

# Introduction to Psychology – The Scientific Approach

People like to offer their own explanations for why people do what they do. Psychologists go beyond personal opinions. The single thing that matters most in psychology is **evidence**. Psychologists are expected to provide evidence to support their explanations of human behaviour and experience. Evidence doesn't come from personal experience or subjective opinion. It comes from **empirical research** – experiments, observations, case studies, questionnaires, interviews, correlational analysis and content analysis.



Research studies are crucially important, and form the foundation of psychology. Psychologists conduct research studies to test their theories and explanations. They publish their **procedures** and **findings**, and other psychologists criticise them to assess whether they provide **valid** evidence, or conduct similar studies to determine whether the findings are **reliable**.

## The key word is science

Science is a process that enables us to get closer and closer to developing an accurate understanding of the world. This is the process:

<p><b>Step 1:</b> Identify a research question or issue. This usually stems from observing an interesting behaviour, or from a broader psychological theory.</p>	<p>To take a simple example: We might wonder whether we like something or someone the more we see them, or whether we like them less from repeated exposure to them (familiarity breeds contempt). Which is true?</p>
<p><b>Step 2:</b> Decide on a topic to study (your <b>aim</b>) and (if appropriate) form a testable <b>hypothesis</b>. In some forms of scientific research, a formal statement is made – a hypothesis. This is a statement that makes a prediction about what will happen if your theory is true. You state it so that you can test to see whether it is supported by evidence and thus may reflect reality.</p>	<p>In order to test this idea, we need to go with one of the views – familiarity leads to increased liking rather than contempt.</p> <p>A testable hypothesis: You feel more positive about a word you hear ten times than a word you hear just once'</p>
<p><b>Step 3:</b> Design a way to test your hypothesis. The key features of science are that it is controlled, measureable and objective. There are many different kinds of study, but we shall consider the experiment. In an experiment we get one group of people to perform a task in one way or under certain conditions, and another group to do the task differently or in a slightly different set of conditions. We then compare them to see if the variable we have manipulated in the different conditions has had an effect.</p>	<p>Robert Zajonc (1968) tested this hypothesis. He made up a list of words such as ZABULON and ENANWAL</p> <p>Participants were asked to listen to a list of words. One group heard the word ZABULON 10 times in the list and the second heard it just once. The opposite was true for ENANWAL.. At the end, participants were asked to rate (on a scale) how much they liked each word on the list.</p>
<p><b>Step 4:</b> Carry out the study. It is very important to take due account of ethical issues when conducting the study</p>	
<p><b>Step 5:</b> Analyse the results and draw conclusions. Psychologists may use graphs and descriptive statistics to represent their results, and may use statistical tests to work out whether the findings are significant and support the hypothesis, or simply due to chance fluctuations in behaviour.</p>	<p>Zajonc found that participants did rate the words they heard more frequently as more likeable. So, we may conclude that familiarity leads to liking (and does not lead to contempt). Zajonc called this mere exposure effect.</p>

<p><b>Step 6:</b> Evaluate and continue the scientific process. If the hypothesis has been rejected, then it needs to be revised and retested – so we form a revised hypothesis or even a revised explanation. Even if the hypothesis is supported, we might consider that the study was flawed and think of ways to improve it and retest the hypothesis, or we may think of another way to test the hypothesis (perhaps using another experiment, or maybe a different research method)</p>	<p>Can you think of any criticisms of this study?</p> <p>Can you think of another way we could test this theory?</p>
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## Evaluating the study – validity

Validity is concerned with the extent to which our study, test or measure has measured what it is supposed to measure (internal validity). It is also concerned with the extent to which the findings can be applied beyond the study itself to other situations (external validity).

**Internal validity** is concerned with things inside the study – have we used a true measure of the thing we are trying to measure, and could our findings have been affected by something other than the variable we are trying to measure (extraneous or confounding variables)?

So, in the study of Zajonc on familiarity, we need to consider whether we are actually testing whether familiarity makes something more likeable. Internal validity is also concerned with control. It might be that factors other than familiarity affected our findings. For example, participants might have realised that some of the words were repeated a lot, which might have led at least some of the participants to guess what the study is about and to alter their behaviour (we call this demand characteristics – participants are responding to what they see as the demands of the situation, rather than to the variable that we are manipulating). If this is the case, then we haven't actually measured the impact of familiarity on liking. Another possible confounding variable is that some of the participants might have heard the words ZABULON and ENANWAL before (not likely – that's why they were chosen). If they had, then this would have invalidated the study, as they would have been already familiar with the words and so we could not accurately assess the effects of familiarity on liking. Researchers need to try to control everything that might cause a problem and affect results.

**External validity** is concerned with things outside of the research study. To what extent can we generalise the findings to other situations? Do you think that we could apply Zajonc's findings to other situations. For example, could it explain why we get to like people as they become more familiar? Or could it explain why repeated adverts are so successful on TV? Perhaps we will want to be cautious about generalising, because the experimental situation is too different from these real-life situations. For example, liking more familiar words may involve quite different processes to liking familiar people, because we use a lot more information when we form judgements about people than we do with words, and because we interact with people as we become familiar with them.

## Evaluating the study – ethical issues

Ethics is concerned with standards of behaviour and behaving with due respect to the people or animals that we are studying. Ethical issues matter in psychology because the potential for causing damage to the people or animals we study is so much greater than it is for sciences like chemistry that do not conduct experiments on sentient beings. The subject matter of psychology is behaviour, and the research participants are usually human beings. It is all too easy to carry out studies that expose those people to embarrassment, anxiety, stress or even worse forms of psychological harm. We should also treat our participants with respect, and get their consent to use them in research whenever possible, and avoid deceiving them as far as is practically possible (deception is sometimes necessary for research purposes).

Psychologists are always careful to treat their participants with respect and to reduce the risk of harm. To protect the welfare and dignity of participants, ethical guidelines are issued by the British Psychological Society (BPS) and the American Psychological Association (APA). They publish codes of conduct that psychologists must follow in their research and professional practice.

## Further research

Other psychologists have looked at the research conducted by Zajonc and conducted their own studies into the mere exposure effect. It has been found that political candidates who come to be well known to the public through regular TV commercials attain more votes (Grush, 1980), that people respond more favourably to abstract art the more they are exposed to it (Heingartner and Hall, 1974), that people like particular individuals the more they are exposed to their photograph (Moreland and Zajonc, 1982) and that people like classical music the more they hear it (Smith and Dorfman, 1975). This research suggests that we can get people to like something, and even change their attitudes towards something, simply by repeated exposure to it. This has obvious applications for advertising and political campaigning, and for the music industry (underlining the importance of getting radio airplay time for new songs). It may explain why we refer to some things as an 'acquired taste'.

In one observational study a student attended a class at Oregon State University dressed in a black bin bag with only his bare feet showing. Each Monday, Wednesday and Friday at 11.00 the Black Bag sat on a small table near the back of the classroom. Only the professor of the class (Charles Goetzinger) knew the true identity of the Black Bag student – none of the students in his class knew. Goetzinger said that the attitude of his students towards Black Bag changed over time, from hostility to curiosity, and even to friendship.

However, repetition can, of course, become boring and annoying, decreasing the likelihood of liking or attitude change. So, repetition can be useful for getting people to like something or develop a positive attitude towards something, but after a point it may begin to have a damaging effect.

## Research Methods in Psychology

Psychologists use a variety of methods in their research. All of them aim to be scientific because they seek to be objective and controlled and repeatable. Often psychologists conduct **experiments**, which means they can draw conclusions about cause and effect. The main problem with experiments is that they can be quite trivial – just looking at a few variables in a controlled and artificial environment doesn't always represent real life (as in Zajonc's study – liking a familiar word may involve different processes to liking or disliking a familiar person).

One alternative is to simply **observe** what people do in their everyday lives. The problem here is that frequently there is just too much going on to allow us to draw useful conclusions, as too many different factors are affecting the observed behaviour. Other methods include **questionnaires**, **interviews**, **case studies** and also performing **correlational analysis**. Each of these methods has its own advantages and disadvantages. The key is to use different methods to study one aspect of behaviour and to consider how the findings of the different studies inform us.

## Statistical analysis in Psychology

Conducting empirical research is a fundamental activity of psychology, but it would be wasted effort if we didn't have a way of knowing what the results mean. This is where statistics come in. There are two types of statistics in widespread use in psychology – **descriptive statistics** and **inferential statistics** (statistical tests). Descriptive statistics summarise data. They include measures such as the mean and drawing graphs. Such measures allow us to get a snapshot of patterns in our data. Inferential statistics and statistical tests

are based on probability. The key thing to know is that statistical tests tell us whether our results are just due to chance.

## The Goals of Psychology

Consider one of the really important health issues of our times - the obesity crisis in Britain. Here's a disturbing statistic to be getting on with: 67% of men and 57% of women in Britain are overweight or clinically obese.

Can psychology do anything to help?

### Describing behaviour

Psychologists want to be able to describe what is happening when people 'behave'. This is mostly a matter of observation. Psychologists observe how behaviours are related to each other. They might, for example, notice that certain behaviours occur together quite often and form a pattern. They might even begin to get an indication of which behaviours are 'normal' and which 'abnormal'. Eventually, after enough studies have been conducted, possible explanations of the behaviour emerge, which takes us on to the next goal of psychology.

### Explaining behaviour

Describing behaviour is just a starting point. Psychologists really want to go beyond merely describing the behaviour that is happening and try to explain where it comes from, the reasons for it, what causes it. To do this, they formulate theories of behaviour then use the scientific method to test them. This of course is where disagreements emerge. There are many competing theories about the causes of behaviour, which often reflect the general approach psychologists adopt within psychology. Can psychologists do more than explain behaviour? Yes, they can predict behaviour.

### Predicting behaviour

This is the logical next step. Once we are confident that certain behaviours consistently occur under certain conditions, we can use that knowledge to predict how a person's behaviour (including their thoughts) might change in the future. These predictions (known as hypotheses) can be turned into statements that can be tested in studies.

### Controlling behaviour

The idea that psychology should be in the business of controlling behaviour may have sinister overtones for some people. But what if we changed the language a little? What if we said that the ultimate goal of psychology is to change behaviour? This is unquestionably something that many branches of psychology attempt to do. For example, psychological therapies for mental disorders are not just about trying to understand or explain behaviours such as phobias or depression. The intention is to change people's behaviour from maladaptive 'abnormal' behaviour that causes pain and suffering to adaptive, 'normal' behaviours that bring happiness (or less pain, at least).

# Obesity and the goals of psychology

## Describing obesity

Researchers use various research methods to work out what obesity is and how it relates to other factors. For example, they may use questionnaires or interviews to learn about attitudes towards eating in obese people. Psychologists might observe people's eating behaviour and measure how much people actually do eat. They might do brain scans to see if obese and thin people differ in thinking patterns.

## Explaining obesity

The descriptions that are collected enable psychologists to develop explanations. There are several current explanations drawn from the whole range of approaches in psychology. There's a biological explanation that explains obesity in terms of the activity of hormones (e.g. leptin) and other chemicals within the body. For example, the hormone leptin can affect the hypothalamus and interfere with appetite regulation, as can the neurotransmitter serotonin. There's a behavioural explanation that focuses on past learning experiences of rewards and punishments involving food. There's also a cognitive explanation that emphasises the ways that we think about, interpret and perceive the meaning of food and eating.

## Predicting obesity

If obesity is associated with inactivity, it is a short step to make the prediction that less active people are more likely to be overweight. If we identify depression as one of the causes of obesity, then again it is a simple matter to predict that depressed people are more likely to be obese.

## Controlling obesity

There may even be a political dimension to behavioural control. The obesity crisis is a good example. Because the costs of obesity are so high (especially type 2 diabetes) the government employs psychologists to devise programmes to change eating and exercise behaviours in people who are overweight.

