

Chapter 4 – Influences on illicit drug use

4.1 Introduction

Drug experimentation primarily begins in adolescence but only a small proportion of those that experiment with drugs then go on to use drugs harmfully.¹ Understanding the reasons behind this and, in so doing, categorising the various theories to explain this phenomenon, is an extensive task.

There is general consensus that drug use is a multifaceted 'biopsychosocial' phenomenon. This term is used to encapsulate that drug use is influenced by biological, psychological and social factors. Although distinct theories have been developed for each of these factors, which are discussed in this chapter, there is often a degree of overlap between these explanations. Using only one model to explain why people use drugs may not be appropriate to describe all types of behaviour.

In addition to biopsychosocial influences, the extent to which drugs are obtainable and aspirational is thought to influence their use.¹ This includes their price of purchase, the ease of access to specific drugs and their psychological attractiveness and societal acceptance. This chapter also considers these influences.

This chapter will focus only on the influences of illicit drug use. It should be noted that there are similarities between what influences illicit drug use and what influences alcohol and tobacco use. Since the influences on alcohol and tobacco use have been widely published elsewhere by the BMA, these will not be addressed. For further information on these topics please refer to the BMA reports:

- *Under the influence: the damaging effect of alcohol marketing on young people* (2009)
- *Forever cool: the influence of smoking imagery on young people* (2008).

The following case study illustrates the multifactorial aetiology of drug dependence.

Case study: Influences on illicit drug use

Mr X is a 43-year-old man who has been using substances since he was in his teens. He has been in treatment for the last 10 years. He is now taking 40mg of methadone, which is dispensed daily. This has reduced from 80mg over the past two years. He has not used any heroin or other opioid drugs for the past four years and has not injected at all for the past eight years. He is continuing to use crack cocaine about once a month. His main problem is his alcohol use, which has been increasing ever since he came into treatment and became much worse when he stopped using heroin. He is now drinking about two cans of strong lager (10 units) several days a week, although he is sometimes able to stay off alcohol for two or three days per week. He finds it particularly difficult not to drink after work.

Ten years ago Mr X was diagnosed with hepatitis C. He was offered treatment then, but as he did not want to have a liver biopsy did not want to be referred. Two years ago he was admitted to hospital with jaundice and ascites and diagnosed with advanced hepatic cirrhosis. He did well during that admission, and following medical treatment improved substantially and was able to return to work. He was subsequently offered treatment for HCV by his local hepatology service. This was not started though, as he continued to drink alcohol after a short (3-month) period of abstinence.

Mr X had a difficult childhood. His alcoholic father died when he was very small. His mother was depressed and he was taken into care when his behaviour became unmanageable as a teenager. This followed his mother remarrying. As an older adolescent, he was caught by the police a few times for minor acquisitive offending and served one short sentence in a young offenders' unit. He did enjoy school, was popular and was always interested in computing. He left school with GCSEs in maths and computer science. He spent some time in South America in his 20s but returned to England and started working as a computer technician. He still works freelance and is able to get work from a friend who runs his own business. He has a council tenancy.

He has a long-term partner who has used drugs in the past. He has two stepdaughters.

He is seen every two weeks by his local drug treatment service. He has a keyworker (see **Glossary**) but does not use the sessions well and generally just wants to collect a prescription. He has a GP but has never been to see him. He is seen by the hepatologists every six months.

Three months ago Mr X had another episode of ascites. Again he did well and was booked in to see the hepatitis clinical nurse specialist to talk about interferon and ribavirin treatment. He began to understand that he must stop drinking if he is to have successful

treatment for his hepatitis C. The hepatologist explained to him in detail the prognostic implications of his liver damage and the nature of the treatment. He began to use his keywork session to discuss his fears for the future. The addiction psychiatrist assessed his mental state and concluded that he was depressed and that he would benefit from both an antidepressant and some cognitive-behavioural therapy (CBT), which he did attend. He was also advised to stay on methadone (for a discussion of methadone therapy, see **Chapter 8**), as further withdrawal symptoms may have jeopardised his ability to stay free of illicit drugs and alcohol. The psychiatrist also did some joint sessions with him and his partner. He also began to see his GP, who was able to reinforce the message that he had to stop drinking.

He was eventually able to stop drinking for three months and start treatment, while continuing to receive support from his drug service and his GP. His goal is to become completely drug and alcohol free.

Case study details provided by Dr Emily Finch, a consultant addiction psychiatrist.

4.2 Biological factors

4.2.1 The genetic basis for drug use

The use of drugs has a genetic component.² This means that those with a genetic predisposition to drug use, such as those with a direct family member with a history of substance use, are at an increased risk of using drugs.² The implication of this is that variations exist at an individual neurobiological level, and this affects an individual's susceptibility to drug use. This means that not every person will themselves carry the gene or become drug dependent.

Evidence for the heritability of drug use is derived from a range of research designs. The most robust evidence for the genetic influence of drug use comes from twin studies; research using family- and adoption-based designs has also shown an effect. Given the breadth of high-quality research using twin studies, this section will only briefly examine family- and adoption-based designs, before focusing on twin studies.

As discussed earlier, a considerable part of the genetic effect may be protective against dependence rather than raising risk. An example of this is the aldehyde dehydrogenase 2 gene (*ALDH2*), which is prevalent in Asian populations and thought to be protective against dependence on alcohol.^{3,a}

Family-based designs

Research using family-based designs suggests that siblings of cannabis-dependent individuals have an elevated risk of developing cannabis dependence themselves.⁴ Similar findings have been reported among siblings of cocaine-dependent individuals.⁴ Siblings of individuals with dependence on opioid drugs, cocaine and/or cannabis have also been reported to be at an increased risk of developing drug dependence.⁵ These findings were found to be largely independent of factors related to family conditions.⁵ The impact of the family on drug use is discussed in greater detail later in this chapter (see **Section 4.4.1**).

While there is evidence that substance use disorders cluster in families, it is not clear from family-based designs whether these can be wholly attributable to heritable factors. This is because the family design cannot distinguish between whether the cause of familial similarity is genetic or environmental in nature.⁶

Adoption-based studies

Adoption-based studies have shown a genetic basis for drug use. Adoption studies are based on a comparison of the concordance^b between offspring behaviour and the characteristics of both the adoptive and biological parents. Similarity between offspring and biological parents is suggestive of genetic influences, although research studies in this area should correct for in utero exposure to drugs.

Adoption studies have reported a strong link between biological parents' substance use, and their offsprings' risk of addiction. A 1995 analysis of adoptees with substance-dependent biological parents (parents that were alcohol and/or drug dependent) compared with controls (adoptees with non-substance-dependent biological parents) provided an early demonstration of the role of genetic factors in the development of drug use and dependence.⁷ After controlling for in utero substance use, substance use in biological parents was found to be significantly associated with adoptee drug use.⁷ These findings are suggestive of genetics having a significant influence on the development of drug use.

a In some drinkers, however, the *ALDH2* allele ('flushing gene') contributes to diminished activity of the enzyme and increases drinkers' risk of developing some cancers.⁸

b In genetic terms, concordance refers to the probability that a pair of individuals will both have a certain characteristic, given that one of the pair has the characteristic.

Twin studies

Twin studies utilise data from identical/monozygotic (MZ) and fraternal/dizygotic (DZ) twin pairs that have been reared together. As genotypes and family environments tend to be similar, twin studies provide greater clarity in disentangling the role of genetic and environmental influences on drug use.⁶ This is because genetic influences are shared 100 per cent between members of MZ twin pairs, while DZ twin pairs only share 50 per cent of their additive genetic influences. This means the genetic influence between MZ twins is likely to be more apparent than in DZ twins. Thus, differences between these two groups are suggestive of a genetic factor.

Research using twin studies has reported a large degree of heritability^c in relation to drug use.⁶ It has consistently been shown there is a higher MZ than DZ concordance for drug dependence.²

The extent to which drug use has a genetic component appears to differ between different types of drug. Cannabis use and dependence appear to have a large genetic component. A 2006 review of the genetic epidemiology of cannabis use, abuse and dependence found evidence that there is a genetic basis to each of these three stages.⁹ It was estimated that the heritability of cannabis use ranged from 34 per cent to 78 per cent.⁹

In terms of other drugs, research from the late 1990s among Vietnamese twins reported that 33 per cent of stimulant use/dependence, 27 per cent of sedative use/dependence, 54 per cent of heroin use/dependence and 26 per cent of the use/dependence of psychedelic drugs could be attributed to genetic factors.^{10,11} These findings have been replicated among female twins from the USA.^{12,13} Significant twin resemblance was found for hallucinogen use, opioid use, sedative use, stimulant use and symptoms of dependence.^{12,13}

The convergence of findings from a range of research designs provides compelling evidence that illicit drug use and dependence are influenced by heritable genetic factors. Despite this, genetic factors are not exclusively responsible for the development of drug use and dependence. If they were, the above studies would be expected to report 100 per cent concordance between MZ twins. As is detailed in the following sections, there are a wide range of other factors that may influence drug use.

^c Heritability refers to the extent to which genetic individual differences contribute to individual differences in observed behaviour (also known as phenotypic variation). Individual differences in behaviour may be due to genetic or environmental factors, and/or random chance.

4.2.2 Concurrent disorders

Psychiatric illness is thought to strongly influence the use of drugs. In recent years, a considerable amount of research literature has documented associations between drug use and dependence, and a range of psychiatric disorders.¹⁴⁻¹⁷ This comorbidity^d has been observed for a diverse range of drugs, and is associated with negative outcomes for both the persistence and severity of drug use and psychiatric illness.²

It should be noted that a proportion of the overlap between drug use and mental illness may be definitional. This is because of the difficulty in separating out true underlying disorders from behaviours that develop as part of drug use. The effects of drugs on mental health are explored in more detail in **Chapter 3**.

Available clinical, neurobiological and epidemiological evidence is yet to identify a unified explanation as to why there is such a high concordance between drug use and mental illness.² A number of different explanations have been suggested to account for this relationship.

It is assumed that the presence of an initial psychiatric illness may, either directly or indirectly, increase the risk of drug use. One of the most widely cited explanations of this causal relationship between psychiatric illness and drug use is that drugs are used to self-medicate the negative pervasive symptoms of psychiatric illness.^{2,18}

It may be that the direction of this relationship is reversed, and that drug use acts as a precursor to biological changes that are known to be involved with psychiatric illness.² Research from the USA has suggested that high levels of cocaine use are associated with the development of psychotic symptoms.^{19,20} A similar pattern has been observed for cannabis,²¹⁻²⁵ opioid drugs and amphetamines.²⁶

Alternately, it may be that there is a shared aetiology to drug use and mental illness, in which a specific factor, such as a common genetic predisposition, increases the risk of both mental illness and drug use.² Epidemiological data from the USA indicate the lifetime rates of major depression are 32 per cent in cocaine users, and up to 13 per cent among non-users of cocaine, which is suggestive of some common cause.² It may also be that shared environmental influences account for this comorbidity.^{2,26}

^d Comorbidity refers to the co-occurrence in the same individual of more than one psychiatric disorder.

Available longitudinal investigations provide little in terms of disentangling the relationship between mental illness and drug use. This is both because the evidence from these investigations is considered relatively weak in determining causality, and because they are limited in number. From available research, there is supporting evidence for each explanation.² It may be the case that each of these explanations is correct, and the extent to which any one is at work is related to a complex range of factors that are specific to the individual.

4.2.3 The psychopharmacology of individual drugs

Aside from an individual's own biological predisposition, which may put them at an increased risk of using drugs, the extent to which a drug can influence an individual's behaviour is related to a drug's psychopharmacology (see **Glossary**).

Drugs alter the normal functioning of brain mechanisms that exist to regulate the functions of mood, thoughts and motivations.² There is considerable variation in relation to the particular types of neural receptors (see **Glossary**) and neurotransmitters that drugs affect in the brain, and consequently the extent and nature of their physiological effects on the brain and behaviour.² It should be noted that almost all psychoactive substances with reinforcing properties share the common property of activating mesolimbic dopamine, which plays a critical role in models of learning theory.² The role of dopamine is considered further in **Section 4.3**.

A component of why individuals may wish to use drugs is to elicit an alteration in normal brain function. This may include the desire to experience pleasure or to avoid pain (the desired effects of commonly used illicit drugs are explored in greater detail in **Appendix 2**). Thus, at a biological level, both the immediate and long-term reasons for why people may use a drug can be rationalised by understanding how that drug affects the brain at the pharmacological level.

The repeated use of drugs may contribute to their continued re-administration through the development of physical symptoms. These include:

- **tolerance**: which can be defined as a given drug producing a decreasing effect with repeated dosing.² Tolerance to a drug can be both physical and psychological, with psychological tolerance often having a greater effect on influencing behaviour. Tolerance influences repeated drug use, and as a result larger drug doses must be administered to produce a similar effect
- **withdrawal**: which is the body's reaction to absolute or relative withdrawal of a drug. Withdrawal is associated with a range of significant negative physical and psychological outcomes, and in certain cases can be fatal. Withdrawal can be alleviated by readministering the drug, which contributes to its repeated use.²

These two factors may influence the continued use of drugs but, as highlighted in **Appendix 2**, the potential to develop tolerance and withdrawal states varies with individual drugs.

4.3 Psychological factors

4.3.1 Personality type

There is evidence that certain personality characteristics can be considered predisposing vulnerabilities for drug use.^{17,27} The use of drugs is also thought to contribute to the development in changes in personality.^{17,27}

Personality traits of impulsiveness, sensation seeking and negative emotionality have been associated with an increased risk of using drugs.²⁸⁻³¹ Sensation seeking has been defined as a need to seek intense sensations, along with the willingness to take risks for the sake of having such experiences. Among those with sensation seeking as a personality trait, under-responsiveness to natural rewards and the need for greater stimulation has been suggested as motivation for drug taking.²⁸ Individuals with high levels of impulsivity have a tendency to act quickly without forethought and planning.²⁹ Evidence suggests that a lack of forethought and inhibitory control over behavioural impulses may play a role in perpetuating drug use.^{27,30} Longitudinal studies have found that impulsivity in childhood predicts experimentation with drugs in later adolescence and early adulthood.³¹ High scores on measures of negative emotionality have also been associated with future drug use.²⁷

Continued use of drugs has been associated with behavioural, cognitive or affective changes to personality.^{17,27} The social withdrawal, irritability and negative emotionality often observed among drug-dependent groups may be better attributed to drug-induced anxiety and depressive syndromes.²⁷

Further perspectives have suggested a different explanation for the association between personality type and drug use. Personality traits have been documented to have a substantial heritable component.³² Rather than personality influencing drug use, or drug use influencing personality, it may be that there is some common genetic factor that predisposes an individual both to have certain personality traits and to be at an increased risk of using drugs.³²

4.3.2 Models based on learning theory

Learning-based theories have been developed from classical and operant conditioning paradigms of response reinforcement. These models seek to explain addictive behaviour as pairings between a drug, drug-associated stimuli,^e and the effect of taking a drug. Enduring changes to behaviour result from, or are influenced by, these interactions. Learning theory may be useful to understand how drug use becomes a facet of identity, and the implications this may have on treatment. In these instances, specific maladaptive traits may become reinforced over time, through the acquisition of drugs or perceived protection against negative experiences (see **Chapter 8** for further information on the 'addict identity').²⁷

It is necessary to recognise that drugs are rewarding. The rewarding properties of drugs can include sensations of pleasure or relief of pain, tension or fatigue, as well as the ability to enable the user to escape negative feelings or emotions. Thus, the drug is used, it has rewarding effects, and this reinforces repeating this behaviour (ie it influences the continued use of the drugs).²

This relationship can be understood at a biological level. As explored earlier, drugs influence the normal functioning of the brain. The use of psychoactive drugs causes activation to areas of the brain that are normally involved in motivation, such as the mesolimbic dopamine system (see **Section 1.1.3**). This causes the release of dopamine, the neurotransmitter released in response to any positive event or reward.² Any release of dopamine leads to a strengthening of the synaptic connections in the neural pathways.^{2,33,34} This reinforces the behaviour that resulted in a reward, making it more likely to be repeated.² Psychoactive drugs can activate the mesolimbic dopamine system, either directly or indirectly, and, through associative learning processes, stimuli associated with drug use and drugs can themselves begin to influence behaviour.²

Classical conditioning

Classical conditioning (sometimes known as Pavlovian conditioning) can be simplified as learning through association. Theories based on classical conditioning are often used to explain complex behaviours, such as drug craving.^{f,2,35} Under a classical conditioning model, drug craving arises because of the repeated pairing of environmental stimuli with the rewarding properties of drugs.³⁰

e Drug-associated stimuli could include environments where drugs are taken, the presence of drug dealers or drug users, or the sight of drug paraphernalia.

f Craving is to have a strong or uncontrollable want for something (*Cambridge Dictionary*).

To the individual using drugs, neutral stimuli associated with drug use, such as drug use paraphernalia, or environments where drugs have previously been consumed, can begin to exert influences on behaviour. Research has demonstrated that after repeated drug administration, cues that precede drug ingestion, such as the sight of a needle and syringe, elicit craving for drugs.³⁶ A formulation of how this process takes place is as follows:

- a stimulus, such as a syringe, elicits no particular drug-related response, ie it is a **neutral stimulus**
- when an individual uses a drug such as heroin intravenously via a syringe, it reliably elicits a response: a drug-related high. The drug is the **unconditioned stimulus**, and the drug-related high is the **unconditioned response**. The unconditioned response occurs in response to the unconditioned stimulus
- the **unconditioned response** (heroin) is repeatedly paired with the **neutral stimulus** (syringe)
- eventually, the **neutral stimulus** (syringe) alone is able to elicit a **conditioned response**, which is to crave using heroin.

Operant conditioning

The theory of operant conditioning (also known as instrumental learning/conditioning) has also been used to describe why people use drugs. If classical conditioning can be seen as learning through association, then operant conditioning can be seen as learning through reinforcement.^{2,35}

In contrast to classical conditioning models, where the individual has no control over the presentation of a stimulus, with operant conditioning it is the individual's own behaviour that produces the stimulus.^{2,35}

Operant conditioning explains that behaviour is repeated because of the emotional consequences attached to that behaviour.^{2,35} If use of a drug produces a reward, such as a state of euphoria, or alleviates withdrawal symptoms, it is more likely to be repeated.^{2,34} If use of a drug leads to a non-rewarding, aversive state, such as acute intoxication, then a behaviour is less likely to be repeated.^{2,35}

Social learning

Social learning theory has also been used to explain influences on drug use. Social learning theory extends the concept of operant conditioning as a basis for addiction, to learning through observation and communication. Social learning theory posits that individuals may be influenced in their decision to use drugs through observing role models in their environment and perceiving social norms in relation to drug use.³⁵ Social learning theory explains that individuals will repeat behaviours they observe to have a positive outcome, and avoid behaviours they observe having a negative outcome.³⁵ According to social learning theory, the more frequent and intense the

observed positive element of drug taking, the more likely it is that it will become habitual.³⁵ The more frequent or intense the observed negative drug-associated experience, the greater the likelihood that it will be avoided. Social learning theory is often used to describe the influence of peers and family on drug use.³⁵

4.4 Social factors

4.4.1 Family

Family conditions during childhood are associated with illicit drug use.^{7,37,38} Beyond the genetic characteristics shared within a family, there are a range of familial factors thought to influence drug use. As described in **Section 4.3.2**, social learning theory suggests that one of the mechanisms by which behaviour is acquired is through imitation and modelling of others. The role of the family's attitudes towards drug use may play a role in this regard. As well as this, atypical family relationships may also influence drug use. Research has indicated that the family factors that contribute to individual differences in drug use include:

- single-parent, or step families³⁹⁻⁴²
- substance use among family members⁴³
- poor parent-child relationships^{44,45}
- family conflict⁴⁶
- poor parental supervision.⁴³

It should be noted that there may be other environmental factors that influence drug use, and it can be difficult to disentangle these factors from the influence of family conditions. This is because families share the same environments. These confounding variables may include social inequalities and the role of peer influence.

Family structure

A number of studies have suggested that family structure may play a role in individual development and functionality, including drug use. Research among 14 to 15 year olds in five European countries, including England, found that living with both biological parents was generally associated with reduced levels of drug use.³⁹ Similar research reported a significant association between illegal drug use and broken family structure among 10 to 12 year olds in Glasgow and Newcastle.⁴⁷ In comparison, those living with both biological parents had the lowest past illegal drug use.⁴⁷ The highest levels of drug use were found among those living with reconstituted families (step families).⁴⁷ Similar findings were reported in research among Scottish adolescents, with a greater level of lifetime illegal drug use reported among those from single-parent families.⁴⁸

Family substance use

The use of drugs within the family environment may influence subsequent drug use. Research among Scottish pupils reported that almost half of those who had used drugs had a family member that also used drugs.⁴⁹ This compares with around 10 per cent of non-using pupils having a family member that used drugs.⁴⁹ In the majority of cases, the drug-using family member identified was a sibling or cousin.⁴⁹

Family relationships

As well as family composition and behaviour, the quality of family relationships may influence drug use. Research among British adolescents reported that those who thought their parents' opinions were most important were less likely to regularly use drugs.⁵⁰ In comparison, those who valued their friends' opinions highest reported greater drug use.⁵⁰

Parenting style may also influence levels of drug use. Research has reported that families that lack parental monitoring, that have high levels of parent-child conflict, or where children are unwilling to disclose information to their parents, have higher levels of drug use.⁴⁸ The association between lack of parental monitoring and drug use at the age of 15 years has been shown to be particularly strong.⁴⁸ Stattin and Kerr have posited that a lack of parental monitoring may result from children disclosing too much information about norm-breaking behaviour to their parents.⁵¹ This knowledge causes parents to abandon monitoring their children's behaviour, which has consequent impacts on drug use.⁵¹

Protective factors

The family environment may also exert effects that protect against the use of drugs. Positive family relationships and communication may guard against future use of drugs.^{39,40} Any benefit in living with both parents is thought to be undermined in instances where drug use among peers is high.³⁹

4.4.2 Peer influence

Peers may influence whether an individual engages in or refrains from drug use.^{52,53}

Peers may influence individuals directly, such as by offering drugs, or indirectly through social modelling and perceived norms.

Drug use appears to occur often within a peer-group context. Research has reported that adolescents who spend more time with their friends are at an increased risk of drug use.⁵⁴ American research has found that youth spending five or more evenings each week out with friends are at greater risk of drug use than those spending fewer nights out.⁵⁴ From a British perspective, research has indicated that lifetime cannabis users are less likely to spend time regularly with their parents, and more likely to spend free time with drug-using friends.⁴⁵ Research conducted among Swiss school

students reported a close association between pupils witnessing students coming to school cannabis intoxicated, or taking cannabis onto school premises, and their own cannabis use.⁵² It should be noted that this research does not identify the direction of this relationship, in terms of whether cannabis-using peers influence students to use cannabis, or whether cannabis users choose to associate more with other cannabis users.

The relationship between peer groups and drug use is complex, and may function in different ways. Individuals often identify themselves as a member of a group on the basis of shared behaviours or beliefs. They may adopt behaviours to increase their sense of belonging to a group, or to become accepted as a group member. Alternatively, the high concordance between peer group and drug use may be a result of individuals seeking out peers with similar interests and behaviours to their own. Consequently, peer-group homogeneity may result from processes of selection into groups, or conformity to existing members of a group.⁵⁵ Social learning theory may explain peer drug use, as drug use is encouraged by observing drug using among role models. Decisions to use drugs are made on assessments of the consequences of drug use, and the perceived punishments or rewards reinforce the decision to engage in or refrain from the behaviour.

McIntosh et al reported that the impact of peer pressure declines with age.⁵³ Research involving 11 to 14 year olds in Scotland and England reported a decrease with age in the influence of peer pressure when experimenting with drugs.⁵³ It is suggested that the declining role of peer pressure results from drug-using peers moving away from viewing drug use as a form of risk taking, and instead to drug use as an enjoyable activity.⁵³ The decision to experiment with drugs becomes increasingly a matter of personal choice rather than one of external influence.⁵³

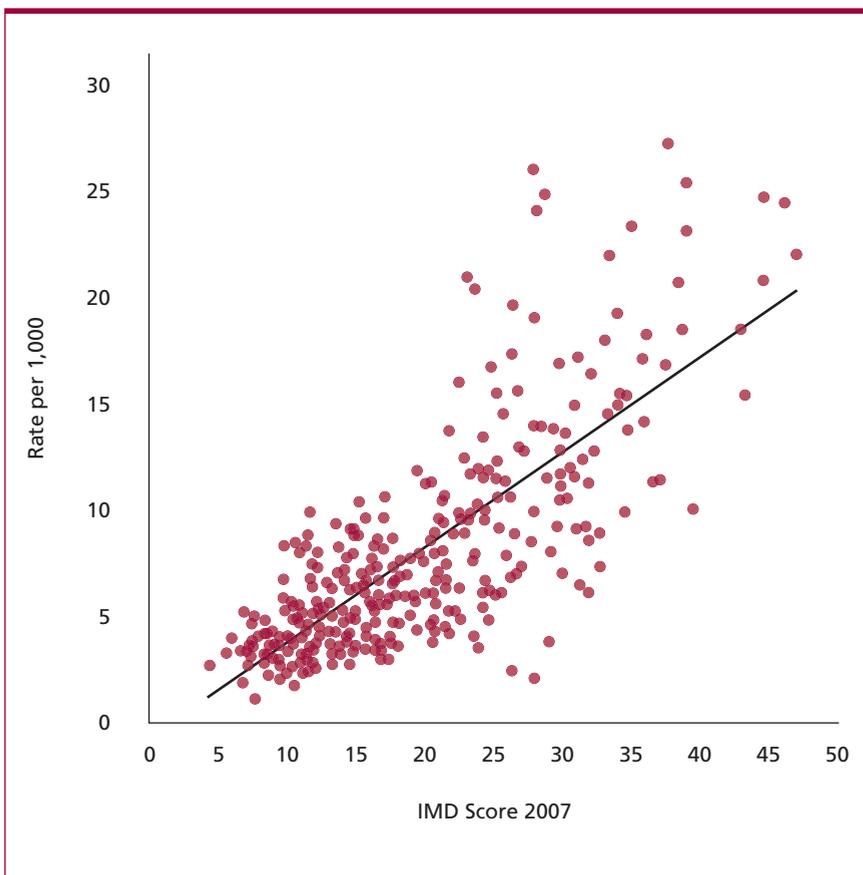
4.4.3 Social inequalities

Social inequalities refer to people in different socioeconomic groups experiencing a different quality of life. These differences include avoidable differences in health, wellbeing and length of life.

Cannabis use has been found to be greater among those living in areas of lower deprivation.⁵⁶ It has been suggested that this is because cannabis users more frequently come from less-deprived backgrounds.⁵⁷ Teenagers and young adults from poorer backgrounds have less discretionary cash to purchase drugs. This suggests there is an effect of affluence on drug use, at both the individual and neighbourhood level.⁵⁸ Social deprivation does appear to influence the harmful use of drugs. The Marmot Review suggested that, in the UK, the likelihood of problematic drug use is related to socioeconomic status, noting a positive correlation between the prevalence of problematic drug users aged 15 to 64 years and deprivation (see **Figure 6**).⁵⁹ Similarly,

hospital admission rates for drug-specific conditions for both male and female individuals have shown a strong positive association with deprivation.⁵⁹

Figure 6 – Prevalence of problematic drug users aged 15 to 64 years, by local authority of residence and Index of Multiple Deprivation (IMD),⁹ 2006-2007



Source: North West Public Health Observatory (2010) *Indications of public health in the English regions. 10. Drug use*, p51, scatter plot 1. Liverpool: North West Public Health Observatory,⁵⁷ Reproduced with the permission of the North West Public Health Observatory.

⁹ The Index of Multiple Deprivation (IMD) is a measure used in UK Government statistical study of deprived areas in UK local authorities. A low IMD score indicates an area of low deprivation.

4.4.4 Stigmatised groups

Stigmatised groups are prone to earlier, more frequent, or more problematic drug use.⁶⁰ For the less affluent in particular, drug use can cause stigma, and can be how people end up in these groups. It is thought they might also experience faster progression to problem drug use.⁶⁰ Among certain stigmatised groups, socioeconomic inequalities appear to play a substantial role in their stigmatisation.⁶⁰ Problematic drug use is just one of a number of behaviours, such as poor diet and lack of exercise, associated with negative health outcomes.⁶⁰

Groups that are considered vulnerable include, but are not limited to:

- young people within care institutions
- sex workers
- homeless populations
- victims of traumatic experiences.

Young people within care institutions

Young people in care institutions, such as residential or foster care, face distinct developmental challenges. In comparison to the normal population, these include accelerated social independence, not completing formal education, and high unemployment upon leaving care.⁶¹

Research has identified that those in care are at an increased risk of earlier initiation into, higher levels of, and more frequent use of drugs, including heroin and crack cocaine.⁶¹⁻⁶⁴ Research using twin studies has shown that those using cannabis in care institutions before the age of 17 have an increased risk of other drug use and dependence, when compared to their non-drug-using co-twin.⁶⁵ The risk of other drug use and dependence is estimated to be 2.1 to 5.2 times higher than that of their co-twin.⁶⁵

A range of factors are thought to explain the high proportion of drug use among this population. These factors include carer use and challenging life events, such as bereavement, rejection, early independence and responsibility, sex work and the transition from care.⁶⁴ In addition, some young people within care institutions may have grown up in homes where parental problematic drug use was evident. As has been highlighted previously, parental use of drugs may influence their children's drug use.⁶⁶ Parental drug use may also be a compounding factor in preventing children from returning to the care of their parents. This separation from their parents may further increase the risk of young people using drugs.⁶¹

Sex workers

Sex workers are thought to be at an increased risk of using drugs. Explanations for this increased risk include sharing environmental space on streets and in the dealing houses, which serve as sex markets, drug markets and areas where homeless people congregate.⁶⁷ In one study, 84 per cent of those sex workers who work outdoors reported having a current drug problem.⁶⁷ This compares with just 13 per cent of sex workers who work indoors.⁶⁷

There are few reliable data on the prevalence and patterns of drug use among this population. Evidence on whether drug use is a cause or effect of sex work indicates that both are possible. Research suggests that drug use is often a motive for prostitution, but could also be a consequence and maintaining factor.⁶⁷ Sex work and drug use may be mutually reinforcing, such that 'exiting' either becomes more difficult. Their mutually reinforcing potential is strengthened where individuals are exposed to 'trapping factors'.

These include:

- involvement in prostitution and/or 'hard drug' use before the age of 18 years
- sex working 'outdoors' or as an 'independent drifter'
- experience of at least one additional vulnerability indicator, such as being 'looked after' in local authority care or being homeless.⁶⁶

Homeless populations

Homelessness occurs on a continuum ranging from 'rooflessness' or sleeping rough, to living in bed and breakfast accommodation and hostels, to an inability to leave unsatisfactory housing conditions. Homelessness has been associated with increased use of drugs.⁶⁸ In addition to drug use, homelessness is also associated with social exclusion, which includes poor and unhealthy living conditions, unemployment, low education, socially disadvantaged background and poor physical health. There may also be a high level of psychiatric illness among homeless populations.⁶¹

The association between homelessness and drug use is largely recognised in the literature. Research among homeless people in London found that 60 per cent reported that their substance use was one of the reasons they first became homeless.⁶⁹ Having become homeless, 80 per cent reported subsequently using drugs.⁶⁹ Overall, drug use, injecting, daily use and dependence have been found to increase, the longer that individuals remain homeless.⁶⁹

A 2003 Home Office piece of research into young homeless populations found young homeless people reported high lifetime, last-year and last-month prevalence rates for drug use. This included illegal drugs and illicit use of prescribed medication.⁷⁰ Ninety-five per cent of young homeless individuals had used drugs.⁷⁰ Often they had begun experimenting with illegal drugs at a young age, typically aged 14 years.⁷⁰ Levels of use of cannabis, amphetamine and ecstasy were also high among this population, and a substantial minority reporting use of heroin and crack cocaine.⁷⁰

Victims of traumatic experiences

Adverse experiences are thought to play a role in influencing drug use. Early adverse experience, such as childhood sexual or physical abuse, have been associated with an increased vulnerability to drug use.⁷¹

There is evidence that individuals who have experienced some form of trauma at a young age are at an increased risk of developing problems with drug use.⁷² Research among US childhood victims of physical abuse, sexual abuse or neglect estimated that these individuals are up to 1.5 times more likely to use illicit drugs.⁷³ Similar research among American students demonstrated that the highest levels of drug use were found among students who reported both physical and sexual abuse.⁷⁴ In addition, victims of any form of abuse reported initiating drug use earlier and greater multiple drug use, when compared to their non-abused peers.⁷⁴ Research has also demonstrated that emotional abuse is associated with higher levels of drug use.⁷⁵ Trauma in later life is thought to be associated with drug use, but the evidence base for this association is not well established.

Although clinical data confirm a relationship between adverse experiences and drug use, it is not known whether this relationship is direct or indirect. It is thought that the high concordance between drug use and victims of trauma may, in part, be explained by individuals using illicit drugs to cope with negative emotions, feelings and experiences. Among drug-using school children who have been sexually and physically abused, explanations for use include coping with painful emotions and escaping from their problems.⁷⁴ It may also be that traumatic experiences indirectly impact on drug use. It has been well established that childhood maltreatment may result in a number of emotional and psychological consequences, such as depression, anxiety, suicidality, low self-esteem and personality disorders.⁷⁶ The association between mental health and drug use has already been highlighted in **Section 4.2.2**.

4.5 Access to drugs

4.5.1 Price

Price appears to influence the use of drugs. It was previously believed that the addictive nature of drugs meant drug users were not sensitive to changes in price, but research has demonstrated that drug users are responsive to price.^{1,77} This estimated responsiveness to price (elasticity of demand^h) varies by drug and user type;ⁱ in almost all cases, the number of users and the quantity of drugs consumed declines when prices are increased – in some cases substantially.^{1,77} Further evidence for how price affects different types of drugs, and users, is presented next. It should be noted that, given the illegal nature of drug use, the price data reported are often of low quality (see **Section 6.3.2**).

Cannabis

American research has estimated that, among high school students, responsiveness to the price of cannabis is about -0.30 .⁷⁸ Research in Australia, which investigated cannabis use among adult populations, demonstrated a much larger responsiveness of -0.88 .^{j,79}

Cocaine

Responsiveness to price has been shown for cocaine. Research conducted in 1999, using data from the US National Household Survey on Drug Abuse between the years 1988 and 1991, estimated a price responsiveness of between -0.30 and -0.55 .⁸⁰ Among youth populations, the responsiveness to the price of cocaine was -0.89 and -1.28 .^{k,80} More recent research, conducted in 2006, estimated that among US college students, the responsiveness to the price of cocaine is as high as -0.57 , depending on age and sex.⁸¹ It is interesting in this context to note that the price of cocaine in the USA has fallen by around 70 per cent since its peak in the late 1970s, but use has fallen by almost the same amount.⁸²

h Price elasticity of demand is a measure used in economics to show the responsiveness, or elasticity, of the quantity (proportion) demanded of a good or service, in relation to a change in its price. More precisely, it depicts the change in quantity demanded, in response to a 1 per cent change in price. Price elasticity, or responsiveness to price, is almost always depicted as negative – a rise in price reduces demand. Demand is described as 'inelastic' if it is numerically less than -1.0 , but this does not mean that there is no responsiveness to price.

i In the context of drug use, elasticity of demand comprises two components: the 'participation response' – the decision to use the substance – and the 'intensity response' – the amount a continuing user consumes.¹

j The figures -0.30 and -0.88 both refer to the participation elasticity, ie the decision to use the drug.

k The participation elasticity was -0.89 and the overall elasticity was -1.28 .

Heroin

It is unclear whether the responsiveness to changes in the price of heroin is similar to that seen with cocaine and cannabis.¹ This is because the evidence base for heroin use is poor. Responsiveness to the price of cannabis and cocaine is generally extrapolated from general population surveys that provide information on the prevalence of cocaine and cannabis use. General population surveys do not report on the prevalence of heroin use. This is, in part, because heroin users generally live too chaotic a lifestyle to allow their inclusion in such samples.

Research between 1993 and 2006 among clients in needle exchanges in Oslo, estimated a price responsiveness of -0.77 for heroin users.⁸³ It should be noted that these findings are conditional on the user injecting heroin. Research among US arrestees testing positive for heroin estimated that the responsiveness to heroin prices was between -0.10 and -0.18 .⁸⁴ Research that examined the impact of US heroin prices on admissions to emergency rooms for heroin use found that responsiveness to price among this population was only -0.10 .⁸⁵ These trends underline that, at least in the medium term, the demand for drugs is responsive to other factors besides price.

4.5.2 Physical availability of drugs

The physical availability of drugs refers to the proximity and accessibility of a drug. Logic dictates that if a drug is not physically available, then it cannot be used. As explored previously, a range of factors influence drug use, and while the physical availability of drugs plays a role in their use, it cannot be considered the sole influence on whether they are used.

Available evidence suggests that the physical availability of drugs does not impact on levels of drug use. Research from the USA has suggested that the physical availability of drugs is often concentrated in neighbourhoods with high levels of economic disadvantage, greater population density and high concentrations of minority residents.^{86,87} Levels of use were reported to be similar to those seen in affluent neighbourhoods.^{86,87} Socioeconomic status appears to influence problematic drug use, so the physical availability of drugs may impact use among those who are already using drugs problematically.

4.6 Psychological attractiveness and societal acceptance

4.6.1 Popular media

The popular media, which include film, television, music, video games and the internet, together with increasing exposure to celebrity lifestyles, form a dimension of people's social environment. Available evidence suggests that popular media may influence health behaviours. Research has demonstrated that popular media portrayals of pro-alcohol and smoking imagery can influence the uptake of these substances.^{23,88-90} While research into the influence of popular media on drug use has received much less attention, a similar effect appears to be present.⁹²⁻⁹⁶ There is little evidence demonstrating that popular media has a protective impact on drug use.^{97,98} The efficacy of mass media approaches in delaying initiation into and minimising the use of illicit drugs is explored in **Chapter 7**.

4.6.2 Films

Films often address and depict health-related behaviours. With the cinematic film industry grossing billion of pounds in profits, and with the globalisation and proliferation of home-based media technologies, there is the potential for film to influence the behaviour of large numbers of people.

The use of illicit drugs is often portrayed in films. A content analysis of the top grossing US films from 1999 to 2001, found nearly two out of five teen characters in films used illicit drugs, and were unlikely to be shown suffering any consequences of their drug use (either positive or negative, or short or long term).⁹⁹ Australian research from 2005 analysed the portrayal of drug use among the most popular 200 films globally, from 1985 to 2005. It was found that cannabis was portrayed in 8 per cent of films, with each film depicting the use of cannabis up to a maximum of 10 times.¹⁰⁰ Cannabis use was only shown in a positive or neutral light, with no negative depictions or consequences.⁷⁹ This is similar to the findings related to the effects of marketing and imagery on tobacco and alcohol use.^{88,101}

The available evidence suggests that films have the potential to model behaviour, and communicate normative propositions about health-related matters, such as illicit drug use.¹⁰² Research has suggested that portrayals of drugs have an impact on drug use in the UK. A 2011 cross-sectional study of over 1,000 13 and 15 year olds from the west of Scotland explored incidents of witnessing drug use in films, and subsequent drug use, and found an association between film exposure to illicit drugs and using cannabis.⁹² This association persisted after adjusting for sex, social class, family structure and levels of parental control.⁹² The association did not exist when controlling for other variables, including personal characteristics, such as risk taking, rule breaking, achievement of school qualifications and friends' substance use.⁹² It is difficult to interpret these findings, given the cross-sectional nature of this analysis, which makes

conclusions about the direction of any relationship problematic. One explanation is that young people who take drugs not only are more inclined to do this in the company of like-minded friends, but may also share, or develop, similar tastes in cultural representations of drug use, which may in turn determine the kinds of films they choose to watch.⁹² Conversely, portrayals of drug use could directly influence an individual's uptake of drug use, which could itself influence the friendship groups that an individual may choose to maintain.⁹²

4.6.3 Television

Television watching is widespread throughout the UK. There is the potential for images on television to reach a broad range of UK society, although the evidence that portrayals of drug use on television influence behaviour is less well established than for other media. Given the evidence that film influences drug use, and the obvious similarities between these two media, it is not unreasonable to assume similar effects occur with television.

Portrayals of drug use on UK television appear to be relatively sparse and predominantly negative (see **Box 4**). A 2005 review by Ofcom, which assessed a snapshot of television for content, including drug references, found that overt or implied drug users comprised 0.4 per cent of the television characters included in the sample.¹⁰² Drug scenes were most likely to provide an antidrugs message, with 57 per cent of scenes reviewed assessed as carrying a negative message, 40 per cent a neutral message and 3 per cent a mixed message.¹⁰² There were no drug scenes assessed as portraying a positive message about drugs.¹⁰²

Box 4 – Example of drug reference in television

Holby City

Gabby is in hospital after taking too many drugs and consequently gave birth 3 months early. The baby is on life support and unlikely to survive. Her boyfriend Leo blames her for taking the drugs, and himself for supplying them. Gabby says she can't think straight and wants Leo to ask the doctors for some drugs so she can say yes to turning off the life support machine. Leo says that he cannot believe she is more bothered about her next fix than her dying baby.

Source: Ofcom (2005) *Smoking, alcohol and drugs on television: a content analysis*. London: Ofcom.¹⁰² Reproduced with the permission of Ofcom.

4.6.4 Music

As with other forms of media, exposure to music and the impact on drug use has received little attention. There are a range of reasons why music may influence health behaviours. Music is related to personal identity, and people often model themselves after musical figures, in terms of dress, behaviour and identity.¹⁰³⁻¹⁰⁵ Exposure to modern music is ubiquitous.

Reference to drug use in certain types of music is common, and appears to influence drug use. American research from 2008 found that explicit substance use is represented in around one-third of the most popular songs in the USA, with alcohol and cannabis referenced most frequently.¹⁰⁶ Overall explicit substance use is portrayed most frequently in rap music, and least frequently in pop music.¹⁰⁶ References within music to substance use are most commonly motivated by social pressure and sex, and are associated with partying and sex.¹⁰⁶ The social, sexual, emotional and financial consequences of drug use are most commonly depicted as positive.¹⁰⁶ The legal and physical consequences of drug use are more commonly depicted as negative.¹⁰⁶

Robust research on exposure to drug references in UK music has not taken place, so it is not possible to make a reliable assessment of drug exposure in UK music. Due to the increasingly globalised trends in music in developed countries, there is a large degree of international crossover in styles of music. It is not unreasonable to take figures reported in the USA as a crude estimate of what is taking place in the UK.

Research has suggested that exposure to drug references in music influences cannabis use. American research from 2010 looked specifically at cannabis exposure in popular music and current cannabis use among students aged 14 to 15 years.⁹² It was reported that high exposure to references to cannabis in popular music was independently associated with higher levels of current cannabis use.⁹³

4.6.5 Celebrity

The reach of entertainment media provides unprecedented public access to the lives of celebrities. Public knowledge of the personal lives of media personalities is greater today than it has ever been. This is particularly true among young people.¹⁰⁷ Research from 2001 reported that of those surveyed, 59 per cent of young people stated that their celebrity idol had influenced some aspect of their attitudes or beliefs.¹⁰⁸

Research has suggested that celebrities may have both a positive and negative impact on drug use, although this is not conclusive. Research from 2010, which examined Diego Maradona's influence on drug use (an Argentinean footballer with a history of involvement with drugs), found that those who had a greater degree of

parasocial interaction¹ with Diego Maradona were more likely to have an increased awareness of drug abuse, a greater personal concern about drug use, abstain from drug use, and strongly support drug-use-prevention programmes.⁹⁴ In contrast, identification with Maradona had a mitigating effect on prevention of drug use.⁹⁴ These findings suggest that notable celebrities may have a role in reducing drug use, and a conflicting role in increasing drug use.

4.6.6 Video games

Leisure activities have changed over the last 10 to 15 years, with the use of new technologies such as video game consoles taking up a large proportion of free time.⁹⁵ This increase in video game use is set within a context of leisure time that is increasingly being occupied by the use of electronic devices.⁹⁵

The number and types of depictions of drug use in video games is less clear than for other forms of media. The most recent content analyses, from 2004 and 2005, of US teen- and mature-rated video games found that only a handful of video games depicted drug use in any format.^{109,110} It should be noted that the video games industry is a continually expanding market, and it is likely that the number and complexity of video games on offer since these analyses were conducted has increased dramatically.⁹⁶ The number of depictions and types of drug use portrayed in video games are potentially much higher than the available figures suggest.

Given the relative paucity of evidence examining the frequency of video game use, and how this impacts on behaviour, it is not clear whether video games affect drug use. One American research study has suggested that video game use is positively related to drug use.⁹⁵ The direction of this relationship, in terms of games influencing drug use, or drug users being more drawn to games, is unknown. It is not possible to determine whether use of video games plays a direct role in use of drugs, or if it impacts drug use indirectly, by taking time away from activities that have been shown to have a protective influence on drug use.⁹⁵

¹ Parasocial interaction is a term used in social science to describe one-sided, interpersonal relationships in which one party knows a great deal about the other, but the other does not.

4.6.7 The internet

Given the rapid advancement in the internet as a means of finding and disseminating vast amounts of information, it represents a developing area in terms of drug exposure and use. A 2009 piece of exploratory analysis on drug website viewing among 12 to 18 year olds in America, found that 5.4 per cent of youths had visited antidrug websites, 1.7 per cent had visited websites that discussed drug use in a positive light and 3.2 per cent had visited a mixture of both.⁹⁶ Viewing of websites encouraging drug use was associated strongly with drug-use behaviours.⁹⁶

The extent to which internet use may influence drug use is unknown. From the limited available evidence, it appears that internet use may influence drug use in a more complex manner than is seen with other forms of popular media.⁹⁵ This complexity appears to arise from the type of internet use engaged in by an individual, with some use encouraging drug use, and other forms of internet use protecting against it. When the internet is mainly used for chat rooms, shopping, entertainment and pornography, an increase in the use of drugs has been found.⁹⁵ Conversely, when the internet is used for activities such as school work, it is associated with less drug use.⁹⁵ The content or purpose of internet use may be significant, in terms of use of illicit drugs.

Summary

- Drug use is widely held to be a multifaceted biopsychosocial phenomenon. No single biological, psychological or social factor is exclusively responsible for drug use.
- Family-based, adoption and twin studies have shown a substantial genetic component to drug use. Comorbid psychiatric illness and personality type have also been shown to be strongly linked to drug use.
- The rewarding potential of drugs, such as sensations of pleasure or relief from pain, may play a role in reinforcing the continued use of drugs. The use of drugs activates the mesolimbic dopamine system in the brain, strengthening neural connections, which influences the repetition of drug-related behaviours.
- A drug's potential to lead to tolerance and withdrawal may influence its continued use.
- The environmental or social factors commonly attributed to problematic drug use include family composition, behaviour and relationships, peer influence, social inequalities and being a member of a stigmatised group.
- Positive family relationships and communication may guard against future use of drugs. Living in a single-parent or step family, substance use among family members, family conflict and poor parental supervision are all indicators for drug use in young people.

- Stigmatised groups are at increased risk of drug use; these include young people in care institutions, sex workers (particularly those who work outdoors) homeless populations and victims of traumatic experiences.
- Evidence shows price has an impact on drug use but the effect is not the same for all types of drugs.
- Evidence of the effect of portrayals of drug use in popular media on drug use are limited and difficult to interpret. There is some evidence that portrayals of drug use in film have an impact on drug use in the UK. Notable celebrities may have a role in either reducing or increasing drug use.

