

Chapter

Health psychology: substance misuse

Health psychology is an **application** in psychology, which means that theories and studies are applied to issues of concern to society and the individual. It includes views on health from different approaches and in your course you will look at biological and learning factors involved in substance misuse. Health psychology is also about promoting good health, and the specification requires you to consider two ways of treating substance abuse as well as an ‘anti-drug’ campaign. You will also look in depth at two drugs, one of which will be heroin, including their effects and how they work.

You are required to know two studies in detail as well as one key issue in the area you are studying, and you will also carry out a practical based on the key issue. The methodology section of this chapter considers how animals and humans are used to study the effects of drugs, and asks you to evaluate such research methods. Health psychology is a large field and can include such topics as stress, sleep, beliefs about health and attitudes to health, but your course looks only at the topic of substance misuse.

Summary of learning objectives

Definitions

You have to be able to define the terms:

- substance misuse
- synapse
- tolerance
- physical dependence
- psychological dependence
- withdrawal



Methodology

- using animals in laboratories to study drugs
- two research methods using humans, to study the effects of drugs
- evaluation of animal research, including looking at both practical and ethical issues
- evaluation of research methods using humans, including issues of reliability and validity

Content

You have to be able to:

- describe a biological explanation of substance misuse
- describe an explanation from the learning approach
- compare learning and biological explanations, including describing and comparing their strengths and weaknesses
- describe mode of action, short-term effects, tolerance, physical and psychological dependencies, and withdrawal, with regard to heroin and one other drug
- describe and evaluate two ways of treating substance misuse, including drug treatment in heroin dependence and one other way
- describe and evaluate one campaign that has encouraged people not to use recreational drugs

Studies in detail

You have to be able to describe and evaluate in detail:

- Blättler et al. (2002), a study looking at heroin
- one other study relating to one drug from alcohol, cocaine, ecstasy, marijuana or nicotine (smoking)

Key issues and practical

You have to carry out one practical that focuses on a key issue, which you choose, that relates to health psychology and substance abuse. The practical can be a content analysis of articles, programmes or other material about the key issue or a summary of two articles from which you then draw conclusions about the key issue.

Table 3.1 Checklist of what you need to know for health psychology and your progress

I need to know about	Done	More work	I need to know about	Done	More work
Defining: substance misuse, physical dependence and psychological dependence			Evaluation (including strengths and weaknesses, both practical and ethical) of research methods using animals		
Defining: withdrawal, synapse and tolerance			Evaluate research methods using humans, including issues of validity and reliability		
Animal laboratory studies when looking at drugs (describe and evaluate)			A biological explanation of substance misuse		
Two research methods using humans to study drugs (describe and evaluate)			A learning theory explanation of substance misuse		

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I need to know about	Done	More work	I need to know about	Done	More work
Describe strengths and weaknesses of biological and learning explanations			Describe and evaluate one other way of treating substance misuse (other than drug treatment in heroin dependence)		
Compare biological and learning explanations			Describe and evaluate one anti-drug campaign		
Describe the mode of action, effects, tolerance, physical and/or psychological dependence and withdrawal with regard to heroin			Describe and evaluate Blättler et al. (2002)		
Describe the mode of action, effects, tolerance, physical and/or psychological dependence and withdrawal, with regard to a drug other than heroin			Describe and evaluate one study on one drug from alcohol, cocaine, ecstasy, marijuana or nicotine		
Describe and evaluate drug treatment in heroin dependence			One key issue and a practical relating to it		

Definitions

Substance misuse, synapse, tolerance, physical dependence, psychological dependence and withdrawal are all defined in the content section of this chapter.

An introduction to health psychology

Health psychology is concerned with any area where health is connected with mental processes, including sleep, stress and drug abuse, as well as health itself and ill health. Actual illnesses are studied in health psychology, such as how to deal with a terminal illness, HIV/AIDS, or dealing with caring for others. However, health psychology is as much concerned with prevention of ill health and promotion of good health as with understanding those with illnesses. Health psychology also looks at areas of people's lives that may put strain on a person and so might lead to ill health, such as bereavement and coping strategies in challenging situations.

The biopsychosocial model

Health psychology has a biological basis, in that it has arisen from the medical profession. There are different types of health psychologist, such as occupational, community and clinical health psychologists. Historically in the UK, health professionals worked within a medical model of health — a model that considered ill health to be caused mainly by biological factors. However, this has now moved



Health psychologists are interested in factors that achieve good health — not only physical aspects but also having social support, a healthy lifestyle and interests

to a biopsychosocial model of health, meaning that as well as there being biological causes for ill health, it is accepted that social and behavioural factors affect health too.

Illness is seen as a combination of biological factors, such as genes, and social factors, such as family relationships and social support. Cognitive and behavioural factors like stress and beliefs are also investigated. Cognitive-behavioural therapy, for example, focuses on negative automatic thoughts and helping someone to change these to more helpful thinking patterns. Depression and anxiety in particular are linked to what could be called faulty thinking patterns. This means that they are faulty for that individual, because certain thought patterns can lead to negative emotions.

Study hint

Questions about health psychology require you to have a good overview of what this area covers, including the importance of different factors when considering health, such as biological, social, cognitive and behavioural areas. Be ready to explain how each of these impact on health and ill health. A good way of doing this is to prepare an example for each factor.

The work of the health psychologist

Health psychologists work with health professionals such as doctors, dentists, nurses, occupational therapists and dieticians. They may carry out clinical work themselves, such as therapy or counselling, or they may undertake research. They are often



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involved in health promotion campaigns and their role is as much about prevention as cure. When carrying out research, health psychologists use research methods such as experiments, longitudinal studies, cross-sectional studies and case studies. They research any issue that might impact upon how health issues affect an individual.

It is important to note that work in the area of substance misuse is only one part of what a health psychologist might be involved in — they may also look at social support, emotional state, living conditions and diseases such as heart problems, perhaps considering genetic factors. They are interested in factors that lead to certain health problems and in how such factors can be reduced. One example would be to see how more social support could be put in place for a particular section of the population, such as the elderly. This demonstrates evidence for the biopsychosocial model in that, when considering help for an individual, the health psychologist will consider genetic background and medical features. They might also evaluate behavioural features such as whether someone smokes, and social factors such as social class or whether there is social support available.

Promoting good health

Health promotion is of great interest because not only is it good for someone to be healthy, but it is also cost-effective for a society to promote good health. It is cheaper to prevent health problems than to treat them. For example, health psychologists are involved in anti-smoking campaigns and promoting good diets. They also help to promote good health by working with individuals on behaviour change. Some are involved with giving advice to a wider audience, such as institutions and workplaces.

Promoting good health requires clear communication and education. Health psychologists work with doctors and other health professionals to help them to communicate clearly with their patients and clients, and to ensure that there is understanding of what is needed to achieve and maintain good health. For example, it has been found that a patient in a doctor's consulting room will not remember much of what is said, so it is important for a doctor to ensure that there is good understanding, for example by repeating the main points and questioning the patient. Promotional campaigns are also about education and communication.

Explore Look up a promotional health campaign and consider its main features, such as how the message is presented and what educational aspects there are.

Examination-style question

What is meant by health psychology?

(3 marks)

Extension question

With reference to at least two areas, discuss the work of a health psychologist.

(12 marks)

Methodology

In this section you are required to cover the use of animals in laboratory studies as well as two research methods using humans to study the effects of drugs. You will then evaluate the use of animals, considering both practical and ethical issues, as well as evaluating the use of humans, including looking at validity and reliability issues.

AS link Note that you might be asked to draw on AS material for both the Methodology and Content sections of this chapter.

Animal laboratory studies into drugs

In this section, animal laboratory studies — including those looking at drugs — are outlined as a research method.

Features of animal laboratory studies

Laboratory studies using animals are laboratory *experiments*. Ethology is the research method where animals in their own environment are observed and studied but, in the study of drugs, experiments are used to test the effects of different drugs, so ethology is not suitable. Animal experiments involve observing an animal's behaviour, but there will have been manipulation of an independent variable, and it is the experimental method that is being discussed here, not the observational research method.

An animal experiment will have an independent variable (IV) that is manipulated to see the effect on a dependent variable (DV). There are strong controls, such as the environment, duration of the study, biochemical factors, gender, age, type of animal and whatever variables are important for a particular study. The aim is to control all variables except the independent variable, so that it can be shown that a change in the IV has caused any change in the DV. This means laboratory experiments can show a cause-and-effect relationship.

AS link Review what you have learned about animal laboratory studies when looking at the biological approach in the AS course (pp. 255–62).

Study hint You are asked to look at the use of animals in laboratory studies when researching into drugs, so you will need to know about animal laboratory studies and how they are used, especially when researching into drugs.

Table Summary of the features of animal laboratory experiments

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- Strong controls such as environment, care, type of animal, and state of animal (such as hunger and thirst)
- Manipulation of one feature, which is the independent variable (IV)
- Measurement of change in another variable (the dependent variable), as a result of manipulation of the IV
- Cause-and-effect conclusions are able to be drawn (to a large extent)
- Scientific procedures are often used, requiring scientific equipment

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Using animals instead of humans has some effect on how a laboratory experiment is run because animals have to be fed, housed, looked after and handled in ways that humans do not. Such issues have to be incorporated into the study. Studies cannot last too long and they must be suitable for the species — animals are only able to act and react in certain ways. The animal also has to have the right features, such as biochemistry or brain structure, depending on what knowledge is sought. Part of a description of animal laboratory experiments, therefore, needs to include features such as preparing appropriate housing, feeding and care routines, planning the necessary controls and how they will be put into place.

On the whole, there can be more control with animals in laboratory experiments than with humans. The study would be scientific in drawing a hypothesis from a theory, controlling all variables except the IV, and often using scientific equipment to measure the DV.

Numbers and types of animal used

Figures for animals used in laboratory experiments in psychology are hard to find because the data tend to show overall animal testing numbers, not just use of animals in psychology studies. Home Office figures in the UK in 2004 showed nearly 3 million animals used, and figures had been rising up to then, so the number may be greater than that now.

Explore Find out about animal experiments to get an idea of which animals are used a lot and whether particular animals are preferred for particular studies.

AS link Review what you learned about the numbers and types of animals used in laboratory studies when you studied the biological approach for the AS course (pp. 255–62).

Explore Look up some of the many other animal laboratory experiments that are used to study the effects of drugs. The ones chosen here focus on nicotine, heroin and cocaine, but you could look at studies that consider other recreational drugs.

Different animals are chosen for different purposes. Insects, for example, do not have a brain structure at all similar to that of humans, whereas mice and humans share many characteristics. The size of mice is useful, they are low cost and they have fast reproduction rates. Genetically modified mice can be bred to suit whatever purpose is required. Other types of animal are used in experiments, such as rhesus monkeys, as explained in one example later in this section.

Animal experiments for research into drugs

In this section three examples of animal laboratory experiments are given, two using monkeys and one using mice.

The link between cocaine/heroin use and renal disease

Experiments have used animals to help to understand the prevalence of renal disease in heroin and cocaine users. Renal disease occurs when the kidneys fail to function properly. In the laboratory experiments, mice are given either heroin or cocaine in various doses and then their renal function is tested. Animal studies have shown that renal disease is linked more to cocaine use than to heroin, which could point to the drug itself being implicated in renal disease (rather than taking any drug).



Studies other than animal experiments have also investigated the link between heroin/cocaine and renal disease. For example, it was concluded with regard to heroin (Jaffe and Kimmel, 2006) that economic conditions, behavioural practices and culture were factors more likely to relate to renal disease than heroin use itself, partly because renal disease in heroin users is not as common as it once was. If heroin caused the renal disease then there would still be the same level of link, and there is not. Their findings support the animal experiments that found more of a link between cocaine and renal disease than heroin and renal disease. Animal studies can be used in this way to back up studies of humans.

Study hint

Link Jaffe and Kimmel's findings (2006) with the biopsychosocial model of health. They considered biological factors (use of heroin), social factors (socioeconomic conditions and culture) and behavioural factors (lifestyle), and drew the conclusion that the use of heroin was not the prime cause of renal disease in heroin users.

Evaluation**Strengths**

- The human study cited reinforces the conclusions from the animal studies, which tend to give reliability to the conclusion that it is likely that cocaine affects renal function more than heroin does. Animal studies can be used to back up human studies.
- The animal studies are evidence for a biological explanation — that taking drugs into the body affects physical aspects of the body. This is possibly the case for some drugs more than others. Controls regarding biological aspects make animal studies useful in this way.
- An advantage of using mice is that such studies would not be possible with humans because you could not inject humans with cocaine or heroin and then test their renal function in such controlled conditions.

Weaknesses

- There are differences in brain structure between mice and humans, so conclusions about the effects of drugs on the brain and behaviour might not be generalisable.
- The human study shows how important it is to look at factors other than the drug-taking, because it seems that although taking heroin correlated with renal disease, there were other factors. Psychosocial factors are not studied using animals.
- The human study is evidence for the biopsychosocial model, which suggests that with complex human behaviour there are complex causes affecting such behaviour.

Looking at drugs as reinforcers

Meisch (2001) considered animal laboratory experiments into oral self-administration of drugs (taking it themselves by mouth). For example, rhesus monkeys were given the opportunity to take drugs so that researchers could see whether drugs are reinforcing. Here 'reinforcing' refers to the drug being taken as a reward, which would link to factors like addiction. Drugs used included barbiturates, opioids,

stimulants and ethanol. Animal laboratory experiments showed that drugs of this kind become reinforcers if they are taken by mouth, which means that the animal will choose to take the drug as a reward, so it will get pleasure from taking the drug.

AS link

One study on the use of animals in laboratory experiments to look at cocaine as a reinforcer was Pickens and Thompson (1968), which was a study suggested in your AS course. Review this as an example of an animal experiment that looks at the effect of drugs (p. 361 and the AS textbook CD).

There are problems in animal experiments like this because the study has to take the taste into account (which the animal may not like). The delay before the drug starts to work also has to be considered, as it has to be clear that it is the effect of the drug that is the reinforcer rather than anything else. Animal studies have shown that monkeys will choose to take in more drug solution than water, which is taken to show that they choose the drug as a reward.

Evaluation

Strengths

- Monkeys share many of the genes of humans, so generalising from monkeys may be a reasonable thing to do.
- Humans can become addicted to certain drugs, which appear to be taken for their reward value, so the findings of the study of monkeys fits with known human behaviour, which gives them reliability.

Weaknesses

- Rhesus monkeys are not human, so generalising from what acts as a reinforcer for monkeys to humans might not be reasonable.
- Ethical issues about using animals might be raised, though if the guidelines for using animals are adhered to, then such experiments are generally allowed.

Testing the properties of amphetamines in reducing cocaine addiction

The researchers Czoty et al. at Wake Forest University School of Medicine in California have found that amphetamines can reduce in monkeys, for up to a month, the behaviour of obtaining cocaine for reward. According to an article written by the researchers in 2008, amphetamine seems to mimic cocaine, but without leading to drug abuse. This means that cocaine addiction could be treated in the same way as nicotine and heroin addiction — by prescribing a replacement drug.

The monkey was taught to press levers to get food or an injection of cocaine as a reward. The number of times the monkey had to press the lever to receive cocaine was increased until it was too much for the monkey to keep pressing. At this stage the cocaine was removed and the monkey was treated by injection (intravenously) with an amphetamine for 24 hours a day. A week later the monkey was offered the possibility of getting cocaine again and the researchers found a large decrease in the number of times the monkey responded. They tried different doses of amphetamine and found a moderate dose was the most effective. Cocaine use over the month was reduced by about 60%.

Evaluation

You can make the same points for the study on cocaine as the reinforcer study above:

- Monkeys are not humans so it is hard to generalise, but they do share many genes with humans, so perhaps some generalisation is possible.
- Human behaviour shows that cocaine is reinforcing, which suggests the study findings can be generalised.
- There are ethical issues you could discuss, such as asking how many monkeys were used (the researchers should use a restricted number) and how the animals were cared for (a licence is required, and caging should be suitable).

Evaluation of animal laboratory experiments

You are required to evaluate animal laboratory experiments, both as a research method and in terms of how useful experiments are in learning about the effects of drugs. In this section experiments are evaluated with regard to practical and ethical issues, as well as how useful they are in learning about drugs.

Evaluation focusing on practical issues

Strengths

- Animals are relatively small and usually easy to handle, which means some procedures are more feasible.
- Some animals have short gestation periods and reproductive cycles so generations and genes can be studied more easily than with humans.
- Some animals, such as mice, have a similar brain structure to humans so there is value in studying animals and relating results to humans.
- Some procedures are not suitable for humans but they can be done on animals (ethical guidelines allowing).
- There can be stronger control over the environment than for humans, which means that findings of studies are more likely to be objective.

Weaknesses

- The brains of animals are not exactly the same as those of humans, so relating the results from animals to humans may not be accurate. Furthermore, animals' genetic structure is not the same as that of humans, again making generalisation difficult.
- Human behaviour is complex, so isolating variables — especially in animals — will not address that complexity.
- There is a lack of credibility when using animals and concluding about humans because of differences in genes and brain functioning.

Evaluation focusing on ethical issues

Strengths

- Procedures can be carried out on animals that cannot be done on humans — there are ethical reasons for using animals rather than humans.

Study hint

Remember

to make each point very clearly when discussing strengths and weaknesses.

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- **Pro-speciesism** puts forward the view that we must do all we can to protect our own species, so using animals is one way of discovery that does not harm humans and which also benefits them.
- The knowledge found can sometimes benefit animals as well, which makes a study more ethical.
- There are strong guidelines that have to be followed when using animals in laboratory experiments, so there are safeguards that make such studies ethical, to an extent at least.

Weaknesses

- Many animals feel pain and become distressed during experiments, although there are guidelines to avoid unwanted discomfort.
- Some people believe that animals should not be treated as objects. They argue that humans are animals and there is an obligation to treat non-human animals well. This is the opposite view to pro-speciesism

Evaluation of experiments when researching drugs

You can evaluate animal laboratory experiments used to research drugs in the same way as you would evaluate them in general, by looking at practical and ethical issues as well as issues of generalisability, credibility, validity and reliability.

Validity

The validity of using findings from animal studies to apply to humans can be argued either way. Validity can be claimed or not. If an animal experiment is being used to test the effects of a drug, this is not a valid study because the effects of a drug on an animal will not necessarily be the same as the effects on a human being. However, neuronal transmission takes place in the same way in the brain of mammals as in humans, so it may be possible to generalise from the brains of animals to the brains of humans.

Generalisability

Animals are different from humans, so to claim that findings from animals are true of humans may not be safe. One example is the drug thalidomide, which was tested on rabbits and found to be safe but was far from safe when given to pregnant humans. This suggests that any drug, including recreational drugs, might have a different effect on humans than on animals. Amphetamines have been shown to have a different effect on humans than on rats.

Reliability

Animal studies tend to be reliable because of the strong controls in the experimental situation, where more can be controlled than with a study using humans. Variables

Explore Find out about the various organisations that are against using animals in experiments at all. There are a relatively large number of people in the UK who would like to liberate all animals from being used in this way.

AS link Review the process of neuronal or synaptic transmission from your AS learning of the biological approach. The recreational drugs you will be studying for this chapter work by neuronal transmission, so it is useful to remind yourself about the process (pp. 264–65).



that might be controlled are the type of animal, size, age, gender, environment, what the animal has eaten, how thirsty it is, its body weight, and whether it is in a crowded situation. With such control and a well-documented procedure, it is possible to repeat the study and to show that the findings are reliable. Usually a study is repeated as a matter of course and findings are not published from just one study on one animal.

Using humans to look at the effects of drugs

You need to know two research methods, using humans, which look at the effects of drugs. This section considers three research methods related to **recreational drugs**. You are required to study only two such methods, but three are given here to help your choice and to assist with reviewing methodology from the AS course.

The first research method chosen here is interviewing (as used by Blättler et al., 2002), the second is questionnaires (Ennett et al., 1994) and the third is PET scanning.

Interviewing

One research method that uses human participants to study drug behaviour and the effects of drug usage is interviewing. Interviews can be structured, semi-structured or unstructured. They usually involve gathering qualitative rather than quantitative data, although some interviews gather both sorts. Qualitative data involve attitudes, opinions and comment, and quantitative data are numbers such as scores, percentages and the number of 'yes' or 'no' answers.

Recreational drugs are drugs taken for pleasure rather than for medical reasons. Cannabis, heroin, cocaine, nicotine, ecstasy and alcohol are examples of recreational drugs.

AS link The research methods chosen here are the three that you studied in your AS course — interviews and questionnaires in the social approach (pp. 9–23) and PET scanning in the biological approach (pp. 240–42). You could be asked about your AS material, so you need to review it.

Table Evaluation of interviewing as a research method

3.3	Strengths	Weaknesses
	<ul style="list-style-type: none"> ● Interviewing can be in-depth, so data are likely to be valid because different issues can be explored (depending on the type of interview). ● Interviewing can gain valid data because participants can use their own wording and are not as restricted as with questionnaires. 	<ul style="list-style-type: none"> ● Interviewers may influence responses by the way they dress, or their age or gender. This would affect reliability, as another interviewer might get different results. ● The data have to be analysed, which can be subjective as there may be a lot of qualitative data to be put into themes, and these can come from the researcher's preconceived ideas rather than from the data. If analysis is subjective another researcher might analyse the results differently, so there would not be reliability.