DRUG CRIME PREVENTION AND MITIGATION: A LITERATURE REVIEW AND RESEARCH AGENDA

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1. INTRODUCTION

1.1 BACKGROUND TO THIS REPORT

In May 1999, against a backdrop of rising public concern about the problem of illicit drugs, and considerable debate over how best to deal with that problem, the NSW Government convened a 'Drug Summit' attended by drug experts, parents, former drug users, members of Parliament, and other community leaders. Delegates to the Summit were assigned to working groups which discussed various aspects of illicit drug policy, including: the prevention of drug abuse, drug abuse in correctional institutions, drug education in schools, and drug law enforcement. Over the course of five days, each working group debated the issues assigned to it. At the end of the Summit, the resolutions of each working group were put to a plenary vote.

One of the resolutions of the Drugs and Law Enforcement Working Group which received plenary endorsement was that:

> "9.8 It be recognised that there is inadequate research into crime prevention and mitigation, and that collaborative research should be undertaken into:
>
> (a) economic models of the drug industry investigating such aspects as the price sensitivity of demand for drugs,
>
> (b) cost-effectiveness of incarceration and incarceration alternatives,
>
> (c) background of incarcerated prisoners as part of a prospective look at outcomes to see where interventions would be most cost-effective,
>
> (d) delivery of methadone or similar substitutes, and cost-effectiveness of different law enforcement, prevention and treatment strategies to reduce drug related harm." (NSW Government 1999, resolution 9.8, p. 100)

This resolution arose from discussion in the Drugs and Law Enforcement Working Group[1]. Participants realised that one of the key stumbling blocks to better drug policies was the paucity of reliable data about the effects and effectiveness of current drug law enforcement policy. It is generally believed, for example, that illicit drugs are responsible for much of the crime recorded by police. At present, however, we have no accurate estimate of the proportion of crime (ie attributable fraction) caused by various kinds of illicit drugs. This makes it impossible to determine the cost of illicit drug consumption, to determine priorities among drug use control programs or to assess the weight which should be assigned to preventing crime as opposed to other adverse effects of illicit drug consumption.

Acknowledging this problem, the NSW Government directed the NSW Bureau of Crime Statistics and Research to develop a strategic research plan to support drug-related crime prevention and mitigation (NSW Government 1999, p. 101). This report presents that plan.

Rather than merely listing a set of research studies which might usefully be conducted on drug-related crime prevention and mitigation, this report reviews more than 30 years' research on the efficacy of crime prevention and mitigation in reducing illicit drug use and/or the harm it causes.

This report identifies areas where further research would inform or improve existing policy. We pay particular attention to policies which currently attract high levels of government investment. This review is by no means exhaustive. Two omissions in

particular should be noted. Firstly, law enforcement agencies engage in various activities which are not intended to prevent or mitigate drug crime, but probably have that effect inadvertently. Such activities include those designed to make it harder to sell stolen goods, and those designed to arrest and imprison repeat property offenders. Rather than being drawn into a discussion of the wider problem of property crime control, we focus on the issues raised by drug law enforcement.

Discussion of treatment is limited in this report. Whilst acknowledging that many individuals do not have to be coerced into treatment, we focus on coerced rather than voluntary treatment. We do not regard coerced treatment as being a superior way of reducing drug-related crime. However, there is evidence that coerced treatment is at least as effective as voluntary treatment, both in retaining people in treatment, and in producing beneficial outcomes.

We have chosen to focus on the effects of law enforcement and the criminal justice system on entry into treatment, because it seems the policy issues arising in this area have been less extensively researched, even though from the standpoint of crime prevention and mitigation, they are more important.

1.2 SUMMARY OF RESEARCH PRIORITIES

Chapter 2 of this report provides an overview of the main domains in which government acts to reduce and prevent drug-related crime. Subsequent chapters conclude with a detailed discussion of the research which should be conducted in order to improve existing policy in this area. Each of the questions identified as the subject of useful research is worthy of close attention. It is difficult to appreciate the policy importance of these questions without a close reading of the research findings which underpin them. The most important questions facing policy makers in the area of drug crime prevention and mitigation can be briefly summarised as:

1.2.1 General

- What proportion of crime is attributable to illicit drugs? Does this proportion vary for different drugs and in what way?

1.2.2 Deterrence

- Does the perceived risk of apprehension have any short or long term deterrent effects on (a) first use of an illicit drug or (b) repeated use of an illicit drug?
- Does the existence or imposition of criminal sanctions exert any short or long term deterrent effect on (a) first use of an illicit drug or (b) repeated use of an illicit drug?
- Do increases in statutory maximum penalties exert any effect on the actual or perceived severity of sentences imposed by courts for drug possession and/or use?
- What are the harm reduction costs and benefits which flow from attempting to deter potential drug users from drug use and/or to reduce the level of drug consumption among existing users?

1.2.3 Market disruption

- How do those involved in drug manufacture, importation and distribution view the risks created by drug law enforcement agencies, the costs imposed by the criminal justice system, and the benefits available from illicit drug trafficking?

- At what level of the drug importation/distribution process is it most cost-effective (in terms of market disruption) to intervene?
- What effect, if any, does supply-side drug law enforcement have on the price, purity, and availability of different kinds of illicit drugs, and how do variations in drug price, purity, and availability affect drug consumption and expenditure?
- What effect does demand-side (ie street level) drug law enforcement have on the perceived risks and costs associated with drug use, and how do these perceptions influence the willingness of dependent drug users to enter treatment?
- What are the principal harms generated by demand-side drug law enforcement and how best might they be alleviated?

1.2.4 Coerced treatment

- Which coerced treatment regimes or programs are most cost-effective in reducing recidivism and improving the health and social functioning of offenders whose criminal conduct is drug-related?
- How do these coerced treatment regimes compare in terms of cost-effectiveness with conventional sanctions for drug-related crime?
- Does coerced treatment result in unwarranted net-widening?
- What are the barriers to more effective co-operation between treatment and criminal justice personnel in dealing with offenders whose crime is drug-related?

1.2.5 Primary prevention

- What is the relative cost-effectiveness of different kinds of school-based drug education programs?
- Do the most effective or cost-effective programs vary for different groups of students distinguished, for example, by ethnicity, gender or age?
- What are the critical components of successful school-based drug education programs?

1.3 STRUCTURE OF THIS REPORT

Chapter 2 provides an overview of the prevalence of drug use in Australia, the crime problems which it creates, and the options for limiting those problems.

Chapter 3 reviews past research on deterrence, highlighting the limited amount known in this area in relation to: the effect of sanctions on behaviour, issues such as the effect of changes in sentencing legislation on court sentencing practice, and the effect of changes in sentencing practice on perceived sentence severity.

Chapter 4 discusses research on drug market disruption, highlighting the limited knowledge we have about the effects and effectiveness of supply-side drug law enforcement.

Chapter 5 considers coerced treatment.

Chapter 6 discusses research into primary prevention.

2. DRUG USE, DRUG HARM, OPTIONS FOR CONTROL

2.1 PREVALENCE OF DRUG USE AND HARM AMONG YOUNG PEOPLE

Drug use impacts acutely on individual users and their community, contributing to traffic crashes, drownings, rapes, suicides, assaults and theft (Grossman, Chaloupka, Saffer & Laixuthai, 1994; Inciardi & Pottieger, 1991). In Australia, the continuing rise in fatal overdoses is another worrying trend in terms of acute impact (McKetin, Hall, Darke & Dietze, 1999).

Drug use is linked to a number of chronic health conditions including: cancer, liver disease, pancreatitis, peptic ulcers and bronchitis (English et al 1995; Rice, Kelman, Miller & Dunmeyer, 1990). It is associated with an increase in users' health risk behaviours, such as failure to use condoms, and sharing of injecting equipment (Calahan, 1991). Drug use exerts psychological and economic pressure on users' families (Brook, Brook, Gordon, Whiteman & Cohen, 1990) and is a considerable drain on the community through crime, health and productivity related costs (Collins & Lapsley, 1996; Rice, Kelman & Miller, 1991).

Research has shown that drug use by high school students is associated with lower educational achievement and lower earnings in adulthood (Yamada, Kendix & Yamada, 1996; Cook & Moore, 1993).

In its World Drug Report, the United Nations International Drug Control Program (1997) states that data from a range of sources, such as: hospital emergency room visits, drug related mortality, arrests of drug users, and numbers of countries reporting rising consumption levels, provide a consistent indication that illicit drug consumption has increased throughout the world in recent years. In respect of unprocessed plant-derived drugs, cannabis use is most widespread. However, the report expresses greater concern about the use of heroin and cocaine. Consumption of these drugs is less prevalent, but their health effects are far more serious. The UN report notes that use of synthetic drugs, particularly amphetamine type stimulants, has risen most rapidly in recent years. It estimates that the global prevalence rate of illicit drug consumption is between 3.3 per cent and 4.1 per cent of the world population. Although use of illicit drugs is highest among western youth, trends in use are remarkably similar across all nations: a strong consumer driven youth drug culture, falling age of first use, increasing availability of drugs, proliferation of different drug types, and greater acceptability of drug-taking behaviour.

The increasing affluence and consumerism of young people seem to be accompanied by increasing drug use and associated problems. In Bulgaria in the mid 1970s, the average age of initiation into drug use was 18.5 years. A decade later, it was 14-16 years for heroin use and even younger in the case of other drugs (Berterame, 1997). A survey of problem drug users in the Czech Republic indicates that 37 per cent of new problem users are between 15-19 years of age (Berterame, 1997). In many high use locations, drug use is an ever-present choice for young people. A confidential survey of 14-16 year olds in north-western England states that nearly 75 per cent had been in situations where drugs were available, approximately 50 per cent had tried drugs and approximately 20 per cent were current users (Parker, Measham & Alderidge, 1995).

Although these statistics illustrate that drug use involves the young disproportionately, the figures do not necessarily indicate a high level of drug use in the general population of young people. Apart from cannabis, illicit drug use by young people remains low in

terms of historical trends. Among American senior high school students (12th grade), the proportion using any illicit drug other than cannabis, during the previous year rose to 20.7 per cent in 1997, from a low of 14.9 per cent in 1992. However, this is well below the peak of approximately 34 per cent in 1981. In contrast, prevalence of cannabis use by young people increased dramatically during the 1990s. In 1992, 28.8 per cent of American 12th grade students had used cannabis in the past year. By 1997, this proportion had risen to 43.3 per cent.

In younger students the increase in annual cannabis use prevalence was more dramatic, with 7.2 per cent of 8th grade students using in the past year in 1993, increasing to 17.7 per cent in 1997 (National Institute on Drug Abuse, 1998). In Europe, surveys of school children indicate a similar pattern of increasing cannabis use during the 1990s. In 1993, 25 per cent of British 15-16 year olds students had tried cannabis, increasing to 38 per cent in 1997 (Balding, 1998). In the Netherlands, 14 per cent of 14-15 year old students had tried cannabis in 1992 and this had increased to 24.5 per cent in 1996 (Kuipers and de Zwart, 1999). During this period, use of other illicit drugs remained low in both these European countries, with some exceptions. In the Netherlands and Britain, use of Ecstasy (methylenedioxymethamphetamine or MDMA) by young people approximately doubled during the mid-1990s, albeit from a low baseline (Plant & Miller, 2000; Kuipers & de Zwart, 1999; Balding, 1998). Heroin use by British teenagers also increased. However, because numbers were small, it is difficult to assess whether this indicates a trend. (Plant & Miller, 2000).

National drug surveys indicate that Australia has mirrored these international trends in illicit drug use by young people (Jones, 1993). The Australian Institute of Health and Welfare's National Drug Strategy Household Survey (1999) indicates that use of any illicit drug by 14-19 year olds in the previous year increased from 32 to 37.7 per cent between 1995 and 1998. Most of this increase was accounted for by increased cannabis use, which rose from 28.7 to 34.6 per cent for this age group. Young women evidenced a particularly marked increase in use over this period.

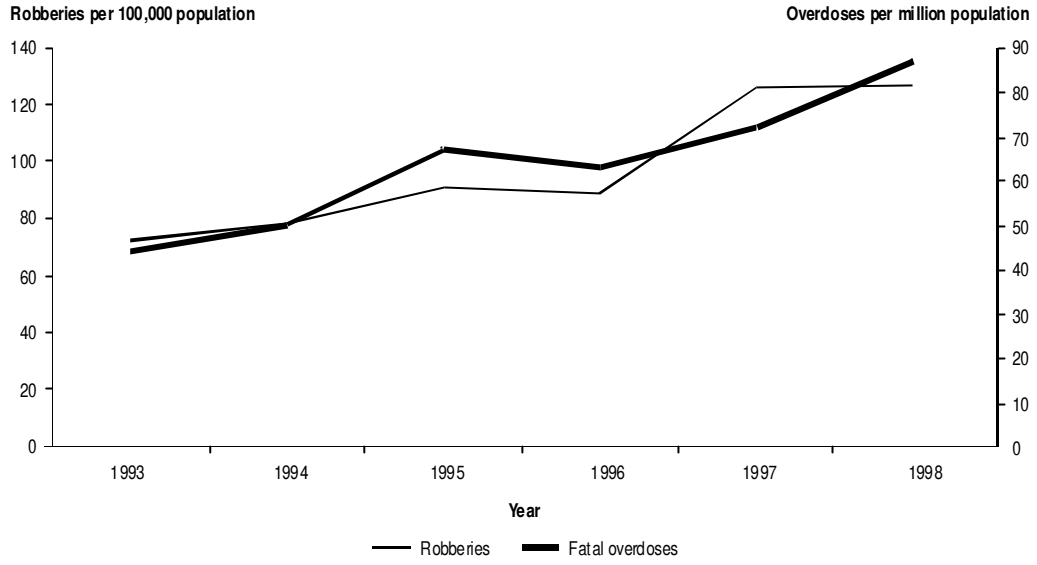
The most recent survey of drug use by Australian students confirmed that cannabis is the illicit drug most commonly used by secondary students, with 36 per cent of this group reporting use at some time in their life (Letcher & White, 1998). Cannabis is the illicit drug that is most readily available. Accordingly, many young people regularly make decisions about its use, even those who have never chosen to use drugs.

2.2 CRIME PROBLEMS ASSOCIATED WITH ILLICIT DRUG USE

Over the past seven years (ie the period for which consistent national crime data has been available) Australia has seen significant growth in levels of property crime (Australian Bureau of Statistics, 1993 and 1999). The growth has been particularly marked for robbery, an offence often committed by heroin dependent offenders because it provides ready access to cash to purchase heroin (NSW Bureau of Crime Statistics and Research, 1987). Not surprisingly, the growth in robbery has been accompanied by what appears to be a very substantial growth in the population of heroin users. This is illustrated in Figure 1, which shows national trends in robberies and fatal overdoses (the latter being generally considered to provide a good guide to the size of the population of dependent heroin users: Darke and Hall, 2000). Since 1993, the recorded rate of robbery in Australia has risen 76 per cent, while the recorded rate of fatal overdoses has risen 97 per cent.

Of course, the vast majority of young people who use illicit drugs do so only transiently and do not commit crimes as a result of their drug use. On the other hand, the minority

Figure 1: Trends in robberies and fatal overdoses (Australia)



of young people who do proceed to become heavy users of illegal drugs are quite likely to become involved in property crime[2] to fund their drug consumption. Many also become involved in selling or distributing illegal drugs. A small proportion of drug users commit violent crime or some criminally negligent act as a direct result of having consumed illicit drugs. Violence associated with illegal drugs also comes from competition among drug sellers and importers for control of illegal drug markets.

The effect of drug use on property crime is hardly surprising. Most illicit drugs are fairly expensive and drug consumption levels, particularly among dependent drug users, are often very high. A dependent heroin user consuming three caps of heroin daily has to raise between $30,000 and $40,000 per annum just to support his or her drug use. Since most drug users are far from wealthy, most are forced to rely on crime to fund their drug consumption. This option is particularly attractive to young people who have had some involvement in property crime prior to becoming heavy drug users. It is not surprising, therefore, that individuals who use illegal drugs are more likely to have an arrest record or self-report involvement in property crime (Blumstein, Cohen, Roth & Visher, 1986, pp. 50-51).

However, the mere concurrence of illicit drug use and property crime, is not enough to vouchsafe the conclusion that illicit drug use causes property crime. It is possible, for example, that individuals disposed to involvement in crime are simply also disposed to illicit drug use.

Early studies of drug use and crime appeared to support this view, with several showing that involvement in crime preceded drug use rather than vice versa (Johnson, Goldstein, Preble, Schmeidler, Lipton, Spunt & Miller, 1985; Wish and Johnson, 1986; Dobinson & Ward, 1985; Dobinson & Ward, 1987; Dobinson & Poletti, 1988). Other studies examine the factors which influence offending frequency among existing offenders, rather than the factors which differentiate offenders from non-offenders. These studies present a rather different picture.

Offenders who consume illicit drugs generally offend at a higher rate than those who do not (Blumstein et al 1986). Furthermore, the frequency of offending among property offenders generally escalates with their levels of drug use (Blumstein et al 1986;

Salmelainen, 1995). For example, in research conducted 20 years ago, Sechrest (1979) found that rates of property crime amongst participants in a drug treatment program were more than twice those among arrestees generally.

Australian research studies have generally produced similar findings. Dobinson and Ward (1985, 1987) and Dobinson and Poletti (1988) found that, although drug users were generally involved in property crime prior to the onset of drug use, the level of their involvement in property crime generally increased following commencement of regular drug use. Similar findings have been obtained by Kaye, Darke and Finlay-Jones (1998). Salmelainen (1995) found that juveniles incarcerated for property crime who were heavy users of cannabis had high self-reported levels of involvement in shoplifting, motor vehicle theft and break and enter crimes. She also found that they were more likely to cite 'money for drugs' as their reason for offending.

Stevenson and Forsythe (1998) obtained similar results in relation to cannabis-using juvenile offenders. They also found higher self-reported involvement in break and enter and higher earnings among heroin dependent adults imprisoned for break and enter than among non-heroin dependent adults imprisoned for the same offence. In a representative sample survey of over 5,000 NSW secondary school students, after controlling for a wide range of other known predictors of criminal participation, Baker (1998) found that rates of self-reported involvement in property crime were strongly related to self-reported cannabis consumption.

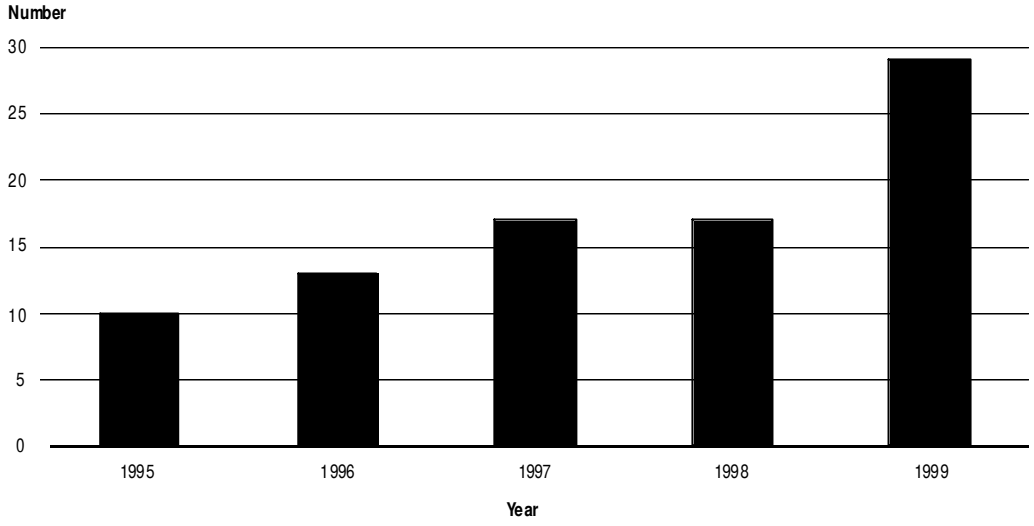
Evidence of illicit drug use is also extremely common among arrestees. In a recent survey of people arrested by police at the Bankstown and Parramatta Local Area Commands, two areas of Sydney with high rates of drug-related crime, nearly 43 per cent tested positive for heroin use. More than 50 per cent tested positive for cannabis use (Makkai, Fitzgerald & Doak, 2000). These studies do not provide conclusive proof that illicit drug use increases crime, but this conclusion seems reasonable, given the evidence. Such a conclusion is strongly supported by evidence that treatment programs which reduce drug consumption also generally reduce crime. For example, in randomised trials, methadone maintenance treatment has been shown to reduce both heroin consumption and the likelihood of arrest and re-imprisonment (Hall, 1996). Such evidence strongly suggests that, although a wide range of distal factors may be responsible for determining involvement in crime and offending frequency, drug use is likely to be a common proximate cause of both (Simons, Conger & Whitbeck, 1988).

Most property crime attributable to drug use results from the need to raise funds to purchase illicit drugs. Nevertheless, some drug use is directly responsible for criminal behaviour. High levels of anabolic steroid consumption appear to increase the risk of violent behaviour (Maycock & Beel, 1997), as does chronic use of amphetamine and its derivatives (Hando, Topp & Hall, 1997).

Much of the violence, intimidation and corruption associated with illegal drugs stems from the market itself. Illicit drug dealers have no legal remedies open to them to enforce the payment of debts, to resolve disputes, or to counter employee dishonesty. Like other markets for illegal products and services, they are therefore frequently characterised by violence, bribery, intimidation and extortion (Kleiman, 1992).

Evidence of the speed with which illicit drug markets can engender violence as well as property crime has been vividly demonstrated in South West Sydney over recent years. Figure 2 shows the rise in the frequency of 'shoot with intent' offences (eg shoot with intent to commit murder) recorded in the Canterbury-Bankstown, Fairfield-Liverpool and Outer South Western Sydney statistical subdivisions. These offences are generally

Figure 2: Recorded frequency of 'shoot with intent' offences: 1995-99 (South West Sydney)



believed by senior police[3] to arise from competition between gangs to protect their control of local drug markets. Even though the number of offences is relatively low, and more recent data apparently indicates a levelling off or decrease in the incidence of 'shoot with intent' offences[4], the trend highlights the fact that illicit drug markets generate more than income-generating property crime.

In addition, illicit drug markets often generate significant problems of public disorder, with consequent erosion of neighbourhood amenity. Because drug dealers cannot advertise their product openly, they resort to other methods of attracting would-be purchasers. The surest way of reaching customers is to sell drugs in a location already well known as a place where illicit drugs can be purchased. This creates a 'honeypot' effect. The more drug users travel to a particular location to obtain illegal drugs, the more attractive the site becomes to dealers. The more dealers frequent that site, the more attractive it becomes to users. For this reason, although offences such as public intoxication by drugs, loitering to obtain drugs, or the discarding of drug use paraphernalia may not be serious in themselves, they are often viewed by local residents with a great deal of concern (Chilvers, 1999). For this reason they are often the focus of a great deal of law enforcement effort.

Although, by and large, it is not the focus of much drug law enforcement effort, another crime problem is closely associated with the use of illegal drugs. Injecting drug use has been identified as one of the principal risk factors for child neglect. (Harrington, Dubowitz, Black & Binder, 1995; Davis, 1990; Tomison, 1996; Jaudes, Ekwo & Voorhis, 1995; Chaffin, Kelleher & Hollenberg, 1996; Dore, Doris & Wright, 1995; Calvert, 2000). Child neglect itself can amount to criminal conduct. Given the prevalence of child neglect in Australia, this is a matter of no small consequence. However, the wider criminological significance of child neglect stems from its prominence as a risk factor for later involvement in crime (Weatherburn & Lind, 1997; Widom, 1989; Salmelainen, 1995; Smith & Thornberry, 1995). For example, Weatherburn and Lind (1997) estimate that every increase of 1,000 in the number of neglected children results in an additional 266 juveniles subsequently becoming involved in crime.

2.3 OPTIONS FOR CONTROL

Given that drug use directly and indirectly causes a range of significant crime-related harms, what are the options for dealing with these harms?

2.3.1 Decriminalisation of drug use

Some have argued that one of the most effective ways to break the nexus between illicit drug use and crime is to remove criminal sanctions against illicit drug use and, at least in the case of dependent drug users, to provide access to a legal supply of the drug on which they are dependent (Ellard, 1992). Supporters of this strategy argue that those dependent on illegal drugs would suffer fewer adverse health outcomes if they were provided with a regular legal supply of the drug on which they are dependent. This would also reduce the amount of money they spent on illegal drugs, thereby reducing drug-related crime and corruption. On the other hand, reduced returns on their investment would mean some drug sellers could be expected to quit the illicit drug market. It could be argued that this would make it possible for law enforcement agencies to increase the level of law enforcement pressure on remaining drug sellers.

There may be a case for decriminalising (or removing penal sanctions from) some forms of drug use in some circumstances. The process of arrest and imprisonment imposes financial and social costs, both on the individual sanctioned and the community at large. Hunter and Borland (1999) have shown that having an arrest record significantly diminishes the future employment prospects of indigenous Australians. Similar effects have been noted for non-minority groups in overseas studies (Thornberry & Christenson, 1984). Furthermore, there is evidence that the adverse impact of arrest and imprisonment on employment increases the later risk of further involvement in crime (Good, Pirog-Good & Sickles, 1986). These observations do not mean we should abandon deterrence as a policy. The sanctions against drug use may discourage some people from using drugs (MacCoun, 1993). They do mean that, for certain drugs in certain circumstances, decriminalisation or the removal of penal sanctions may do more good than harm.

Nonetheless, it is one thing to concede that the removal of sanctions for certain kinds of drug use in certain circumstances might result in a net reduction in social harm. It is quite another to suggest that decriminalisation should be used as a general policy to reduce drug-related crime. In evaluating such a strategy, the principal problem clearly relates to injectable drugs of dependence such as heroin.

Both British and Swiss authorities have conducted small scale randomised trials in which heroin has been provided to dependent users. Beneficial effects on health and social functioning were observed, including a reduction in self-reported crime and arrests (Bammer, 1999). However, small scale trials such as the Swiss heroin trial and the heroin trial designed by the Australian National University (Bammer & Douglas, 1996), are not capable of answering the central policy problem raised by attempts to reduce crime through drug decriminalisation.

The central problem is this. Suppose we were to provide heroin to a large proportion of the dependent heroin using population as a device for undermining the black market in heroin. Such a strategy is necessary, of course, if we are to reap the full benefits of decriminalising heroin use and providing heroin to dependent users. Any significant drop in demand for heroin in the illegal market will almost certainly produce a fall in the price of heroin in the illegal market (Butler & Neil, 1994). However, this may entice novice users into the illegal heroin market or increase the frequency with which 'recreational users' of the drug consume it. Of course, there is no certainty of this. A fall in illicit drug revenue might result in a fall in the supply of heroin. If there was a significant increase in the number of people using heroin (or the number of dependent users), we could expect a significant increase in drug-related harm.

To assess full-scale decriminalisation of use, then, we must be prepared to take significant risks. Given the public antipathy directed at much less risky population-wide initiatives, such as the needle and syringe and methadone programs, such a trial is unlikely to gain public or political support in the near future.

2.3.2 More conventional control options

In the short to medium term, as a matter of practical reality, we are going to have to frame drug policy on the assumption that prohibition will continue. What are our options if we proceed on this assumption? Setting aside programs employed by police to combat property crime without specifically targeting drug users, and voluntary treatment programs run by the health services (both of which reduce drug-related crime), there are four principal policy options:

- deterrence
- disruption of illegal drug markets
- coerced treatment
- primary prevention

Let us consider each of these in turn.

- **deterrence**

We can rely on criminal sanctions to discourage people from trying illegal drugs (general deterrence) or to discourage people who have tried them, from using them again or using them as frequently as they have in the past (specific deterrence). This option rests on at least three assumptions: (a) the individuals who are the target of deterrence see themselves as facing at least some realistic prospect of being apprehended if they embark on or continue their drug use, (b) the measures taken to create sanctions have the intended effect on those who actually do the sanctioning, (c) the perceived severity of the sanctions, coupled with the perceived risk of apprehension, is enough to offset the attractions of drug use.

- **disruption of illegal drug markets**

We can seek to disrupt illegal drug markets through strategies designed to discourage drug importation, manufacture or selling, or through strategies designed to entice existing drug users out of the illicit drug market. To the extent that this option trades on deterrence, it rests on the same assumptions. It also rests on the assumption that our efforts to stem the supply of illegal drugs (or discourage their importation) do not have the unintended effect of raising drug prices in a way which increases the amount of crime committed to purchasing them. Some variants of the drug market disruption strategy also assume that police can encourage drug users into treatment without resorting to strategies which increase the public health risks associated with illicit drug use.

- **coerced treatment**

Superficially, at least, using the criminal justice system to try to coerce illicit drug users into treatment is an attractive option as it focuses only on those individuals whose drug use prompts them to commit crime. Here again though, to make the policy worthwhile, a range of conditions must be met. We need to be sure that coerced treatment is actually more cost-effective than conventional sanctions such as imprisonment. Where coerced treatment can be shown to work, we need to be sure that we are targeting the correct population. In particular, we need to avoid 'net-widening', that is, drawing more people into the control of the criminal justice system than can be justified, either in terms of the nature of their offending, or the harm which can be avoided as a result of greater control.

- **primary prevention**

We can seek to reduce drug use and/or the harm associated with it through primary prevention strategies, such as measures designed to address the factors leading to drug use or education programs designed to discourage it. The central question here is one of

efficacy in harm reduction; what are the most effective primary prevention policies in reducing drug use harm rather than reducing drug use itself. Many other questions raised by primary prevention strategies relate to cost, timing, techniques and targeting; that is, assuming prevention programs can be shown to work, what do they cost, when should they be introduced, what are the optimal primary prevention techniques, and to whom should the programs be directed?

These options are not mutually exclusive and the issues canvassed only hint at what we need to know to improve policy directed at crime prevention and mitigation. In the ensuing chapters we take up these issues in more detail.

3. RESEARCH ON DETERRENCE

3.1 INTRODUCTION

The dominant paradigm for contemporary thinking about the effects of drug laws on behaviour is the rational choice perspective (MacCoun, 1993). Developed by economists, this perspective offers a broad framework for considering decision-making behaviour (Piliavin, Thornton, Gartner & Matsueda, 1986). It assumes that people are perfectly rational actors able to evaluate the consequences of alternative choices, and to estimate the likelihood of their occurrence. By assuming that people always make decisions based on the principle of maximising expected utility - ie maximising that which is of personal value to themselves (Dawes, 1988), the paradigm fits the well-known principle of hedonism, which states that all human behaviour is motivated by desire for pleasure and avoidance of pain (Stover & Brown, 1975).

In terms of the decision to use illicit drugs, the rational choice paradigm emphasises three mechanisms of influence: the drug's availability, the drug's price (considered in detail in chapter 5), and the risk of punishment (MacCoun, 1993).

The influence of the risk of punishment on the decision to use illicit drugs may be viewed in terms of deterrence theory, an application of the rational choice paradigm. Deterrence theory states that a person engages in criminal behaviour whenever the expected utility of crime exceeds that of alternative courses of action (Becker, 1968). According to deterrence theory, the expected utility of criminal behaviour is a function of the gains associated with the successful completion of the crime, the subjective probability of obtaining those gains, the losses associated with legal sanctioning if caught (ie the severity of punishment), and the subjective probability of receiving those legal sanctions (ie the certainty of punishment) (Carroll, 1978). The goal of deterrence is to render the expected utility of criminal behaviour lower than that of law-abiding behaviour for those who have not yet offended (general deterrence) and those who have been sanctioned for offending (specific deterrence).

Surprisingly, although current drug policy relies heavily on deterrence, little research has been conducted to examine its efficacy in relation to drug use, especially in Australia. However, there is a large body of literature dealing with deterrence of crimes other than drug use. This chapter is divided into six main sections providing:

- evidence and arguments relating to the rational choice perspective
- an overview of general research into deterrence theory relating to:
  - criminal opportunity and policy impact studies
  - perceptual deterrence research which recognises the importance of an individual's own perceptions of the risks and rewards of criminal behaviour
- an overview of the limited research into the deterrent effects of legal sanctions on illicit drug use
- consideration of the role of informal social norms and personal beliefs in regulating conduct along with other non-instrumental determinants of legal compliance
- identification of research priorities in relation to the deterrence of drug use and drug-related crime
- conclusions.

3.2 CRITIQUES OF THE RATIONAL CHOICE PERSPECTIVE

The rational choice perspective and, by extension, some forms of deterrence theory (eg the classic economic models such as that outlined by Becker, 1968) have been the subject of detailed critiques by psychologists (eg Carroll, 1978; Dawes, 1988; Kahneman & Tversky, 1984). It is clear that people's perceptions of risks and rewards influence their decision making, and therefore, that their reasoning processes can mediate the effects of legal sanctions. However, there is considerable psychological evidence that people do not combine information in in the manner suggested by expected utility theory formulations.

Dawes (1988) describes how we are not rational information processors, and shows that we sometimes act irrationally, in the sense of not acting in our own self-interest. Our automatic thinking processes often lead us to choose one alternative while rational considerations favour another. Kahneman and Tversky (1984) have also shown that people often make choices which violate the assumptions of rational choice theory. They note inconsistencies in the hypothetical gambles people take depending on whether the choices are framed in terms of gains or losses. Problems which have identical outcomes and risks, but are worded differently, can be rejected in one situation, but accepted in another, a finding at odds with the rational choice perspective.

Carroll (1978) provides experimental evidence of people's gambling behaviour which is at odds with rational decision-making. Male adult and juvenile offenders and non-offenders evaluated hypothetical crime opportunities in terms of: potential gain, probability of success, potential penalty and probability of capture. Rather than combining all the information in the manner suggested by expected utility formulations, most subjects focused primarily on one of the four dimensions. The preferred dimension varied across subjects and was not related to age or criminality. Carroll argues that, due to our limited cognitive processing capacity, we do not make exhaustive and complex calculations which lead to optimal choices. Rather, we make a few simple and concrete examinations of our opportunities and make guesses that can be far short of optimal, often based on "standing decisions", or rules of thumb, which eliminate the need to completely analyse every new decision. Carroll found that incentives were more important than penalties in predicting crime judgements, and that probability of success was more important than probability of capture. He argues that to the extent that those judgements can be influenced in potential offenders, it may be more productive to lower the perceived gains and chances of success and to raise the incentive for noncriminal activities (Stover & Brown, 1975) than to focus on changes in penalties and risks.

Using a cross-sectional correlational design, Tittle (1977) compared the power of eight independent variables to predict future deviance in a general population sample of 1993 household residents from three states in the United States. Fear of legal sanctions and other predictors such as moral commitment, degree of social integration, extent of alienation and perceived legitimacy of the law were compared in their capacity to predict nine kinds of self-estimated future deviance such as stealing something worth about $5, stealing something worth about $50, cannabis use, and illegal gambling. In line with Carroll's (1978) experimental study, Tittle found that the utility (or positive reinforcement capacity) of the deviant behaviours was the best predictor of their future occurrence, while fear of legal sanctions proved to be of only minor importance. Once again, subjects were found not to combine all the information available to them in order to reach their decisions in the way prescribed by rational choice theory.

Similar results were obtained in a study employing a correlational design with a large sample (n=3300) of potentially serious offenders: people who had been incarcerated previously, dependent drug users and high-school drop-outs (Piliavin et al 1986). That

study sought to estimate the relative influence of different factors on self-reported criminal behaviour. A number of different interpretations of the pattern of results was investigated, but the conclusion remained unchanged: the risk of formal legal sanctions had virtually no impact on criminal behaviour. In contrast, the potential gains of, and perceived opportunities for, criminal behaviour exerted a significant positive effect on illegal behaviour across all three groups. This study is important because it employed rigorous statistical models that allow more confidence in the causal inferences drawn (Hall, 1987), and it was conducted using samples of non-conventional populations. Piliavin et al like Carroll (1978) and Tittle (1977), argue that a strict rational-choice model cannot capture the complexity involved in the decision to engage in crime.

3.3 AGGREGATE LEVEL RESEARCH ON DETERRENCE THEORY

Of course, the threat of sanctions may deter criminal behaviour even where individuals misjudge the severity or certainty of that threat. It may be argued, that empirical evidence on the actual effect of sanctions is a more relevant basis on which to assess deterrence than empirical evidence on whether people are always rational in their ability to weigh the costs, risks and benefits of particular kinds of behaviour.

Empirical testing of deterrence theory has proceeded in two main stages, with the bulk of research in relation to both being conducted in the United States. In the first phase, throughout the 1960s and 1970s studies were concerned primarily at the aggregate rather than the individual level. Cook (1980) divided research conducted at the aggregate level into two main types: criminal opportunity studies and policy impact studies.

In criminal opportunity studies, natural variations in crime rates and sanction levels across time and place are used to examine the relationship between the two. Early aggregate level studies tended to find modest deterrent effects for certainty but not for severity of punishment. For example, Gibbs (1968) used a contingency table to test whether the murder rate was related to the probability of punishment for murder, using cross-sectional data by US state for 1959-61. He found that those states with a higher probability of punishment had lower murder rates. Gibbs interpreted his results as evidence that potential murderers can be deterred.

Cook (1980) has criticised many of the early studies such as the one conducted by Gibbs (1968), on methodological grounds, raising issues such as the poor quality of data on crime; the use of correlational data without appropriate statistical controls for potential confounding variables; and reliance on inappropriate estimates of the probability of punishment. He is also concerned that arrest certainty and crime rates may exert a reciprocal influence on one another. In other words, increases in arrest risk may reduce crime through deterrence, but increases in crime rates also reduce the capacity of the criminal justice system to maintain levels of arrest certainty. Cook points out that these two effects are difficult to distinguish empirically when data on arrest rates and punishment are measured at one point in time.

More recent and more methodologically rigorous criminal opportunity studies have tended to find modest deterrent effects of certainty, but not of severity of punishment. These studies have incorporated appropriate statistical controls, and more valid estimates of the probability of punishment. For example, Sampson and Cohen (1988) tested Wilson and Borland's (1978) hypothesis that aggressive or 'zero tolerance' policing will have a deterrent effect on crime. They examined robbery rates in 171 American cities in 1980 and, consistent with deterrence theory, found that proactive policing had a suppression effect on aggregate robbery rates.

In policy impact studies, researchers have examined the effect of changes in law or enforcement policies using quasi-experimental designs. Consistent with the criminal opportunity studies, this literature provides evidence for a deterrent effect of certainty of punishment, but not severity. Many policy impact studies have examined the effects of legal interventions for drink driving. In their review of these studies, Ross and La Free (1986) conclude that measures directed at increasing the perceived certainty of punishment can have marked and immediate deterrent-like effects on the proscribed behaviour. These results have been obtained in virtually all well-designed evaluations of the interventions in many countries, and are reflected in significant reductions in the number of car accidents likely to involve alcohol. However, Ross and La Free found that the effects of deterrence decayed over a matter of months or a few years at the most. They postulated that one possible reason for the decay was that the very low levels of actual likelihood of punishment were insufficient to sustain a high perceived certainty of punishment for the offender.

Although Ross and La Free found that certainty of punishment exerted a deterrent effect, they failed to observe any deterrent effect of punishment severity on drink driving. They attribute this to a possible interaction between severity and certainty of punishment. Where the likelihood of punishment is very low, as it often seems to be, the potential offender discounts the risk of even more severe penalties as negligible. They suggest that "deterrence-based policy seems to founder on the low actual rates of apprehension and punishment for offenders" (p 146).

A more recent review of economic research into deterring drink driving (Benson, Rasmussen & Mast, 1999) reaches the same conclusion: factors that enhance the probability that a driver will be stopped by the police seem to significantly reduce driving under the influence (DUI) fatalities, a finding that appears robust. Conversely, findings regarding laws that mandate various minimum levels of punishment are much less robust.

Although Ross and La Free conclude that increased certainty of punishment has a deterrent effect on drink driving, they criticise past policy impact studies on methodological grounds such as: the general inadequacy of correlational designs for drawing causal inferences, the fact that many evaluations of deterrent effects of punishment are based on changes in formal laws rather than changes in actual enforcement behaviours, and the fact that various actors in the criminal justice system have considerable discretion to respond in ways that undermine the intent of formal policies.

This last point is particularly pertinent in relation to the effects of increased severity of sanctions: when charges attract harsher penalties, defendants fight them more aggressively, prosecutors are more willing to plea bargain, and judges and jurors are less willing to convict (Ross, 1976). When this occurs, we cannot expect formal changes in sanction severity to exert any deterrent effect. Furthermore, even if formal changes in sanction severity or increases in sanction certainty do have an impact on actual sanction severity or certainty, we cannot expect a deterrent effect unless these changes produce an increase in perceived sanction severity or certainty.

3.4 PERCEPTUAL DETERRENCE RESEARCH

The realisation that, ultimately, deterrence is a manifestation of the way in which an actor's own perceptions of risks and rewards motivate his/her decisions and actions, spawned a new body of research during the 1970s and 1980s. Research during that period emphasises deterrence as a perceptual process involving threat communication (Waldo & Chiricos, 1972). In investigating deterrence as a perceptual theory, researchers

began examining the relationship between subjects' perceptions of the certainty and severity of punishment and their self-reported involvement in various criminal acts.

Consistent with the aggregate level research, these studies failed to find any consistent deterrent effect from the perceived severity of formal sanctions (Bailey & Lott, 1976; Meier & Johnson, 1977; Silberman, 1976; Waldo & Chiricos, 1972).

Although the majority of research into the perceived certainty of formal sanctions revealed a modest deterrent effect (eg Grasmick & Milligan, 1976; Jensen, 1969; Kraut, 1976; Paternoster, 1989; Waldo & Chiricos, 1972), several studies failed to find an effect for certainty of punishment (eg Zimring & Hawkins, 1973). Some found an effect, but only on potentially serious offenders who had little commitment to social conventions (Silberman, 1976), or were highly motivated toward deviance (Tittle, 1977).

Piliavin et al (1986) suggest that one reason for the inconsistency of research findings on the impact of deterrence is that most early research on perceptual deterrence was conducted using cross-sectional designs (Grasmick & Green, 1980; Silberman, 1976; Teevan, 1976; Tittle, 1977). Criminal acts committed prior to an interview were related to attitudes to and perceptions of risk of punishment expressed during the interview. It is possible that the subject's deviance has resulted in a perception of risk, rather than vice versa (Hall, 1987). In other words, the criminally uninitiated may have had unrealistically high expectations of sanction risks. Subsequent experience with offending may have lowered their previous estimate of the risk involved (Paternoster, Saltzman, Chiricos & Waldo, 1983).

Other methodological weaknesses in early studies of perceptual deterrence include the fact that most of the conclusions reached by researchers are based on bivariate analyses (eg Kraut, 1976; Paternoster, Saltzman, Chiricos & Waldo, 1982 and 1983; Teevan, 1976; Waldo & Chiricos, 1972). These analyses fail to capture the complexities of criminal behaviour. The early studies also focus on restricted populations of relatively conventional people (such as university students) and nonserious crimes (such as petty theft or drunkenness), at the expense of an analysis of more threatening acts that are central to the question of how society controls the behaviour of its members.

With few exceptions, more recent and better designed perceptual deterrence studies have found that self-reported criminality is lower amongst people who perceive the sanction risks as higher (eg Grasmick & Bursik, 1990; Bachman, Paternoster & Ward, 1992; Paternoster & Simpson, 1997). For example, Grasmick and Bursik (1990) interviewed a random sample of 360 adults about the effect of present perceptions of threat on subjects' present estimates of whether they would commit an offence in the future. The offences described were tax cheating, driving under the influence of alcohol, and petty theft. The effect of the perceived certainty of legal sanctions was assessed with questions which followed the general format: "Do you think you would get caught if you …" where the question identified a particular form of criminal conduct. Respondents answering questions of this type were provided with a four-point response scale ranging from "definitely would not" to "definitely would".

Perceived severity was assessed with the question, "If you were caught and the courts had decided what your punishment would be, how big a problem would it create for your life?", with a five-point response scale ranging from "no problem at all" to "a very big problem". Logistic regression analysis, controlling for potential confounding variables, such as the effects of conscience and the opinions of significant others, showed that perceived certainty of legal sanctions had a significant effect on subject's current inclination to violate the law, whereas perceived severity did not.

Bachman et al (1992) present five hypothetical scenarios in which they described for 94 male university students, a sexual assault on a female student by a male student. The scenarios varied in regard to several aspects, such as the victim/offender relationship and the victim's initial response. Subjects were required to estimate (a) the certainty of formal and informal sanctions for the male in the scenario, (b) the extent to which they believed his actions were morally wrong, and (c) the likelihood that they would do what the male in the scenario did under the same circumstances. Consistent with deterrence theory, there was a significant restraining influence of perceived risk of formal sanctions on projected sexual assault; the more certain subjects were that the male would be formally sanctioned (dismissed from university or arrested), the lower their reported likelihood that they would behave as the offender had.

Subjects in this study were also strongly influenced by their moral evaluations of the incident. When subjects thought the male's behaviour was morally offensive, they were significantly less likely to report that they would behave similarly. This was not the case with those scenarios where they perceived the male's behaviour to be less morally wrong. Bachman et al note interaction between the deterrent effects of perceived risk of formal sanctions and moral evaluations. Only when subjects were not restrained by moral inhibitions, did the fear of formal punishment effectively deter them. This finding supports the hypothesis that, since those with strong moral inhibitions are already effectively controlled, the fear of punishment will work only for those without such inhibitions (eg Braithwaite, 1989; Grasmick & Green, 1980; Tittle, 1977). The restraint of moral inhibitions may be so strong in some circumstances that it precludes consideration of instrumental concerns, such as the risk of formal sanctions.

The finding that the perceived risk of formal sanctions does have a deterrent effect is contrary to some earlier studies. This may be due to different research designs (Klepper & Nagin, 1989). Unlike early research into perceptual deterrence, more recent studies have estimated what Grasmick and Bursik (1990) refer to as an "instantaneous" deterrence effect (ie the effect of current perceptions on current intentions to offend), by employing projections of future behaviour as the outcome variable. Although intentions to act are not perfectly correlated with future behaviour, under certain conditions, the two are closely related (Fishbein & Azjen, 1975). This methodology provides a more stringent test of deterrence theory than one which relates current risk perceptions to past behaviour. The scenario paradigm also offers the advantage of specifying in detail the circumstances of the crime (Nagin, 1998). This is an important consideration because perceptions of risk will obviously be affected by the context in which the crime occurs.

Focusing specifically on drug use, Paternoster (1987) conducted a thorough review of perceptual deterrence studies. He found a modest average correlation between the perceived certainty of sanctions and cannabis use across cross-sectional studies of -.26. Mindful of the well-documented weakness inherent in relating current risk perceptions to past behaviour, he also reviewed the results of longitudinal panel studies which took into account experiential effects.[5] Paternoster found an average correlation of -.21 between perceived certainty of sanctions and cannabis use. Across 14 studies, he found a weak correlation of -.17 between perceived severity of sanctions and cannabis use. He suggests that this effect may have been spurious because in many of the studies he reviewed, perceived severity of formal legal sanctions was not adequately distinguished from perceived severity of informal social sanctions.

In a later study designed to address these problems, Paternoster (1989) notes the significant effect of perceived certainty of formal legal sanctions on the decision of 1250 high school students re whether to initiate cannabis use. Severity was not influential in the decision. However, when the same students were interviewed a year later, perceptions of certainty

had no power to predict those who had initiated cannabis use in the preceding twelve months, nor those who had ceased. Such a pattern of results suggests that legal sanctions may have the most influence on the initial decision to use drugs, but that this influence diminishes as use is initiated and becomes more frequent (MacCoun, 1993).

More recent studies suggest that the generally modest or inconsequential findings of early perceptual deterrence research may have been due to changes in risk perceptions over time. The evidence indicates that fear of formal punishment may provide an effective inhibition on some forms of offending and some types of offenders. Although there are important exceptions, the general consensus on deterrence (eg MacCoun, 1993; Nagin, 1998; von Hirsch, Bottoms & Burney, 1999) is that perceived certainty of formal sanctions has a deterrent effect, whereas perceived severity does not.

3.5 RESEARCH ON THE DETERRENCE OF ILLICIT DRUG USE

Despite the vast literature on deterrence theory, many questions remain. This is especially the case regarding the deterrent effects of criminal sanctions on illicit drug use. Virtually no research on this issue has been conducted in Australia, and it is unclear whether results from the US can be generalised to Australia, given that the focus of American drug policy has been on use reduction, whereas Australia has focused on harm reduction. It is also worth noting that for more than a decade, the main illicit drug problem in the US has been crack cocaine, whereas in Australia, it is heroin, as shown by public policy concerns.

In one of the few aggregate level studies of drug use and sanction severity, Fagan (1994) analysed sanctions and recidivism for 6800 drug arrestees in New York City during 1983-1986. He found that neither the prevalence, nor the rates of recidivism were associated with sanction severity. He suggests that punishment was not a threat worth avoiding for drug sellers operating in a social context of severely constrained opportunities for legal work and widespread demand for drugs. He argues that efforts to increase the deterrent effects of criminal sanctions should not only address the costs of punishment, but should seek to neutralise the strong economic incentives for participation in drug selling, while changing perceptions of opportunities for work in the legitimate economy.

Australian evidence countering deterrence theory comes from a study investigating the impact of the Cannabis Expiation Notice (CEN) scheme in South Australia (Ali, Christie, Lenton, Hawks, Sutton, Hall & Allsop,1998). Introduced in April 1987, this scheme meant adults who came to the attention of police for "simple cannabis offences" (possession of small amounts and/or cultivation of a small number of plants) could be issued with an expiation notice. Offenders could avoid prosecution by paying the specified fee within 60 days; failure to pay the fee in the specified time could lead to prosecution in court and the possibility of a conviction's being recorded. The rationale underlying the scheme was that a clear distinction should be made between private users of cannabis and those who are involved in dealing, producing or trafficking in cannabis for commercial reasons.

Ali et al (1998) investigated the social impacts of the scheme by comparing a group of South Australian (SA) subjects who had received a CEN, with a group of Western Australian (WA) subjects with a criminal record resulting from a conviction for a minor cannabis offence. The study found that neither the issuing of a CEN (SA), or an offence apprehension and subsequent arrest (WA) had any impact on either group's self-reported patterns of cannabis or other drug use. Indeed, the majority of people in both groups said that even if they were caught again, they would not stop using cannabis. This attitude appeared to arise from the belief that the laws restricting cannabis use are inappropriate and overly punitive. The considered the fault lay with the laws, rather than with themselves as

cannabis users. Thus, apprehension appeared to reinforce disapproval of the cannabis laws rather than to result in decreased use (Lenton et al 1999).

Other evidence contrary to deterrence theory was also obtained by Ali et al (1998) following this change in legislation and law enforcement policy. Deterrence theory predicts that, all things being equal, any change in drug legislation which leads to a reduction in the perceived certainty or severity of punishment will increase the expected utility of drug use, causing an increase in the prevalence of drug use (MacCoun, 1993). In theory, therefore, the partial decriminalisation of cannabis use which accompanied the introduction of the CEN scheme should have led to an increase in cannabis use in SA. However, this pattern of results has not been observed (Donnelly, Hall & Christie 1999). Although there was an increase in lifetime cannabis use in SA between 1985 and 1995, similar increases occurred in other jurisdictions over the same period. According to Donnelly et al (1999), "(t)here is no evidence to date that the CEN system in South Australia has increased levels of regular cannabis use, or rates of experimentation among young adults" (p 13).

These results are in accord with those observed in other jurisdictions which have implemented legislative changes with respect to cannabis. In the US, some states have decriminalised cannabis. Longitudinal and cross-sectional comparisons of drug use indicators in decriminalised and non-decriminalised states suggest that the legislative changes have had little or no reliable impact on the prevalence of cannabis use (Johnston, O'Malley & Bachman, 1981; Single, 1989). A similar pattern of results has been observed in the Netherlands, where the possession and personal use of cannabis has been tolerated for more than two decades (MacCoun & Reuter, 1997).

At face value, the consistency of these results across markedly different jurisdictions directly contradicts the prediction of deterrence theory that a reduction in the perceived certainty of legal sanctions will lead to an increase in the prevalence of drug use. However, decriminalisation has only been studied in relation to cannabis. There is presently no credible basis on which to predict the effects of legislative changes to laws regarding other illicit drugs. Secondly, as MacCoun (1993) points out, decriminalisation of cannabis use has generally occurred in states where cannabis use has already become widespread and may therefore have reached the limit of its market penetration. Thirdly, studies of the effect of decriminalisation have not sought to examine whether it increases the frequency of drug use among existing users. Fourthly, at the national level, an influence of even a small magnitude can have a significant aggregate effect (Rosenthal, 1990).

3.6 THE ROLE OF INFORMAL SOCIAL NORMS AND PERSONAL BELIEFS

Many authors emphasise the importance of both moral reasoning and informal social controls, such as the opinions of significant others, in the regulation of conduct and the decision to engage in criminal behaviour (eg Braithwaite, 1989; Etzioni, 1988; Grasmick & Bursik, 1990; Paternoster & Simpson, 1997). They suggest that people may refrain from offending, not because they fear the legal consequences of their action, but because they believe the act to be morally wrong, or because they believe significant others will disapprove or, perhaps due to a combination of these considerations.

The negative opinions of a partner, peers or family may contribute to the deterrence of criminal behaviour. Tuck and Riley (1986) suggest that sanction certainty may be more important than sanction severity in deterring crime because one way in which changes in detection risks may influence behaviour is by increasing the weighting of negative social forces. The offender may know perfectly well that others would not approve of his/her potential criminal behaviour, but may be prepared to ignore this fact in the

belief that significant others will never find out about it and, therefore, there are few risks of social disapproval. Paternoster (1989) obtained evidence that, although perceived certainty of punishment influenced criminal decisions, the effects were marginal and far less consequential than the influence of peers in both the initiation and cessation of delinquent conduct, including cannabis use. This is consistent with a large body of research showing that the informal social norms existing in a peer group are the best predictors of young people's drug use behaviour (eg Elliott, Huizinga & Ageton, 1985; Johnston, O'Malley & Bachman, 1989; Kandel, 1980).

Rather than either formal or informal sanctions being crucial to deterrence, interaction between the two may have deterrent effects. Thus, the existence of criminal sanctions against drug use may serve to reinforce social norms against such use. The interaction between formal and informal social controls may be a far more powerful source of influence on crime than either in isolation. This is often argued in relation to crimes such as domestic violence and child sexual assault. For example, a US study of recidivism among 1200 domestic violence offenders examined whether the effects of arrest on subsequent offending varied according to the offender's "stake in conformity" or strength of bonds to society, measured by marital and employment status (Sherman, Smith, Schmidt & Rogan, 1992). The authors hypothesise that offenders subjected to social control in jobs and marriages are more likely to be deterred by legal sanctions than those without such stakes in conformity. Consistent with these expectations, the study found that legal sanctions were associated with more subsequent violent incidents involving offenders with a low stake in conformity (unmarried and unemployed) and fewer violent incidents involving those bonded to conventional society (married and employed).

Heckathorn (1990) suggests that compliance which appears to be simply a matter of individual deterrence may actually arise through more circuitous routes. In particular, he considers the effect on significant others of the sanctions levelled against an individual and the influence of those significant others on whether individuals offend again. Heckathorn states that studies of responses to legal sanctions or perceived threat of legal sanctions must take into account the group context in which sanctioning occurs. To the extent that members of a group (such as family, friends and co-workers) are interdependent, sanctions directed at one individual have implications and consequences for other group members. According to Heckathorn, this "spill-over" effect, gives group members a stake in regulating one another's behaviour, in some cases augmenting the effects of formal sanctions, and in other cases attenuating them.

This form of regulation occurs through a variety of control mechanisms, such as persuasion, selective incentives that affect the anticipated rewards from alternative courses of action, and control of opportunity structures (in which chances to engage in group approved activities are expanded, and chances to engage in disapproved actions are limited). Arguments such as these suggest that, although the effects of informal social norms on behaviour are measurable, reliable and often quite powerful (Cialdini, Kallgren & Reno, 1991), their efficacy may depend to some extent on formal sanctions.

3.7 OTHER NON-INSTRUMENTAL DETERMINANTS OF LEGAL COMPLIANCE

In assessing the effects of legal sanctions on behaviour, a further consideration is the perceived legitimacy of the law, people's evaluation of laws, and the implementation process. Tyler and Lind (1992) argued that the perceived fairness and legitimacy of authorities and laws are important non-instrumental determinants of legal compliance. They cite earlier research by Tyler which demonstrated that the perceived legitimacy of laws and the fairness of their enforcement by authorities significantly influenced the general population's level of compliance.

Although they did not specifically consider drug use, their analysis has important implications for drug policy. Many critics (eg Blumstein, 1993; Skolnick, 1990) have claimed that drug laws severely curtail individual liberties, that sentences are too harsh, that minorities are singled out for enforcement, and that the legal status of tobacco and alcohol render the prohibition regime hypocritical. These considerations may tend to undermine the effectiveness of tougher sanctions as a means of deterring drug use.

Of course, the mere fact that an act is illegal may heighten its attractiveness to young people - a forbidden fruit effect. This hypothesis has not been studied systematically, but MacCoun (1993) has described three mechanisms by which such an effect might occur. Reactance theory (Brehm & Brehm, 1981 cited in MacCoun, 1993) predicts that restrictions on freedom of choice enhance the attraction of an object or activity. The principle of scarcity (Lynn, 1992 cited in MacCoun, 1993) suggests that artificial scarcity might enhance the desirability of an object or activity because we associate scarcity with quality. Finally, it is possible that forbidden fruit effects might reflect a disposition for risk-seeking or sensation-seeking behaviour. Some people may be attracted by the thrill of illicit drugs and may discount the legal risks that accompany them.

The prevalence and magnitude of the forbidden fruit effect with respect to illicit drugs is unknown. Although in a laboratory setting a forbidden fruit effect may occur when other factors are held constant, in natural settings other factors may act together with prohibition, to attenuate or eliminate any forbidden fruit effect. For example, illicit drugs are less available and more expensive, more dangerous and more stigmatised than many non-prohibited objects and activities. Further research on this issue is clearly needed.

3.8 RESEARCH PRIORITIES FOR DETERRENCE

The relationship between crime rates and sanction levels is clearly complex (Nagin, 1998). The magnitude, and possibly even the direction of the response to a policy may change over time. The response of crime rates to a change in sanction policy will depend on the specific form of the policy, the context of its implementation, the processes by which people learn of it, differences in perceptions of the change in risks and rewards produced by the policy, and feedback effects triggered by the policy itself (eg a decrease in private security following an increase in public security).

Identifying four major impediments to making confident assessments of the efficacy of policy options for deterring crime, Nagin (1998) argues that these should be priority areas for future research to address:

- long term effects
- the relationship between risk perceptions and actual sanctions policy
- the implementation of policies
- the gap between intended and actual policy which means laws are generally not administered as intended

- **long term effects**

Much less is known about long term deterrent effects than short term ones. Some studies suggest short and long term effects differ because the deterrent effect of formal sanctions arises principally from the social stigma caused by their imposition. Fear of stigma depends on punishment's being a rare event. A criminal record cannot be socially isolating if it is commonplace. Policies which are effective in the short term may erode the foundation of their deterrent effect over the long term if they increase the proportion of the population affected by this stigmatisation.

- **the relationship between risk perceptions and actual sanctions policy**

Little is known about how certain and severe punishment is perceived. Deterrence is ultimately a perceptual phenomenon. The conclusion that decisions to engage in crime are affected by perceptions of sanction risk does not automatically allow the conclusion that policy can deter crime. Unless the perceptions themselves can be manipulated, desired deterrent effects will not be achieved. A better understanding of the dynamics of risk perception and changes in risk perception over time, as well as the relationship between policy and perceptions, would greatly aid policy design.

- **the implementation of policies**

The effect of policies depends on their deterrent effect. Currently, they are assumed to apply equally to all units of the population from which they were estimated. In general, this is not the case and the estimated deterrent effect should be interpreted as the average of "treatment" effects across population units. For example, the deterrent effect of increasing the number of police in a given city will depend on many factors, such as how they are deployed, so the effect may be larger or smaller across cities. It follows that even though there are credible estimates of average deterrent effects of some broad classes of policies, there is limited capacity to predict the effect of these policies in a specific place. A better understanding of how and why responses to policy vary over time and space is required.

- **the gap between intended and actual policy which means laws are generally not administered as intended**

Actual policy may bear little resemblance to intended policy because the exercise of discretion by key players in the criminal justice system can undermine the intent of formal policies (MacCoun, 1993). Police can be selective in enforcement. Prosecutors can vary regarding whom, for what, and how vigorously they prosecute. Judges and juries decide who to convict and for what. Judges may vary widely in the penalties they impose.

The capacity of the criminal justice system to translate policy into a credible threat is determined by many other factors, including the economic feasibility of enforcing the sanctions, the size of the potential offender population, and the perceived fairness of the laws and sanctions. A better understanding of the technology of sanction generation is required to delineate the boundaries of feasible policy.

These issues and others raised in the course of this discussion suggest that useful questions for research include:

- Does increasing the risk of apprehension have any short or long-run deterrent effects on (a) first use of an illicit drug or (b) repeated use of an illicit drug?
- What effects, if any, do sanctions have on the use of illicit drugs by (a) those well bonded to conventional society -v- those without such bonds (b) various socioeconomic groups (c) males -v- females (d) minority groups -v- non-minority groups?
- What effects, if any, do actual sanction certainty and the severity of changes in statutory penalties and enforcement policies have on illicit drug use?
- What effects, if any, do perceived sanction certainty and severity of actual changes in sanction have on certainty and severity (ie by what processes do people form and subsequently update their risk perceptions?)
- If there are general or specific deterrent effects, are they durable over the long term?
- What is the relationship between the number of illicit drug users deterred from drug use and the magnitude of the harms avoided as a result?
- Do increases in sanction severity result in the conviction of people on less serious drug charges (ie do they lead to increased plea bargaining)?

3.9 CONCLUSION

Deterrence theory is an application of the rational choice paradigm which maintains that criminal activity can be deterred by the threat of certain, swift and severe punishment. This theory has been investigated for four decades by researchers from many disciplines and using many methodologies. Despite the plethora of studies, many questions about deterrence theory remain. In particular, how effective is the drug prohibition regime in deterring illicit drug use and/or dealing. Reuter (1997) states, "It is hard …. to say what good policy would look like, because one consequence of politicians' treating drug control as a moral crusade has been an absolute disinterest, bordering on gross negligence, in assessing the consequences, good or bad, of the emphasis on punishment … there is no credible basis for describing a policy that would reduce, in any important dimension, the extent of (drug problems)" (p 263).

The limited extant research examining this issue has been conducted in the US, and its relevance to contemporary Australian society is unclear. We are presently committed to a prohibition regime without any clear understanding of whether, to what extent, and/or how it works. Blumstein (1993) argues that the political system has learned an overly simplistic trick - lacking any better alternative to propose, politicians respond to community concern about illicit drug use by sternly demanding increased punishment. This approach is strikingly effective, not in solving the problem, but in alleviating the political pressure to "do something". The public generally seems to accept this approach to almost any objectionable behaviour, and without much consideration as to whether the approach will be effective in the particular context of concern. If illicit drug policy is to be based on rigorous scientific research, clearly this situation must be rectified.

As a first step in the basic research agenda, simply asking people why they have not used illicit drugs would help to clarify our understanding of whether and to what extent prohibition has the desired deterrent effect. If threatened or actual imposition of sanctions for drug use does act as a deterrent, we need to know which groups of individuals are deterred, and under what circumstances.

There is some evidence that sanction certainty is more important than sanction severity in deterring crime. We need to know more about how police can influence the perceived certainty of apprehension and conviction and how this, in turn affects drug user behaviour. Since the threat of (increased) sanctions cannot be expected to act as a deterrent unless it influences actual or perceived sentencing practice, we also need to know more about any effect that increases in the statutory maximum penalties for drug use may have on actual and perceived sanction severity.

Finally, since it is possible that large benefits in terms of harm reduction might flow from small deterrent effects, we need to know more about the relationship between deterrence and harm reduction.

4. RESEARCH ON DRUG MARKET DISRUPTION

This chapter examines current theory and research concerning illegal drug markets. Drug law enforcement is expected to reduce illicit drug consumption and the harm associated with it. Separate rationales underpin supply-side drug law enforcement (DLE), that is, enforcement directed at the sellers of illegal drugs, and demand-side DLE, that is, enforcement directed at the purchasers of illegal drugs. We review evidence of the alleged benefits of DLE, and of the unintentional harms it causes.

4.1 THEORY

The principal goal of drug law enforcement is to disrupt illegal drug markets in order to: reduce a public order or public amenity problem created by public drug use and/or dealing, to suppress illegal drug use and trafficking, to reduce drug-related crime, or to curb a combination of these.

Some authorities claim that DLE has failed in all these objectives because illegal drug use and trafficking, drug-related crime and drug-related problems of public order and amenity have increased despite rising investment in DLE (Marks, 1990; Mugford, 1990). This argument ignores the counterfactual: we do not know how large a drug problem we would have had in the absence of DLE. This is not an idle point. The spread of drug use in a population is in many ways similar to that of an epidemic (Behrens, Caulkins, Tragler, Haunschmied & Feichtinger, 1999). One of the distinctive features of epidemics is that efforts to control them may only ever succeed in limiting the final size of the affected population. This may not be as good an outcome as preventing any increase in drug-related harm, but it is an outcome worth having nonetheless.

DLE has other less obvious effects on drug markets. Because the transition from recreational to problematic drug use can sometimes take several years, drug-related harm can continue to rise long after the number of new recruits to drug use has declined. Everingham and Rydell (1994) estimate that it takes about ten years for an increase in the rate of initiation into cocaine use to produce an increase in the number of heavy cocaine users. Contemporaneous increases in DLE and drug-related harm are not necessarily proof that the former has failed to achieve any worthwhile effect. The importance of this point is underscored by the fact that, although the prevalence of cocaine use in the US declined between 1978 and 1992, the number of emergency admissions relating to cocaine use grew over the same period, as increasing numbers of existing cocaine users progressed to heavy use (Caulkins & Reuter, 1997).

DLE activities intended to suppress illegal drug use and trafficking, fall into two categories: those intended to discourage sellers, and those intended to discourage buyers (Kleiman, 1992). Some activities carried out to discourage the selling of illicit drugs are designed to make it more costly or difficult to manufacture, cultivate or sell them, such as crop eradication programs, interdiction of drugs at the customs barrier, controls over the precursor chemicals used in the production of illegal drugs, the imprisonment of convicted drug sellers, and the confiscation of their assets. Others are designed to increase the risk of apprehension for selling, such as covert surveillance of suspected drug traffickers, the use of undercover police informants and the use of inducements (eg immunity from prosecution) to encourage offenders to inform on and testify against each other.

The tactics employed by DLE officers against buyers of illegal drugs include the use of stop and search powers to check for possession of illegal drugs or outstanding warrants,

and the arrest and prosecution of drug users for illegal drug use, possession and other related offences. They also include moving suspected drug users away from places where they might obtain or use illegal drugs and encouraging them to enter treatment. Such activities are carried out more or less continuously in areas which are known to have significant drug problems. From time to time, however, police conduct a 'crackdown', that is, a temporary but intense period of law enforcement over a defined geographical area, designed to encourage sellers and users of illegal drugs to leave the area.

The rationale for seller-focused, supply-side DLE is that it reduces the supply or availability of an illegal drug and/or increases the costs and risks associated with its importation and distribution. Conventional economic theory suggests that reducing the supply of a drug should increase its cost, thereby reducing demand. However, even if high level DLE fails to reduce the supply of a drug, importers/traffickers face substantial penalties if they are caught, and stand to lose substantial sums of money through asset confiscation and drug seizures. It seems unlikely that many would be prepared to accept these risks without significant financial compensation. If this is true, the demand for compensation will tend to keep the price of an illegal drug higher than it would be in a regime where high level DLE is absent or less intense. Theoretically, supply-side DLE should result in reduced demand for the drug.

The rationale for buyer-focused, demand-side DLE is that, even if police cannot increase the financial cost of illicit drug use or restrict its availability, they can substantially increase the non-monetary costs associated with its use. The effect on the demand for a drug should be the same as that produced by an increase in street level drug prices or a drop in street level drug purity (Moore, 1972). As the level of inconvenience, time, risk or cost of trying to find a drug seller increases, increasing numbers of drug purchasers should be tempted to reduce their consumption of the drug, whether by entering treatment, switching to legal drugs, or simply cutting back on their illicit drug consumption. Any of these actions will produce a drop in the aggregate demand for the drug, thereby reducing both crime and revenues to drug sellers and crime. (For a theoretical counter argument see Lee, 1993.)

Despite the fact that the majority of arrests for drug offences involve drug users, historically DLE agencies have tended to regard supply-side DLE as more important than demand-side DLE (Kleiman, 1992; Green & Purnell, 1996; Sutton & James, 1996). Most regard the arrest of a high level drug supplier as more valuable than the arrest of a low level drug supplier, particularly where the latter's involvement in the drug market is prompted by drug dependence. There are at least three reasons for this: firstly, most people in the community (and the courts) view drug sellers as more criminally culpable than drug users; secondly, perhaps as a result, police tend to view the task of arresting drug users as less rewarding than that of arresting dealers; thirdly, there is a widespread belief among police and the general community that the principal goal of DLE is to stem the flow of illegal drugs.

Despite the tendency of law enforcement agencies to focus on supply side DLE, some contend that demand-side DLE may be a more effective DLE strategy. Underpinning this contention is the belief that the demand for addictive drugs is what economists call 'price-inelastic' (Koch & Grupp, 1973). Technically, demand for a commodity is 'price-inelastic' if an x per cent increase in its price produces a reduction in aggregate demand for the commodity of less than x per cent. It can be shown that if demand for an illegal drug is price-inelastic, increasing its price will actually increase aggregate expenditure on the drug (Wagstaff & Maynard, 1988)[6]. This will mean increased profits to drug suppliers. Furthermore, to the extent that crime is driven by illicit drug expenditure, it will also mean increased crime.

Demand for a commodity may be price-elastic at some prices and price-inelastic at others. White and Luksetich (1983) argue that when drug prices are low relative to users' incomes, users may not be prepared to moderate their consumption in the face of price increases. However, when drug prices are high it may not be possible to raise the additional income required to support an addiction. At that point, users may begin to stretch out the time between drug use episodes or enter treatment. As a result, demand for the drug in question may become price-elastic. White and Luksetich conclude that the effect of increased supply-side DLE will depend upon the structure of a drug market and the existing level of DLE.

When there is a market monopoly, drug prices will be elastic because drug sellers raise prices to the point where they begin to lose revenue. When there is no market monopoly, the effect of increased supply-side DLE depends upon its intensity. If the increase in supply-side DLE is not sufficient to drive the price of an illegal drug out of its inelastic range, the result will be counterproductive (ie more crime and increased revenues to dealers). However, if the increase in supply-side DLE is of high intensity, drug prices will be driven into their elastic range. In this instance DLE will exert positive effects.

So far we have considered ways in which DLE might disrupt the market for illegal drugs. However, some theorists maintain that if supply-side DLE focuses on street level dealers and is carried out with enough intensity, it can destroy rather than simply suppress an illegal drug market (Kleiman,1988; Caulkins,1993). They argue that street level dealers are particularly vulnerable to police detection. Past a certain point, the costs imposed on street level dealers by DLE begin to outweigh the benefits (profits) they accrue by remaining in the illegal drug market. According to this theory, each departure of an illegal drug dealer from the market raises the law enforcement pressure on other dealers. This prompts even more dealers to leave the market, creating added pressure and fuelling a process that eventually results in the collapse of the market at that location.

One obvious criticism of this approach is that it may just create dispersion; new markets may simply 'pop up' at other locations or drug transactions may be conducted just as frequently, but out of sight. This criticism does not necessarily negate the rationale for DLE crackdowns. Street level DLE can be conceived of as a means of remodelling or reshaping drug markets in ways which might make them less harmful (Dorn & South, 1990; Dorn & Murji, 1992; Murji, 1998). For example, displacement may be accompanied by a reduction in the scale of an illegal drug market (Caulkins, 1992). Furthermore, whilst a less visible drug market might be just as economically vigorous, any reduction in drug market visibility may still prove beneficial in improving public amenity.

Of course, just as it is possible for crackdowns to reshape drug markets in positive ways, it is also possible for them to reshape markets in negative ways. Some experts contend that crackdowns weed out less violent and less aggressive players (Dorn & South, 1990). Others argue that crackdowns encourage drug users to engage in behaviour which threatens their own health and that of the general public (Maher & Dixon, 1999). These sorts of considerations are often used to buttress the argument that DLE is incompatible with harm minimisation (Marks, 1990; Mugford, 1990). This an issue of particular significance in Australia because of the commitment to harm minimisation embodied in our national drug policy (Ministerial Council on Drug Strategy, 1998). It is an issue of even greater significance for the NSW Government, which is committed to pursuing harm minimisation in drug law enforcement (NSW Government, 1999, p. 98).

Whether prohibition is incompatible with harm reduction is difficult to say. We lack a generally accepted list of drug-related harms, we lack a generally accepted means of quantifying those drug-related harms which have been identified, and we lack consensus

regarding which harms are caused by prohibition, and which are caused by drug use. All the same, there is an air of unreality about attempts to deny DLE any role in harm minimisation. As Pearson (1992) points out, prohibition against most currently illicit drugs is likely to remain until there is a major change in the systems of international treaties. To refuse to seek ways of capitalising on the benefits and reducing the harms associated with DLE on the grounds that prohibition should be abandoned is "to waste an opportunity to intervene positively in public policy-making" (Dorn & South state, 1990, p. 186).

Prohibition and drug law enforcement undoubtedly cause some harm. However, the question of whether DLE is consistent with harm reduction is more complex than might appear. The aggregate social harm caused by drug use (whether legal or illegal) is at least partly a function of its prevalence and frequency of use. That is why alcohol and tobacco produce far more aggregate social harm than drugs such as heroin and cannabis (Collins & Lapsley, 1996). If the threat of arrest and prosecution for drug use plays any role in limiting its prevalence and frequency, DLE must be credited with helping to limit the harm caused by illicit drugs. The fact that DLE may sometimes cause harm does not alter this state of affairs. It simply means that in assessing the value of DLE to harm reduction, we must consider its costs along with its benefits (Weatherburn & Lind, 1999).

4.2 RESEARCH ON SUPPLY-SIDE DLE

Three key issues must be addressed in assessing supply-side DLE:

- whether it is possible to influence the price, purity and availability of illicit drugs through supply-side controls
- what sorts of supply-side DLE strategies and tactics are most effective in influencing the price, purity and/or availability of an illicit drug, and at what level of drug distribution is DLE most effective
- whether, and if so how, are drug users affected by the price, purity and availability of an illicit drug.

The historical evidence provides few grounds for believing that high level supply-side provides an easy way to raise illicit drug prices. Kleiman (1992) credits the ban on poppy cultivation by Turkey and the conviction of a number of high level drug traffickers in the late 1960s (the so-called 'French Connection') with producing a substantial increase in domestic US heroin prices. He also maintains that anti-smuggling efforts in the US during the 1980s exerted a substantial effect on retail cannabis prices. On the other hand, he argues, the civil war which erupted between the Medellin cocaine trafficking organisation and the Colombian Government produced only transient effects on US cocaine price and purity. Worse still, the defoliation of the Mexican cannabis crop in the early 1970s using paraquat produced no effect on US marijuana consumption because the source of the drug quickly shifted from Mexico to Colombia.

Because of the inherent difficulties in experimenting with supply-side DLE, those investigating its effects have developed models of illicit drug markets and used them to simulate the effects on illicit drug prices or consumption of various kinds of policy changes. As with all simulations, the results obtained from such analyses are only as convincing as the assumptions on which they are based. It is also worth remembering that all drug market modelling conducted to date is based on characteristics of the US market for illicit drugs, and on US levels of investment in DLE. The pattern of illicit drug use in Australia is different, with heroin more prevalent, and cocaine less prevalent. The relative balance of investment in drug law enforcement and treatment is also different in Australia. It is unclear whether, and if so, to what extent, the results of US simulation studies of the effects of supply-side DLE are relevant to Australia.

These qualifications aside, the results to date do not provide much basis for confidence in the effectiveness of supply-side DLE as a means of increasing drug prices and reducing drug consumption. Early work by Polich, Ellickson, Reuter and Kahan (1984) suggests that substantial increases in investment in supply-side DLE are necessary to produce even modest increases in the price of illegal drugs. This is because the costs imposed on dealers and traffickers by supply-side enforcement are passed on and diluted at each level of the distribution chain. For example, they estimate that a doubling of the interdiction rate for cocaine would add US$2.1 million to the costs associated with importation of the drug. However, because of the size of the cocaine market in the US, the absence of monopoly control and the steep price gradient between importation and the street, the end result is a street level price increase of only 3.4 per cent.

Caulkins (1994) has questioned one of the assumptions underlying Polich et al's analysis, raising the possibility that drug seizures may exert more pressure on retail drug prices than previously thought. Polich et al have assumed that the cost of drug distribution is a constant, unrelated to the value of the drugs being distributed. Caulkins suggests there are good reasons for believing that at least some of the costs of illicit drug distribution may be proportional to the value of the drugs being distributed. Thus, because the cost of preventing couriers absconding with a drug increases with its value, it might cost as much to distribute one kilogram of cocaine worth $50,000/kilogram as it costs to distribute two kilograms of cocaine, each worth $25,000 (Caulkins, 1994).

If Caulkins' 'multiplicative hypothesis' is correct, a given percentage change in the value of an illicit drug seized, for example, at the customs barrier, would exert a similar sized percentage change in its retail price. That would make supply-side DLE potentially a strong source of leverage over illicit drug markets. Analysing time series data on the price of cocaine at different market levels in the US, Caulkins (1994) found that the ratio of cocaine prices at different levels remained stable over time. He interpreted this as evidence in favour of his multiplicative hypothesis. However, Kleiman (1992) points out, that this may be that some extraneous factor (eg falling levels of investment in DLE relative to growth in cocaine trafficking) is exerting simultaneous and similar effects on the price of cocaine at different levels of the market.

To date, the only study which actually examines the effects of supply-side DLE on illicit drug prices, purity and availability is the one conducted in Australia by Weatherburn and Lind (1997) . They collected information on the size, date and location of all heroin seizures in Australia over a two year period from February 1993 to January 1995. During that period, they also monitored the price, purity and availability of heroin at street level in Australia's largest open-air heroin market (Cabramatta). Time series analysis revealed no detectable relationship between the quantity of heroin seized by police and the price, purity or availability of heroin at street level. The results of this study suggest that seizures of heroin in the Australian market exert no short-run effects on the price, purity and availability of heroin. Whether seizures of other drugs would exert effects on their price, purity or availability remains unknown.

The absence of any short-run effect of seizures suggests that only a small proportion of illegal drugs imported or manufactured is ever seized by police. It may be that the risks, costs and sanctions imposed on those caught for importing or manufacturing illicit drugs do little to offset the attractions of their trade. Both these factors seem to be true of the heroin market in Australia. The number of customs barrier seizures of heroin (an indicator of the number of heroin importers detected) has remained fairly flat despite very rapid growth in heroin consumption over the past ten years (Darke & Hall, 2000). If the number of detections is any guide to the risk of apprehension, for importers, that risk appears to have changed little, if at all. Indeed, if the increase in demand for heroin has attracted other heroin importers into the market, the risk of detection may have declined.

The quantity of heroin seized at the customs barrier increased significantly in the financial year 1998/99. This was mainly due to a single very large seizure (Commonwealth of Australia, 2000). Even so, the quantities seized are unlikely to represent a large proportion of the total imported. Rough estimates[7] of the quantity of heroin consumed per annum in Australia are about two tonnes. The quantities of heroin seized have never risen to more than about a quarter of this figure. Over the past three years at least, quantities seized have usually hovered around 10 per cent of estimated consumption. Furthermore, the true interdiction levels are probably substantially lower than these figures suggest, because heroin interdiction weights are measured without regard to the purity levels of the drugs involved, whereas estimates of demand have been measured in pure grams.

If police were able to influence the price of illegal drugs, how would that impact on consumption? Rather than simply modelling the effect of illicit drug seizures on the price of illicit drugs at street level, Rydell and Everingham (1994) modelled the effect of drug seizures (and treatment) on illicit drug consumption. Their analysis is unique in that it attempted to evaluate the efficacy of different kinds of supply-side DLE strategy and treatment in reducing the size of the US cocaine market. The results suggest that in terms of cost effectiveness, (a) source country control (b) interdiction at customs barriers (c) domestic supply-side enforcement and (d) treatment require progressively less funding to reduce cocaine consumption in the US. The rank ordering of the three supply-side DLE strategies (a), (b) and (c) arises because the closer to street level a seizure occurs, the greater the financial cost to dealers and the lower the seizure costs to law enforcement (Rydell & Everingham, 1994, p. 14).

Rydell and Everingham's analysis assumes that seizures of cocaine exert a significant effect on retail cocaine prices, which in turn produce a significant effect on the long-term demand for cocaine (Rydell & Everingham, 1994, pp. 61 and 109). There is little direct support for the proposition that seizures of heroin exert any short-run effect on its price, purity and availability, but they may exert significant long-term effects (Becker, 1988; Becker, Grossman & Murphy, 1991). The direct empirical evidence available to support the assumption that an increase in the price of an illegal drug reduces its consumption is mixed but encouraging.

Caulkins and Reuter (1998), report that early studies tend to confirm the view that the level of consumption of addictive drugs is unresponsive to their street price. However, more recent studies suggest that demand for drugs such as heroin may be more elastic than first thought. They cite evidence of elasticities for cocaine of between -1.10 and -0.72, and for heroin of between -1.80 and -1.60. Other research cited by Caulkins and Reuter (1998) suggests that for arrestees, a group responsible for much of drug related harm, the elasticities of demand for cocaine are between -1.50 and -2.0.[8] For frequent users, the high elasticity of drugs may reflect the fact that drug expenditure represents a large proportion of their disposable income. Faced with price increases, users are inclined to seek treatment or to reduce their consumption (Caulkins & Reuter, 1998).

4.3 RESEARCH ON DEMAND-SIDE DLE

The rationale behind demand-side DLE is to increase the non-monetary costs of illicit drug use. This is expected to encourage drug users to either cut back on their drug consumption, enter treatment, or switch to legal drugs. Setting aside deliberate attempts to coerce drug users into treatment (see chapter 5 of this report) two lines of inquiry into demand-side DLE have been followed:

(a) what are the effects of DLE 'crackdowns'?

(b) does the pressure created by demand-side DLE motivate entry into treatment?

Initial research on police crackdowns suggests that they suppressed the demand for illicit drugs. The most encouraging results come from a much cited police crackdown in Lynn, Massachusetts (Kleiman, 1988). Interviews with residents and merchants in the city indicate that the crackdown in that city reduced the volume of visible drug transactions. The study also notes an 85 per cent increase in demand for treatment following the crackdown and a decrease in burglaries, robberies and other forms of drug-related crime in the year following the crackdown. Unfortunately, the study did not involve a control group. For this reason the possibility cannot be ruled out that some or all of the positive effects may have occurred without the police crackdown.

Studies of police crackdowns in other areas have produced more ambiguous results. According to Worden, Bynum and Frank (1994), a crackdown on the Lower East Side of Manhattan reduced the amount of street dealing, increased the demand for drug treatment, and appeared to reduce crime. Informal reports from various locations suggest considerable improvements in public amenity in the areas where crackdowns took place. However, a later crackdown in Lawrence, Massachusetts failed to produce the positive effects. Interviews with addicts indicate only a small reduction in the availability of heroin. While some drug-related crime fell, other categories of crime increased. Sherman (1990) also reports that police crackdowns on drug markets produce only small and temporary effects.

A problem common to the studies described above is that they were observational and used few controls. To date, the most rigorous study of a police crackdown was conducted by Weisburd and Green (1995). Using police drug arrest data, they identified 56 drug 'hotspots'. They categorised these hotspots into four groups according to the level of drug-related activity in each. Within each category, hotspots were allocated randomly to treatment and control groups. Officers associated with the treatment group were made individually responsible for enforcement in particular hotspots. During the 'implementation stage' the officer responsible for a hotspot co-ordinated 'sweeps' of the area by a dozen or more patrol officers, followed by action by local government health and licensing authorities against the owners of premises involved in drug dealing and use.

Police calls for service provided the main indicator of crime and antisocial behaviour. These were monitored in the seven months before and after the intervention, both within and outside the areas where intervention took place. Calls for service in relation to violent or property offences did not change in response to the intervention. Both treatment and control groups showed evidence of a general increase in the number of calls for disorder over the course of the study. The increase was much less marked for the treatment group, suggesting that the crackdown may have at least retarded a naturally occurring increase in calls for service in relation to disorder. A check on displacement revealed that intervention had reduced drug-related calls for service in areas outside those where an intervention took place.

Rather than displacing problems, the crackdown reported by Weisburd and Green produced a diffusion of benefits. However, correlational and ethnographic evidence suggests that higher drug enforcement in one area can increase the level of drug-related activity in an adjoining jurisdiction (Rasmussen, Benson & Sollars, 1993; Maher, Dixon, Lynskey & Hall, 1998). Maher et al (1998) argue that it is more desirable to contain all drug-related activity within a defined geographic region than to have the same amount of activity spread over a number of regions. They contend that containing activity makes the market easier to control. Displacement does not, in itself, indicate that a crackdown has failed to produce any benefits. However, in judging whether a crackdown has been successful, the scale, pattern and duration of displacement are of crucial importance.

The conflicting results obtained in studies of police crackdowns may appear puzzling, but the effects of a police crackdown probably depend upon a wide range of contextual factors, including the geography of an area and the means available to drug market participants to thwart the effects of DLE. Caulkins, Larson and Rich (1993) found evidence that ease of access to and egress from a drug market made the same police tactics much more effective in one location than in another. Buerger (1992) found that dealers employed a variety of tactics to thwart the effects of street level drug law enforcement, such as keeping only small quantities of drugs in their possession, exchanging drug payments and drugs at geographically separate locations and developing 'drive in' drug markets.

The effects of police crackdowns appear variable, at least in the short-run. The long-run picture is more encouraging. A number of studies have found evidence that over time, street level DLE increases the willingness of dependent drug users to seek treatment.

Chitwood and Chitwood (1981) compared the characteristics of 206 randomly chosen drug users in long term treatment for drug dependence with 103 randomly chosen patients attending a county emergency room for treatment of acute drug-related problems. Bivariate comparisons revealed that those in the long term treatment program were much more likely to have an arrest record than those attending an emergency room for treatment of acute drug problems. A larger proportion of long term treatment patients had funded their purchases of illegal drugs from some form of income-generating property crime. Unfortunately, no multivariate analyses were conducted to see whether contact with police or the justice system discriminated between those in treatment and those not in treatment, when other significant discriminators (age, ethnicity, gender, type of drug use) were constant.

Chitwood and Morningstar (1985) controlled for differences in type of drug use by examining the factors discriminating between 95 individuals in treatment for cocaine use and 75 cocaine users not in treatment recruited through informal contacts. Those in treatment were more frequently arrested and had longer arrest histories than those not in treatment. They were also more likely to have derived their income from illegal sources. Furthermore, when the level of cocaine use was constant, the relationship between arrest history and treatment status was even more pronounced. This finding is encouraging because the level of cocaine consumption was found to exert a significant effect on the likelihood of being in treatment. Unfortunately, no attempt was made to control for a range of other factors found to exert significant effects on entry into treatment, including prior experience of an overdose and the extent of social support.

Contrary results were obtained by Carroll and Roundsaville (1992). They compared a sample of several hundred cocaine users in treatment with 101 cocaine users not in treatment recruited through informal contacts. Four variables were employed to measure contact with law enforcement: whether the individual was currently on probation or parole, the number of prior convictions, the total number of months spent in prison, and the number of days of illegal activity in the past 30 days. Surprisingly, they found no differences between the two groups in the frequency of cocaine use in the past month, amount of money spent on cocaine in the past month, age of onset of drug abuse, duration of regular cocaine use, or duration of longest voluntary abstinence from cocaine. Furthermore, the treatment group was significantly lower than the non-treatment group in terms of months spent in prison and level of involvement in illegal activity.

The most rigorous study to date was a prospective longitudinal study conducted by Schultz, Raipiti, Vlahov and Anthony (1994). They examined the determinants of enrolment in detoxification and methadone maintenance treatment (MMT) among a

sample of 1039 active injecting drug users with no recent experience of treatment. A second, follow-up interview was conducted within 9.5 months of the first interview, seeking information on entry into treatment, entry into detoxification, and whether subjects had overdosed or become infected with HIV in the period following the first interview.

Of the 1039 subjects, 209 reported entry into MMT following the baseline interview and 144 reported entry into a detoxification program only. Separate logistic regression analyses were conducted to model the decision to enter detoxification and the decision to enter MMT. The factors independently associated with the decision to enter detoxification were: a recent overdose, having entered treatment some time in the ten years prior to the baseline interview, a history of arrest, and frequency of drug use. Factors found to exert independent influence on the decision to enter MMT included: marital status, gender, duration of use and prior history of treatment, but did not include a history of arrest or imprisonment.

Limited Australian evidence is available on factors which prompt entry into MMT. Although it is not strictly a study of the determinants of entry into treatment, an ethnographic study of factors influencing the decision to give up using heroin is of some relevance. Bammer and Weekes (1993) conducted in-depth interviews with 18 heroin users in Canberra. All had at some stage stopped using heroin. The desire to keep their relationships intact, and concern about health and lifestyle problems figured prominently among the reasons for attempting to give up heroin. Several respondents cited concern about trouble with the courts, the cost of funding their heroin dependence, guilt about involvement in crime, or the increasing prospect of being imprisoned as important considerations in the decision to cease using heroin.

As noted earlier, Weatherburn and Lind (1997) found no evidence of any relationship between the number of persons convicted for heroin use and possession in Fairfield Local Court and the number entering the local MMT program at a nearby hospital. However, interviews with 247 heroin users entering MMT provided evidence that DLE encourages heroin users into MMT. Of those interviewed on entry into treatment, 30 per cent cited 'trouble with police' as their reason for seeking treatment. Nearly 70 per cent cited the cost of heroin as the reason for seeking treatment. Since the cost of heroin is at least partly related to DLE, these findings suggest that both the monetary and non-monetary costs imposed by DLE play a role in encouraging heroin users into MMT.

More recently, Weatherburn, Lind and Forsythe (1999) surveyed 510 heroin users in western and south-western Sydney regarding their reasons for entering treatment in order to identify factors differentiating those who entered treatment from those who did not. They found that more than 60 per cent of respondents who were in MMT at the time of the interview rated 'avoiding more trouble with the police/courts' as an important or very important reason for entering treatment. Respondents who had been imprisoned or had a family member or friend imprisoned for a drug-related offence were more likely to have had some experience of MMT, even when the researchers controlled for a wide range of other factors likely to influence the decision to enter treatment.

The threat of respondent arrest and imprisonment on willingness to enter treatment was less clear for two reasons. Firstly, although South-East Asian and Aboriginal heroin users typically have substantial histories of contact with police and the criminal justice system, both groups show a marked reluctance to enter MMT. Secondly, whilst there was a significant bivariate correlation between being arrested and/or imprisoned for a drug-related offence and having had some experience with MMT, this correlation disappeared when controls were introduced for respondent age and/or duration of

heroin use. This suggests that it may be difficult to disentangle the effects of contact with police and the criminal justice system from those produced by other factors associated with age.

4.4 POTENTIAL COSTS OF DRUG LAW ENFORCEMENT

Despite the potential benefits of DLE, activities carried out under this program cannot be regarded as either cost free or risk free. Aggressive street level drug law enforcement can encourage unsafe injection practices, such as rapid injection of drugs, needle-sharing, or failure to use precautions such as a swab or tourniquet. It can also encourage corruption and/or systemic violations of civil liberty.

Unsafe injection practices are a matter of public importance because they encourage the spread of blood-borne viral infections such as HIV-AIDS and Hepatitis B and C. If drug law enforcement encouraged these diseases it would conflict with objective six of the National Drug Strategy (Williams, 1997, p. 3). Ethnographic research carried out by Maher et al (1997, 1998) provides evidence that demand-side DLE prompts many heroin users to engage in a variety of defensive tactics designed to protect them from discovery by police, but which are inimical to public health. These tactics include the oral and intra-nasal storage of heroin, swallowing heroin to avoid apprehension, needle sharing, using discarded needles found in the street, rapid and careless injection of heroin, and the unsafe disposal of injection equipment (Maher et al 1998, pp. 104-110).

Weatherburn et al (1999) confirm the existence of these risks, but suggest they may be restricted to a minority of heroin users. In their study they asked respondents whether they injected heroin 'in a place where they felt safe from police'. They also asked respondents whether they engaged in unsafe injection practices, such as failing to use a swab, failing to use a tourniquet, sharing needles, and discarding injection equipment unsafely. Eighty-five per cent of respondents who injected heroin said they usually used heroin in a place where they felt safe from police. For this group of respondents, police action could not be cited as a cause of unsafe injection practices. However, those who said they did not inject in a place where they felt safe from police were more likely to share and discard needles. For this group, the threat of police detection clearly exacerbated the health problems associated with heroin.

Other potential costs are associated with street level drug law enforcement. The Wood Royal Commission (Wood, 1997) dramatically highlighted the risk of police corruption associated with DLE. Over zealous policing can generate pressures on officers to subvert or abuse their authority (Kleiman & Smith, 1990; Manning & Redlinger, 1978; Skolnick, 1975). Maher et al (1997) maintain that the street level DLE carried out in Cabramatta has involved repeated violations of civil liberties and at least the appearance, if not the reality, of corruption. Some of her informants suggested that police had seized illegal drugs and money from them without arresting or charging them (Maher et al 1997, p. 30). Others reported having been subjected to illegal strip searches and racial vilification (Maher et al 1997, p. 45). According to Maher et al these behaviours have made it harder for police to secure the co-operation of the local community in dealing with drug related crime.

4.5 RESEARCH PRIORITIES FOR ILLICIT DRUG MARKETS

4.5.1 Supply-side DLE

It is obvious from the foregoing review that DLE is an area of public policy plagued by poor measurement of costs and benefits (Weatherburn & Baker, 2000). This is especially true of supply-side DLE, which has attracted interest among Australian academics, mainly in the context of arguments about heroin decriminalisation.

The most pressing problem for those involved in supply-side enforcement in Australia is the absence of any reliable estimates of the size of the major illicit drug markets and the overall effectiveness of this method of enforcement. Ideally, effectiveness in this context should mean the success of enforcement in reducing the uncompensated costs on society by inducing changes in illicit drug consumption (Sutton & Maynard, 1994). However, these cost savings are difficult to quantify. In the short term, it would be useful simply to have information on the effects of supply-side DLE on such outcomes as the percentage of illicit drugs seized, the costs imposed on those who import, produce or sell illicit drugs, and/or the risks and benefits (real and perceived) associated with illicit drug importation and distribution. Pioneering work of this kind has been carried out in Britain by Sutton and Maynard (1994).

It would also be useful to have a better understanding of the impact of supply-side enforcement on the price, purity and availability of illicit drugs. Weatherburn and Lind (1997) have made a start in this direction, but the quantities of heroin seized at the customs barrier have increased significantly since their study (Commonwealth of Australia, 2000). Furthermore, Weatherburn and Lind examined only the effect of heroin seizures on the price, purity and availability of heroin in one major heroin market. The effects of seizures may be more pronounced in markets more remote from the principal points of importation (see Caulkins, 1995). Weatherburn and Lind's general approach to analysing the effect of heroin seizures on heroin price, purity and availability should be extended to other illicit drug markets.

The lack of information about the outcomes of supply-side DLE is paralleled by a lack of information about the effects of changes in supply-side investment on its outputs (eg quantities of illicit drugs seized, number of traffickers arrested, dollar value of assets confiscated, arrest and conviction rate of drug traffickers, percentage imprisoned, and average duration of prison terms imposed). This lack of information is difficult to comprehend, since the inputs to and outputs of DLE ought not to present anything like the problems associated with outcome measurement. As intimated above, Sutton and Maynard (1994) have demonstrated the feasibility of conducting output based cost-effectiveness assessments of supply-side policy. Similar research in Australia would greatly inform decisions about the value of additional investment in supply-side DLE.

A second and related problem is the absence of any reliable information on the dynamics of drug markets. We do not know, for example, how much time would elapse before a reduction in initiation to drug use produced a substantial reduction in the quantities of drugs consumed. For this reason we are unable to assess the effectiveness or cost-effectiveness of various law enforcement policies. Such assessments necessitate developing formal models of drug markets which can be used to simulate the effects of different policy options. Useful work on this issue has been conducted by RAND in the United States (Rydell and Everingham, 1994). Unfortunately, that work cannot be applied in Australia, mainly because it concerns the US cocaine market, whereas Australia's principal illicit drug problem is heroin.

4.5.2 Demand-side DLE

Apart from the question of whether DLE deters drug use, the most pressing problems facing those involved in demand-side DLE are (a) how best to maximise the effect of DLE on treatment entry and retention; and (b) how best to deal with the public amenity problems created by drug markets while minimising the threat posed by DLE to public health.

A number of issues arise in connection with the first of these problems. The available evidence supports the hypothesis that demand-side DLE is one of the factors encouraging

heroin users into MMT. However, it does not establish that hypothesis beyond reasonable doubt. Further research is needed to clarify the relationship between DLE and the demand for illicit drugs. As noted earlier, Weatherburn and Lind (1997) did not observe a time series relationship between convictions for heroin use and possession and entry into MMT. The significance of this finding is limited by the fact that they examined treatment entry in only one location, and their data restricted the extent to which they could test for a lagged relationship between arrest rates and MMT entry.

If MMT treatment reduces heroin consumption, we can expect the aggregate amount of time spent by heroin users in MMT to be an important determinant of heroin consumption. The aggregate amount of time spent by heroin users in MMT is a function of the rate of entry into MMT and the period of time spent in MMT. Researchers have examined the effect of police activity on entry into treatments, such as MMT, but the effect of such activity onretention in treatment has yet to be examined. This is a troubling omission. Demand-side DLE may fail to affect the rate of entry into treatment simply because there is a shortage of treatment places. If it constrains the rate of departure from treatment, it will obviously limit aggregate levels of illicit drug consumption, and thus some of the harm associated with consumption.

Heroin is not the only drug known to prompt involvement in crime. Juveniles consuming large amounts of cannabis also appear to commit property crime to fund their consumption (Salmelainen, 1995; Stevenson & Forsythe 1998; Baker, 1998). Yet there are few treatments available in Australia for cannabis dependence. At face value, it is difficult to argue that arresting people for cannabis possession and/or use exerts any effect on consumption rates among heavy users. Yet the majority of demand-side DLE arrests are for cannabis consumption. Clearly, further research is needed on the effects of demand-side DLE on users of drugs other than heroin, and on the cost-effectiveness of alternative treatment options and regimes in reducing the consumption of drugs other than heroin.

Of course, even within a particular category of drug, the optimal drug treatment strategy may vary across groups of users. Weatherburn, Lind & Forsythe (1999) found little evidence that demand-side DLE encouraged South East Asian and Aboriginal heroin users to enter MMT. This is a particularly disturbing finding, because these heroin users report higher levels of involvement in crime than many of users receiving MMT. Other issues warranting further research are the failure of demand-side DLE to encourage entry into treatment by some groups of drug users, and the most appropriate means of overcoming this problem. The extent of unsatisfied demand for various forms of drug treatment must also be assessed.

The public amenity problems caused by public drug markets creates acute tension between police and public health officials over harm minimisation. Faced with adverse publicity and/or public complaints about public drug use and dealing, police usually come under pressure from politicians and the media to crackdown on such activity. Very little rigorous research has been conducted on the efficacy of police crackdowns in dealing with drug-related problems of public amenity in Australia or elsewhere. Academic discussion of the impact of police drug market crackdowns on public amenity and public health has been speculative rather than informed by careful measurement of DLE effects. Rigorous research on the impact of a police crackdown on drug use and dealing would do much to inform demand-side DLE policy.

Crackdowns and harassment of drug users are not the only means of reducing the problems created by illicit drug markets. The literature on situational crime prevention suggests a variety of ways in which drug markets might be suppressed (Hough & Edmunds, 1999). For example, Hough and Edmunds suggest that the removal of injection sites, the introduction of closed circuit television, surveillance of cash points, and

measures designed to discourage prostitution would reduce the amenity of a drug market from the vantage-point of drug users, thereby discouraging both dealers and users. Further research on the scope for reducing the harm caused by drug markets through situational crime prevention techniques might help suggest ways in which to reduce our reliance on more coercive means of dealing with the harms created by illicit drug markets.

4.5.3 Researching the adverse effects of DLE

Whilst the negative effects of DLE have received more research attention in Australia than the positive effects, there is still a need for further research on ways of reducing the harm caused by DLE. Given the recent history of policing in New South Wales, there is obviously a need for further research on ways of limiting or preventing the corruption of DLE officers. It is, of course, difficult to evaluate the effectiveness of corruption prevention programs. However, it is possible to conduct research which would help design such programs (Chan, Doran & Devery, 1999). One of the most salient features of DLE is that although many police are exposed to opportunities and temptations to engage in corrupt behaviour, not all respond to these opportunities and temptations. Much attention has been given to this problem overseas (Newburn, 1999), yet apart from the work of Chan et al (1999) it has received very little attention in Australia.

There is also a need to research ways of minimising the risks posed to public health by DLE. Maher et al (1997, 1998) identify a range of risky behaviours engaged in by heroin users to avoid detection by police. It is unclear whether these behaviours are a generalised response to the possibility of police detection, or a reaction (based on past experience) to the aggressive and hostile way in which some police carry out their street level DLE duties. This is a crucial issue because it goes to the heart of whether demand-side DLE and public health policy are intrinsically or only contingently incompatible. It ought to be possible to resolve the issue by introducing policing protocols designed to minimise the risks posed by DLE, and evaluating their effects on user behaviour.

Another potentially adverse effect of DLE deserves close attention. There is credible evidence that arresting an individual can significantly suppress his/her future employment prospects (Hunter & Borland, 1999). One might reasonably expect imprisonment to exert the same effect. Arrest and imprisonment may be justified if the individual arrested is known to be involved in serious or persistent property crime and/or is involved in commercial drug trafficking. In this instance, the harm done to the affected individual may be offset by some larger benefit to the community. This is less likely when the arrest or imprisonment is for a minor offence, such as possession of a small quantity of drugs or possession of drug use implements. In such a case, arrest and imprisonment may result in a net social loss. Better information is needed on the social costs of arresting and/or imprisoning minor drug offenders, particularly given the evidence from Ali et al (1998) suggesting that being arrested for a minor cannabis offence exerts no deterrent effect.

4.6 CONCLUSION

Despite a clear theoretical rationale, DLE policy remains seriously under-researched. Little is known about the effects and effectiveness of supply-side DLE. Among the various research needs identified in this area, the most pressing are to gain a better understanding of how those involved in the supply-side of a drug market view the activities of supply-side DLE and how this, in turn, influences the price, purity and availability of illicit drugs. We also need a better understanding of how drug users respond to changes in drug price, purity and availability. All these questions would be resolved if we had a well grounded model of the dynamics of illicit drug markets.

We know somewhat more about the effect of demand-side DLE. Even with this, however, there are significant gaps in the knowledge base underpinning current policy. The most salient problem concerns the impact of street level DLE on demand for illicit drugs. We need better information, in particular, about the perceived risks and costs created by demand-side DLE and how these perceived risks and costs influence willingness to enter treatment. We also need to examine ways in which to prevent or ameliorate the harms created by DLE, such as those pertaining to public health, corruption and employment. To this end it would be useful to devise and evaluate protocols designed to minimise the various harms now associated with DLE.

5. RESEARCH ON COERCED TREATMENT

5.1 INTRODUCTION

Legally coerced drug treatment is undertaken at the behest or on the order of a court by those charged with or convicted of an offence to which their drug dependence has contributed (Hall, 1997). It has been apparent for some time that we cannot rely solely on deterrence and incapacitation to reduce the harm associated with illicit drug use (Kramer, 1978; Mushkin, 1975; Chan, 1995; Peters & Murrin, 2000). It is equally clear that punitive sanctions for drug crime and drug-related crime cannot be avoided simply by providing voluntary treatment places and inviting convicted offenders to avail themselves of them. These views have prompted policy makers to consider placing people convicted of drug-related crime in some form of coerced treatment.

The goal of legally coerced treatment is to reduce criminal recidivism among people who commit drug-related offences. The strategy used to achieve this goal is to divert drug dependent offenders away from the criminal justice system and into an appropriate treatment modality, most often as an alternative to incarceration, but usually with the threat of incarceration if treatment requirements are not met (Hall, 1997). The rationale for coerced treatment is that the drug dependence of some offenders has contributed to their offence, treatment is an effective way of reducing the severity of dependence, and therefore of reducing the likelihood of reoffending (Inciardi & McBride, 1991). Australian evidence for this assertion was provided by Thompson (1995), who found that incarcerated heroin dependent offenders were very likely to relapse to heroin use on their release, and hence to reoffend and return to prison.

Coercion programs have operated in New South Wales (NSW) for more than two decades (NSW Bureau of Crime Statistics and Research, 1981). They are intended to achieve beneficial outcomes for the community. Coerced treatment is intended to reduce the extent of illicit drug use, drug-related crime, and other harms associated with drug use in a cost-effective manner. There are also beneficial outcomes for those coerced into treatment, through a reduction in their drug use and the harms associated with that use, and, where possible, a minimisation of the extent of contact with the criminal justice system and the negative consequences of such contact.

This chapter is divided into seven sections:

- a brief overview of legally coerced treatment in Australia
- a discussion of the rationale for legally coerced treatment
- a review of the relatively limited research on the efficacy of coerced treatment
- consideration of treatment and ethical issues in the use of legally coerced treatment
- a research plan relating to legally coerced treatment including short and long term research priorities and objectives.
- an outline of the trial of a dedicated Drug Court in NSW
- a summary.

5.2 LEGALLY COERCED TREATMENT IN AUSTRALIA

In Australia, legally coerced treatment for drug dependence is one of several "diversionary" measures for drug offenders designed to divert them from the criminal justice system. Diversion programs evolved in the juvenile justice system. They are

also used for offenders other than drug offenders. They involve a hierarchical series of interventions tailored to the gravity and circumstances of the offence, and the life circumstances of the offender (Spooner, Hall & Mattick, 2000). With regards to drug offenders specifically, diversion has two primary objectives:

- to divert offenders with less involvement in the drug subculture and crime away from the criminal justice system, because it is costly to deal with minor offenders in this way, and because it is thought that contact with the system may be criminogenic for minor offenders
- to coerce those with greater drug dependence and criminal involvement to adopt an appropriate treatment modality (Alcohol and other Drugs Council of Australia - ADCA, 1997).

Offenders whose criminal offence is drug-related are targeted for drug diversion strategies. This includes those charged with use, possession and/or supply of an illicit drug; those who were intoxicated at the time of their offence; and those who committed an offence in order to obtain drugs or to financially support their drug use (Spooner, Hall & Mattick, 2000). This broad group comprises people who are law-abiding except for their illicit drug use; people with a wide range of patterns of drug use, from recreational to dependent; people unlikely to reoffend, people likely to reoffend, and recidivist offenders; and people who have committed various offences and are subject to a range of sanctions. The implication of this degree of heterogeneity is that a range of responses must be tailored to the offence, the nature and extent of drug use, and the probability of recidivism (ADCA, 1997).

Current diversion measures used in Australia may be taken at any time between when an offender is detected by police and when s/he is disposed by the court (Swain, 1999): before arrest, before trial, before sentence, after sentence, and before release. ADCA has identified five distinct types of diversion implemented in jurisdictions worldwide:

i. informal police diversion - individual police officers exercise their discretionary powers not to proceed against offenders
ii. formal police diversion - senior police officers formally caution offenders, and a record of the offence is usually kept
iii. statutory diversion - offenders are directed towards various interventions in an effort to avoid their progression into the criminal justice system, eg the Cannabis Expiation Scheme operating in South Australia
iv. prosecutorial diversion - prosecutors intervene and direct offenders away from the criminal justice system if they believe the community is best served by treating offenders rather than subjecting them to court action including sanctions such as fines, bonds or imprisonment
vi. judicial diversion - based on the discretionary power of magistrates and judges, courts may order a range of dispositions and interventions.

Legally coerced treatment in Australia has most often taken the form of judicial diversion, in which offenders are offered a constrained choice of incarceration or some form of treatment (Carney, 1987; Fox, 1992). The sentencing of convicted offenders whose criminal conduct has been drug-related, is also often deferred pending entry into and evidence of progress on some treatment regime. These sorts of coerced treatment programs have never been evaluated thoroughly. However, recently, several states have introduced dedicated drug courts. These courts are designed to administer cases referred for judicially supervised drug treatment and rehabilitation within a court enforced drug treatment program (Makkai, 1998).

Whilst no drug court evaluation has yet been completed in Australia, in NSW, a 30-month trial of a drug court is currently underway, with the effectiveness and cost-effectiveness of the court subject to evaluation by the NSW Bureau of Crime Statistics and Research. In the NSW trial, eligible offenders (non-violent drug offenders facing a custodial sentence) are referred from their local court to the drug court, where they are either accepted on the drug court program (the experimental group), or are sent back to the referring court and dealt with in the standard manner by the criminal justice system (the control group). The allocation procedure is random, a fact which makes the NSW trial the most rigorous undertaken to date, and of great interest to policymakers worldwide.

5.3 RATIONALE FOR LEGALLY COERCED TREATMENT

Hall (1997) has identified four main potential arguments in favour of legally coerced treatment: reduced illicit drug use and drug-related crime, reduced costs associated with drug-related crime and law enforcement, the relative ineffectiveness of conventional sanctions in deterring drug use and drug-related crime, and reduced spread of blood-borne viral infections among and from prisoners. Each of these arguments is examined below.

5.3.1 Reduced illicit drug use and drug-related crime

Although treatment for drug dependence does not eradicate drug use completely and permanently, it has consistently been shown to be effective at reducing both drug use and the crime associated with this use (eg Bell, Hall & Byth, 1992; Dole et al 1969; Egerston, Fox & Leshner, 1997; Gerstein & Harwood, 1990; Gossop, Marsden & Stewart, 1998; Hall, 1996; Hubbard et al 1989; Mattick & Hall, 1993; Maugh & Anglin, 1994; Ward, Mattick & Hall, 1998). Although research on the effectiveness of legally mandated treatment is scant, reviews of this literature have concluded that the beneficial outcomes of treatment are not diminished if treatment is coerced as opposed to voluntary (eg Hubbard et al 1989; Hall, 1997). Indeed, Makkai (1998) argues that treatment is more effective when combined with legal sanctions.

Some outcome studies (reviewed by Maddux, 1988) have suggested that in some circumstances, this is the case. However, the additional benefits achieved by coerced compared to voluntary patients were shown to be modest, and follow up periods were short. Criminal justice clients have higher rates of entry into treatment (Hser et al 1998; Wish & Johnson, 1986), and tend to remain in treatment programs longer than voluntary clients (Collins & Allison, 1983; De Leon, 1988; Loneck, Garrett & Banks, 1996; Webster, 1986; Harford, Ungerer & Kinsella, 1976). This may contribute to the positive outcomes observed in relation to coerced treatment since length of retention in treatment is known to be an important factor affecting treatment outcome (eg Coombs, 1982; Katz, Long & Churchman, 1975; McLellan, Luborsky, O'Brien, Woody & Druley, 1982; Simpson, 1979). Moreover, some criminal justice clients were closely supervised by probation or parole officers during and after treatment. It is thought this may contribute to the maintenance of gains made during treatment (Hubbard et al 1989). Thus, coerced treatment may prove a useful alternative to incarceration for many criminally active drug users who will not voluntarily enter treatment. In theory at least, it should reduce both drug use and associated criminal activity.

5.3.2 Reduced costs of drug-related crime and law enforcement

The fact that the great majority of drug-related offences are not detected (Atkinson, 1992) makes it difficult to calculate accurately the financial costs to society of drug-related crime. However, Walker (1997) estimates that in 1996, drug-related crime cost

Australia $2000 million. Clearly, a reduction in the prevalence of drug-related crime would reduce the financial burden borne by the community. Collins and Lapsley (1996) estimate that in 1992, the cost to Australian society of law enforcement related to illicit drugs was more than $450.6 million, almost two-thirds of which related to administering and operating the prison and court systems. The costs of incarceration represent a substantial proportion of state law enforcement expenditure. The average cost to the Department of Corrective Services for each inmate detained in NSW prisons during 1997-98 was $148.25 per day (NSW Department of Corrective Services, 1998).

Much research has shown that providing treatment for dependent drug users reduces the frequency and amount of their drug use (eg Egerston et al 1997; Gerstein & Harwood, 1990; Gossop et al 1998; Hall, 1996; Hubbard et al 1989; Ward et al 1998). Given the close connection between intensity of drug use and frequency of offending (see chapter 3) the reduction in drug-related crime and an accompanying reduction in the costs associated with reduced drug use are not surprising (Bell et al 1992; Hall, 1996; Maugh & Anglin, 1994; Ward et al 1998). Treatment for drug dependence is also cost-effective. In the United Kingdom it has been shown that every pound invested in treatment represents a saving of more than three pounds in terms of reduced demands upon the criminal justice system (Gossop et al 1998).

Compared to incarceration, treatment has frequently been shown to be a more cost-effective manner in which to deal with drug dependent offenders, both adult (eg Caulkins, Rydell, Everingham, Chiesa & Bushway, 1999; Hubbard et al 1989) and juvenile (eg Spooner, Mattick & Noffs, 1999). A coerced treatment program which means fewer drug users are incarcerated may lead to substantial savings to government. Moreover, added benefits accrue from the probability that coercion strategies which reduce the number of drug offenders prosecuted in court may also reduce the considerable court delays which are currently the norm in NSW Courts (Weatherburn & Baker, 2000).

5.3.3 Lack of effectiveness of criminal sanctions

Although incarceration represents a significant financial burden on Australian society, it is an effective, though not cost-effective means of temporarily incapacitating offenders (Chan, 1995). However, criminal sanctions are relatively ineffective at decreasing recidivism rates among offenders. Howells and Day (1999) found that the effect of criminal sanctions on reducing recidivism was negligible, and that treatment and rehabilitation programs were far more effective. In the context of drug-related offences, Fagan (1994) analysed sanctions and recidivism for 6800 drug offenders in New York City between 1983 and 1986, and reached a similar conclusion, arguing that "drug crimes appear to be intractable, persistent behaviours that are insensitive to the severity of criminal sanctions" (p 203). Consistent findings such as these led Howells and Day (1999) to conclude that criminal sanctions would reduce recidivism only when combined with some form of rehabilitation.

5.3.4 Reduced spread of blood-borne viral infections among and from prisoners

The onset of HIV/AIDS and the spread of other blood-borne viral infections (BBVIs) such as hepatitis C among injecting drug users (IDUs), provides a further argument for treating rather than incarcerating drug dependent offenders: prisons constitute fertile ground for further spread of BBVIs among incarcerated IDUs due to the lack of sterile injecting equipment and condoms (Dolan & Crofts, 2000). It is also possible that BBVIs will spread to the general community via the sexual partners of incarcerated IDUs following their release from prison. Although the prevalence of HIV in Australian

prisons is low, and the prevalence of injecting drug use is lower in prisons than in the community, there is a documented case of HIV transmission by needle-sharing in an Australian prison (Dolan, Hall, Wodak & Gaughwin, 1994). Providing coerced treatment in the community should reduce HIV transmission by reducing the number of incarcerated IDUs.

5.5 EFFECTIVENESS OF LEGALLY COERCED TREATMENT

Although the potential benefits of legally coerced treatment are impressive, little data is available regarding the frequency or effectiveness with which this option is exercised in Australia. Rather than evaluating their impact or effectiveness, reports on Australian coerced treatment programs describe their rationale and mode of operation (Rigg & Indermaur, 1996; Skene, 1987; Williams, 1982),. Evidence on the effectiveness of coercion for illicit drug users is therefore scant. It is based primarily on research conducted in the United States between the 1950s and the 1970s. Although studies have examined different forms of treatment and degrees of legal coercion, few have done so systematically, and none with a view to examining interactions between treatment modality, client characteristics, and extent of legal pressure.

Vaillant (1988) describes 100 male heroin users who entered a prison hospital for abstinence-oriented treatment for heroin dependence in 1952 at a mean age of 25 years and with a mean of two years of dependence at time of admission. They were followed up for 20 years. One factor Vaillant found contributed to prolonged abstinence was parole supervision in the community for a year or more following imprisonment. Only severe offenders with more extensive criminal and drug use histories received sentences which included this parole period. However, this group was more likely than less severe offenders to manifest periods of abstinence for three or more years. Although Vaillant's data did not allow rigorous testing of the nature of the association between parole and outcome, he notes that parole imposed a structure on the offender's life, interfering with drug-seeking behaviour.

Anglin (1988) reviewed a number of studies of the California Civil Addict Program (CAP). Nearly 1000 heroin dependent offenders entered the CAP in the early 1960s for abstinence-oriented treatment involving a seven year commitment. This group was compared with other offenders who entered the program but, due to procedural errors, were released after minimal exposure to the in-patient treatment component, and were processed instead by the criminal justice system. Characteristics of the offenders are not described by Anglin beyond noting that the two groups were similar. Compulsory hospital treatment followed by intensive supervision in the community, including urine testing to monitor abstinence, produced substantial reductions in heroin use and crime among CAP participants during the seven years following commitment. These reductions were larger and occurred many years sooner than those observed in the comparison group. The CAP was later extended to include methadone maintenance treatment for heroin dependent offenders. For those who decreased their heroin use and criminal behaviour during the CAP, but relapsed following discharge from the program, methadone maintenance produced larger reductions in heroin use and crime than CAP alone.

De Leon (1988) reviewed the effects on treatment outcome of legal coercion into therapeutic communities during the 1970s. Failing to find evidence for differential outcomes between legally coerced and voluntary admissions to therapeutic communities, he found both groups showed significant post-treatment improvements in drug use, criminality and employment. Once again, offender characteristics are not described.

Although it is not strictly a study of legal coercion into treatment, a study by Dole et al (1969) compares drug offenders who were randomly assigned to parole with and without community-based methadone maintenance treatment. This study demonstrates the benefits of closely linking the criminal justice system with drug treatment. In this study, 12 prisoners who applied for methadone maintenance to be implemented shortly before they were released on parole were randomly assigned to parole with methadone. Meanwhile, 16 were assigned to an untreated control group. The average age of both groups was 30 years. Most had completed some high school, and had been dependent on heroin for an average of 12 years. In the year after release, none of the methadone group relapsed to dependent heroin use, compared to the entire control group, and only three of the methadone group were convicted of new crimes, compared to 15 of the control group. The methadone group was not coerced into receiving methadone. This study is one of only a few which assesses random assignment to treatment versus non-treatment.

The results of Dole et al (1969) are supported by two more recent observational studies of large samples of offenders coerced into methadone maintenance treatment in California (Anglin, Brecht & Maddahian, 1989; Brecht, Anglin & Wang, 1993). In the first study (Anglin et al 1989), dependent male heroin users induced to enter methadone maintenance did not differ from voluntary admissions in terms of demographic characteristics. All subjects tended to be in their late 30s, poorly educated, and with low rates of employment. Subjects in both the voluntary and coerced groups had first used heroin at a mean age of 18 years, and became dependent an average of two years later. Although the group coerced into methadone maintenance had slightly higher rates of serious property offences and higher proportions of time incarcerated and under legal supervision, they did not differ from voluntary admissions in terms of overall criminal behaviour during pre-treatment periods. Further, there was no difference between the groups in their response to treatment when they were followed up an average of 6.6 years after admission. Both groups exhibited considerable reductions in both heroin use and criminality post-treatment. However, there was a general pattern of regression toward pre-treatment levels following cessation of treatment.

The results of this study were replicated and extended by Anglin et al (1989), who recruited a larger and more diverse sample of coerced and voluntary methadone admissions with a mean age of 32 years and an average of 12 years of dependent heroin use. This sample was less criminally involved than the first sample, and included females (46 per cent) and offenders of different ethnic backgrounds (white 74 per cent; Hispanic 26 per cent). Again, no differences between groups were found in their response to treatment when they were reinterviewed an average of five years after admission. If anything, the group coerced into treatment exhibited larger reductions in criminal behaviour because they engaged in more criminal activity prior to entry into treatment. These findings led Brecht et al (1993) to conclude that, "voluntary motivation for treatment offers no advantage over legal coercion. In fact, an internal state promoting voluntary admission appears to be a transient phenomenon and is not sufficient, of itself, to maintain extended control over addictive behaviour in the absence of treatment program participation … a more externally constraining system that does not rely on a fluctuating individual motivational state seems warranted" (p 554).

Thus, studies of drug dependent offenders coerced into abstinence-oriented treatment (Anglin, 1988; Vaillant, 1988), therapeutic communities (De Leon, 1988) and methadone maintenance (Anglin et al 1989; Brecht et al 1993; Dole et al 1969) have demonstrated reductions in drug use and criminal activity. Studies which compare self referred with coerced clients have demonstrated equivalent benefits for the two groups (Anglin et al

1989; Brecht et al 1993; Collins & Allison, 1983; De Leon 1988). With the exception of the study by Dole et al (1969), in which drug offenders were randomly assigned to parole with and without community-based methadone maintenance treatment, these studies can be criticised on methodological grounds (Rotgers, 1992; Ward, 1979). In particular, the strongly positive conclusions drawn by Anglin (1988) regarding the efficacy of legally coerced treatment are based on a comparison of two groups who were admitted to the CAP, one of which was later released due to procedural errors. From these findings it cannot be established that participants did not differ in systematic ways from those who voluntarily presented for treatment, diminishing the validity and generalisability of the results.

Apart from such sampling issues, other methodological concerns raised in critiques of coerced treatment research include the appropriateness of statistical analyses, the reliability and validity of measurement, and the lack of experimental research designs (Ward, 1979). Further, studies of coerced treatment have generally failed to describe in detail the characteristics of the offenders. The generalisability of early findings from the United States to contemporary Australian society is uncertain. This is particularly the case in light of a small Australian study which compares court-referred with self-referred heroin users, and notes no clear benefits in diverting offenders away from the criminal justice system and into treatment (Desland & Batey, 1992).

A study conducted in New York (Inciardi, 1988) also failed to discover evidence of any benefits of legally coerced treatment. It has been argued that the program studied had been implemented in a completely inappropriate fashion and was "doomed to failure from its inception" (p 547). Leukefeld and Tims (1988) suggest that the distinguishing factor between effective and ineffective legally coerced treatment is the implementation of long term aftercare and monitoring. Anglin (1988) reports that close community supervision with objective drug testing is the component of coerced treatment that produces the greatest effect. Clearly, such theorising cannot substitute for methodologically rigorous Australian research which takes into account the wider experience of the American justice system with coercion programs, and which specifically addresses issues such as these.

The recent merging of the criminal justice and drug treatment systems has been exemplified by the development and growth of treatment-oriented drug courts. In an effort to reduce drug use and drug-related crime, these courts link defendants with community-based drug treatment programs. Despite the proliferation of these courts in the United States (Peters & Murrin, 2000) and frequent claims of success by their advocates, most so-called 'drug court evaluations' have not involved comparison groups and do not include data on drug relapse or post-program recidivism (Belenko, 1998). The few evaluations which have included comparison groups have generally found lower rates of re-arrest amongst drug court participants than among their comparison group counterparts (Belenko, 1998; Peters & Murrin, 2000).

5.6 ISSUES WITH THE USE OF LEGALLY COERCED TREATMENT

The potential benefits of legally coerced treatment are impressive and the literature suggests it is worthy of further investigation. However, there are other issues to consider in its use. As is the case with voluntary treatment, the coerced treatment program must be appropriate to the individual; any single treatment program will not be effective for all clients (Gerstein & Harwood, 1990; Hubbard et al 1989). There should be a range of treatment options to which criminal justice clients can be referred, based on their preferences. Specific ethical issues must be taken into account in the context of legally coerced treatment (Sheldon, 1987).

Some authorities consider coerced treatment to be an infringement on the civil liberties of those undertaking such treatment (eg Newman, 1974; Szasz, 1985). However, others argue that the right to not be treated must be denied an individual when there is a risk to life and/or high social costs are involved (Huberty, 1972). The wisdom of allocating scarce resources to coerced treatment in a climate in which voluntary treatment places are limited has been questioned by Hall (1997).

The World Health Organisation (Porter, Arif & Curran, 1986) states that compulsory treatment is ethically and legally justified if the rights of the individual are protected by "due process" and as long as effective and humane treatment is provided. In considering the ethical implications of coerced treatment, Fox (1992) points out that in no Australian jurisdiction does any legislation exist which would allow a sentencer to compel an offender to receive treatment. He argues that to ensure individual rights are protected and informed consent is obtained, offenders be offered at least two 'constrained choices': (a) whether to undergo the usual legal process or to participate in treatment, a benefit the offender is entitled to refuse (Sheldon, 1987). (b) If treatment is chosen, offenders should be able to nominate the type of intervention they will receive (Fox, 1992).

Hall (1997) cautions against the optimistic belief that legally coerced treatment will prove a panacea to the problems of extensive court delays, overcrowded prisons, and the high costs of both drug-related crime and the law enforcement efforts directed towards controlling such crime. He notes that our criminal justice and treatment systems are under-resourced, and that the effectiveness of coerced treatment programs will be constrained by ill-defined goals and strategies, unrealistic expectations of potential benefits, poor management and inadequate resources. In particular, any expansion of coerced treatment programs must be accompanied by funding for additional treatment places (ADCA, 1997). Otherwise, the existing treatment system will be even further constrained, those voluntarily seeking treatment may be denied it, and treatment personnel may become overwhelmed and demoralised by a large increase in the number of dependent users seeking treatment. Long waiting lists and unavailable services are compelling political facts which inevitably detract from the potential effectiveness of coerced treatment (Platt, Buhringer, Kaplan, Brown & Taube, 1988).

5.7 RESEARCH ISSUES WITH LEGALLY COERCED TREATMENT

The extant literature on legally coerced treatment suggests that this is an area which could provide benefits to the community in terms of reduced illicit drug use and crime, and which could do so in a cost-effective fashion. However, a great deal more research is needed before we can assess the value of coerced treatment or identify ways in which that value may be maximised. The priority questions for future research to address include:

Which forms of treatment (eg methadone maintenance, abstinence-based) are best suited to which classes of offender? This broad question encompasses areas which research must address.

Firstly, there is a need to clarify appropriate eligibility criteria for coercion programs to enable a better understanding of the target population. Due to problems in assessing genuine motivation, the principal difficulty is making an initial assessment of suitability. Miller (1985) broadly divides sources of motivation in relation to treatment for alcohol dependence into intrinsic (internally generated) and extrinsic (externally generated) motivation. The conventional wisdom has been that intrinsic motivation is necessary for treatment success (eg Rounsaville & Kleber, 1985). This view predicts that because coercion is a form of extrinsic motivation, it is unlikely to be conducive to treatment success.

Similarly, Prochaska and DiClemente's (1986) 'stages of change' model emphasises that in their drug use, clients cycle through different levels of motivation or readiness for change from (a) pre-contemplation - in which drug use is not considered problematic, to (b) contemplation - in which the user considers the advantages and disadvantages of making changes, to (c) action - in which the user begins to make changes. This model predicts that forcing a client into treatment before s/he has reached the appropriate level of motivation will not be helpful, and may possibly have detrimental effects. There has been little research to specifically address the effect on coerced treatment of sources and levels of motivation, despite the importance of these issues (De Leon, 1988).

A related question is whether coerced treatment is broadly effective across client types, or if there are certain clients who may respond more favourably to non-coercive treatments, even when coercive options are readily available (Rotgers, 1992). More generally, a better understanding of the client characteristics associated with a successful outcome of coerced treatment would facilitate the development of classification tools that can reliably identify criminal justice clients most likely to respond favourably to such programs (Rotgers, 1992).

The interaction between client characteristics and the coercive strategy chosen must also be examined (Platt et al 1988). There is increasing recognition of the heterogeneity of drug users, differences in how clients respond to various treatment modalities, and increased interest in prescriptive matching of patients to treatments (Project MATCH Research Group, 1998). These factors underline the importance of the form of mandated treatment and how that treatment fits client characteristics. It is essential that we develop a typology of coercive strategies which can be applied, along with an increasingly refined understanding of the differential effects of such pressures.

How cost-effective are different forms of coerced treatment compared with conventional sanctions? In the contemporary political climate, to demonstrate that coercion programs are beneficial in terms of reducing illicit drug use and crime is not enough to ensure their implementation and use. We must also show that such programs achieve these benefits at a cost equal to or lower than the cost of conventional sanctions.

What are the impediments to effective co-operation between a criminal justice system and treatment personnel? It has been observed in both Victoria (Skene, 1987) and NSW (Baldwin, 1979) that a lack of communication between, and differing expectations of, corrections and treatment personnel led to scepticism about the utility of coerced treatment and a subsequent reduction in its use by judges and magistrates. Williams (1982) notes that corrections and treatment personnel work within separate and often philosophically opposed frameworks, and that they will tend to view their roles as emphasising different objectives. Whereas the justice system is responsible for community protection, the treatment system is concerned with the well being of the individual. In particular, a breach of treatment requirements, such as non-attendance or relapse to drug use, tends to be expected by treatment providers, whereas corrections personnel consider such breaches to be grounds for sanctions (Skene, 1987).

Some authorities suggest that it is undesirable (Newman, 1974) or impossible (Smith, 1975) to successfully integrate the goals of the two systems. However, Williams (1982) illustrates the crucial role that community corrections officers who are integrated into the health care system play in coercion programs, mediating the differing aims of the various stakeholders and acting as conduits for improved communication between them. Clearly, any comprehensive evaluation of coercion programs must include provision for the opinions of key stakeholders to be taken into account, to ensure that best practice for coercion programs is developed and maintained.

Is 'net widening' a characteristic consequence of coerced treatment programs? If a coercion program was considered less onerous by criminal justice personnel than the normal legal process, it is possible that some people who may have received only a warning under previous policies, may be coerced into treatment if programs were expanded. The clarification of appropriate exclusion criteria is important in addressing this issue. It would be undesirable to cast the net so wide as to force individuals into treatment who would not ordinarily have required formal treatment if they had not come to the attention of the court. This consideration is pertinent given that if the offender breaches treatment requirements, s/he may face more serious sanctions than if s/he had not entered the treatment scheme at all. In this situation, coercion inadvertently increases the likelihood of re-offending, defeating its purpose of reducing criminal recidivism among drug-related offenders. If the target group and eligibility criteria are too wide, costly treatment and rehabilitation resources may be wasted due to a net widening effect (Rotgers, 1992).

In the longer term, other research objectives could usefully extend these basic research questions. For example, the issue of how long coercive measures should be in place in order to ensure that the maximum benefit is derived from them could be examined. Anglin (1988) found that a relapse rapidly followed the lifting of coercion, leading him to advocate periods of coercion of between five and 10 years. However, it has yet to be determined whether current systems of treatment and control can accommodate long term urine monitoring, probationary reporting and other coercion-related measures for the many clients who might be expected to enter treatment if coercion programs are expanded (Rotgers, 1992).

The question of appropriate sanctions for breaches of coerced treatment programs should also be addressed. Issues that could be examined include: breaches that should be dealt with by sanction, and the sorts of sanctions that are both proportionate to the gravity of the breach, and effective in preventing the recurrence of the breach. Previous research suggests there is a need to make clear to both the court and offenders that coerced treatment is not a 'soft option' which allows drug offenders to avoid punishment (Rotgers, 1992; Skene, 1987). Coerced treatment should be demanding to the offender, who should be closely monitored and accountable to the court. For coercion programs to be viable and effective, their goals, strategies and the requirements of all participants must be specified, including the sanctions imposed on offenders for any failure to fulfil the requirements of treatment.

As with drug law enforcement generally (Weatherburn 2000), there is a need to develop performance indicators for coercion programs in order to evaluate in an ongoing fashion their efficacy in achieving desired outcomes. For example, if the desired outcomes are defined as diverting drug dependent offenders from the criminal justice system and reducing recidivism, suitable performance indicators might be an increase in the proportion of drug dependent offenders who are diverted from the criminal justice system into appropriate treatment, and a reduction in recidivism among drug offenders. Once appropriate indicators are agreed, the implementation of a way of regularly assessing these indicators will allow ongoing monitoring and evaluation of coercion programs. However, performance indicators will not substitute for rigorous evaluation in the first instance.

If our understanding of the operation of coerced treatment is refined through research, and if rigorous objective evaluations show that the strategy is effective and cost-effective in achieving its desired outcomes, the utility of expanding coercion programs from adult courts into children's courts could be examined by future research. Intervening early in the drug use and criminal careers of juveniles with significant drug problems could significantly reduce the rates of illicit drug use and drug-related crime in the future.

5.8 CONCLUSION

The extant literature suggests that legally coerced treatment programs have the potential to provide substantial benefits to the community in terms of reduced illicit drug use and drug-related crime. However, there is currently a dearth of information regarding the effectiveness of coerced treatment programs in Australia.

The most important question to be addressed is whether coerced treatment is actually more cost-effective in dealing with drug-related crime than conventional sanctions. The drug court evaluation being conducted by the NSW Bureau of Crime Statistics and Research provides a start in this direction, but it is only a beginning. Other states (eg Western Australia and Queensland) are trialing drug court programs which differ in significant respects from the NSW model. It would be extremely useful to have reliable comparative data on the cost-effectiveness of the three programs.

As part of this process we need to evaluate the cost-effectiveness of more conventional forms of coerced treatment, such as those involving deferral of sentence pending treatment. It would also be worth trialing coerced treatment programs at points in the criminal justice process other than between conviction and sentence. Given the importance of drug use as a predictor of recidivism, for example, it would be worth trialing a post-release program in which sentenced offenders are placed in treatment programs as a condition of parole.

Closely related to the issue of cost-effectiveness, is the problem of identifying which treatment programs work best for which offenders. This is a complex problem to research because it is generally neither feasible or ethical to randomly allocate offenders to different treatment regimes. It would be extremely useful, nevertheless, to compare success rates on various outcome measures for individuals given different treatment regimes while making some attempt to control statistically for possible confounding variables. The value of this sort of data to policy makers is that it enables them to optimise public investment in coerced treatment.

Perhaps the third most important problem facing policy makers is how best to integrate treatment and criminal justice approaches to managing drug-related crime. The most important question in this respect is how to reconcile court and treatment provider views on how best to deal with drug dependent offenders who repeatedly breach the conditions of their treatment program. Research which identifies the barriers to effective co-operation between the treatment and criminal justice personnel would make the business of implementing coerced treatment programs a great deal easier.

6. RESEARCH ON PRIMARY PREVENTION

6.1 INTRODUCTION

Preceding chapters have focused largely on law enforcement strategies designed to address problems created by rising levels of illicit drug use in Australia, particularly during the last decade. The 1990s also saw a growth of interest in prevention programs, particularly school based education programs. This chapter reviews progress in primary prevention of drug use and harm. The literature on resilience in children is examined first, as this is a promising area for early prevention intervention. However because primary prevention for this age group substantially comprises school based drug education, literature dealing with this intervention strategy is given greatest prominence.

Resilient children are those who manifest the ability to adapt and develop, despite risk and adversity. Such children are more likely to grow into confident and competent adults, who are less likely to exhibit social problems, including involvement in crime and problematic drug use (Farrington, 1994). Unfortunately, there is little research exploring how risk factors can be reduced, and resiliency increased in childhood as strategies to reduce the likelihood of problems with drug use later in life. The final section of this chapter summarises the extensive research evidence on education approaches to drug use and harm and identifies the approaches which consistently achieve the best results. This forms the basis for recommendations on how existing research findings can be used to develop better education prevention practices and on further research which could be undertaken to test and refine promising approaches.

6.2 REDUCING RISK AND BUILDING RESILIENCE

In developing drug prevention programs, researchers have created a framework for better understanding the aetiology and consequences of drug use. This framework is still evolving. The core elements comprise risk factors, protective factors, and the interplay between the two during the social development of the child (Brounstein & Zweig, 1999; Catalano, Kosterman, Hawkins, Newcomb & Abbott, 1996). The literature indicates that certain factors in a child's life predict a range of health and social problems, including problems with drug use. Hawkins, Catalano, and Miller (1992) identify 17 groups of risk factors which precede substance abuse. Four of these they considered societal and cultural contextual factors. The other 13 they considered to be either individual or interpersonal factors.

Contextual risk factors

- laws and norms favouring drug use
- availability of drugs
- extreme economic deprivation
- neighbourhood disorganisation

Individual and interpersonal risk factors

- physiological factors such as sensation seeking, poor impulse control, and genetic predisposition
- family drug behaviour and attitudes
- poor and inconsistent family management practices
- family conflict
- low bonding to family

- early and persistent behaviour problems
- academic failure
- low level of commitment to school
- peer rejection in elementary grades
- association with drug using peers
- alienation and rebelliousness
- attitudes favourable to drug use
- early onset of drug use

Researchers believe that risk factors are cumulative, indicating that children with more risk factors are more likely to use drugs (Newcomb & Bentler, 1988). The corollary is that if these risk factors in a child's life can be reduced, the risk of subsequent drug use and associated problems is also lessened.

Brounstein and Zweig (1999) state that the relationship between risk factors and drug use is not linear. Exposure to even a considerable degree of risk in childhood does not mean that drug use or other problem behaviours will necessarily follow. Many children grow up in high-risk environments, but still emerge with few problem behaviours. According to Brounstein and Zweig, the reason for this is the presence of protective factors in the lives of these young people. Hawkins et al (1992) consider that protective factors essentially comprise the positive, healthy aspects of a child's life, which act to balance and reduce the impact of the risk factors. They also make the point that because some risk factors for drug use problems may be difficult or impossible to change, identification of protective factors is important for prevention policy.

Unfortunately, there is little research evidence on factors which specifically protect against problematic drug use. Garmezy (1985) has identified the following general protective factors in children exposed to extreme family stress:

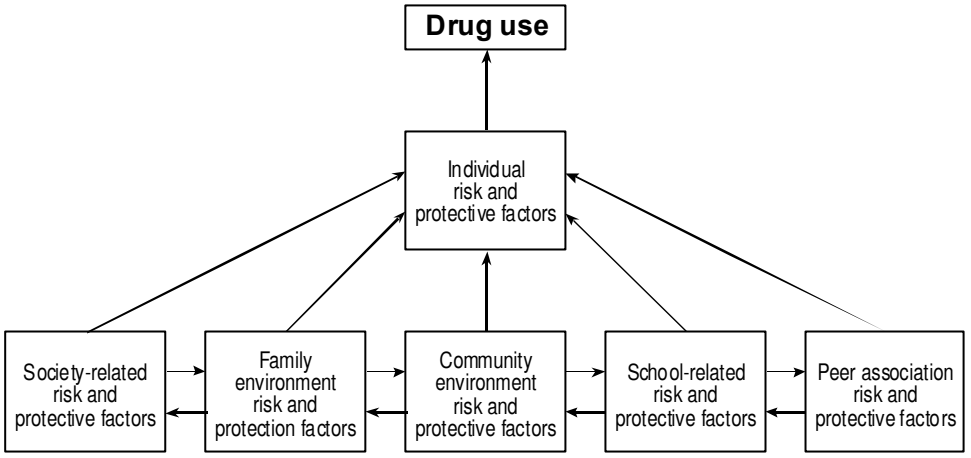
- positive temperament
- supportive family milieu
- an external support system which reinforces the child's own coping efforts.

Rutter (1985) notes that resilient children display a repertoire of social problem solving skills and a belief in their own ability to cope. More recently, Brook et al (1990) found that the risk posed by drug-using peers was moderated by a strong attachment to parents and by parent conventionality. They also reported the strengthening of one protective factor by another, such as a strong paternal bond reinforcing the effects of positive maternal characteristics.

Brounstein and Zweig (1999) consider that the interaction of drug use risk and protective factors can be better understood within a framework comprising six life domains. The individual is at the core of this model and is influenced by five environmental domains: society, family, community, school and peers. The interplay between the risk and protective factors, both within and between the individual and environmental domains determines the degree to which drug use occurs. Depicted in Figure 3, this web of influence provides guidance as to the target factors for prevention programs and the interrelationship between programs.

Brounstein and Zweig (1999) reiterate that risk and prevention factors are not opposite sides of the same coin. They suggest that building on and enhancing protective factors is a more promising approach, because it stresses positive elements in individuals and environments. Past prevention programs, which focused on risk factors have been criticised for stressing deficits and, in the process blaming the victims, even though many of the risk factors were beyond their control.

Figure 3: The web of influence: Drug use risk and protective factors



Taken from Brounstein and Zweig (1999)

The shift away from risk-focused prevention has led to a greater emphasis on the concept of resilience. The term originated in the longitudinal studies conducted by Garmezy and Streitman (1974) and Rutter (1979). Along with others in the 1970s and 80s, they examined the developmental qualities of children who prevailed despite exposure to risk factors such as poverty, problem drinking parents, and dysfunctional families. For example, Werner and Smith (1982) found that in rural Kauai, Hawaii, being raised in a small family with low levels of conflict, being intelligent and being firstborn lessened the effects of extreme poverty on educational, economic and health outcomes. The findings of these early researchers led to an interest in the aetiological importance of resilience factors which protect against a range of health and social problems, including drug problems.

Wolin and Wolin (1995) have defined resilience as successful adaptation despite risk and adversity. In reviewing contributors to resilience, the Hazelden Foundation (1996) identifies the following factors:

- a strong caring relationship with a parent or another adult
- feelings of success and a sense of mastery in at least one area of the child's life
- social skills and ability to consider personal safety when making decisions
- problem solving skills
- a sense that hard work and perseverance will bring reward
- surviving previous stressful situations
- strong personal and environmental resources, such as good health and a supportive family

In designing interventions to prevent drug use problems, Hawkins et al (1992) state that it is important to focus on the potential positive effects of protective factors. McMillan (1992) identifies the following characteristics of programs that were effective in building resilience in students who were at risk:

- early intervention
- positive school climate
- a central role for the teacher

- small class size
- parent involvement
- self-esteem and support building
- guidance coupled with vocational education
- peer involvement.

Specific resilience building in terms of drug use problems has not been identified. However, Hawkins et al (1992) suggest that the available evidence indicates that developmentally appropriate, multi-component, intersectoral programs are likely to achieve the best results, particularly if they simultaneously address risk and protective factors. Programs should be targeted at those with the highest risk by virtues of their exposure to multiple risk factors. Programs should target the greatest risk factors for those groups. Where programs cannot reduce risk, they should seek to enhance protective factors in order to buffer the risks that cannot be changed.

Given the current state of knowledge about prevention through resilience building, it is difficult to make specific recommendations as to research and program development in the Australian context. Brounstein and Zweig (1999) identify eight effective prevention programs without specific drug education components. Well implemented and rigorously evaluated, these programs employed various strategies to target a range of youth populations from the general to particularly high risk groups. Brounstein and Zweig (1999) found three unifying themes to be evident in the eight programs:

- promotion of supportive caring relationships between youth and members of their families, their communities and their peer groups
- provision of a multifaceted intervention specifically tailored to the needs of the target group
- success in reducing the onset or use of drugs or in reducing risk factors and /or enhancing protective factors related to the future drug use.

However, the considerable diversity in the programs' characteristics makes it difficult to identify specific features that are associated with each element of success. The other cautionary note pertains to the goal of these prevention programs, which was to unselectively prevent all forms of drug use. The longitudinal study of a group of children from pre-school to adulthood by Shedler and Block (1990) challenges the notion that any drug use is antisocial and indicative of individual deficit. They found that the relationship between psychological adjustment and drug use is not linear. Those young people who had engaged in some drug experimentation, primarily with cannabis, exhibited better psychological health than non-users, although frequent users were considered maladjusted. Similarly, the parenting experiences of the experimenters as young children, were superior to those of both the abstainers and the frequent users.

Further formative research is needed to determine what resilience factors are linked to reduced drug problems and what can be done to increase resilience. There needs to be more systematic investigation of the links between program elements and changes in drug using behaviour. Work needs to be done on identifying and changing factors associated with problematic drug use, rather than drug use per se. Finally, any intervention research involving at risk young people must be carefully designed and monitored so that it does not stigmatise the group it is designed to assist.

At this point in time we do not consider that intervention research in the field of childhood resilience is likely to succeed in identifying short term strategies for preventing drug problems. The field is still embryonic in terms of its theoretical foundations and empirical

data. Moreover, many of the characteristics of programs identified as building resilience, such as small class size, are already recognised for their pro-social benefits. In practical terms, conducting further research on the drug prevention benefits that would derive from optimising these factors would not be productive unless the capacity existed to implement the changes.

6.3 PREVENTION THROUGH DRUG EDUCATION

6.3.1 The development of modern drug education

The beginning of the modern era in drug education is probably best marked by the 1963 report of the advisory Commission on Narcotic and Drug Abuse appointed by President Kennedy. Illicit drug use by American adolescents was increasing rapidly in the early 1960s and the Advisory Commission strongly rejected the approach to prevention that had prevailed since the repeal of prohibition, namely that young people should not be educated about drugs (President's Advisory Commission on Narcotic and Drug Abuse, 1963). The Commission acknowledged:

> 'the argument runs that education on the dangers of drug abuse will only lead teenagers to experimentation and ultimately to addiction'. (p 18)

However, the Commission considered that the fundamental issue was not whether young people should be educated, but who should provide that education. The Commission considered that prevention goals would be better served if education was properly conducted by schools, churches and community organisations, rather than occurring informally and possibly being provided by drug users. Drug education programs from this era were based on the premise that young people simply lacked information about the negative effects of drug use. Accordingly, it was thought that providing them with factual information would establish negative attitudes and deter use (Perry and Kelder, 1992). Evaluation of these 'information only' approaches indicates that they had little impact on attitudes or behaviour (Kinder, Pape & Walfish, 1980).

The failure of information programs spurred two developments during the 1970s: affective programs and abuse prevention (Gorman, 1996; Beck, 1998). Affective programs sought to reduce drug use by enhancing personal development. Programs typically included training in self-esteem, decision-making, values clarification, stress management and goal setting. The evidence indicates that these programs did not succeed in changing behaviour (Hansen, 1992).

According to Dielman (1994), one of the reasons for this lack of success was that affective programs had the reduction of use or abuse as their stated goal, but were evaluated against completely different dependent variables, such as increased self esteem. In addition, this model makes assumptions that drug use by young people is driven by individual deficiency and that abstinence can be achieved by enhancing self-esteem or improving decision-making skills. Shedler and Block's (1990) research refutes this notion that any drug use is a sign of poor psychological adjustment. They found that young people who engaged in some experimentation with drugs, primarily with cannabis, exhibited the best psychological health profile on a standard personality assessment instrument, whereas abstainers were relatively anxious, emotionally constricted, and lacking in social skills.

The drug education programs developed in the 1980s were theoretically and methodologically more rigorous. The social influence model developed from Bandura's (1977) social modelling theory and McGuire's (1964) work on social inoculation/resistance

training, has dominated this most recent phase of drug education. The approach is based on the belief that young people begin to smoke, drink and use other drugs because of social pressure to do so from a variety of sources, such as the mass media, their peers and even the image they have of themselves. In order to successfully resist the adoption of undesirable behaviours, young people need to be inoculated by prior exposure to counter-arguments and the opportunity to practise the desired coping strategies.

The social influence model was used initially to prevent young people taking up smoking. Success in this area led to use of the approach to reduce the uptake of other drugs (Perry & Kelder, 1992). Ellickson and Bell (1990) report that their project Alert social influence intervention curbed cannabis uptake by one third and reduced current use by 50-60 per cent in a sample of students from 30 junior high schools in California and Oregon. Hansen et al (1988) compare the impact of a 12 session, peer-led social influence program, Project SMART, on drug use by 7th grade students with changes achieved by an affective program. These researchers found a social influence approach incorporating a substantial peer education component, was effective in delaying the uptake of smoking, drinking and cannabis use. Students who participated in the affective program, increased their use of all three drugs, over both the social influence students and the no intervention controls.

The finding by Hansen, Johnson, Flay, Graham, and Sobel (1988) that affective drug education actually increases use illustrates an important lesson to be learned from the history of drug education. Poorly conceptualised programs can cause harm. Dusenbury, Falco and Lake (1997), in a review of effective drug education programs, in The United States, found that while a lot was known about the components of the more promising drug education curricula, most of the money spent on drug education in that country has not been spent on promising programs.

Project DARE (Drug Abuse Resistance Education), uses specially trained police officers to provide drug education lectures. It is the most widely implemented drug eduction program in the United States (Dusenbury, Falco & Lake,1997). In a meta-analysis of eight methodologically rigorous evaluations of DARE programs, Ennett, Tobler, Ringwalt and Flewelling (1994) found that the program's effect for drug use was not statistically significant. In fact, it was substantially smaller than for programs emphasising social skill development and interactive teaching techniques. DARE is well known because it is aggressively marketed. It may be appealing to stakeholders in drug education for reasons other than efficacy. Ennett et al (1994) suggest that it appeals to political decision makers, because it links drug education and law enforcement. At the same time, it is attractive to students, because it involves the unusual opportunity to hear a policeman talk about drugs. Teachers also see the program as attractive because of its appeal to students and the break provided by somebody else delivering a lesson.

The emotive nature of drug use by young people means that intuitive, or ideologically driven decision making is not uncommon when selecting drug education programs. However, with the emergence of a coherent body of knowledge on drug education, there is an increasing focus on data-driven approaches. These recognise that program success is determined primarily by the extent to which the intervention changes the behaviour of students, schools, neighbourhoods and families in a manner that influences drug use and harm. Choosing a drug education program on the basis of its intuitive appeal or popularity, rather than its effectiveness, could mean that it is taking the place of other more beneficial drug education interventions. Once established, well promoted but ineffective programs can consume resources over a long period, obstructing the implementation of programs which produce better outcomes.

6.3.2 What components contribute to effective programs?

The history of drug education indicates that the early programs were clearly ineffective. Nevertheless, Dielman (1994) considers these programs and the accompanying research to be useful as a foundation and impetus for the development of better interventions. In more recent reviews and meta-analyses of contemporary drug education programs, a picture is beginning to emerge as to what interventions are likely to make a difference.

Tobler (1986) conducted a meta-analysis of 143 drug prevention programs designed for young people. Concluding that programs which combine peer influence with specific skills training are the most effective, she comments that programs offering alternatives to drug use, such as sporting or social activities, are particularly useful for at risk students. Bangert-Drowns (1988) conducted a meta-analysis of 33 school-based prevention programs which focused on alcohol and emphasised education strategies. He found that education increased drug related knowledge and changed attitudes, but drug use behaviour changed only in students who had volunteered to participate in the education. He also found that programs, where lectures were the only intervention had less influence on attitudes than those that used discussion.

In a review of 45 drug education studies, Hansen (1992) found that social influence and multiple component programs which typically featured social influence strategies, demonstrated more success than either information-based or affective education approaches. Hansen's findings have been supported and extended by other researchers in the area. Eggert, Thompson, Herting, Nicholas and Dicker (1994) and O'Donnell et al (1995), among others, have reported that drug education programs based on social learning principles have reduced student drug use. These programs have also demonstrated broader prevention benefits. Programs have reduced anti-social behaviour and school behaviour problems; increased academic performance and commitment to schooling, and reduced affiliation with deviant peers (O'Donnell, Hawkins, Catalano, Abbott & Day, 1995; Spoth, Redmond, Haggerty & Ward 1995). The effects appear to be stronger if three things happen: (a) booster sessions are added at critical points of developmental transition (Bell, Hall & Byth, 1992; White & Pitts, 1998); (b) school based activity is complemented by a parenting component (Rohrbach et al 1994) and (c) the social messages are reinforced at the broader community level (Perry & Kelder, 1992; Perry, Williams, Veblen-Mortenson, Toomey, Komro, Anstine, McGovern, Finnegan, Forster, Wagenaar & Wolfson, 1996).

Almost invariably, these successful programs were based on social influence models. Initially most sought to develop specific skills to resist the pressures to initiate drug use. However, Botvin (1986) includes a general set of skills for enhancing individual competence in his Life Skills Training (LST) program to enhance a young person's ability to deal with the indirect pressures to use drugs. The skills targeted by Botvin's program are:

- development of greater autonomy
- self mastery, self esteem and self confidence
- coping with social anxiety
- better knowledge of drug use prevalence among their age peers
- development of attitudes and beliefs consistent with non use.

The LST approach has been evaluated in ten studies. According to Dusenbury, Falco and Lake (1997), it has postponed the onset of alcohol, cannabis and tobacco use into young adulthood.

Gorman (1996) believes the meaning of these results needs to be assessed in light of their methodological limitations. In a very detailed critique of the LST approach, he notes that whilst some of the studies report significant educational effects, no change is reported on most measures. This is particularly pertinent in the case of studies with large number of comparisons. Here one or two significant results are likely to occur by chance. Gorman also notes the small numbers in some of the social influence studies and in one instance, the collapsing of variables into dichotomised scales, which, depending on the cut off points chosen, could have influenced significance.

LST is a substantial program comprising at least 15 classroom sessions for grade 7 students, followed by ten and eight sessions respectively for grades 8 and 9 (Duryea, Mohr, Newman, Martin, & Egwaoje, 1984; Perry & Kelder, 1992). It may be difficult for most schools to add such a program to their already crowded curriculum.

The use of peer leaders to provide drug education is another strategy for which there is considerable supportive evidence. Carr, Thomas, Doyle, Redman and Myles (1994) consider this approach to be based on the view that young people can more usefully explore controversial issues with others of the same age and social background. Klepp, Halper, and Perry (1986) support this perspective with a range of evidence concerning the credibility of peer educators in terms of social information. They argue that the role of peer educators extends beyond the provision of information. Peer educators can serve as potent role models, by demonstrating non-use, by creating a norm that drug use is deviant rather than acceptable, and by providing alternatives to drug use (p 407).

Coggans and Watson (1995) maintain that peer-led approaches can take advantage of factors such as peer modelling and normative attitudes and values. However, they caution that peer leaders should be selected very carefully. Students who are considered good role models by adults are not necessarily regarded in this way by the target group. Botvin (1990) considers peer leaders should be credible with high-risk young people, have good communication skills, show responsible attitudes, but be somewhat unconventional. Even ideal peer leaders are likely to lack the organisational and management skills possessed by effective professional teachers. Botvin recommends that the best of both worlds may be achieved by using teachers and peer leaders in combination.

Hansen and Graham (1991) state that normative beliefs about drug use and drug related behaviour have a crucial role in effective school-based drug education programs. They found that students over-estimated the proportion of their age group that drank alcohol. This erroneous belief increased the likelihood that they themselves would drink. In their study, Hansen and Graham compare alcohol use by students who had received one of four curricula: information only, information plus resistance skills training, information plus normative beliefs, or information plus resistance skills training plus normative beliefs. They found that after one year, alcohol use was significantly reduced among students who received any of the programs that included a normative beliefs component. Hansen and Graham's study looked only at alcohol education programs, but their findings are likely to be applicable to education programs for illicit drugs, where in most cases actual prevalence is very low.

According to a number of researchers, the timing of drug education is likely to be critical (Dielman, 1994; Duncan et al 1994). Kelder et al (1994) comment that primary prevention is most effective if instituted before behavioural patterns are established and become more resistant to change. In Australia, students are typically taught about drug use in high school. However, in the United States young people are exposed to primary prevention programs from as young as 10 years of age, in recognition of the early onset

of drug use and the high student drop out rate in some inner city districts. Without early prevention programs, these particularly vulnerable young people would not get exposed to any formal drug education (Falco, 1992).

The general consensus in the literature is that the optimal time for initiating youth drug interventions is during the late primary/early high school years, as this is when experimentation starts (Johnston et al 1989; Dielman, 1994; Duncan et al 1994). However, onset of use can vary in different populations and with different types of drugs. Accordingly, timing of programs should be optimised for a particular population and for particular drugs such as cannabis, by reference to the appropriate prevalence data.

In a meta-analysis of 120 school-based drug education programs, Tobler and Stratton (1997) found that the most important factor was interactive process, whereby students were actively engaged in discussions, role plays and games. In a comparison of programs that measured knowledge, attitudes and use behaviour, only the interactive programs produced significant change in attitude and drug use. The interactive programs were equally successful with cigarettes, alcohol and cannabis and extremely successful with illicit drugs other than cannabis. Tobler and Stratton caution that this last result came from only six programs. They acknowledge that the ideal group process cannot stand alone. Part of their study involved examining the effect of a number of placebo prevention programs, which used interactive methods of delivery, but excluded essential content. They found that the placebo prevention programs were as ineffective as the non-interactive programs, clearly demonstrating that certain content was essential. Table 1 summarises the findings of Tobler and Stratton (1997) and Tobler et al (1999) regarding the content and delivery features of effective drug education programs.

Table 1: Summary of content and delivery features of effective drug education programs based on the meta-analysis conducted by Tobler and Stratton, 1997

Content	
Knowledge	Short-term effects such as car accidents Long-term health consequences of drug use
Drug refusal skills	Drug refusal skills Assertiveness skills Communication skills Safety skills
Intrapersonal skills	Coping skills Stress reduction techniques Goal setting Decision-making/problem solving
Delivery	
	Everyone actively involved Participation between peers Student-generated role plays Supportive comments from peers Rehearsal of drug refusal skills Sufficient practice time Peer modelling of appropriate behaviour Developmentally appropriate activities to promote bonding between younger adolescents

A further factor associated with success is program size, with decreasing effectiveness in larger programs. Tobler et al (1999) offer a number of explanations for this effect, centering on the fidelity of implementation. Interaction is the key. Accordingly, teachers

must be well trained in these techniques and allow sufficient time for interactive learning by all students. Additionally, some mechanism for involving key school based stakeholders in the development process is likely to make the program more relevant and increase ownership and fidelity of implementation. These processes may be achieved more readily by smaller programs. Tobler et al (1999) note that programs which were successful in reducing cannabis use, achieved similar results in influencing smoking and drinking behaviour. They suggest that early drug education can be generic and does not need to be compartmentalised by drug type until at least 9th grade.

The recent growth in drug education has meant a considerable amount is known about the components and methodology of successful drug programs. In an attempt to systematise this knowledge, Dusenbury and Falco (1995) have summarised key elements of effective drug education. They reviewed school-based programs conducted between 1989 and 1994 and interviewed 15 leading researchers in the area. From this they identified 11 critical components for an effective program. Ballard et al (1994) undertook a very similar process of consultation and review in developing their 15 principles for drug education in schools. These principles are substantially evidence-based and are designed to offer a framework to assist policy makers, school administrators, teachers, parents and other stakeholders to make decisions about the selection, design and implementation of drug education programs.

Ballard et al's principles are remarkably similar to Dusenbury and Falco's key elements. These two sets of critical components provide the basis for the summary of effective drug education elements contained in Table 2. In addition, four features of successful drug education programs not mentioned in those two reviews, but consistently identified in other research have been included in this table. These features are:

- timing the intervention appropriately to ensuring that prevention programs are initiated when prevalence of use by young people is still very low (Kelder et al 1994)
- using peer leaders to focus on the social factors that influence drug use (Coggans & Watson, 1995)
- providing utility knowledge content as a foundation for practical skills development (McBride et al 2000)
- ensuring programs are delivered as intended (Dielman, 1994).

6.3.3 Examples of effective American drug education programs

The Midwestern Prevention Program (Pentz, Dwyer, Mackinnon, Flay, Hansen, Wang & Johnson, 1989) provides a good example of a well conceptualised and implemented drug education program. In this project, 22,500 grade 6 and 7 students in Kansas City participated in school based, social influence intervention. The intervention consisted of ten classroom sessions designed to teach the students how to resist drug use and ten accompanying homework sessions requiring parental involvement. In addition, media intervention, health policy development and community organisation elements were progressively added to the school based program, on the basis that these would support and extend prevention skills learned at school. The results indicate that drug use prevalence rates were lower in the intervention population at one and two year follow ups, compared to the controls.

The practical relevance of such a program for preventing illicit drug use needs to be considered. In the case of cannabis, use was very low in both groups anyway and only small numbers were dissuaded from using. This was achieved by a program which was substantial and required considerable community involvement.

Table 2: Summary of critical elements in effective school-based drug education

Theme	*Component*	*Source*	*Comment*
Context	Drug education is best taught in the context of broader health skills	*Ballard et al (1994)* *Dusenbury and Falco (1995)*	Ongoing, comprehensive, developmentally appropriate health programs promote general competence and provide a context for understanding drug related behaviour
Consistency	Drug education messages across the school environment should be consistent and coherent	*Ballard et al (1994)*	School policies and practices should reinforce the objectives of drug education programs
Collaborative approaches	Mechanisms should be developed to involve students, parents and the wider community in school-based drug education	*Ballard et al (1994)* *Dusenbury and Falco (1995)*	Broadening school-based education by including family, community and media components will reinforce desired behaviours by providing a supportive environment for school-based programs
Sensitivity to different needs	Drug education should be responsive to developmental, gender, cultural, language, socio-economic, and lifestyle differences	*Ballard et al (1994)* *Dusenbury and Falco (1995)*	Drug education programs that are sensitive to the different backgrounds of the young people they target will be more relevant and effective
Basis in evidence	Drug education needs to be based on research as to effective curriculum practice and the needs of students	*Ballard et al (1994)* *Dusenbury and Falco (1995)*	Effective programs are based on an understanding of contemporary theory and research evidence as to what causes drug use and what factors provide protection
	Programs should be evaluated	*Ballard et al (1994)* *Dusenbury and Falco (1995)*	Evaluation will provide formal evidence of the worth of the program in contributing to short and long term goals as well as improving the design of future programs. The quality of evaluation studies should also be assessed
Timing of education	Prevention education is best delivered before behavioural patterns are established	*Kelder et al (1994)*	Drug education programs should start when prevalence of use by young people is still very low
	Drug education programs should be immediately relevant, developmentally appropriate and have sequence, progression and continuity	*Ballard et al (1994)* *Dusenbury and Falco (1995)*	Programs must be credible and useful to students, which means they need to be provided regularly at different stages of schooling

Table 2: Summary of critical elements in effective school-based drug education, continued

Theme	*Component*	*Source*	*Comment*
Education strategies	Interactive teaching techniques should be used	*Dusenbury and Falco (1995)*	Techniques such as role play, group discussion and joint activities promote active involvement in the learning process
	Peer leaders should be involved in the education process	*Coggans and Watson (1995)*	Peers leaders are credible and effective in presenting the social factors which influence drug use
Content	Utility knowledge on drug use and harm should be provided	*McBride et al (2000)*	Content which is of immediate practical relevance to young people in their decision making about drug use provides the basis for interactive skill development
	Social resistance skills training should be provided	*Dusenbury and Falco (1995)*	Such an approach helps young people identify pressure to use drugs and gives them the skills to make alternative responses
	Normative education	*Dusenbury and Falco (1995)*	This gives young people an accurate indication as to the extent of drug use in their peer group, which is typically lower than expected
	Address the values, attitudes and behaviours of the community and the individual	*Ballard et al (1994)*	Responsible decisions by students about drugs are more likely where peer and community groups demonstrate responsible attitudes and practices
	Acknowledge the interrelationship between individual, social context and drug in determining drug use	*Ballard et al (1994)*	The drug experience is influenced by these three components and effective education programs need to deal with these influences in an integrated manner
	Emphasise drug use that is most likely and most harmful	*Ballard et al (1994)*	Generally, school-based drug education should concentrate on lawfully available drugs because their use by young people is more likely. While illicit drug use disproportionately attracts media attention and public concern it should be addressed in particular contexts or subgroups, where it is particularly prevalent and harmful
Teachers	Teachers should be trained and supported to conduct drug education	*Ballard et al (1994)* *Dusenbury and Falco (1995)*	The classroom teacher, with specific knowledge of students and the learning context, is best placed to provide contextual drug education. Programs are most successful when teachers receive training and support, particularly in undertaking interactive teaching activities
	Drug education programs and resources should be selected to complement the role of the classroom teacher	*Ballard et al (1994)*	The classroom teacher is central to the delivery of effective drug education and should not be compromised by external programs

Table 2: Summary of critical elements in effective school-based drug education, continued

Theme	*Component*	*Source*	*Comment*
Program implementation	Drug education programs should demonstrate adequate coverage, sufficient follow-up and ability to achieve long-term change	*Ballard et al (1994) Dusenbury and Falco (1995)*	An adequate intervention, complemented by ongoing follow-up or strategically timed booster sessions is needed to counter effect decay and the ongoing influence to use drugs. Stand alone and one off interventions are not likely to be effective
	Drug eduction programs should be implemented as intended	*Dielman (1994).*	Monitoring should, be undertaken to ensure programs are delivered in the intended manner, as failure may occur because of inadequate implementation, rather than as a result of any deficiency in the design of the program

Perry and her colleagues (Perry et al 1996) have reported on another rigorous large scale drug education program, Project Northland, which combined school based education with multi level community support activities. Although the program was designed to reduce alcohol use, its impact on other drug use was also measured. The intervention students participated in a three year program, starting in grade six. The students were taught skills to enable them to talk to their parents about alcohol, to deal with peer influences and normative expectations about alcohol, and to understand how community-wide change towards alcohol could be achieved. At the same time, the program addressed how parents communicate with their children, how peers influence each other, and how the community deals with alcohol use by young people. Perry et al (1996) state that the intention of the program was to give students skills to better deal with their social environment, and to also directly change that social environment, so that it was more supportive of non use. At the end of three years the researchers found that the intervention students reported less use of alcohol, but cannabis use was only lower in those intervention students who were non-drinkers at baseline.

An alcohol education study by Shope, Kloska, Dielman and Maharg (1994) was one of the first to explore harm reduction benefits which may derive from education. These researchers found that whilst there was no difference in the level of alcohol use between the intervention and control groups, the harms deriving from alcohol use did not increase as rapidly in an intervention subgroup with a prior history of unsupervised drinking, as they did in comparable controls. Curriculum materials used in the study contained a strong abstinence message and there was criticism of the small numbers in the subgroup that demonstrated change (Gorman, 1996). However, the results seem to indicate that harm reduction can be achieved by school drug education even though this is not necessarily linked to reduced consumption.

6.3.4 Australian programs and a greater emphasis on harm reduction

The NSW based Illawarra Program incorporated a range of best practice elements, from drug education research in the 1970s and 80s (Wragg, 1990). Targeting students in year 6, the program began with a parent familiarisation evening. The classroom component of six units was introduced to students by peers who had completed the program the previous year. The curriculum covered decision-making strategies, information on drug problems, alternatives to drugs misuse, pressures to take drugs, and resistance skills. During the program there was a second parent evening. After the teaching phase,

students worked in groups to produce drug-related materials and put together a short piece of drama. This culminated in a third parent evening, where the materials and dramas were presented. Wragg (1990) followed up students to year 10 and found that a significantly lower proportion of the program group had used tobacco or cannabis, compared to controls, but that there was no impact on the proportion that had ever used alcohol.

Wragg (1990) found that overall, the program influenced the intervention students to use fewer drugs. Where drug use occurred, the students used reduced amounts and in a more responsible manner. Accordingly, the intervention achieved harm reduction as well as consumption benefits. On the basis of his findings, Wragg recommends that drug education be multi-component in nature and involve parents and peers as well as teachers in an extended program. The program should use interactive teaching strategies such as role play, discussion and skill development. A way of countering the attenuation that occurred in the follow-ups would be to provide strategically timed booster sessions or have continuous drug education in the early years of secondary school.

A more recent study by McBride, Midford, Farringdon and Phillips (2000) explores the prevention benefits of a purely classroom based alcohol education program for junior high school students (Years 8-10). This drug education study was fundamentally different to most large scale American research program, because it sought to enhance students' abilities to identify and deal with high risk drinking situations and had harm reduction as it primary goal. In the first phase, reported in McBride et al's study (2000), a sequenced program of 17 interactive, skills based activities was conducted over eight to ten lessons. The activities encompassed acquiring and applying utility information on alcohol, rehearsing skills, individual and small group decision making, and discussing typical student drinking scenarios, with an emphasis on recognising and identifying ways to reduce harm.

Preliminary results reported by McBride et al indicate that the intervention students' utility knowledge about alcohol increased, their attitudes were more knowledge based and reflected increased support for harm reduction, and their consumption did not increase to the same extent as that of control students. The level of harm experienced by the two groups from their own drinking and drinking by others, was not different for the full intervention sample. However, those intervention students who reported drinking with adult supervision prior to the intervention, experienced nearly three times less harm associated with their own drinking subsequent to the intervention than their counterparts in the control group. McBride et al (2000) suggested these findings indicate that supervised young drinkers immediately benefit from a well-conceptualised education program.

It seems the timing of a drug eduction program focusing on harm reduction is particularly critical in terms of development stages of use - too early and it's not relevant; too late and behaviour patterns have already been established.

6.3.5 Practical benefits of school-based drug education

Recent research indicates that certain drug education approaches do achieve changes in drug use and related harm. The practical implications of this must be considered. In their meta-analysis of drug education program evaluations, White and Pitts (1998) found that ten methodologically sound, school based programs had a statistically significant impact on drug use. However, the effect size of these programs was very small. At one year follow up, these programs delayed onset or prevented drug use in 3.7 per cent of participating students. Effect size also declined with time. Similarly sound programs which reported on change at two year follow up, were effective with only 1.8 per cent of participating students at this time. White and Pitts suggest that all drug education has

been able to achieve to date is a short term delay in onset of use by non-users and a short term reduction in the amount of use by some current users. The practical implications of such a low level of improvement need to be considered in the light of efficient resource utilisation.

The other side of this practical benefit argument is explored by Caulkins et al (1999) in considerable detail. These researchers studied the cost-effectiveness of national implementation of model drug education programs in the USA. Specifically, they looked at the cost-effectiveness of school-based prevention programs in reducing the nation's cocaine consumption. Project ALERT and LST formed the basis for this modelling exercise, because they both have demonstrated an effect on student drug use, but have not been widely implemented. The middle estimate of program cost per student was US$67.12 and the middle estimate of program effectiveness was a reduction in future cocaine consumption of 3.8 grams per participating student. Based on these figures, the authors middle estimate of a model drug education program's cost-effectiveness was a reduction in consumption of 26 kg of cocaine for every million dollars spent on the program.

This compares favourably with the cost-effectiveness of most law enforcement approaches, but is not as cost-effective as treatment. However, whilst treatment may be more cost-effective, it provides benefits only to those who have already experienced problems because of their drug use. Education has the potential to prevent problems. Caulkins et al (1999) estimate that for every education program dollar spent on universal drug education, savings of US$2.40 in social costs associated with cocaine use accrue. There would also be parallel savings of US$0.75 and US$0.80 in social cost respectively associated with tobacco and alcohol use and additional savings from reduced use of other illicit drugs apart from cocaine. This research modelling, while less applicable in the Australian context because of the low prevalence of cocaine use in this country, does illustrate the potential value of effective, universal drug education programs.

6.4 SCHOOL BASED ILLICIT DRUG PREVENTION: DEVELOPING EFFECTIVE AUSTRALIAN PROGRAMS

6.4.1 Goals and process for school drug education programs

There is a considerable amount of research evidence as to what strategies are most effective in drug education. This provides a sound basis for recommendations on future education approaches in this country. Additionally, there are more fundamental elements relating to goals and processes which must be considered first when developing comprehensive school responses to illicit drug use.

Australian drug policy is based on the principle of harm reduction (Ministerial Council on Drug Strategy, 1998). This is quite different from American drug policy, which focuses on abstinence. In the drug education area this is relevant because the great majority of drug education studies have been conducted in America and have abstentionist aims (Foxcroft, Lister-Sharp & Lowe, 1997; Office for Substance Use Prevention; Alcohol, Drug Abuse and Mental Health Administration, 1989). Accordingly, programs tend to be judged by their success in achieving abstinence or delaying onset. Dielman (1994) warns that exclusive reliance on measures of use can obscure important program effects on patterns of use. He recommended that programs should be assessed in terms of a greater variety of outcomes. In Australia, illicit drug prevention programs should be designed to achieve a reduction in net harm. This does not mean that abstinence or reduced use should not be a goal – they are ways of eliminating or reducing harm, but strategies which focus on changing patterns of use should also be included.

Illicit drug use by young people consistently attracts media attention and public concern. However, illicit drugs other than cannabis are not commonly used, and do not cause the

most harm in aggregate terms. The legal drugs, alcohol and tobacco, feature consistently as the recreational drugs most used by young people in Australia. However, cannabis use is now at very similar levels to tobacco (Australian Institute of Health & Welfare, 1999; Letcher & White, 1998).

Accordingly, educational efforts should focus on providing students with skills for making and implementing decisions about these three drugs (alcohol, tobacco and cannabis), on the basis that education about these drugs is immediately relevant and likely to produce the greatest benefit. Education about low prevalence illicit drugs should generally be limited to generic safety skills such as calling an ambulance in cases of overdose, not mixing drugs, and being careful about injuries where blood is present.

Some schools are located in communities where illicit drug use is known to be high. Students in these schools are likely to be exposed to use and need to be equipped to stay safe. They may require more detailed education about particular illicit drugs and the cluster of associated harms. For example, schools located in communities where injecting drug use is both prevalent and public should, at a minimum, provide their students with practical skills to reduce their risk from other people's drug use. In order to do this, such schools need to discuss the injecting drug practices that cause harm.

One of the important elements in the success of previous innovative Australian drug education programs was extensive consultation with the range of stakeholders who were central to its implementation (Midford & McBride, 1999). Any development process for a new drug education program, particularly if it is likely to be controversial, should involve extensive consultation with and reporting of findings to all relevant stakeholders, including the target students. This will ensure that the needs of all groups are reflected in the program and the actual consultation process is more certain of enhancing ownership and increasing support.

6.4.2 Research evidence as to best practice

An important research finding by Tobler et al (1999) bears on the nature of illicit drug education programs. They found that effective cannabis education programs for late primary and early high school students were also effective in reducing use of alcohol and tobacco (Tobler et al , 1999). The findings from senior high school programs, while less definitive, suggest that a more differentiated approach is required with older students. Accordingly, any illicit drug program should be an integral part of a well-designed generic drug education program up until year 8. In years 9 to 12, a separate program or a program with distinctive drug components should be offered.

Tobler and her colleagues (Tobler et al 1999; Tobler & Stratton, 1997) found that interactive programs were significantly better than didactic programs at changing both drug use attitudes and behaviour. Such programs had planned activities designed to present content and develop skills. They also provided opportunities for exchanging ideas between peers (see table 1 for details). The intention of such programs is that students will be equipped to better manage real world drug related situations by acquiring, practising and refining new prevention skills in a supportive environment.

Programs providing knowledge about the short and long term effects of drug use, normative information on drug use by young people, attitudes to drug use, and teaching interpersonal skills that assist in drug refusal and interpersonal skills were better than placebo programs (see table 1) (Hansen & Graham, 1991; Tobler et al 1999). These findings are reinforced by several other researchers, including McBride et al (2000) and Dusenbury and Falco (1995). To be effective, illicit drug education programs must be constructed to provide certain useful information, facilitate exploration of attitudes, and develop particular practical skills. They also need to allow sufficient time for thorough coverage of this critical content.

Tobler et al (1999) and Dielman (1994) consider that the effectiveness of drug education may be reduced if programs are not delivered in the intended manner, rather than because of any deficiency in the design. Accordingly, drug education teachers must be well trained in program delivery and programs must be manageable and well structured, so they can be delivered routinely as intended. Additionally, teachers should be involved in program development as a way of boosting ownership and increasing fidelity of implementation.

Coggans and Watson (1995) consider that peer led approaches offer a number of advantages in terms of modelling and normative attitudes. However, good role models in adult terms may not be similarly well regarded by other students. Even the most capable students may require support to fulfil a leadership role. Accordingly, new drug education programs should use peer leaders and teachers in combination. Teachers should co-ordinate the education activity and involve peers in well structured and credible leadership roles.

Kelder et al (1994) and Dielman (1994) have indicated that primary prevention is most effective if instituted before behavioural patterns are established and more resistant to change. Accordingly, the timing of any education programs addressing prevalent drug use should be optimised for a particular population by reference to the appropriate prevalence data. This may mean that implementation of programs may need to occur earlier with particularly high-risk populations.

Effective large scale drug education projects such the Midwestern Prevention Project (Pentz et al 1989), Project Northlands (Perry et al 1996) and the Illawarra Program (Wragg, 1990) all incorporated substantial parent and community involvement. In their review of key elements in effective drug education programs, Dusenbury and Falco (1995) consider that school based programs are enhanced by media components and components involving the participation of families, communities and special populations. The relative contribution of these components is not well understood. They should be incorporated into any drug education program wherever resources permit, but further research should be conducted to see if they add sufficient potency to a curriculum based approach to justify the additional effort and expenditure.

6.5 A RESEARCH PLAN FOR PREVENTION

6.5.1 The need to focus on harm reduction

The above recommendations are based on the substantial amount of evidence concerning which program elements appear consistently in the more effective programs. This knowledge allows new programs to be developed which can distil the best practice features of past interventions and develop new, more potent approaches. Because most of the drug education literature derives from research conducted in the United States, it has a strong abstinence focus. This has meant that drug education has traditionally not targeted and measured other worthwhile objectives, such as a reduction in harm. This is where Australia has an opportunity to contribute in a major way.

Alcohol education programs with harm reduction goals have been implemented successfully in Australia over the past few years (McBride et al 2000; McLeod, 1997). The next stage in the development of drug education in this country is the development and trialing of conceptually sound and evidence based illicit drug education programs that have harm reduction goals. These programs must have a common core, which deals with generic drug use issues. However the illicit component should give considerable emphasis to cannabis education, given the prevalence of its use by young

people. Programs should also incorporate a range of basic illicit drug safety skills. Abstinence should feature in these programs, but it needs to be one of a number of strategies included on the basis of demonstrated ability to achieve a reduction in net harm, rather than as the only goal. In specific terms, the following intervention research program is recommended.

6.5.2 An integrated program of research

An integrated program should be developed which aims to identify the critical components and processes for effective school based illicit drug education in the Australian context. Ideally, this involves trialing various pilot programs in a representative range of school settings.

Specific components of the research should be to:

- Gather descriptive data from stakeholders in illicit drug education regarding their requirements for practical and effective school-based programs
- Gather descriptive data from young illicit drug users regarding their history of use and their perceptions of the role of education in preventing use, curtailing progression or minimising harm
- Collate and interpret prevalence and patterns of use data from student populations across a representative range of school settings
- Develop and trial a range of pilot illicit drug education programs that have a basis in research evidence and have been negotiated with the intervention school communities as suitable for their students and the school context.

The evaluation should then be conducted in three phases:

Phase 1 Formative Evaluation Structured interviews, focus groups and questionnaire surveys are used to gather data from a range of education stakeholders, including: school administrators, teachers, parents, students, community health professionals and community police. Snowball and privileged access techniques are used to gather data from young illicit drug users and incentives are offered to aid recruitment. Education stakeholders and young illicit drug users from a range of representative communities are sampled. Ideally this should include major metropolitan, regional metropolitan, country and remote locations.

Phase 2 Pilot Programs Development and implementation of pilot programs based on the information gathered during the formative evaluation process together with intervention techniques consistently identified in this literature review as having the greatest likelihood of producing behaviour change in relation to illicit drug use. The effectiveness of the pilot programs is assessed in terms of stakeholder satisfaction with the implementation process and program content and the change in student knowledge and attitudes following exposure to the education. Most importantly, student behaviour change is measured in terms of illicit drug use and the harms experienced from own use and the use by others. The harms measured would range across physiological, sexual, educational, family, and legal domains.

Phase 3 Dissemination of Findings Reports of research findings are published and disseminated to stakeholders. In addition, presentations are made in relevant professional and community forums. Publications are submitted to appropriate professional journals in order to contribute to the body of knowledge on school drug education.

Any research intervention program should be of a minimum of two years' duration, with a major educational component in the first year followed by booster sessions in the

second year. A program providing developmentally appropriate education at strategic times throughout secondary school should also be trialed. This would involve a more protracted, although not necessarily bigger research effort. Whole of school interventions and programs with complementary community and media components should also be considered. The total time frame for a research program will, of course, be longer to include all aspects from the formative phase to the post intervention evaluation and dissemination of findings.

The development and trialing of a number of context specific pilot interventions will provide evidence of what actually works, under what circumstances, and for what reasons. This will be immediately useful, because the education packages created to suit a range of circumstances are a by-product of the research. If they are shown to be effective at the pilot stage, such packages are likely to be attractive to schools and could readily be implemented on a broad scale. In more strategic terms, contextual Australian research findings will inform a coherent national approach to illicit drug education. The corollary of developing Australian approaches is that there will be less need to draw on drug education approaches developed in other countries to suit other cultures, goals and contexts.

A large scale multi-site project would be ideal, as evidence could be gathered from a range of interventions in various settings. This would produce a better understanding of the type of program content that is effective in specific settings, and how the community context contributes to effective drug education. However, a single site trial would still usefully inform practice, as little illicit drug education research is currently being conducted in Australia.

6.6 CONCLUSION

The provision of illicit drug education programs which are based on evidence and focused on harm reduction is likely to increase the impact and relevance of drug education for young people, making it a more effective prevention strategy in Australia. However, the history of drug education is littered with several false dawns, where considerable effort was put into a particular approach, only to dissolve when evidence mounted as to its ineffectiveness. The critical difference now, is that there is good evidence as to the type of program which influences high prevalence drug use. However, in itself, this knowledge is unlikely to be adequate to sustain the coherent development of effective, universal drug education in the Australian context.

The greatest potential barrier is still the selection of drug education programs on the basis of ideal outcomes rather than on the evidence of what can realistically be achieved. Ultimately, this approach is self defeating, because when the programs are evaluated and shown to be ineffective, questions are asked as to why drug education is not achieving its objectives and the whole approach is discredited once more.

This time around, drug education programs should not be selected simply because they do not threaten conventional community views on drug use. Drug education programs should be selected on the basis of features which research indicates are most likely to change behaviour, and to have a beneficial impact on youth drug use and youth drug problems.

The process must not end there. The programs selected for use in schools should routinely incorporate evaluation to measure achievement against stated objectives. In this way the effectiveness of drug education will be scrutinised continually. Rather than being merely a salve to the community conscience by appearing to do something to protect young people, drug education will then demonstrate its ability to empower prevention and reduce the harmful effects of drug use.

NOTES

1 The first author was a member of that working party.

2 In this context the term 'property crime' is taken to include any activity intended to raise funds for, or allow the acquisition of illegal drugs.

3 Personal communication: Assistant Commissioner Clive Small, Commander, Special Agencies, NSW Police Service.

4 ibid.

5 Single waves of some panel studies were included in the cross-sectional studies Paternoster reviewed so there is some overlap between the studies on which the two estimates were based.

6 This seemingly paradoxical situation occurs simply because, where demand for a drug is price-inelastic, increases in its price exert a larger effect on aggregate drug expenditure than on decreases in consumption.

7 These estimates are obtained by multiplying the estimated number of Australian dependent heroin users (70,000: Darke and Hall 2000) by the quantity of heroin each consumes, assuming an average 2.5 injections per day of approximately .03 of a gram of heroin each (personal communication, Paul Dillon, National Drug and Alcohol Research Centre).

8 Negative values for price elasticity indicate an inverse relationship between drug price and drug consumption. Elasticities greater than -1.0 indicate that increases in the price of the drug produce larger than commensurate decreases in consumption.

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