and respondent may bias responses and lead to invalid data:
  - An aggressive interviewer, for example, may intimidate a respondent into giving answers that don't really reflect their beliefs.



A structured interview

Jim West/Alamy

- Status considerations (based on factors such as gender, age, class and ethnicity) may also bias the data; a female respondent may feel embarrassed about answering questions about her sexuality posed by a male researcher and not answer honestly.
- **Prestige bias:** This occurs when a respondent gives an answer designed to not make themselves look bad. Opinion polls, for example, sometimes show respondents saying they would willingly pay more taxes if it helped to improve hospitals or care of the elderly — while actually voting for parties that promise to reduce taxes.
- **Prejudgements:** As with postal questionnaires, the researcher has decided, in advance of their research, what is and what is not significant in relation to the behaviour being studied.
- **Biased questions:** Again, the same types of biased questions noted in relation to postal questionnaires can be an unintentional feature of structured interviews.



Identify and explain two validity problems associated with structured interviews.

## Content analysis

This research method is somewhat unique in terms of the methods covered here in that it has both **quantitative** and **qualitative** forms — the latter is outlined in the chapter on qualitative research methods (Chapter 6). What both varieties have in common is the study of texts (which for our purpose refers to data sources such as television, written documents and the like — a text is just a general term referring to data and is not restricted to written material).

**Quantitative** analysis of media texts involves using statistical techniques to do things like categorise and count the frequency of people's behaviour, as in the following examples:

- **Television:** Analysing *EastEnders* could involve creating two basic categories (men and women) and then counting the number of minutes each gender appears on screen. A more complex analysis might involve the use of categories like location (where each character is seen, such as in the pub as a customer or an employee, in their own home and the like) or activity (what each character does while they're on screen). Such analyses build up a picture of the **patterns of behaviour** that underlie the social interaction portrayed on screen.
- **Newspapers:** This could involve counting the number of column inches given to activities that focus on men as opposed to women — or counting the number of times men and women are pictured. A more complex analysis might involve analysing the prominence given to different stories featuring men and women.

Quantitative content analysis, therefore, is mainly concerned with categorising behaviour and its main 'tool of the trade' is a **content analysis grid** — a chart used to systematically collect statistical data. Table 5.1 is a very simple content analysis grid designed to analyse the behaviour of characters in a television programme.

Table 5.1 Sample content analysis grid

Character	Male/female	Age	Place and purpose	How long on screen
Jo Banks	F	37	Pub (employee)	15 seconds
Tom Ward	M	56	Pub (customer)	43 seconds
Jo Banks	F	37	Shop (customer)	84 seconds

This type of quantitative analysis can tell us something about the behaviour of a character (Jo Banks, for example, has two main roles — mother and employee) and although this is a simple example, content analysis can be complex and wide-ranging. Meehan's (1983) study of American daytime television used content analysis to identify and analyse the stereotypical roles played by female characters in soap operas. She discovered that women in soaps played a maximum of ten different types of role — 'the Good Wife', 'the Bitch' and so forth. More recently, Harwood (1997) used content analysis to demonstrate that television viewers generally prefer to watch characters of their own age.



Briefly explain what is meant by content analysis.

### Strengths

- **Concept mapping:** Page (2005) argues computer technology can be used to rapidly search texts (such as newspaper articles) for key words or phrases that indicate the use of similar ideas. Page was interested in understanding how the media portrayed global warming — as something naturally occurring, the result of climate variability, or as something created by human behaviour. By tracking the way these concepts were used it was possible to create a concept map that demonstrated the ideological thinking of media professionals (whether 'the media' described global warming as having 'natural' or 'social' causes) on a worldwide basis. This, in turn, would tell us a great deal about how people generally understood the causes of global warming in terms of the information they received from media sources.
- **Analysis:** Quantification allows surprisingly complex conclusions to be drawn about people's behaviour on the basis of a relatively simple and straightforward data collection technique.
- **Reliability:** The use of a **standardised framework** (the grid) means data can be checked and **replicated** (although there are limits to the reliability of this technique).
- **Themes and patterns** of behaviour that may not be immediately apparent can be uncovered through relatively simple quantification. Recurrent themes (such as women being associated with housework) in complex forms of social interaction can also be identified using this method. Hogenraad (2003), for example, developed a



computer-based content analysis program to search text-based historical accounts of war to identify key recurring themes that signify the lead-up to conflicts. This raises the interesting possibility of this method having predictive qualities; by identifying a pattern of past behaviour that always leads to war, it should be possible to predict the outbreak of future conflict on the basis of key themes appearing in newspapers or television news programmes.

### Weaknesses

- **Reliability:** Content analysis frequently involves making judgements about the categorisation of behaviour — the researcher decides which categories will or will not be used for analysis. The researcher must also judge which forms of behaviour fit which categories: can all observed behaviour be put neatly into a particular category (or does behaviour that cuts across different categories merit a category of its own)? Data can be difficult to **replicate** because different researchers, studying the same behaviour, may not categorise it in the same way.
- **Reasons:** It doesn't tell us very much about how audiences receive, understand, accept or ignore uncovered themes and patterns (something called media **decoding** — how people make sense of (decode) the various messages pushed by the media.

## Secondary quantitative methods

In this section we will discuss methods using secondary data of two kinds: official and non-official statistics.

### Official statistics

In Britain, the two main sources of official statistical data are government **departments** (such as the Home Office) and **agencies** (such as the police). Governments produce **demographic data** (information about the behaviour of individuals and groups) for two main purposes:

- informing policy-making (e.g. how many teachers will be needed in 10 years' time)
- information/accountability purposes (e.g. how much is spent on defence or schooling each year)

### Strengths

- **Patterns** of behaviour may be picked up by statistical analysis because they can provide a broad overview of such behaviour across potentially wide areas (local, national and international). Durkheim (1897), for example, classically identified distinct patterns to suicidal behaviour that led him to argue such behaviour must have social causes.

- **Representativeness:** As Marshall (1998) notes, statistical 'data are almost invariably nationally representative, because they are obtained from complete censuses or very large-scale national sample surveys'.
- **Availability:** Official statistics may be the only available source in a particular sociological area.
- **Cost:** Data that would be hugely costly, time-consuming and difficult to collect (such as statistics on marriage, divorce, crime and so forth) are freely available from government sources, such as the Office for National Statistics.
- **Trends:** Using statistical data drawn from different years it's possible to see how something has changed over time ('longitudinal studies'). Education statistics, for example, can be used to track changes in levels of achievement between males and females over the past 50 years. Statistics can also be used to track possible changes in behaviour after the introduction of a new law, for example.
- **Iteration:** Many official statistical sources, in areas like crime, unemployment, marriages, births and divorces are backed by law (a marriage, divorce or birth must be legally registered, while the police have a legal duty to record reported crimes). Data are usually collected in the same way from the same sources ('iteration') which adds to their overall reliability because research can be **replicated**. Although definitions may change (the statistical meaning of 'unemployment', for example, has changed numerous times in the past 30 years), most statistical definitions (such as what counts as a birth or a murder) rarely change. This makes year-on-year comparisons possible.
- **Comparisons:** Statistics can be used for both **inter-group** comparisons (such as the differences in middle- and working-class family size) and **cross-cultural** comparisons. Bakewell (1999), for example, noted the significance of official statistics as a data source (on both a national and international level) in his discussion of statistics on refugees because they could be quickly and easily used to demonstrate the size and scale of an international social problem.
- **Authority:** Although some statistical data doesn't have high validity, this is not true of all official statistics. Demographic data in areas like marriage, divorce, births and deaths, for example,



Marriages are required to be registered

Mode Images Limited/Alamy

record all of these events with a very high degree of accuracy; these statistics measure what they claim to measure. Even in areas where validity is much lower there are examples — such as the number of murders or car crimes committed each year — of higher validity (with the latter, for example, people are very likely to report car crime because they are insured against it).

- **Launch studies:** Official statistics can be useful for establishing the need for further research. They can, in other words, point to the existence of 'a problem' or issue that requires explanation.

### Weaknesses

- **Validity:** Official statistics, apart from not providing any great depth or detail, have validity problems associated with what governments include in — or exclude from — published data. The problem is that official statistics may only give us a **partial picture of reality**, for two main reasons:
  - **Omissions:** For example, while official crime statistics provide valuable data about crimes that are reported to and recorded by the police, they tell us little or nothing about the **dark figure of crime**: crimes that are neither reported nor recorded. Young (2001) argues that around 75% of all crime in the UK 'is in the dark figure'.
  - **Explanations:** Statistical data tell us little or nothing about the reasons for people's behaviour; while we have a reasonably precise figure for the number of year-on-year murders in the UK, this tells us very little about *why* people kill each other.
- **Interpretation:** Although quantitative data is normally considered more objective than qualitative data, the significance of any data must always be interpreted by the researcher — they have to decide what the data *means*. A statistical rise in levels of crime, for example, may be the result of a real rise, or the outcome of a different way of defining and counting crime, or it might result from the police targeting certain types of crime (and hence arresting more people).
- **Definitions:** Governments occasionally change the definition of key concepts (such as what counts as 'car crime' or, in Bakewell's (1999) analysis, how different governments define the concept of a 'refugee'). Such changes contribute to a potential **reliability** problem because to make statistical comparisons the researcher must ensure they are comparing 'like with like'. A further problem of definition can arise over the way behaviour is officially categorised; for example, in attempting to estimate the extent of 'knife crime' in our society, data is increasingly taken from hospital records (on the basis that victims of knife crime may not want to report their victimisation, because they fear reprisals or because to do so might involve incriminating themselves). While this official data gives an insight into the general extent of 'knife wounding', it doesn't distinguish between things like deliberate and accidental wounding.



Suggest one use and one limitation of official crime statistics.

## Non-official statistics

Non-official statistical data is collected and published by a variety of public and private organisations. Mort (2006), for example, identifies more than 900 publications and services produced by non-governmental groups, including:

- trade unions (e.g. Unison)
- professional bodies (e.g. the British Medical Association)
- banks
- consultancies (such as management and accountancy firms)
- pressure groups (e.g. the Tax Payer's Alliance, Greenpeace)
- employers' federations (e.g. the Confederation of British Industry)
- charities (e.g. the Rowntree Foundation, which publishes statistics on poverty)
- quangos (e.g. the General Teaching Council, Audit Commission and Youth Justice Board)

These and many other organisations produce a wide range of statistical data (both national and international) that reflect a variety of interests and concerns (from the environment to mortgage lending).

### Strengths

While non-official statistics retain some of the strengths of their official counterparts (such as savings in time, money and effort), they have some additional advantages:

- **Sources:** They provide original data that is not available elsewhere.
- **Innovation:** Marshall (1998) argues non-official statistics have opened up sources of information about areas of our society (such as consumption patterns, regional government and the environment) that are not covered in official statistics.

### Weaknesses

- **Sources:** Researchers frequently find it difficult to trace the sources used in compiling non-official statistics (especially, but not exclusively, when they're produced by private companies).
- **Reliability:** Information about how the data is compiled (such as adequate notes, definitions and details of statistical techniques) is frequently lacking — making it difficult to estimate data reliability.
- **Partiality:** Non-official data is frequently produced by organisations (such as trade unions, employer associations and pressure groups) to promote a particular aim or cause, which can lead to questions concerning:
  - **Completeness:** To what extent are statistics that don't chime with organisational aims ignored?
  - **Omissions and interpretations:** For example, The Tax Payers' Alliance (a right-wing pressure group that seeks to influence government spending) produced a list of 1,162 quangos in 2010 with the implication these were all 'unnecessary drains on the public purse' — but the list included 502 NHS trusts and 469 local

government authorities (which, certainly in the case of the latter, stretches the definition of 'non-governmental' to breaking point).



Suggest one way the strengths of official statistics can be used to overcome the weaknesses of non-official statistics.

## Quantitative research methodology

Choices about the use of particular research methods are not confined to simple practical questions (such as whether a questionnaire will provide the right level and type of data required for a research project). **Theoretical research considerations** are also important and perhaps one of the most significant of these is the methodological beliefs of the researcher.

Quantitative research methods have historically been associated with a very specific research methodology and design: **positivism**. 'Positivist' very loosely means 'scientific' and positivist sociologists argue it's possible (and desirable) to study social behaviour in ways similar to those used by scientists (such as chemists or physicists) to study behaviour in the natural world.

### Positivist methodology

Positivist methodology has a number of basic features, described below.

The primary research goal is to **explain**, rather than describe, social phenomena. This involves **testing hypotheses** to either confirm or refute them (show them to be true or false). According to Firestone (1987): 'In quantitative research, the emphasis is on collecting data that lead to dependable answers to important questions.'

Sociology seen as 'science' involves the attempt to discover the general rules (or **laws**) that underpin all human behaviour. An example of a general sociological rule might be the idea that every child requires some kind of socialisation if they are to develop as a human individual.

To discover these general behavioural rules social scientists, like their natural scientific counterparts, must be **personally objective**. Research must not be influenced by a researcher's values, beliefs, opinions and prejudices — an idea sometimes called **value-freedom**. Science is concerned only with what is — rather than what we might want or personally believe something to be. To avoid biasing or influencing the data collection process the scientist shouldn't participate in the behaviour being studied. Rather, they must 'stand outside' that behaviour so they can study and observe it dispassionately.

Social scientists must also be **systemically objective**: the research methods used must be capable of producing objective data. Research methods, therefore, should not

depend on the subjective interpretations of a researcher (what they may personally believe or feel about something) and research should be capable of exact **replication**. The greater our ability to replicate data, the higher the level of research reliability.

In this view, the social world has an **objective existence** — it exists in a way that can't be influenced by people's beliefs about it. (For example, marriage rates have fallen consistently in our society over the past 25 years, regardless of how we personally feel about this statistic.) If this is so, then **reliable and valid knowledge** can be discovered in the same way natural scientists discover knowledge: by systematic observation, critical questioning and experimentation.

Positivism leans towards **quantitative data** because of the fundamental belief in and desire for objectivity: as Firestone (1987) puts it, there is an assumption that 'there are **social facts** with an objective reality apart from the beliefs of individuals'. Because objectivity is seen as a crucial part of the scientific approach, positivist researchers choose methods that offer higher levels of objectivity and reliability.

To reliably and validly study behaviour, sociologists should use **empirical** methods: that is, methods involving the use of our senses (such as sight). **Evidence** about social behaviour, in other words, can only be considered reliable and valid if it is capable of being **observed** and **tested**. Anything not directly observable (such as people's thoughts) does not provide valid knowledge (since we can never objectively know what someone is thinking — the best we can do is make deductions or educated guesses about people's thinking on the basis of their actions).

Positivism focuses on **cause and effect**. If we can discover general behavioural rules it follows that the social world and the behaviour it involves are predictable: it should be possible to predict the various ways people will behave in particular situations.

Scientific research revolves around the ability to quantify and **measure** social behaviour. If something cannot be tested and measured it belongs to the realm of opinions, not facts. Positivism favours scientific forms of knowledge that are:

- > factual
- > objective
- > evidenced-based
- > tested

They are seen as more important, significant and worthwhile than non-scientific forms that are:

- > based on opinion
- > subjective
- > based on unsupported interpretations
- > untested

For positivists, knowledge consists of identifying facts about how and why people behave as they do and, eventually, making connections between different facts to produce **theories** that explain behaviour.



Briefly explain why positivist researchers are more likely to use quantitative research methods.

## Positivist research design: the hypothetico-deductive model

We can use Popper's (1934) classic example of how to design positivist social research, which was organised around two ideas:

- **'Hypothetico'** means 'starting with a hypothesis'. For Popper, the research process revolves around the ability to develop and clearly state testable hypotheses.
- **Deductive** logic is a way of making authoritative statements (proofs) about what is not known by a thorough analysis of what is known. The ability to make deductive statements becomes the basis for drawing logical conclusions about specific events from general events.

To simplify this idea, think about fictional detectives such as Morse or Lewis who solve crimes by:

- systematically investigating a case
- collecting and analysing facts
- identifying the guilty party on the basis of these facts

This is an example of deduction because they prove something specific that was not initially known (the identity of a murderer) on the basis of general observations about things that were initially known (the facts of the case, the clues identified and so forth).

A **model** is a small-scale representation of something (such as a research process) that helps clarify the relationship between the separate elements in the design by describing them in simplified terms. In this case, Popper's model suggests the various steps to follow in order to 'do research' and, as such, helps us to design the actual process itself.

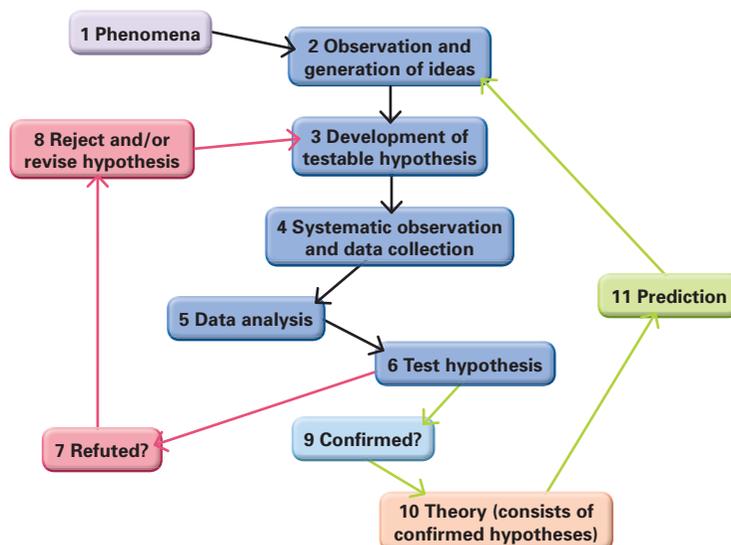


Figure 5.1 The hypothetico-deductive model

Here we will not consider the research design in detail, but will focus on two central aspects: a testable hypothesis, and systematic observation and data collection.

### Testable hypothesis

The model is organised around this fundamental principle of positivism: reliable and valid knowledge can be generated only through developing and rigorously testing a hypothesis. The hypothesis provides both a focus for the research and a clearly defined objective for data collection, since the researcher is locked into a systematic design for identifying, collecting and processing data. Once the hypothesis has been **operationalised**, using whatever **indicators** may be required, the researcher can arrive at an objective measurement of the behaviour being researched.

For example, in her review of research examining the educational properties of museums, Lindauer (2005) noted that the question ‘Did the exhibition effectively communicate the main idea or message?’ illustrates the idea of hypothesis testing within this type of research design. As she argues, ‘The question...poses a cause-and-effect relationship — attending an exhibit will cause visitors to acquire particular knowledge or information’ that can be measured and therefore tested (once the concept of ‘effectively communicate’ has been operationalised and quantified).

### Systematic observation and data collection

Systematic observation (something that covers a range of methods, from questionnaires through interviews to direct observation itself) is significant because the researcher’s efforts are channelled towards testing the hypothesis; anything that deflects from this goal is a distraction, of no importance to the research, and can be ignored. Data is collected *after* the hypothesis has been developed precisely because it will be used to *test* the hypothesis.

Explain and evaluate the use of postal questionnaires to research the importance of families in shaping people’s identities. (52 marks)