
JUVENILES IN CRIME - PART 1: PARTICIPATION RATES AND RISK FACTORS

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PREFACE

It may seem trite to observe that the development and evaluation of crime prevention policy is greatly aided by access to a regular supply of data on offending and the factors which affect it. Ironically, though, apart from annual surveys of illicit drug use, the only regular supply of data on offending in Australia is that able to be gleaned from official records of those who have been apprehended for offending. While much information of value can be gained from these records they are generally regarded as presenting a biased and incomplete picture of offending behaviour. A much more complete and less biased picture can be obtained through surveys of self-reported offending. Such surveys are conducted annually among representative samples of youth in the United States of America.

This report presents results from the first comprehensive survey of self-reported offending among school students ever conducted in Australia. The object of the survey was to obtain information from secondary school students about three main aspects of juvenile involvement in crime. These were (a) the prevalence of juvenile involvement in various types of crime (b) the frequency of offending amongst those juveniles who are involved in each type of crime and (c) the factors which affect (a) and (b). This report concentrates on issues surrounding the prevalence of juvenile involvement in various crime types and the factors potentially influencing whether or not a juvenile will engage in a particular crime type. A second and subsequent report will deal with offending frequency and the factors which affect it.

While not all the factors of potential interest were able to be explored, the information obtained even from this limited survey will prove to be of considerable value in shaping crime prevention policy. Its greatest potential, however, lies in its capacity to help policy makers determine whether measures designed to reduce offending amongst school students actually have the desired effect. This potential can only be realised when the survey is repeated on a regular basis. Of course, surveys such as these can sometimes bring to light information which may be misused or misinterpreted by the media. The NSW Department of Education and Training, the Catholic Education Commission, the Association of Independent Schools, the NSW Cancer Council and NSW Health are therefore to be applauded for supporting the conduct of the survey and recognising its value in developing a balanced and effective approach to crime prevention.

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EXECUTIVE SUMMARY

This report presents the results of a study on self-reported offending behaviour undertaken as part of the NSW component of the 1996 Australian School Students' Alcohol and Drugs Survey. Information about offending behaviour was sought from a total of 5,178 secondary school students in NSW.

PREVALENCE AND OFFENDING FREQUENCY

- Large numbers of NSW secondary students offend, but generally they do not offend very often.
- In the 12 months prior to the survey we estimated that 29 per cent of students assaulted someone, 27 per cent maliciously damaged property, 15 per cent received or sold stolen goods, 9 per cent shoplifted, 5 per cent committed break and enter and 5 per cent committed motor vehicle theft.
- For each type of offence, the median offending frequency was 1 to 2 times in the 12 months prior to the survey, amongst those students who had committed that offence.
- For each type of offence, a number of students offended quite frequently. For example, among students who had committed break and enter, 16 per cent had committed 10 or more break and enters in the 12 months prior to the survey. These frequent offenders, however, formed only one per cent of all NSW secondary students.
- Male students generally had higher rates of participation in each offence than female students, in each of Years 7 to 12. Break and enter and motor vehicle theft are particularly male-dominated, while shoplifting is least dominated by males.
- Participation in each type of offence tended to peak around Years 9 to 10 (i.e. 14-16 years of age) for both males and females.

RISK FACTORS RELATED TO JUVENILE PARTICIPATION IN CRIME

Level of supervision, family structure, self-perceived school performance, truancy, Aboriginality, ethnicity, gender, and use of alcohol, cannabis, opiates, stimulants and steroids were examined as potential risk factors related to juvenile crime in this study.

Several of these factors were significantly associated with all types of offences. Controlling for all other factors, students who truanted, who were male, who drank alcohol and who used cannabis were more likely than other students to participate in assault, malicious damage and acquisitive property crime (motor vehicle theft, break and enter, shoplifting, or receiving or selling stolen goods).

Some factors were significantly associated with most but not all types of offences. Controlling for all other factors, students who received low level supervision were more likely than those who received high level supervision to participate in malicious damage and acquisitive property crime. Controlling for all other factors, Aboriginal and Torres Strait Islander students were more likely than other students to participate in assault and acquisitive property crime.

Other factors were found to be specific to certain types of offence. Controlling for all other factors, opiate users were more likely than non-users to participate in malicious damage, while steroid users were more likely than non-users to participate in acquisitive property crime.

Ethnicity, however, was generally not associated with any type of offence.

POLICY IMPLICATIONS

Given the low rate of apprehension amongst juvenile offenders, there is a clear need to focus more on primary prevention strategies rather than rely solely on criminal justice system approaches in dealing with juvenile crime. Primary preventative strategies would involve targeting the opportunities and incentives for involvement in crime, through better use of measures such as security devices, general environmental design principles and community-based schemes and through stricter enforcement of underage drinking laws. Preventative strategies should also target the multiple risk factors that are related to juvenile involvement in crime, which include lack of parental supervision, truancy, and substance use. Potentially effective strategies of this nature include early family-based interventions, school-based programs and drug treatment programs tailored specifically to adolescent needs.

1. INTRODUCTION

1.1 BACKGROUND

To understand juvenile involvement in crime and to develop strategies to reduce juvenile crime we need to understand not only how many juveniles participate in crime and the reasons why they participate, but also how frequently juveniles offend. These two aspects of juvenile crime – participation and offending frequency – are the subjects of a two-part study conducted by the NSW Bureau of Crime Statistics and the NSW Crime Prevention Division of the NSW Attorney General’s Department. We have chosen to deal with these two aspects of crime separately as it is suggested that these are distinct dimensions of crime and may have different risk factors (see, for example, Blumstein et al. 1986; Salmelainen 1995). The present study, Part One, focuses on juvenile participation in crime in NSW, while Part Two will examine offending frequency.

To date, most of the information about juvenile crime in NSW, including both participation and frequency, has been based on official statistics, from the police, the courts, and juvenile detention centres. However, it is widely acknowledged that official crime statistics are likely to produce a somewhat limited and perhaps distorted picture of the number and characteristics of juveniles participating in crime. A great deal of crime is not reflected in official statistics as it is never reported to the police and never enters the criminal justice system. Official statistics also miss out on a wealth of information about the offender and the circumstances surrounding the offence. They also can be affected by factors such as policy initiatives and the practices and resources of agencies in the criminal justice system. For example, police discretion, and policy initiatives that influence police discretion, such as the recently introduced Young Offenders Act 1997, can affect official juvenile crime statistics, as they impact upon whether juveniles are informally warned, formally cautioned or charged for certain offences, and hence, upon whether or not and how juveniles show up in official crime statistics.

A source of information not subject to these limitations is self-report data. This type of data can provide a rich source of information about juvenile offending. Self-report data are obtained through surveying juvenile populations of interest about their involvement in crime. Known juvenile offenders, such as those serving time in detention centres, can be surveyed, although their characteristics might be quite different from those of juvenile offenders who escape conviction. More representative populations such as juveniles within households or school students are often better populations to survey.

Self-report data, however, are not without problems. A question often raised is whether people are willing and able to accurately report on their involvement in crime. Generally speaking, research examining this question has found that self-reported offending is a reliable and valid indicator of delinquent behaviour (Hindelang, Hirschi & Weis 1981). However, differences in question wording can markedly affect reporting of offending behaviour and hence the validity of the data (Visher & Roth 1986).

Self-report surveys on offending behaviour using representative samples have been conducted in other countries. National household surveys of youth have been conducted in the USA and Britain to measure the level of juvenile involvement in crime. Such

studies have generally found that offending is widespread amongst youth, but that most offending is relatively minor and transient in nature (see, for example, Graham & Bowling 1995; Visher & Roth 1986; Blumstein et al. 1986).

Large scale self-report studies on representative juvenile samples have rarely been conducted in Australia, although some self-report surveys on offending behaviour have been conducted using limited samples, such as adolescents in particular schools or in particular suburbs of major cities (see, for example, Warner 1982; Mak 1994; Braithwaite 1977). Some of these surveys suggest, as the overseas surveys do, that juvenile offending is widespread. In NSW, however, no studies of offending behaviour using representative juvenile samples have been previously undertaken, although self-reported offending among convicted juvenile offenders has been studied (see, for example, Salmelainen 1995).

The Bureau and the Crime Prevention Division were provided with a unique opportunity to obtain self-report data on involvement in crime from a large representative sample of juveniles through the 1996 Australian School Students' Alcohol and Drugs Survey (hereafter referred to as 'the school survey'). The school survey sought information about tobacco, alcohol and illicit drug use, sun protection and other characteristics from a representative sample of secondary school students across all States and Territories of Australia. This was the first survey to take a standardised approach to examining substance use amongst secondary students on a national level.¹ In NSW, the joint survey coordinators – the NSW Cancer Council and NSW Health – agreed to extend the survey to cover a broader range of issues. They established a reference group with representation from several organisations in NSW to advise on the survey. This group decided to include offending behaviour and a range of other behaviours in the NSW survey.²

The school survey provided a rich data source from which we could examine juvenile crime. We had the opportunity not only to examine the prevalence of offending behaviour amongst NSW secondary school students, but also the opportunity to examine how use of alcohol and illicit drugs and developmental factors relate to offending behaviour. Previous overseas research has shown such factors to be important predictors of involvement in crime.

This study also allowed us to obtain an Australian perspective on the risk factors underlying juvenile participation in crime. As a result, this study has the potential to provide valuable assistance in the development of effective juvenile crime prevention programs in Australia.

1.2 LITERATURE REVIEW AND RESEARCH OBJECTIVES

The focus of this study was participation in crime. Our broad research objectives were to examine –

- the prevalence of juvenile participation in crime in NSW
- the risk factors underlying juvenile participation in crime.

1.2.1 The prevalence of juvenile participation in crime

The prevalence of juvenile participation in crime will be considered by examining how many secondary school students in NSW have participated in a range of crimes – assault,

malicious damage, receiving or selling stolen goods, shoplifting, break and enter, and motor vehicle theft. We examine how many secondary students have ever participated in these offences and how many participated in the 12 months prior to the survey. Participation rates are examined by gender, school year and region. We also briefly examine the frequency with which secondary students commit these crimes and the number of different types of crimes in which secondary students participate. As we noted earlier, the second report in this series will deal more comprehensively with the issue of offending frequency.

1.2.2 The risk factors underlying juvenile participation in crime

An extensive amount of research has been conducted on the risk factors underlying juvenile delinquency, mostly in the USA and Britain. We report on some of this research here to provide the context for our study. However, an exhaustive review of this literature is beyond the scope of the present study.

Studies on delinquency have employed a variety of survey methods and study populations, including both official records and self-report surveys, and cross-sectional and longitudinal studies. Some studies have focussed on initiation into delinquency, while many have focussed on serious delinquency or chronic offenders. A wide range of factors, including developmental factors, substance use and association with delinquent peers have been found to be correlates of juvenile involvement in crime. There is much stronger evidence for some of these factors than for others and some of these factors are widely thought to have a causal influence on juvenile involvement in crime, while the causal status of other factors remains unclear.

The present report is unfortunately restricted to an examination of some developmental and demographic factors and substance use (alcohol and illicit drugs), as we were limited by the range of questions included in the questionnaire by the NSW Cancer Council, NSW Health and the NSW reference group. Nevertheless, we explore a range of hypotheses about the two groups of factors that the survey did have information on. The research literature and logic that led to the selection of our hypotheses is discussed below.

Developmental and demographic factors

Developmental factors related to the family have consistently been shown to be strong predictors of delinquency and initiation into delinquency. Family factors including poor parental supervision, parental rejection of the child, lack of involvement with the child, and inconsistent, erratic discipline are amongst the strongest predictors of delinquency (see, for example, the review by Loeber & Stouthamer-Loeber 1986). Family structure has also been found to be a predictor of involvement in crime. Juveniles from broken homes (Canter 1982; Nagin & Paternoster 1991) or from larger families (Nagin & Smith 1990; Farrington 1987) are more likely to be involved in crime. Other family factors such as socio-economic status (see, for example, Elliott, Huizinga & Menard 1989; Farrington 1987), parental and sibling criminality (Lauritsen 1993; Farrington 1987; Loeber & Stouthamer-Loeber 1986), maltreatment of children including neglect and abuse (Smith & Thornberry 1995) and youth homelessness (McCarthy & Hagan 1992) have also been shown to be predictors.

Family factors are widely thought to have a causal influence on juvenile involvement in crime. Many studies have found that their influence remains when other extraneous factors have been controlled for. Family factors also feature strongly in theories about

causes of delinquency. It has been argued, for instance, that juveniles who receive little parental supervision and involvement are inadequately socialised and are less likely to develop the appropriate controls or values to refrain from criminal activity (Hirschi 1969; Elliott, Ageton & Canter 1979). Others have suggested that these factors exert their influence through juveniles being more likely to associate with delinquent peers (see, for example, Weatherburn & Lind 1997).

The causal influence of other family factors, such as family structure, is less clear. The relationship between family structure and juvenile involvement in crime may be more attributable to other factors such as poor parental supervision, weak attachment, conflict or neglect which may be more prevalent amongst sole-parent and large families.

Schooling is another developmental factor that has consistently been shown to be a strong predictor of delinquency. Poor academic performance has been shown to be related to both the onset and frequency of offending (see, for example, the meta-analysis by Maguin & Loeber 1996; Farrington 1987). School conduct problems, including truancy, are also important predictors of offending (Loeber & Dishion 1983; Thornberry, Moore & Christenson 1985; Tremblay et al. 1992).

Schooling is also widely thought to have a causal influence on juvenile involvement in crime. Some have argued, based on the evidence just described, that schools, like families, are important socialising agents. Some argue that juveniles with poor school achievement develop fewer bonds with the school and other conventional community institutions and do not develop the appropriate controls to refrain from criminal activity (Hirschi 1969). Another view is that juveniles who are frustrated in achieving at school seek compensatory achievement through illegitimate opportunities. Cohen (1955), for example, suggests that juveniles seek success (a global goal of society) through gaining status amongst their peers. Ordinarily, juveniles seek to gain status through academic or sporting performance, or through the status of their family, but for juveniles who perform poorly at school and are from disadvantaged families, status may be difficult to achieve. Cohen suggests that juveniles who do not accept their position of low status tend to associate together and turn to illegitimate opportunities to increase their status. They commit crimes not to acquire money but to gain status amongst their delinquent peers.

The causal influence of truancy is less clear. Truancy, like poor school achievement, may be seen as having a causal influence on juvenile offending in that it lessens the opportunities to form strong bonds with the school. Truancy could also exert a causal influence through creating opportunities for juvenile offending, as juveniles are largely unsupervised and perhaps more likely to associate with other delinquents when they are truanting. Alternatively, rather than having a causal influence, truancy may be just another manifestation of other factors, such as poor school performance and lack of supervision, which lead juveniles to become involved in crime.

Gender is amongst one of the most important predictors of offending behaviour (Herrnstein 1995). Both official crime statistics and self-report studies consistently reveal that males outnumber females in criminal involvement, especially in the more serious crimes. Studies of official records indicate that male participation rates are around 3 to 5 times higher than female participation rates in the USA and 5 to 7 times higher than female participation rates in Britain (Visher & Roth 1986). Self-report studies also generally show a gender difference, although often of smaller magnitude (Hindelang, Hirschi & Weis 1981). Graham and Bowling (1995), for example, found that male participation rates were 2.5 times higher than those for females in a British self-report survey.

In NSW, statistics from the Children's Court also show that males considerably outnumbered females in court appearances for every offence in 1995-96 (NSW Bureau of Crime Statistics and Research 1997). Offences such as break and enter, robbery, motor vehicle theft and property damage, amongst others, were particularly male-dominated. Males outnumbered females in court appearances for these offences by a factor of seven or more. The offence of shoplifting was less male-dominated, with males outnumbering females by a factor of only two. While gender is known to be a strong correlate of involvement in crime, the reasons for this remain unclear.

Cultural background is also sometimes thought to be a correlate of criminality, although the evidence is highly controversial. Studies in the USA based on official statistics show that blacks have higher arrest rates than whites, while the findings from self-report studies are less clear (Elliott, Huizinga & Menard 1989; Hindelang, Hirschi & Weis 1981). In Australia, official statistics show that young Aboriginal people are consistently over-represented in the juvenile justice system. For example, in NSW Aboriginals account for 1.9 per cent of the general youth population, yet they account for 16 per cent of Children's Court appearances and 25 per cent of the youth held in NSW detention centres (see Freeman 1996; Luke & Cunneen 1995). Opinions differ on whether this over-representation is a result of greater criminal involvement amongst Aboriginal youths or biases in the operation of the criminal justice system.

There is also a popular view in Australia at the moment that ethnicity is a factor in crime, although the evidence for this view is at best weak. Specific groups of young people from non-English speaking backgrounds have been found to be over-represented in the NSW juvenile justice system, particularly Indo-Chinese youth, but also Lebanese and New Zealand or Maori youth (Cain 1994). This over-representation, however, is not nearly as marked as that for Aboriginals. But as with the over-representation of Aboriginal youth, it remains unclear whether the over-representation of youths from certain ethnic groups reflects higher levels of criminal involvement or biases in the enforcement of law across different ethnic groups.

Even if certain ethnic or cultural groups were found to have higher rates of involvement in crime it would not follow that ethnicity or cultural background has a causal influence on crime. The higher rates may be more attributable to other risk factors such as social disadvantage, poor parental supervision, poor school achievement and drug use, which may be correlated with ethnicity or cultural background.

In the present study we consider the developmental and demographic factors of supervision, family structure, school performance, truancy, Aboriginality, ethnicity and gender. Other developmental and demographic factors, such as socio-economic status, maltreatment (through neglect or abuse) and parental, sibling and peer criminality, unfortunately, were not able to be included in the study. On the basis of previous research we would expect the following hypotheses to be supported by the data.

Rates of participation in all types of crime will be higher among secondary students who –

- receive less adult supervision
- do not live with both original parents
- perform poorly at school
- truant

- are Aboriginal or Torres Strait Islander
- are male.

We also address, in relation to ethnicity, the question of whether rates of participation in all types of crime are higher in secondary students –

- whose parents were born in non-English speaking countries
- who speak a language other than English at home.

Substance use

The relationship between substance use and crime is well established. Numerous studies of offenders and drug users, both adult and juvenile, as well as representative studies such as the USA National Youth Survey indicate that as drug use increases so does criminal behaviour (see, for example, Wish & Johnson 1986).

The nature of the drugs-crime relationship, however, is extremely complex. Whereas the developmental and demographic factors we reviewed in the last section have been found to be related to a general tendency to offend, there is evidence that different drugs are not related in the same way to all offences. The type of drug, moreover, is just one aspect that can affect the nature of the relationship, as drugs vary in their pharmacological effects, patterns of use, prices, availability and legality. Another complicating aspect is the fact that users often use multiple drugs, making it difficult to establish the individual effect of each drug on crime.

As a consequence of the complexity of the relationship, it remains unclear whether substance use has any causal influence on involvement in crime. Some evidence suggests that substance use may precipitate involvement in crime (Blumstein et al. 1986), while other evidence suggests that substance use may magnify the level of involvement in crime (Dobinson & Poletti 1988). Others, however, argue that substance use and crime coexist but exert no causal influence on each other (Hirschi & Gottfredson 1988; Elliott, Huizinga & Ageton 1985).

If substance use does have a causal influence on involvement in crime there are two main ways in which it could do so. The first way in which substance use could influence crime is directly. This kind of relationship would occur, for example, where the use of a particular substance leads an individual to commit crime because the psychopharmacological effect of the substance is to increase aggression or reduce inhibitions. The second way in which substance use could influence crime is indirectly. An example of this kind of relationship is when an individual commits crime to raise money to buy a particular substance.

A direct relationship is most likely to exist between substances such as alcohol, stimulants (amphetamines and cocaine) and steroids, and crimes such as violent and destructive property crimes. Evidence for this kind of relationship comes from studies that show that these types of substances can produce increases in aggression and from studies that show that offenders are often under the influence of alcohol or other substances at the time they committed their offence.

There is strong evidence that alcohol use is related to the commission of violent crime and destructive property crime, and to public disorder. Experimental studies have shown that alcohol can induce aggression (see, for example, the review by Bushman & Cooper 1990). Alcohol is often present, in the offender or victim, in violent crimes,

including homicide and assault, and in destructive property crimes such as malicious damage (Collins 1982; Wallace 1986; Ireland & Thommeny 1993). Many convicted violent offenders report drinking at the time they committed their offence or have a history of chronic alcohol use (Greenberg 1982). However, alcohol is not exclusively related to violent crime. Problem drinking has been associated with deviant and criminal behaviour in general amongst juveniles (Collins 1986; Cookson 1992). Acquisitive property offenders, in addition to violent offenders, report drinking at the time they committed their offence (Collins 1982; McMurrin & Hollin 1989). Juvenile offenders report obtaining money for alcohol, as well as drugs, as their primary reason for committing acquisitive property crime (see, for example, Salmelainen 1995; Cromwell 1994).

The evidence in relation to stimulants and steroids is not nearly as strong as that for alcohol, as these substances have not been as well researched. However, both stimulant use and steroid use are thought to induce aggression and violent behaviour, particularly after prolonged use (Hando & Hall 1993; Maycock & Beel 1997). Stimulant use, particularly cocaine use, has been found to be high amongst arrestees and juveniles with higher offending rates in USA studies (see, for example, Wish & Johnson 1986). It has also been suggested that 'roid rage' can lead to violent crime such as assault and destructive property crime (Australian Bureau of Criminal Intelligence 1997). However, it remains unclear whether it is the use of steroids that produces such effects or whether persons predisposed to such behaviour are more likely to use steroids.

An indirect relationship between substance use and crime is most likely to prevail between substances that are more expensive, illegal and addictive, such as heroin, stimulants and cannabis, and property crimes that are acquisitive in nature, such as shoplifting, break and enter, and receiving or selling stolen goods. Evidence in support of this type of relationship comes from studies linking the use of heroin, marijuana and other drugs to acquisitive property crime.

There is strong evidence that heroin use is associated with acquisitive property crime. Research has shown that heroin use is particularly common amongst acquisitive property offenders (Parker & Newcombe 1987; Stevenson & Forsythe 1998). Many acquisitive property offenders report that their primary motive for offending is obtaining money to finance their heroin habit (see, for example, Dobinson & Ward 1985). In studies of heroin users undertaken by Jarvis and Parker (1989) and Dobinson and Poletti (1988), many users reported that illegitimate sources, including acquisitive property crime, were an important contributor to their income. Jarvis and Parker's study also showed that heroin users committed more acquisitive property crime than other forms of crime and that involvement in acquisitive property crime commonly preceded involvement with heroin, but that the rate of acquisitive property crime increased after the onset of regular heroin use. As with alcohol users, heroin users do not exclusively commit one type of crime. Jarvis and Parker's research, for example, indicated that heroin users did commit non-acquisitive crimes, but not nearly as frequently as they committed acquisitive crimes.

There is also some evidence of a relationship between cannabis and acquisitive property crime, although this relationship is often difficult to assess as cannabis use can be confounded by the use of other drugs. The strongest evidence for a relationship is found among juveniles. A number of studies have found cannabis use to be prevalent amongst juvenile acquisitive property offenders (Dembo et al. 1991; Salmelainen 1995; Stevenson & Forsythe 1998). In these studies juvenile offenders who used cannabis reported greater

involvement in general theft crimes than did non-users, and two of the studies found that the greater the involvement in cannabis, the greater the involvement in general theft crimes. The fact that a strong relationship exists particularly amongst juveniles is consistent with the fact that marijuana use is more common amongst young people (Cooney, Dobbinson & Flaherty 1994; Commonwealth Department of Health and Family Services 1996).

As we mentioned earlier, stimulant use has not been as well researched in relation to crime as some of the other substances. There is some evidence showing that stimulant users commit acquisitive property crime, and at higher rates than non-users (see, for example, Salmelainen 1995; Hando & Hall 1993).

In this study we examine the relationship between participation in crime and use of alcohol, cannabis, opiates, stimulants (cocaine and amphetamines) and steroids. We examine whether previous research that shows these substances are important correlates of criminal behaviour is borne out in an Australian setting. On the basis of previous research we test the following hypotheses.

Rates of participation in violent crime and in destructive property crime will be higher among secondary students who use –

- alcohol
- stimulants
- steroids

but not among secondary students who use –

- cannabis
- opiates.

Rates of participation in acquisitive property crime will be higher among secondary students who use –

- cannabis
- opiates
- stimulants

but not among secondary students who use –

- alcohol
- steroids.

The relationships between developmental and demographic factors, substance use and crime

So far we have considered the possibility that drug use may influence involvement in crime directly or indirectly. It is possible, however, that substance use and crime do **not influence each other at all, but are both caused by some other factor or set of factors.**

This is the basis of general deviance theory, which views substance use and crime as part of a range of deviant behaviours that are caused by an underlying problem or trait (for example, Hirschi & Gottfredson 1988; Gottfredson & Hirschi 1990; Elliott, Huizinga & Ageton 1985). Under this kind of relationship, substance use and crime might both stem from the same developmental problems we have already described, such as poor

parenting and schooling difficulties, or from other social influences, such as delinquent peer influence. Substance use and crime might also serve the same purpose, such as expressing independence from parents or identification with peers, as Jessor and Jessor (1977) suggest.

Evidence in support of such a relationship comes from studies showing that substance use and delinquent behaviour occur in a concurrent cluster of other problem behaviour and that certain social and developmental factors such as poor parenting, schooling difficulties and association with delinquent peers are shared by substance users and delinquents (see, for example, Elliott, Huizinga & Ageton 1985; Elliott, Huizinga & Menard 1989; Barnes & Farrell 1992; Jessor & Jessor 1977).

In contrast to the direct and indirect relationships described in the previous section, which we argued were most likely to exist between particular substances and offences, the relationship described here is more general and could underlie use of all types of substances and involvement in all types of crime. The existence of this type of general deviance-based relationship, however, does not preclude the existence of direct and indirect relationships as well. In fact, it is likely that all three kinds of relationship exist but that the strength of each varies under different circumstances. As noted above, we might expect the nature of the relationship to vary according to the type of substance and the type of crime. We might also expect the relationship to vary according to how deeply involved individuals are in substance use. A general deviance-based link might exist for less serious forms of substance use and crime, whereby developmental, or other factors, lead to juveniles being more likely to start experimenting with a range of different behaviours, including any form of crime and any form of substance use. More specific, direct or indirect links, between certain substances and certain crimes, might start to prevail once preferences for certain substances are developed and substance use becomes more serious. So, for example, juveniles may start off experimenting with involvement in different types of crime and substance use. As their use of any particular substance escalates they may commit more violent crimes because of the psychopharmacological effect of the substance or they may focus their energies on committing more acquisitive property crimes to raise money for their increasingly expensive substance use.

In light of these views about the nature of the drugs-crime relationship we examine the question of whether the same developmental and demographic factors that are associated with higher participation rates in crime are also associated with higher rates of substance use. In other words, is the rate of substance use higher among secondary students who –

- receive less adult supervision
- do not live with both original parents
- perform poorly at school
- truant
- are Aboriginal or Torres Strait Islander
- are male
- have parents who were born in non-English speaking countries
- speak a language other than English at home?

We also explore whether substance use is associated with higher participation rates in crime, over and above any association with developmental and demographic factors.

1.2.3 Summary of research objectives

In summary, the main research objectives are to examine –

- the prevalence of juvenile participation in crime in NSW
- the risk factors underlying juvenile participation in crime in NSW.

Our hypotheses and research questions about the risk factors underlying juvenile crime are as follows.

Developmental and demographic factors

Rates of participation in all types of crime will be higher among secondary students who receive less adult supervision, who do not live with both original parents, who perform poorly at school, who truant, who are Aboriginal or Torres Strait Islander or who are male.

We also address, in relation to ethnicity, the question of whether rates of participation in all types of crime are higher in secondary students whose parents were born in non-English speaking countries or who speak a language other than English at home.

Substance use

Rates of participation in violent crime and in destructive property crime will be higher among secondary students who use alcohol, stimulants or steroids, but not among secondary students who use cannabis or opiates.

Rates of participation in acquisitive property crime will be higher among secondary students who use cannabis, opiates or stimulants, but not among secondary students who use alcohol or steroids.

The relationships between developmental and demographic factors, substance use and crime

We will also address the question of whether the same developmental and demographic factors that are associated with higher participation rates in crime are also associated with higher rates of substance use. Finally, we explore whether substance use is associated with higher participation rates in crime, over and above any association with developmental and demographic factors.

2. METHOD

2.1 THE SCHOOL SURVEY

The data source for this study was the school survey (the 1996 Australian School Students' Alcohol and Drugs Survey - NSW Component). The main aims of this survey were to estimate the prevalence of substance use, and sun protection and other behaviours amongst secondary school students and to continue to monitor trends in these behaviours over time. In NSW, the survey was jointly coordinated by the NSW Cancer Council and NSW Health.

Unit record data from this survey were supplied by NSW Health. Full details of the survey methodology are available in the Technical Report for the NSW component of the school survey (Forero et al. 1997). A summary of the methodology is provided here.

2.1.1 The questionnaire

The school survey was conducted in two parts in NSW. The first part of the survey – the core questionnaire – was conducted nationally. It addressed tobacco, alcohol and drug use, sun protection and general demographics. The second part of the survey – the supplementary questionnaire – was conducted in NSW only. There were two sets of supplementary questionnaires – the first addressed offending behaviour, use of falsified proof-of-age documents and further tobacco and alcohol issues, while the second addressed eating and exercise behaviour and mental health. Approximately half of the total sample of NSW secondary school students completed the first supplementary questionnaire and the other half of the sample completed the second supplementary questionnaire.

The questions contained in the core questionnaire were based on those included in previous surveys conducted by the NSW and Victoria Health Departments and the Centre for Behavioural Research in Cancer. The supplementary questions were developed in consultation with the NSW reference group.

The section on offending behaviour in the supplementary questionnaire contained six offences – assault, motor vehicle theft, break and enter, receiving or selling stolen goods, shoplifting and malicious damage. Assault was divided into two types – assault during sport and assault outside sport. Assault during sport was included only as a filter so as to provide a more pure measure of assault outside sport. It should be noted, however, that some assaults that occur in sport could legally be considered assaults. Shoplifting was restricted to goods worth \$20 or more so as to focus on more serious instances of the offence. These six offences were included in the questionnaire as they are offences for which juveniles are frequently apprehended in NSW (see, for example, NSW Bureau of Crime Statistics and Research 1997).

Respondents were asked whether they had ever committed each offence. If a respondent answered any question positively they were then asked how many times they had committed that offence in their lifetime and how many times they had committed that offence in the last 12 months. Frequency was measured on a six-interval scale, that ranged from 'none' to '20 or more', to keep the format consistent with the rest of the questionnaire.

The questions on offending were derived from those used in the National Youth Survey in the USA as these questions had been fully tested and validated in the field. The actual survey questions relevant to this study, from both the core and supplementary questionnaires, are provided in Appendix A. The full survey is available in the Technical Report (Forero et al. 1997).

2.1.2 Sampling procedure

A complex sample design, involving stratified random cluster sampling was employed in NSW to obtain a representative sample of school students enrolled in NSW secondary schools. Strata were defined by NSW Health Area Health Service, school sector (government, non-government), school type (single-sex, coeducational) and year level. Within each stratum, schools (clusters) were randomly selected with a probability proportional to the size of their enrolment. In total, 170 schools were selected across the 17 Area Health Services and invited to participate in the survey. Schools that were unable or unwilling to participate were replaced, where possible, by randomly selected schools from the same stratum, with the same or nearest postcode.

Eighty students (either 20 from each of Years 7 to 10 or 40 from each of Years 11 and 12) were selected at random from the relevant year lists of each of the participating schools, where possible. Participation in the survey was voluntary. Any students who did not wish to participate in the survey or who were not available to participate at the time the survey took place were replaced, where possible.

2.1.3 Survey administration

Administration of the survey was sub-contracted out to a market research agency. The survey took place on a nominated day in the middle of the week between September and November 1996. It was administered in an examination-like environment and was supervised by trained staff provided by the market research agency. Teacher supervision was allowed, but was not a requirement, and teachers were requested not to look at any student's responses.

2.1.4 Sample size and response rate

Of the initial sample of 170 schools, 56 per cent agreed to participate. Forty-eight replacement schools agreed to participate, resulting in a total of 143 participating schools. From these participating schools a total of 10,441 completed and useable core questionnaires were returned. Respondents comprised 90 per cent of secondary students selected from the participating schools, although the response rate was lower for students in Years 11 and 12 (84% and 75%). For the first supplementary questionnaire, which included the questions on offending behaviour, 5,178 useable questionnaires were returned from secondary students at 143 schools.

2.2 VALIDITY OF THE SURVEY DATA

All sample surveys are subject to both sampling and non-sampling error. Sampling error results from the fact that the survey was conducted on a sample rather than on the entire population of NSW secondary school students. However, the sample size and the sampling procedure used in the survey were designed to be adequate enough to provide reliable estimates.

Non-sampling error can result from a number of sources. One of the potential sources of non-sampling error in this survey was non-response. A large proportion of the schools

initially selected for participation in the survey (44%) elected not to participate in the survey, although the participation rate amongst students in the participating schools was quite high (90%). It is possible that the schools that elected not to participate had quite different characteristics from those that did participate. Similarly it is possible that students who elected not to participate, as well as students who were not available on the day of the survey (through illness, truancy or other reasons) had different characteristics from those who participated. Students who participated in the survey, but chose not to respond to certain questions may also have had different characteristics.

In all likelihood students who did not respond to the survey because they were truanting were more likely to have been involved in crime, as truancy is a predictor of involvement in crime, as we have already seen. Students who chose not to participate or who chose not to respond to particular questions on offending, were probably more likely to have been involved in crime as well. Previous research suggests that delinquents may be less likely to agree to participate in surveys or less likely to complete all items in a survey if they do participate (see, for example, Hindelang, Hirschi & Weis 1981; Graham & Bowling 1995).

As a result, the prevalence estimates presented in this report are more likely to underestimate the true crime rate amongst NSW secondary students, rather than overestimate it. However, response rates were quite high for the survey and for individual questions on offending. The maximum percentage of missing responses for any offence was 4 per cent of the sample. Consequently the impact of these types of non-response error on our prevalence estimates should be minimal.⁴

Another potential source of non-sampling error in this survey is the accuracy of the respondents' answers to the questionnaire. We cannot be certain that some students did not either conceal or exaggerate their involvement in crime, substance use or other behaviours. However, we are reasonably confident that the data obtained through the school survey are valid and reliable as a number of steps were taken to maximise the reliability and validity of the survey. The questionnaires were pilot tested to ensure questions were clear and well understood by students. Test-retest analysis conducted as part of the pilot testing showed that reliability was high, even for substance use. The main survey was administered by trained survey administrators provided by the project team in exam-like conditions. Assurance of confidentiality was given to survey participants. Students were also reminded of the importance of giving honest answers, with reminders about confidentiality and honesty included in the questionnaires before sensitive questions.

In addition, an internal consistency check on the data revealed that most students had produced minimal inconsistencies across the questions on offending behaviour, and on other questions.⁵ Many of these inconsistencies were removed through either cleaning of the data set or through categorisation of the data.⁶ Furthermore, the questions were derived from questions previously tested and validated in other surveys.

It is also important to note that this survey targeted secondary school students in NSW. No attempt was made to target adolescents who had left school before Year 12. Adolescents who leave school early are likely to have different characteristics from those of adolescents who stay at school, and in particular are more likely to be involved in crime. This is especially the case if they left school early because they disliked it or were expelled (Jarjoura 1993; Thornberry, Moore & Christenson 1985). Our findings are probably not generalisable to adolescents who leave school early, but once again it should be noted that the exclusion of these students probably means that we have underestimated, rather than overestimated, the prevalence of juvenile participation in crime.

2.3 METHOD OF ANALYSIS

Prior to analysis, the data set was cleaned to remove any inconsistencies in the data, where this was possible. Some cleaning had already been performed on the national core data by the Centre for Behavioural Research in Cancer and on the NSW supplementary data by the market research agency sub-contracted to administer the survey. Details of the cleaning process used by the Bureau are provided in Section 1 of Appendix B.

2.3.1 Weighting

The sample design employed for the survey resulted in certain Area Health Services being over-represented. Non-response also resulted in certain types of school students being over-represented and others being under-represented. For example, students in the lower years (7-10) were over-represented, while students in the higher years (11-12) were under-represented. For this reason the data were weighted to make the results representative of all NSW secondary school students. The relevant weighting ratios for the first supplementary survey were provided by NSW Health with the data set.

Weighted data were used whenever we were interested in the entire population of NSW secondary students, that is where we calculated prevalence estimates (see Sections 4.1 and 4.2). It should be noted, however, that the weighting had minimal effect on the data. Unweighted data were used in other analyses, that is in the analysis of the sample characteristics (see Section 3), in the analyses carried out on sub-groups of the population, such as lifetime participants and current participants (see Sections 4.2 and 4.3) and in the analyses that involved inferential statistics, such as the chi-square tests of independence and the regression analysis presented in Section 5.

2.3.2 Population estimates

Population estimates were calculated by multiplying the relevant weighted proportions by the number of students in the NSW secondary school population (that is, 441,234). Note that the student population for the supplementary survey (389,146) was smaller than the total NSW secondary student population as the supplementary questionnaire was not completed at all in some of the smaller strata. We have chosen to use the total student population, rather than the supplementary population in our calculations of prevalence estimates, as we have no reason to expect that participation rates will be much different in these smaller strata.

2.3.3 Risk factors

In order to examine our hypotheses about the risk factors underlying participation in crime we classified the offence of assault as a violent crime and malicious damage as a destructive property crime. The four types of acquisitive property crime – receiving or selling stolen goods, shoplifting goods worth \$20 or more, break and enter, and motor vehicle theft – were combined into one group.

To test our hypotheses we analysed the data on two levels – a bivariate level and a multivariate level. In analysing the data on a bivariate level we used the chi-square test of independence to examine whether or not a relationship existed between each potential risk factor and each type of offence (that is, assault, malicious damage and acquisitive property crime). The limitation of this level of analysis is that it only allows

the association between each potential risk factor and each offence type to be examined in isolation. In order to take into account the relative influences of a number of potential risk factors on crime we need to use multivariate techniques. Taking into account the relative influence of potential risk factors is important as developmental factors are likely to be related to each other, as are the use of different substances.

The appropriate multivariate technique for the present data is to use generalised estimating equations (see, for example, Liang & Zeger 1993) to fit models similar to logistic regression models. Logistic regression models are appropriate for describing relationships between a binary (or dichotomous) response variable and a set of explanatory, or predictor, variables (see, for example, Liang & Zeger 1993). However, logistic regression models are based on the assumption that observations are independent of each other. In the school survey the assumption of independence was violated, as the sampling design involved cluster sampling. Students were selected, at random, from a set of clusters (in this case, schools) rather than from the entire population of secondary school students in NSW. It is possible that the behaviour of students within a school is influenced by the behaviour of other students within the school and is therefore not independent. In particular, substance use and offending behaviour are likely to be subject to peer influence within a school.

The use of generalised estimating equations allows for the correlations between observations to be modelled. We assumed that the correlation structure was such that the correlation between students within a school was the same for all schools, and that there was no correlation between students from different schools. The results reported are based on empirical estimates of error variance. These are considered to be more robust than model-based estimates as the modelled correlation structure used in generalised estimating equations may be incorrect (Liang & Zeger 1993).

Models were fitted for the following response variables – participation in assault, malicious damage, and acquisitive property crime, and frequent use of alcohol and cannabis, which were the two most commonly used substances amongst our sample. In each case, participation referred to participation in the 12 months prior to the survey and frequency of use referred to frequency of use in the 12 months prior to the survey. Predictor variables of interest were included in the models where bivariate analysis revealed they had a significant relationship with the response variable. It should be noted that the term ‘predictor’ is used throughout this report for convenience and does not imply causality.

Note also that in the statistical tests used throughout this report we have used a significance level of 0.05.

3. RESPONDENT CHARACTERISTICS

In this section the sample characteristics are presented. For each characteristic we note the relevant question number in the questionnaire, with 'C' denoting the question was in the core questionnaire and 'S' denoting the question was in the first supplementary questionnaire. The full questions are provided in Appendix A.

Gender

Slightly more than half (53%) of the respondents were female (refer to Q C4).

Year level

Students in the lower years (7-10) were over-represented, while students in the higher years (11-12) were under-represented amongst respondents. The distribution of the respondents across the year levels was as follows – 20 per cent in Year 7, 20 per cent in Year 8, 19 per cent in Year 9, 20 per cent in Year 10, 11 per cent in Year 11 and 10 per cent in Year 12 (refer to Q C2). Note that secondary students ranged in age from 10 years to 19 years and over.

Region

Most (61%) respondents attended schools in metropolitan areas. The remaining 39 per cent of respondents attended schools in non-metropolitan areas.⁷

Respondents were distributed across Area Health Services as follows – 9 per cent were from South Western Sydney, 6 per cent from South Eastern Sydney, 12 per cent from Northern Sydney, 7 per cent from Western Sydney, 8 per cent from Central Sydney, 9 per cent from Wentworth, 7 per cent from Hunter, 8 per cent from Illawarra, 6 per cent from Central Coast, 4 per cent from Mid North Coast, 3 per cent from Northern Rivers, 3 per cent from Macquarie, 4 per cent from Greater Murray, 8 per cent from New England, 1 per cent from Mid Western, 2 per cent from Southern and 3 per cent were from the Far West.⁸

School type

About two-thirds (66%) of respondents attended government schools, 20 per cent attended catholic schools and 14 per cent attended independent schools.

Supervision

Just over half (51%) of the respondents reported going out no more than one night without adult supervision in a normal week; 36 per cent of respondents reported going out 2 to 3 nights without adult supervision in a normal week; and 13 per cent of respondents reported going out 4 or more nights without adult supervision in a normal week (refer to Q S4).

Family structure

Most (73%) respondents reported that they lived with their original mother and father. The other 27 per cent comprised 10 per cent living with a step or blended couple,

14 per cent living with a single parent and 3 per cent living with someone else (refer to Q S1).

School performance

The majority (94%) of respondents considered themselves average or better at school work. This group comprised 54 per cent who considered themselves average, 35 per cent who considered themselves above average and 5 per cent who considered themselves a lot above average. Six per cent of respondents considered themselves either below average (5%) or a lot below average (1%) at school work (refer to Q C7).

Truancy

Most (84%) respondents reported that they had not wagged school on any occasion in the 4 weeks prior to the survey, 12 per cent of respondents reported that they had wagged school 1 to 3 days in the prior 4 weeks, and 4 per cent of respondents reported that they had wagged school on 4 or more days in the 4 weeks prior to the survey (refer to Q S6b).⁹

Aboriginality

Three per cent of respondents reported that they were an Aborigine or Torres Strait Islander (refer to Q C9).

Ethnicity

Parents' country of birth

Many (61%) respondents reported that both of their parents were born in Australia; 14 per cent of respondents reported that at least one of their parents was born in an English speaking country, other than Australia; and 25 per cent reported that at least one of their parents was born in a non-English speaking country (refer to Q S2).

Note that included in the latter category are respondents with one parent born in an English speaking country and the other parent born in a non-English speaking country.

Language spoken at home

The majority (83%) of respondents reported that they spoke only English at home. Only 14 per cent reported that they spoke English and another language at home and 3 per cent reported that they spoke only another language at home (refer to Q S3).

Substance use

No sample characteristics relating to substance use are presented here as NSW Health has responsibility for disseminating information of this nature. However, it is important to note that alcohol and cannabis are used by substantial proportions of students, while opiates, stimulants (cocaine or amphetamines) and steroids are used by only a minority of students.

The latest published figures available from NSW Health, based on the last school survey undertaken in 1992, indicate that 67 per cent of secondary students had ever consumed

alcohol and 17 per cent had consumed alcohol on a weekly basis (Cooney, Dobbinson & Flaherty 1994). Twenty-five per cent of secondary students had ever used cannabis and 7 per cent had used cannabis on a weekly basis. Four per cent of students had ever used opiates and 7 per cent had used stimulants. Note that the 1992 survey did not include steroid use.

4. THE PREVALENCE OF JUVENILE PARTICIPATION IN CRIME

In this section we examine the prevalence of participation in a range of crimes amongst secondary school students in NSW. The crimes examined are assault, malicious damage, receiving or selling stolen goods, shoplifting, break and enter, and motor vehicle theft. Secondary students who reported having ever committed a particular crime at the time of the survey are referred to throughout this report as having ever participated or as being lifetime participants in the crime. Secondary students who reported committing a particular crime in the 12 months prior to the survey are referred to as currently participating or as being a current participant in the crime. Note that secondary students who were current participants were, by definition, also lifetime participants.

Participation rates are reported for the State. Comparisons of participation rates are made by gender, school year and region. We also consider the frequency with which secondary students commit these crimes and the number of different types of crimes in which secondary students are current participants.

4.1 PARTICIPATION RATES

Table 1 shows estimates of the number and proportion of students in the population of NSW secondary school students in 1996 who had ever participated, or were currently participating in each of the six offences and in any of the six offences. Assault during sport, which was included as a filter to limit assault to that which occurred outside sport (see Section 2.1.1) is included for comparison purposes. The total population of students enrolled in NSW secondary schools in Years 7 to 12 across the 17 Area Health Services in 1996 was 441,234.

Table 1: Crime participation rates of NSW secondary school students^a

	<i>Ever participated (population estimates^b)</i>		<i>Participated in the 12 months prior to the survey (population estimates^b)</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Assault during sport	138,500	31.4	110,300	25.0
Assault outside sport	173,400	39.3	128,000	29.0
Malicious damage	170,300	38.6	120,000	27.2
Receiving or selling stolen goods	100,600	22.8	67,500	15.3
Shoplifting goods worth \$20 or more	66,200	15.0	41,000	9.3
Break and enter	41,500	9.4	23,800	5.4
Motor vehicle theft	30,000	6.8	20,700	4.7
Any of the six offences ^c	270,900	61.4	210,500	47.7

^a The total population of NSW secondary students in 1996 was 441,234.

^b Population estimates have been rounded to the nearest 100.

^c Assault during sport is not included here.

From the table it can be seen that there were large numbers of secondary school students in NSW who had ever participated in any of the six offences (an estimated 61.4%). Large numbers of secondary students (an estimated 47.7%) were also current participants in any of the six offences, that is they had participated in at least one of the six offences in the 12 months prior to the survey.

Participation was highest in crimes of a violent or destructive nature. An estimated 39.3 per cent of secondary students had ever participated in assault outside sport (that is, attacked someone to hurt them outside sport) and an estimated 38.6 per cent had ever participated in malicious damage, while an estimated 29.0 per cent and 27.2 per cent of students were current participants in these crimes, respectively. Assault outside sport was slightly more common than assault during sport. A positive relationship was found between assault during sport and assault outside sport.¹⁰ The percentage of secondary students who had assaulted someone outside sport was more than twice as high for secondary students who had assaulted someone during sport, than for those who had not assaulted someone during sport.

Fewer secondary students participated in acquisitive property offences than participated in violent or destructive property offences. Receiving or selling stolen goods and shoplifting goods worth \$20 or more were the most common types of acquisitive property offence. An estimated 22.8 per cent of secondary students had ever received or sold stolen goods and 15.3 per cent were currently participating. Participation in shoplifting was slightly less common with an estimated 15.0 per cent of secondary students who had ever shoplifted goods worth \$20 or more and an estimated 9.3 per cent who were currently participating.

Participation was lowest for the more serious acquisitive property offences of break and enter, and motor vehicle theft. However, a substantial proportion of secondary students were participants in these types of crimes. An estimated 9.4 per cent of secondary students had ever participated in break and enter and 5.4 per cent were current participants. For motor vehicle theft, an estimated 6.8 per cent had ever stolen or helped to steal a motor vehicle and 4.7 per cent were currently participating.

In considering these findings it should be noted that although we deliberately tried to capture the more serious instances of most offences through the nature of the wording used in the questions about these offences, it is likely that the crimes that secondary students reported participating in were quite broad ranging, including some minor, as well as very serious instances of each crime. Previous research suggests that it is difficult to avoid the reporting of trivial acts when using self-report surveys (see, for example, Hindelang, Hirschi & Weis 1981).

4.1.1 Participation rates by school year and gender

Table 2 shows estimates of the number and proportion of students in the population of NSW secondary school students in 1996 who had ever participated, or were currently participating in the six offences, by school year and gender.

The table shows that, in general, participation rates were higher for male students than for female students. Participation rates also tended to peak at around Year 9 or Year 10 for each offence for both males and females. It should be noted, however, that the peak may have occurred in Years 9 to 10, rather than in later years, because those secondary

students who leave school after Year 9 or 10 are more likely to be involved in crime than those students who stay on at school, as we have already described. Australian Bureau of Statistics figures indicate that a substantial proportion of NSW youth (32%) leave school before Year 12.¹¹

The proportion of males who were lifetime participants or current participants was higher than for females, for each offence at each year level, except for current participation in shoplifting in Year 12. The estimated proportion of female Year 12 students currently participating in shoplifting (8.4%) was higher than the estimated proportion of male Year 12 students (7.4%). The estimated proportion of female Year 12 students who had ever participated in shoplifting, however, was slightly lower (14.1%) than for male Year 12 students (14.6%).

Males outnumbered females in participation in assault generally by a factor of nearly two. In Year 7, an estimated 45.8 per cent of males had ever participated in assault, nearly twice as many as the 26.3 per cent of females who had ever participated. In relation to current participation, an estimated 36.6 per cent of Year 7 males were currently participating in assault, again nearly twice the 20.8 per cent of Year 7 females participating.

Males outnumbered females to a lesser extent in malicious damage, where they only outnumbered females by a factor of about one and a half. Receiving or selling stolen goods and shoplifting, at least in the lower years, were also male-dominated with males outnumbering females in participation by a factor of about two. In the higher years shoplifting became less male-dominated.

The gender difference was greatest for the more serious property offences of break and enter and motor vehicle theft. Males outnumbered females in participation in break and enter by a factor of around three or four in the lower years, and by a factor of more than nine in Year 11. Year 7 males outnumbered females by a factor of about six for current participation in motor vehicle theft. An estimated 5.6 per cent of Year 7 males were current participants in motor vehicle theft compared with 1.0 per cent of female Year 7 students. The difference between males and females was quite small in Year 9, however, with males outnumbering females by a factor of less than one and a half.

For both male and female secondary students, participation in each type of offence tended to peak around Year 9 or Year 10 (or in the age range 14 to 16 years). The proportion of female students currently participating in each offence was highest in Year 9 except for assault, where the proportion was highest in Year 8 at an estimated 25.2 per cent. The proportion of male students currently participating peaked in either Year 9 or Year 10 for most offences. The exceptions were shoplifting where the proportion peaked later in Year 11 at an estimated 14.6 per cent and motor vehicle theft where the proportion peaked earlier in Year 8 at an estimated 9.8 per cent. However, participation in motor vehicle theft was almost as high in Year 10 at an estimated 9.5 per cent.

The findings that participation rates were generally higher in male secondary students and tended to peak around Year 9 or Year 10 are illustrated more clearly in Figures 1 to 4. These figures show the relationship between school year and participation for male and female students for a destructive property crime – malicious damage – and an acquisitive property crime – break and enter.

Table 2: Crime participation rates by gender and year level in NSW secondary school students^a

	<i>Ever participated (population estimates^b)</i>				<i>Participated in the 12 months prior to the survey (population estimates^b)</i>			
	<i>Male</i>		<i>Female</i>		<i>Male</i>		<i>Female</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Assault								
Year 7	19,600	45.8	10,900	26.3	15,700	36.6	8,600	20.8
Year 8	21,200	49.9	12,500	30.9	15,700	37.0	10,200	25.2
Year 9	23,400	56.9	12,900	32.5	18,800	45.7	9,600	24.2
Year 10	21,200	54.8	11,900	31.9	15,200	39.2	8,000	21.6
Year 11	14,900	49.5	7,800	24.1	9,300	31.0	5,300	16.6
Year 12	12,200	46.7	7,200	24.8	7,800	29.8	4,700	16.1
Malicious damage								
Year 7	14,800	34.6	11,500	27.9	10,100	23.7	8,600	20.9
Year 8	18,300	43.2	14,000	34.7	12,400	29.3	10,500	25.9
Year 9	20,100	48.7	16,900	42.4	14,500	35.3	12,700	31.9
Year 10	19,100	49.4	14,600	39.3	13,700	35.5	10,800	29.0
Year 11	12,000	40.0	9,000	28.1	8,900	29.6	5,700	17.7
Year 12	11,300	43.5	8,200	28.2	6,300	24.3	4,100	14.1
Receiving or selling stolen goods								
Year 7	7,500	17.5	3,500	8.5	4,700	11.1	2,100	5.0
Year 8	11,500	27.2	6,300	15.6	7,500	17.6	4,200	10.5
Year 9	13,500	32.8	8,500	21.4	10,200	24.8	6,000	15.2
Year 10	13,800	35.6	7,600	20.4	10,200	26.3	5,100	13.6
Year 11	9,500	31.7	5,800	17.9	6,700	22.3	4,000	12.5
Year 12	9,100	34.7	6,200	21.3	4,400	16.9	3,700	12.8
Shoplifting goods worth \$20 or more								
Year 7	4,100	9.5	2,000	4.9	2,900	6.8	1,500	3.7
Year 8	6,400	15.0	3,400	8.4	4,700	11.2	1,900	4.6
Year 9	8,300	20.2	6,800	17.0	5,100	12.3	4,700	11.7
Year 10	9,200	23.7	6,600	17.7	5,500	14.2	4,000	10.8
Year 11	6,500	21.5	5,800	18.0	4,400	14.6	2,400	7.4
Year 12	3,800	14.6	4,100	14.1	1,900	7.4	2,400	8.4
Break and enter								
Year 7	3,300	7.6	1,100	2.7	2,100	4.8	800	2.0
Year 8	6,200	14.6	2,100	5.2	4,400	10.3	1,000	2.5
Year 9	6,800	16.4	2,800	7.1	4,300	10.5	1,600	4.1
Year 10	7,600	19.5	2,100	5.7	4,700	12.1	1,300	3.4
Year 11	4,800	16.1	500	1.7	2,300	7.5	200	0.7
Year 12	4,000	15.3	1,200	4.1	1,700	6.6	0	0.1
Motor vehicle theft								
Year 7	3,300	7.7	800	2.0	2,400	5.6	400	1.0
Year 8	5,300	12.4	1,400	3.5	4,200	9.8	1,300	3.2
Year 9	3,600	8.8	2,400	6.0	2,600	6.3	1,500	3.8
Year 10	5,200	13.5	1,200	3.2	3,700	9.5	700	1.9
Year 11	3,100	10.2	1,400	4.3	1,300	4.3	900	2.8
Year 12	2,300	8.7	1,100	3.7	1,600	6.1	700	2.3
Any of the six offences								
Year 7	26,700	62.4	17,900	43.3	21,900	51.3	14,600	35.3
Year 8	29,000	68.4	22,100	54.5	22,400	52.9	17,800	44.1
Year 9	32,000	77.8	23,500	59.2	27,100	65.9	19,000	47.9
Year 10	29,700	76.7	22,100	59.5	22,900	59.2	16,200	43.7
Year 11	20,900	69.7	16,800	52.3	15,400	51.2	11,700	36.3
Year 12	17,300	66.5	13,700	47.2	12,300	47.2	8,800	30.3

^a The total population of NSW secondary students in 1996 in each year was for males – Year 7: 42,782, Year 8: 42,408, Year 9: 41,192, Year 10: 38,732, Year 11: 30,025, Year 12: 26,087 – and for females – Year 7: 41,344, Year 8: 40,472, Year 9: 39,744, Year 10: 37,163, Year 11: 32,187, Year 12: 29,098.

^b Population estimates have been rounded to the nearest 100.

Figure 1: Malicious damage – lifetime participation rates by year level and gender

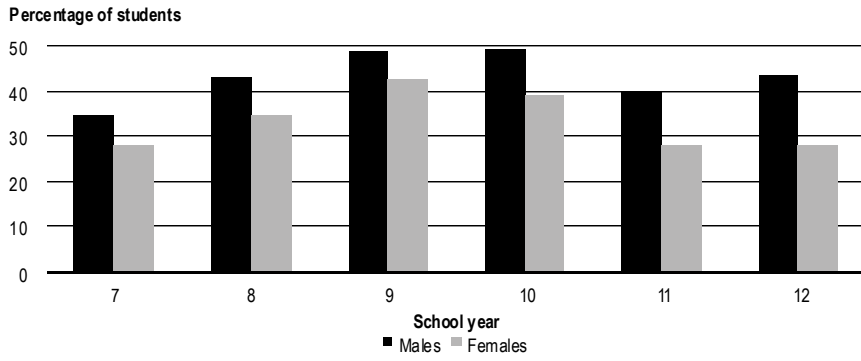


Figure 2: Malicious damage – current participation rates by year level and gender

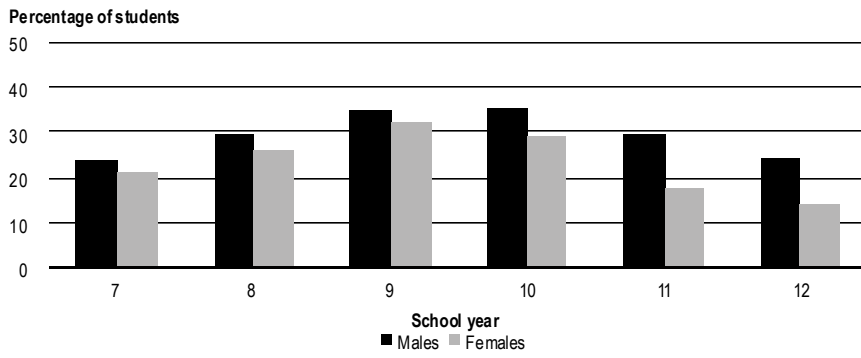


Figure 3: Break and enter – lifetime participation rates by year level and gender

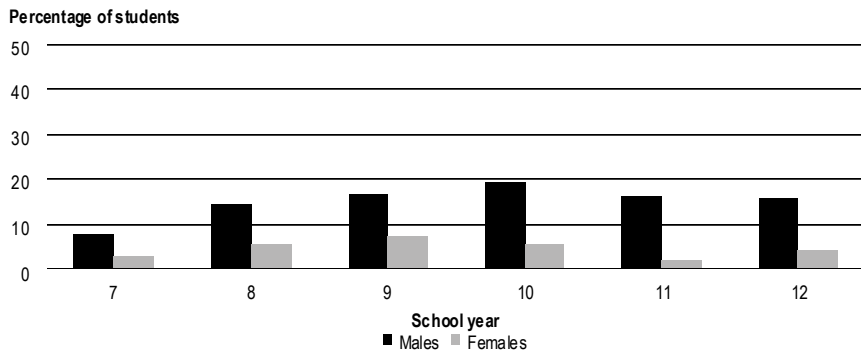
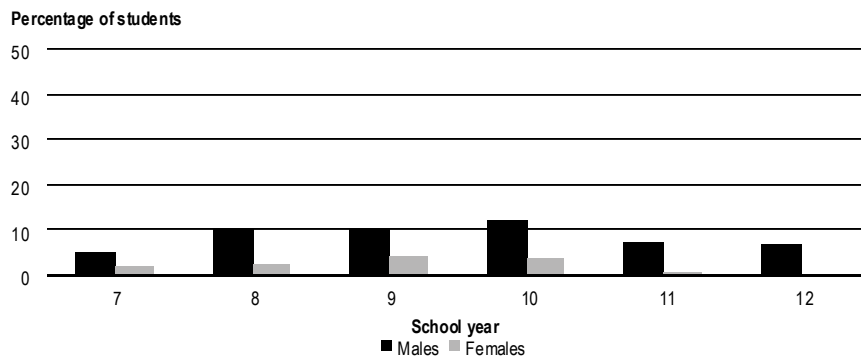


Figure 4: Break and enter – current participation rates by year level and gender



From the figures it can be seen that lifetime and current participation rates were much lower for break and enter than for malicious damage. For both offences, lifetime and current participation rates were higher for males than for females at each year level, although the difference between male and female participation rates was much greater for break and enter. Lifetime and current participation in each offence tended to peak around Years 9 and 10 for both males and females.

4.1.2 Participation by region

We examined whether participation rates for each offence varied between secondary students attending metropolitan schools and secondary students attending non-metropolitan schools. Chi-square tests of independence were conducted to examine whether there were statistically significant differences between the regions. A summary of the relationships is shown in Table 3. Full details of the chi-square tests and cross-tabulations are provided in Section 2 of Appendix B.

Table 3: Chi-square analysis for region by participation in crime

	<i>Ever participated</i>	<i>Participated in the 12 months prior to the survey</i>
	<i>Percentage of respondents</i>	<i>Percentage of respondents</i>
Assault outside sport		
Metropolitan	39	29
Non-metropolitan	42	30
<i>p</i> -value	<i>0.04</i> *	<i>0.84</i>
Malicious damage		
Metropolitan	38	28
Non-metropolitan	42	30
<i>p</i> -value	<i>0.02</i> *	<i>0.11</i>
Receiving or selling stolen goods		
Metropolitan	23	16
Non-metropolitan	23	16
<i>p</i> -value	<i>0.94</i>	<i>0.85</i>
Shoplifting goods worth \$20 or more		
Metropolitan	16	10
Non-metropolitan	15	10
<i>p</i> -value	<i>0.76</i>	<i>0.97</i>
Break and enter		
Metropolitan	8	5
Non-metropolitan	12	7
<i>p</i> -value	<i><0.01</i> *	<i>0.04</i> *
Motor vehicle theft		
Metropolitan	7	5
Non-metropolitan	7	5
<i>p</i> -value	<i>0.88</i>	<i>0.90</i>
Any of the six offences		
Metropolitan	61	48
Non-metropolitan	65	51
<i>p</i> -value	<i><0.01</i> *	<i>0.04</i> *

* Significant at 0.05 level.

Significant differences were found between regions mostly in lifetime participation rates. Secondary students who attended non-metropolitan schools had higher lifetime participation rates for three of the six offences – assault, malicious damage and break and enter. However, in each case the participation rates were only slightly higher.

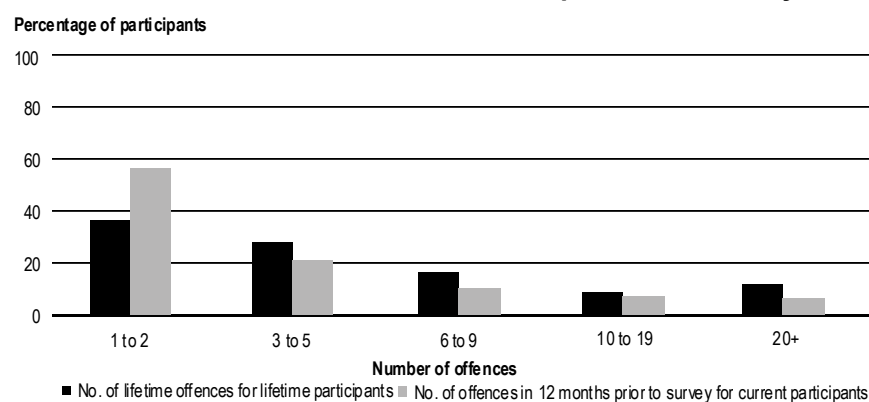
There were generally no significant differences in current participation rates between regions, with a significant difference only found for break and enter. Again secondary students who attended schools in non-metropolitan areas had higher current participation rates in both cases, but they were only slightly higher.

The higher lifetime participation rates in non-metropolitan areas for assault and malicious damage are consistent with recorded crime statistics which show that the rates of recorded crime for these offences are generally higher in non-metropolitan areas (Chilvers 1998). However, our other findings of higher participation for break and enter in non-metropolitan areas and of no difference between regions for the other offences appear inconsistent with recorded crime statistics. Rates of recorded crime for these offences are generally higher in metropolitan areas. One possible explanation for the differences may be that the higher metropolitan recorded crime rates are a result of higher rates of adult offending.

4.2 FREQUENCY OF OFFENDING

Although a more comprehensive analysis of offending frequency will appear in Part Two of this study, we examine offending frequency briefly here by examining the annual offending frequency for each of the six offences, that is, the number of times secondary school students reported committing each of these offences in the 12 months prior to the survey. The analysis on annual offending frequency was limited to those students who reported participating in that offence in the 12 months prior to the survey, that is to current participants, unless otherwise stated. We also consider the total number of times secondary students reported committing each of these offences in their lifetime. This analysis was limited to those secondary students who reported having ever participated in the crime, that is to lifetime participants, unless otherwise stated.

Figure 5: Assault – number of offences ever committed, and committed in the 12 months prior to the survey



Figures 5 to 10 show the distribution of the number of offences secondary students reported committing in the 12 months prior to the survey and in their lifetime for each of the six offences. Note that the distributions presented essentially use the six-interval

scale employed in the school survey to measure offending frequency. The '0' level of the scale has been excluded here, however, as we are only concerned with current and lifetime participants in each offence, that is those who by definition have committed at least one offence in the 12 months prior to the survey or at least one offence in their lifetime.

Most secondary students who reported participating in assault were only involved on a transient basis. From Figure 5 it can be seen that it was most common for secondary students to report their annual offending frequency as 1 to 2 times and their total number of lifetime assaults as 1 to 2 times.

There was a number of assault participants who offended quite frequently. Thirteen per cent of the current participants in assault had an annual offending frequency of 10 or more times. Twelve per cent of the lifetime participants had committed 20 or more assaults in their lifetime. However, when we estimate the prevalence of these frequent offenders amongst the entire NSW secondary school population, frequent annual offenders make up only 4 per cent and frequent lifetime offenders make up only 5 per cent of the population.

Among assault participants, the median annual assault frequency was 1 to 2 times and the estimated mean was 4 times. The median total number of assaults committed in a lifetime was 3 to 5 times and the estimated mean was 5 times. Note that these means, and all the other means presented in this section, are conservative estimates of the means, calculated using the minimum value of each of the five positive intervals on the frequency scale.

Figure 6: Malicious damage – number of offences ever committed, and committed in the 12 months prior to the survey

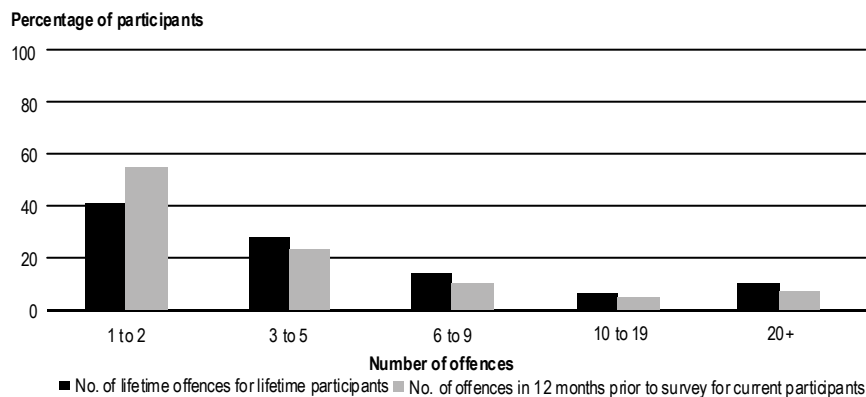


Figure 6 shows that, as with assault, most secondary students who had participated in malicious damage had done so relatively infrequently. Current participants most commonly reported committing the offence 1 to 2 times in the 12 months prior to the survey and lifetime participants most commonly reported committing 1 to 2 offences in their lifetime.

Again there was a number of participants who offended quite often. Twelve per cent of current participants in malicious damage had an annual offending frequency of 10 or more times and ten per cent of lifetime participants had committed the offence 20 or more times in their lifetime. The estimated prevalence of these frequent offenders amongst the entire NSW secondary school student population was 3 per cent for frequent annual offenders and 4 per cent for frequent lifetime offenders.

Among current participants in malicious damage, the median annual offending frequency was 1 to 2 times and the mean was conservatively estimated at 4 times. Among lifetime participants the median number of offences committed in a lifetime was 3 to 5 times and the mean was conservatively estimated at 5 times.

Figure 7: Receiving or selling stolen goods – number of offences ever committed, and committed in the 12 months prior to the survey

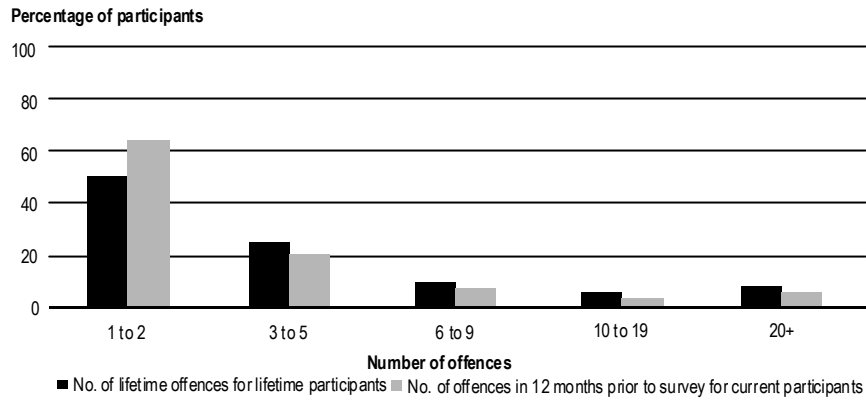
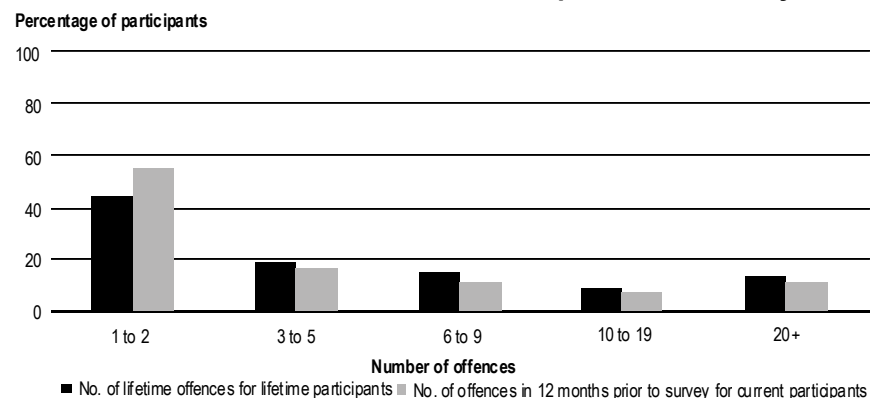


Figure 7 shows that over half of the current participants in receiving or selling stolen goods had an annual offending frequency of only 1 to 2 times. Similarly, over half of the lifetime participants had committed this offence a total of 1 to 2 times in their lifetime.

A small proportion offended quite often, with 10 per cent of current participants in receiving or selling stolen goods having an annual offending frequency of 10 or more times and eight per cent of lifetime participants committing the offence 20 times or more in their lifetime. The estimated prevalence of these frequent offenders amongst the entire NSW secondary school student population was 1 per cent for frequent annual offenders and 2 per cent for frequent lifetime offenders.

Among participants in receiving and selling stolen goods, the median number of times for committing this offence was 1 to 2 times for both annual and lifetime offending. Conservative estimates of the means were 3 times for annual offending frequency and 4 times for the number of offences committed in a lifetime.

Figure 8: Shoplifting – number of offences ever committed, and committed in the 12 months prior to the survey



From Figure 8 it can be seen that more than half of the current shoplifting participants had an annual offending frequency of 1 to 2 times and many lifetime participants had only shoplifted a total of 1 to 2 times in their lifetime. Again there was a number of frequent offenders, with 18 per cent of current participants reporting an annual shoplifting frequency of 10 or more times and 13 per cent of lifetime participants reporting they had shoplifted a total of 20 or more times in their lifetime. The estimated prevalence of these frequent offenders amongst the entire NSW secondary school student population was 2 per cent for both frequent annual offenders and frequent lifetime offenders.

The median annual offending frequency for current shoplifting participants was 1 to 2 times and the median total number of lifetime shoplifting offences for lifetime participants was 3 to 5 times. The means were conservatively estimated at 5 times for both the annual offending frequency of current participants and for the total number of offences committed in a lifetime by lifetime participants.

Figure 9: Break and enter – number of offences ever committed, and committed in the 12 months prior to the survey

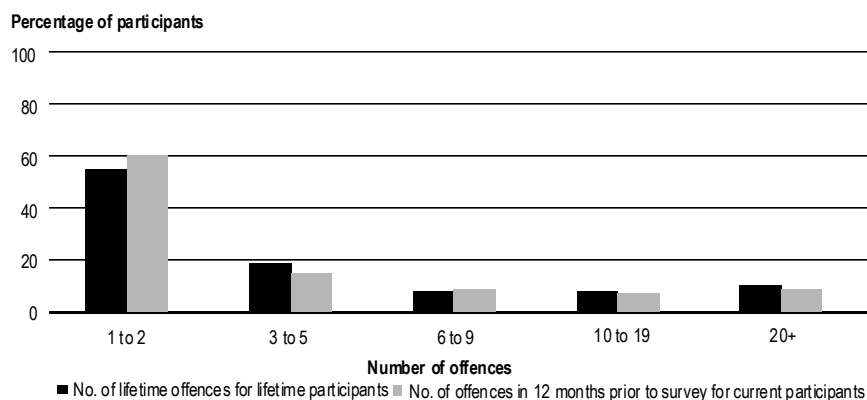


Figure 9 shows that over half of the current participants in break and enter had an annual offending frequency of only 1 to 2 times. Similarly, over half of the lifetime participants had committed a total of only 1 to 2 break and enter offences in their lifetime. There was a number of frequent offenders, with 16 per cent of current participants reporting an annual offending frequency of 10 or more times and 10 per cent of lifetime participants reporting they had committed break and enter 20 times or more in their lifetime. The estimated prevalence of these frequent offenders amongst the entire NSW secondary school student population was 1 per cent for both frequent annual offenders and frequent lifetime offenders.

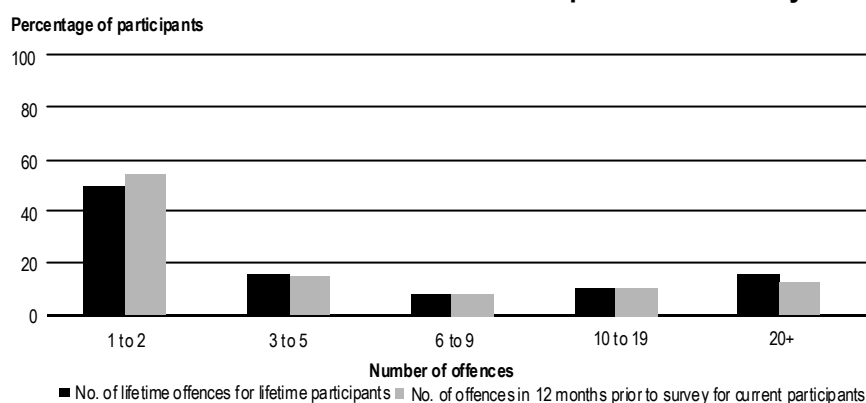
For current break and enter participants the median annual offending frequency was 1 to 2 times, while the conservative estimate of the mean was 4 times. Similarly, for lifetime participants, the median number of lifetime break and enter offences was 1 to 2 times and the conservative estimate of the mean was 4 times.

Figure 10 shows that most current participants in motor vehicle theft had an annual offending frequency of 1 to 2 times and most lifetime participants had only committed the offence a total of 1 to 2 times in their lifetime. There was a number of frequent offenders. Of the current participants in motor vehicle theft, 23 per cent had an annual offending frequency of 10 or more times and, of the lifetime participants, 16 per cent reported stealing a motor vehicle 20 or more times in their lifetime. The estimated prevalence

of these frequent offenders amongst the entire NSW secondary school student population was about 1 per cent for both frequent annual offenders and frequent lifetime offenders.

For current motor vehicle theft participants, the median annual offending frequency was 1 to 2 times, while the mean was conservatively estimated at 5 times. The median total number of motor vehicle thefts ever committed by lifetime participants was 1 to 2 times and the mean was conservatively estimated at 6 times.

Figure 10: Motor vehicle theft – number of offences ever committed, and committed in the 12 months prior to the survey



From these findings it would appear that while a large number of NSW secondary students had participated in crime, the majority did not offend very often. Among the participants in each offence, however, there was a number of frequent offenders who had an annual offending frequency of 10 or more times. This proportion was most substantial for the acquisitive property offences, particularly motor vehicle theft, but also for shoplifting and break and enter. These frequent offenders, however, formed only a small proportion of the total student population.

4.3 JUVENILE PARTICIPATION IN DIFFERENT TYPES OF CRIME

In the preceding section we examined how frequently secondary students reported committing particular offences. In this section we consider how many different types of offences secondary students report currently participating in. Figures 11 and 12 show the number of different types of offences secondary students report currently participating in by school year for males and females, respectively. Note that only those students who report currently participating in any of the six offences are included in the analysis.

Figures 11 and 12 show that most secondary school students who are current participants in any of the six offences are current participants in only 1 or 2 different types of offences. In each school year, over three-quarters of female participants and over 60 per cent of male participants committed only 1 or 2 types of offence. Male participants were more likely than female participants to commit multiple types of crimes. At each year level, the proportion of males participating in three or more types of crime was higher than the proportion for females. For both sexes, students in Years 9, 10 or 11 were more likely to be participating in multiple types of crimes. Just over one-third of male participants

in both Years 9 and 10 committed three or more types of crimes compared with less than 20 per cent in Year 7 and 27 per cent in Year 12. Over 20 per cent of female participants in each of Years 9, 10 and 11 committed three or more types of crimes compared with 11 per cent in Year 7 and 17 per cent in Year 12. These findings reflect those presented in the last section which showed that participation was generally highest for males and for students in Year 9 or Year 10 for each type of offence.

Figure 11: The number of different types of offences male current participants committed by year level

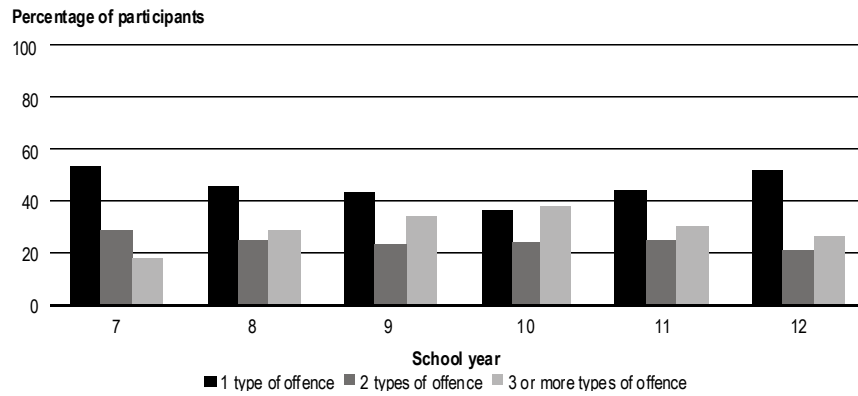
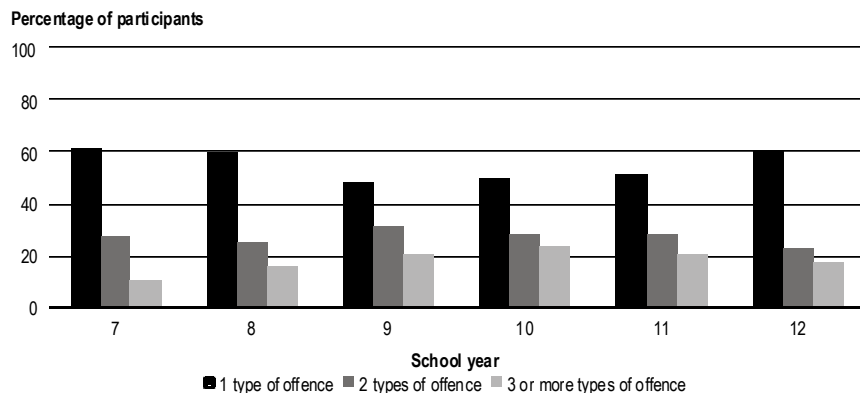


Figure 12: The number of different types of offences female current participants committed by year level



5. THE RISK FACTORS RELATED TO JUVENILE PARTICIPATION IN CRIME

In this section we examine whether developmental and demographic factors and substance use are risk factors related to juvenile participation in crime by examining their relationship with current participation in violent crime, destructive property crime and acquisitive property crime amongst NSW secondary students. We also examine the relationship between developmental and demographic factors and substance use.

5.1 THE RELATIONSHIP BETWEEN DEVELOPMENTAL AND DEMOGRAPHIC FACTORS AND JUVENILE PARTICIPATION IN CRIME

As mentioned earlier in Section 1.2.2, developmental and demographic factors, such as supervision, family structure, school performance, truancy, cultural background and gender, have previously been shown to be strong predictors of juvenile involvement in crime.

In this section we examine the relationship between developmental and demographic factors and current participation in violent crime (assault), destructive property crime (malicious damage) and acquisitive property crime amongst NSW secondary students. For the purposes of this analysis the four acquisitive property crimes – motor vehicle theft, break and enter, shoplifting and receiving or selling stolen goods – have been grouped together, such that if a secondary student is a current participant in at least one of the four acquisitive property crimes then the student is considered as a current participant in acquisitive property crime. The categorisation we have used for the developmental and demographic factors are shown in the tables presented in this section and are the same as those outlined in Section 3 on respondent characteristics. For factors which are not self-explanatory the categories are outlined below.

Supervision

High – going out 0 to 1 night without adult supervision in a normal week

Medium – going out 2 to 3 nights without adult supervision in a normal week

Low – going out 4 or more nights without adult supervision in a normal week

Truancy

None – did not wag school on any occasion in the 4 weeks prior to the survey

Some – wagged school on 1 to 3 days in the 4 weeks prior to the survey

A lot – wagged school on 4 or more days in the 4 weeks prior to the survey

School performance

Average or above average – self-perceived as average, above average or a lot above average at school work

Below average – self-perceived as below average or a lot below average at school work

Parents' country of birth

Australia – both parents born in Australia

English speaking background (ESB) – at least one parent born in an English speaking country, other than Australia

Non-English speaking background (NESB) – at least one parent born in a non-English speaking country

Note that included in the third category are respondents with one parent born in an English speaking country and the other parent born in a non-English speaking country.

We begin by looking at the bivariate relationship between each developmental and demographic factor and current participation in each type of crime. The multivariate analysis, which follows, examines the developmental and demographic factors simultaneously and assesses the relative influence of each factor on participation in each type of crime, controlling for the influence of the others.

5.1.1 Bivariate analysis

Table 4 provides a summary of the bivariate (chi-square) analysis carried out on the developmental and demographic factors and current participation in each of assault, malicious damage and acquisitive property crime. Full details of the chi-square tests and cross-tabulations are provided in Section 2 of Appendix B.

From the table it can be seen that statistically significant relationships were found between current participation in each of assault, malicious damage and acquisitive property crime and each of the developmental and demographic factors, except for parents' country of birth and language spoken at home. In relation to these latter two factors, the only significant relationship found was between language spoken at home and current participation in malicious damage.

Each of the significant relationships was in the expected direction according to our hypotheses and research questions, except for the relationship between language spoken at home and malicious damage. Current participation rates were higher in each type of crime for secondary students who received lower levels of supervision, who did not live with both original parents, who considered themselves as below average at school work, who truanted more often, who were Aboriginal or Torres Strait Islander, and who were male. The higher current participation rates, in each of the crimes, amongst male secondary students reflects the results shown earlier in Section 4.1.1.

Current participation rates in malicious damage were higher for secondary students who spoke English only or English and another language at home than for students who spoke only another language at home. Nearly 30 per cent of secondary students who spoke English only or English and another language at home were currently participating in malicious damage, while only 18 per cent of those who spoke only another language at home were. If we take language spoken at home as a measure of ethnicity then this finding is inconsistent with the popular view that suggests juveniles from an ethnic background are more likely to be involved in crime.

5.1.2 Multivariate analysis

In the multivariate analysis, regression models were fitted for current participation in each of assault, malicious damage and acquisitive property crime to assess the relative

influence of each developmental and demographic factor, controlling for all the other developmental and demographic factors. Language spoken at home and parents' country of birth were excluded from each regression model as the bivariate analysis showed that these factors were generally not related to participation in crime.

Table 4: Chi-square analysis of developmental and demographic factors by current participation in assault, malicious damage and acquisitive property crime

	<i>Assault</i>	<i>Malicious damage</i>	<i>Acquisitive property crime</i>
	<i>Percentage of respondents</i>	<i>Percentage of respondents</i>	<i>Percentage of respondents</i>
Supervision			
High	25	22	14
Medium	32	32	27
Low	40	44	40
<i>p</i> -value	<0.01*	<0.01*	<0.01*
Family structure			
Both original parents	28	27	20
Other	34	31	26
<i>p</i> -value	<0.01*	<0.01*	<0.01*
School performance			
Average or above average	29	28	21
Below average	42	38	38
<i>p</i> -value	<0.01*	<0.01*	<0.01*
Truancy			
None	27	24	16
Some	41	50	47
A lot	60	67	71
<i>p</i> -value	<0.01*	<0.01*	<0.01*
Aboriginality			
Non-ATSI ^a	29	28	21
ATSI ^a	40	38	36
<i>p</i> -value	<0.01*	<0.01*	<0.01*
Parents' country of birth			
Australia	30	29	22
ESB ^b	31	31	21
NESB ^b	27	26	22
<i>p</i> -value	0.05	0.07	0.83
Language spoken at home			
English only	30	29	22
English and other	29	28	23
Other only	27	18	22
<i>p</i> -value	0.71	0.01*	0.80
Gender			
Male	38	32	28
Female	22	25	16
<i>p</i> -value	<0.01*	<0.01*	<0.01*

* Significant at 0.05 level.

^a ATSI refers to Aboriginal or Torres Strait Islander

^b ESB refers to English Speaking Background, NESB refers to Non-English Speaking Background

For the fitted models we report the significance (p-value) of each of the demographic and developmental factors. For each of the significant factors in the model we report the odds ratio and its 95 per cent confidence interval. The odds ratio provides information about the direction and magnitude of the relationship between the developmental or demographic factor and current participation in the relevant crime. An odds ratio greater than one indicates a positive relationship between the developmental or demographic factor and current participation in the relevant crime. An odds ratio less than one indicates a negative relationship. Full details of each model are provided in Section 3 of Appendix B.

Assault

Table 5 shows the model for current participation in assault. It can be seen that each developmental or demographic factor – supervision, family structure, school performance, truancy, Aboriginality and gender – had a significant effect on current participation in assault in the presence of the other developmental and demographic factors. We discuss the nature of each of the relationships below, together with those for malicious damage and acquisitive property crime.

Table 5: Assault – model for current participation with developmental and demographic factors as predictors

<i>Factors in model</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>Confidence interval (95%)</i>
Supervision			
(medium vs high)	<0.01	1.3	1.1 - 1.5
(low vs high)	<0.01	1.4	1.1 - 1.8
Family structure			
(other vs both original parents)	0.01	1.2	1.0 - 1.4
School performance			
(below average vs average or above)	0.02	1.4	1.1 - 1.8
Truancy			
(some vs none)	<0.01	1.7	1.5 - 2.1
(a lot vs none)	<0.01	3.2	2.2 - 4.6
Aboriginality			
(ATSI vs non-ATSI) ^a	<0.01	1.7	1.2 - 2.4
Gender			
(male vs female)	<0.01	2.0	1.7 - 2.3

^a ATSI refers to Aboriginal or Torres Strait Islander

Malicious damage

Table 6 shows the model for current participation in malicious damage. It can be seen that in the presence of the other developmental and demographic factors, only supervision, truancy and gender had significant effects on current participation in malicious damage. Family structure, school performance and Aboriginality were no longer significant in the presence of the other factors.

Table 6: Malicious damage – model for current participation with developmental and demographic factors as predictors

<i>Factors in model</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>Confidence interval (95%)</i>
Supervision			
(medium vs high)	<0.01	1.6	1.4 - 1.9
(low vs high)	<0.01	2.2	1.8 - 2.7
Family structure			
(other vs both original parents)	0.91		
School performance			
(below average vs average or above)	0.16		
Truancy			
(some vs none)	<0.01	2.7	2.2 - 3.3
(a lot vs none)	<0.01	4.7	3.3 - 6.8
Aboriginality			
(ATSI vs non-ATSI) ^a	0.07		
Gender			
(male vs female)	<0.01	1.3	1.2 - 1.6

^a ATSI refers to Aboriginal or Torres Strait Islander

Acquisitive property crime

Table 7 shows the model for current participation in acquisitive property crime. As was the case with assault, each developmental factor – supervision, family structure, school performance, truancy, Aboriginality and gender – had a significant effect on current participation in acquisitive property crime in the presence of the other developmental and demographic factors.

Table 7: Acquisitive property crime – model for current participation with developmental and demographic factors as predictors

<i>Factors in model</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>Confidence interval (95%)</i>
Supervision			
(medium vs high)	<0.01	1.9	1.6 - 2.2
(low vs high)	<0.01	2.6	2.1 - 3.3
Family structure			
(other vs both original parents)	0.05	1.2	1.0 - 1.4
School performance			
(below average vs average or above)	0.01	1.5	1.1 - 2.0
Truancy			
(some vs none)	<0.01	3.9	3.2 - 4.8
(a lot vs none)	<0.01	8.8	5.9 - 13.2
Aboriginality			
(ATSI vs non-ATSI) ^a	<0.01	1.7	1.2 - 2.4
Gender			
(male vs female)	<0.01	1.9	1.6 - 2.2

^a ATSI refers to Aboriginal or Torres Strait Islander

The nature of the relationships between developmental and demographic factors and crime

Together, the three models presented in Tables 5, 6 and 7 show that developmental and demographic factors, in the absence of any other factors (such as substance use), do predict current participation in each crime. Supervision, truancy and gender were significant predictors of current participation in each of the three crimes. Truancy was a particularly strong predictor for each crime, as indicated by its high odds ratios. Family structure, school performance and Aboriginality were significant predictors of current participation in both assault and acquisitive property crime, but had no significant effect on malicious damage, in the presence of the other factors.

Secondary students with lower levels of supervision were more likely to be current participants in all three types of crimes. Compared with secondary students receiving high level supervision, the odds of students who received medium level supervision being a current participant in crime were 1.3 times higher for assault, 1.6 times higher for malicious damage and 1.9 times higher for acquisitive property crime. The odds were even higher for secondary students receiving low level supervision compared with those receiving high level supervision. The odds of students who received low level supervision participating in crime were 1.4 times higher for assault, 2.2 times higher for malicious damage and 2.6 times higher for acquisitive property crime, compared with students who received high level supervision.

Secondary students who truant were more likely to be current participants in each of the three crimes. Compared with secondary students who had not truant, the odds of participation in crime for secondary students who truant sometimes were over one and a half times higher for assault, over two and a half times higher for malicious damage and just under four times higher for acquisitive property crime. The odds were even higher for secondary students who truant a lot compared with students who did not truant. Their odds of participation were over three times higher for assault, nearly five times higher for malicious damage and nearly nine times higher for acquisitive property crime.

Male secondary students were more likely to be current participants in each type of crime. Compared with female students, the odds of male students currently participating ranged from 1.3 times higher for malicious damage up to around two times higher for assault and acquisitive property crime.

Current participation in assault and acquisitive property crime was also more likely for secondary students who did not live with both original parents, compared with those who did; for students who rated their school performance as below average, compared with those who rated themselves as average or above average; and for students who were Aboriginal or Torres Strait Islander compared with those who were not. These students, however, were no more likely to be current participants in malicious damage.

These findings generally mirror those of the bivariate analyses, the only differences being that family structure, school performance and Aboriginality no longer had significant effects on participation in malicious damage in the presence of other developmental and demographic factors.

Overall the findings presented in this section generally support our hypotheses with lack of supervision, not living with both original parents, poor school performance,

truancy, Aboriginality and being male all being associated with higher rates of participation in violent crime and acquisitive property crime and in some cases destructive property crime. We also investigated the question of whether ethnicity might be associated with higher participation rates in crime, using language spoken at home and parents' country of birth as measures of ethnicity. The bivariate analysis showed that ethnicity was generally not associated with participation in any type of crime.

The findings also show that when these six developmental and demographic factors were considered simultaneously, the full set of factors predicted current participation in both assault and acquisitive property crime. Malicious damage, however, was slightly different in that only three of the six factors were needed to predict current participation in this crime.

5.2 THE RELATIONSHIP BETWEEN SUBSTANCE USE AND JUVENILE PARTICIPATION IN CRIME

In this section, we examine the relationship between substance use and current participation in assault, malicious damage and acquisitive property crime amongst NSW secondary students. We focus on current use (that is, use in the 12 months prior to the survey) of alcohol, cannabis, opiates, stimulants and steroids. As alcohol and cannabis use were relatively common amongst the secondary students we were able to consider the effects of different levels of use. The levels of use for these two substances are outlined below and they equate loosely to no use, less than weekly use and weekly use. As use of the other substances was quite rare in our sample, we were only able to consider the effect of use versus no use of the substance in the 12 months prior to the survey.

Alcohol

No use – no alcoholic drinks in the 12 months prior to the survey

Infrequent use – an alcoholic drink in the 12 months prior to the survey, but not in the week prior

Frequent use – an alcoholic drink in the week prior to the survey

Cannabis

No use – no cannabis use in the 12 months prior to the survey

Infrequent use – used cannabis in the 12 months prior to the survey, but not more than twice in the last four weeks and not in the last week

Frequent use – used cannabis three or more times in the last four weeks, or used cannabis in the last week

5.2.1 Bivariate analysis

Table 8 provides a summary of the bivariate (chi-square) analysis carried out on the use of each substance and current participation in assault, malicious damage and acquisitive property crime. Full details of the analysis are shown in Section 2 of Appendix B.

Use of each substance was significantly related to current participation in assault, malicious damage and acquisitive property crime, with secondary students who were substance users having higher participation rates in each type of crime. In the case of alcohol and cannabis, where we were able to examine different levels of use, the greater the level of use of these substances, the higher the participation rates in each type of crime.

These initial findings partly supported our hypotheses about substance use and crime. Alcohol use and steroid use were associated with higher participation rates in assault and malicious damage as expected. However, use of these substances was also associated with a higher participation rate in acquisitive property crime which we did not expect. Cannabis use and opiate use were associated with higher participation rates in acquisitive property crime as expected, but also with higher rates of participation in assault and malicious damage, which we did not expect. Stimulant use was associated with higher participation rates in all three types of crime as we expected.

Table 8: Chi-square analysis of current substance use by current participation in assault, malicious damage and acquisitive property crime

	<i>Assault</i>	<i>Malicious damage</i>	<i>Acquisitive property crime</i>
	<i>Percentage of respondents</i>	<i>Percentage of respondents</i>	<i>Percentage of respondents</i>
Alcohol			
No use	19	12	7
Infrequent use	29	29	20
Frequent use	38	41	36
<i>p</i> -value	<0.01 *	<0.01 *	<0.01 *
Cannabis			
No use	24	20	11
Infrequent use	35	39	33
Frequent use	53	58	63
<i>p</i> -value	<0.01 *	<0.01 *	<0.01 *
Opiates			
No use	28	27	20
Use	59	68	69
<i>p</i> -value	<0.01 *	<0.01 *	<0.01 *
Stimulants			
No use	28	26	19
Use	52	58	62
<i>p</i> -value	<0.01 *	<0.01 *	<0.01 *
Steroids			
No use	29	28	21
Use	51	57	66
<i>p</i> -value	<0.01 *	<0.01 *	<0.01 *

* Significant at 0.05 level.

5.2.2 Multivariate analysis

The multivariate analysis assessed the relative influence of use of each substance on current participation in each crime, controlling for use of the other substances. Models were fitted for current participation in assault, malicious damage and acquisitive property crime. All substances were included in each model as predictor variables because the bivariate analysis revealed that each substance was significant. The models are shown in Tables 9, 10 and 11. These tables show the factors and their significance (p-value). The odds ratio and its 95 per cent confidence interval are shown for each of the significant factors. Full details of each model are provided in Section 3 of Appendix B.

Assault

Table 9 shows the model for current participation in assault. It can be seen that use of alcohol, cannabis and opiates had significant effects on current participation in assault, in the presence of the other substances, while use of stimulants and steroids did not. The nature of these relationships are discussed below, together with those for malicious damage and acquisitive property crime.

Table 9: Assault – model for current participation with current use of substances as predictors

<i>Factors in model</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>Confidence interval (95%)</i>
Alcohol			
(infrequent use vs no use)	<0.01	1.6	1.3 - 1.9
(frequent use vs no use)	<0.01	1.8	1.5 - 2.1
Cannabis			
(infrequent use vs no use)	<0.01	1.5	1.2 - 1.7
(frequent use vs no use)	<0.01	2.5	2.1 - 3.1
Opiates			
(use vs no use)	0.04	1.5	1.0 - 2.2
Stimulants			
(use vs no use)	0.12		
Steroids			
(use vs no use)	0.50		

Malicious damage

Table 10 shows the model for current participation in malicious damage. It can be seen that, as with assault, use of alcohol, cannabis and opiates had significant effects on current participation in malicious damage, in the presence of the other substances, while use of stimulants and steroids did not.

Table 10: Malicious damage – model for current participation with current use of substances as predictors

<i>Factors in model</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>Confidence interval (95%)</i>
Alcohol			
(infrequent use vs no use)	<0.01	2.7	2.2 - 3.3
(frequent use vs no use)	<0.01	3.1	2.4 - 4.0
Cannabis			
(infrequent use vs no use)	<0.01	1.9	1.6 - 2.2
(frequent use vs no use)	<0.01	3.3	2.6 - 4.3
Opiates			
(use vs no use)	<0.01	2.0	1.2 - 3.1
Stimulants			
(use vs no use)	0.16		
Steroids			
(use vs no use)	0.17		

Acquisitive property crime

Table 11 shows the model for current participation in acquisitive property crime by current substance use. It can be seen that use of each substance had a significant effect on current participation in acquisitive property crime in the presence of the other substances.

Table 11: Acquisitive property crime – model for current participation with current use of substances as predictors

<i>Factors in model</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>Confidence interval (95%)</i>
Alcohol			
(infrequent use vs no use)	<0.01	2.2	1.7 - 2.9
(frequent use vs no use)	<0.01	3.1	2.3 - 4.1
Cannabis			
(infrequent use vs no use)	<0.01	2.7	2.3 - 3.2
(frequent use vs no use)	<0.01	7.0	5.5 - 9.1
Opiates			
(use vs no use)	0.04	1.6	1.0 - 2.4
Stimulants			
(use vs no use)	<0.01	1.6	1.1 - 2.3
Steroids			
(use vs no use)	0.02	2.1	1.1 - 4.0

The nature of the relationships between substance use and each crime

Together these three models show that use of various substances does predict current participation in violent crime (assault), destructive property crime (malicious damage) and acquisitive property crime. Alcohol, cannabis and opiate use were all significant predictors of each of the three types of crime, in the presence of other substance use. Users of each of these substances were more likely to be current participants in each type of crime, as indicated by their odds ratios, which were all greater than one.

In the case of alcohol and cannabis, the more frequent the use of each substance, the more likely current participation was in each type of crime. Taking malicious damage, for example, we can see from Table 10 that the odds of infrequent alcohol users being current participants were 2.7 times higher, compared with non-alcohol users. The odds of frequent alcohol users being current participants were even higher at 3.1 times higher than those of non-alcohol users. Similarly, for cannabis, compared with non-users, the odds of being a current participant were almost twice as high for infrequent users and over three times as high for frequent users.

Cannabis use was a particularly strong predictor of acquisitive property crime, as indicated by its high odds ratio. The odds of being a current participant increased almost three-fold for infrequent users and seven-fold for frequent users, compared with non-users.

Stimulant and steroid use were significant predictors of one type of crime only – acquisitive property crime. Users of each substance were more likely to be current participants in acquisitive property crime than non-users.

These findings in relation to substance use generally mirror those of the bivariate analyses. The only differences were that stimulant and steroid use no longer had significant effects on current participation in assault and malicious damage, when use of other substances was taken into account. The findings partly support our hypotheses as we describe below.

Alcohol users were more likely to be participants in assault and malicious damage as expected, but also were more likely to be participants in acquisitive property crime which we did not expect.

Cannabis users and opiate users were more likely to be participants in acquisitive property crime as expected, but also were more likely to be participants in assault and malicious damage which we did not expect.

Stimulant users were more likely to be participants in acquisitive property crime as expected, but were no more likely to be participants in assault or malicious damage, which we did not expect.

The findings in relation to steroid use were completely unexpected. Steroid users were no more likely to be participants in assault and malicious damage, but were more likely to be participants in acquisitive property crime.

Our findings also show that when this set of five substances was considered, the violent crime of assault and the destructive property crime of malicious damage had the same set of three substances as predictors, while acquisitive property crime appeared to be somewhat different, requiring all five substances as predictors.

5.3 THE RELATIONSHIP BETWEEN DEVELOPMENTAL AND DEMOGRAPHIC FACTORS AND SUBSTANCE USE

We have just seen that substance use had a significant impact on participation in each of the three crime types amongst NSW secondary students. We now examine whether developmental and demographic factors predict substance use in NSW secondary students and, in particular, whether the same developmental and demographic factors that predict crime also predict substance use. In Section 5.1 we saw that secondary students who had less supervision, who did not live with both their original parents, who rated themselves as below average school performers, who truanted, who were Aboriginal or Torres Strait Islander, or who were male were more likely to be participants in acquisitive property crime and violent crime. Secondary students with some of these characteristics were also more likely to be participants in destructive property crime. Parents' country of birth and language spoken at home, on the other hand, generally were not related to participation in crime.

We focus on the substances of cannabis and alcohol here as these were the two most widely used substances and also were consistently related to crime. As in the previous sections we report the bivariate analysis first, followed by the multivariate analysis.

In the previous section alcohol and cannabis use had three levels – no use, infrequent use and frequent use – which loosely equated to no use, less than weekly use and weekly use. In this section we needed to reduce alcohol and cannabis use to dichotomous variables so that they could be used as response variables in the regression models. We have chosen to reduce use of these substances into the categories of 'frequent use' and 'no use or some use', or in other words weekly use and less than weekly use. The reason for this categorisation was to focus on frequent use of these substances, rather than occasional use, as frequent use was generally associated with higher rates of participation in crime. We refer to these new variables as 'frequent use' throughout this section. The levels of the developmental and demographic factors remained the same as in Section 5.1.

5.3.1 Bivariate analysis

Table 12 shows a summary of the bivariate analysis (chi-square tests) carried out on the developmental and demographic factors and frequent use of alcohol and cannabis. Full details of the analysis are provided in Section 2 of Appendix B. Significant relationships were found between frequent alcohol use and frequent cannabis use and each of the developmental and demographic factors, except for Aboriginality, which was significantly related to frequent use of cannabis but not alcohol.

Each of the significant relationships was in the expected direction, except for parents' country of birth and language spoken at home. Higher rates of frequent alcohol use and frequent cannabis use were found among secondary students who received lower levels of supervision, who did not live with both of their original parents, who considered themselves as below average at school work, who truanted or who were male. Aboriginal or Torres Strait Islander secondary students had a higher rate of frequent cannabis use, but their rate of frequent alcohol use was no higher than that for other secondary students.

Secondary students who had at least one parent from a non-English speaking background, or who spoke a language other than English at home were less likely to be frequent alcohol users or frequent cannabis users.

Table 12: Chi-square analysis of developmental and demographic factors by frequent use of alcohol and cannabis

	<i>Frequent alcohol use</i>	<i>Frequent cannabis use</i>
	<i>Percentage of respondents</i>	<i>Percentage of respondents</i>
Supervision		
High	20	5
Medium	43	15
Low	53	27
<i>p</i> -value	<0.01 *	<0.01 *
Family structure		
Both original parents	32	10
Other	35	17
<i>p</i> -value	0.03 *	<0.01 *
School performance		
Average or above average	32	10
Below average	44	29
<i>p</i> -value	<0.01 *	<0.01 *
Truancy		
None	28	7
Some	57	27
A lot	65	56
<i>p</i> -value	<0.01 *	<0.01 *
Aboriginality		
Non-ATSI ^a	33	11
ATSI ^a	32	24
<i>p</i> -value	0.77	<0.01 *
Parents' country of birth		
Australia	34	12
ESB ^b	38	14
NESB ^b	28	9
<i>p</i> -value	<0.01 *	<0.01 *
Language spoken at home		
English only	35	12
English and other	25	8
Other only	21	10
<i>p</i> -value	<0.01 *	<0.01 *
Gender		
Male	37	16
Female	29	8
<i>p</i> -value	<0.01 *	<0.01 *

* Significant at 0.05 level.

^a ATSI refers to Aboriginal or Torres Strait Islander

^b ESB refers to English Speaking Background, NESB refers to Non-English Speaking Background

5.3.2 Multivariate analysis

The multivariate analysis assesses the relative influence of each of the developmental and demographic factors on frequent substance use, controlling for all the other developmental and demographic factors. Models were fitted for frequent alcohol use and frequent cannabis use, using all of the developmental and demographic factors as predictor variables. Full details of the models are provided in Section 3 of Appendix B.

Frequent alcohol use

Table 13 shows the model for frequent alcohol use. It can be seen that in the presence of other developmental and demographic factors, supervision, school performance, truancy, ethnicity and gender all had significant effects on frequent alcohol use, while family structure and Aboriginality did not. The direction of the relationships is discussed below, together with those for frequent cannabis use.

Table 13: Frequent alcohol use – model with developmental and demographic factors as predictors

<i>Factors in model</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>Confidence interval (95%)</i>
Supervision			
(medium vs high)	<0.01	2.5	2.1 - 2.9
(low vs high)	<0.01	3.1	2.5 - 3.8
Family structure			
(other vs both original parents)	0.47		
School performance			
(below average vs average or above)	0.02	1.4	1.0 - 1.7
Truancy			
(some vs none)	<0.01	2.6	2.1 - 3.2
(a lot vs none)	<0.01	3.5	2.4 - 4.9
Aboriginality			
(ATSI vs non-ATSI) ^a	0.48		
Parents' country of birth			
(ESB vs Australia) ^b	0.14		
(NESB vs Australia) ^b	<0.01	0.8	0.6 - 0.9
Gender			
(male vs female)	<0.01	1.3	1.1 - 1.5

^a ATSI refers to Aboriginal or Torres Strait Islander

^b ESB refers to English Speaking Background, NESB refers to Non-English Speaking Background

Frequent cannabis use

Table 14 shows the model for frequent cannabis use. It can be seen that in the presence of other developmental and demographic factors, supervision, family structure, school performance, truancy and gender all had significant effects on frequent cannabis use, while Aboriginality and ethnicity did not.

The nature of the relationships between frequent alcohol and cannabis use and developmental and demographic factors

Together these two models show that this set of developmental and demographic factors, in the absence of any other factors, does predict frequent use of both alcohol and cannabis amongst secondary students in NSW. Supervision, poor school performance, truancy and gender were significant predictors of frequent use of both substances, in the presence of the other developmental and demographic factors.

Table 14: Frequent cannabis use – model with developmental and demographic factors as predictors

<i>Factors in model</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>Confidence interval (95%)</i>
Supervision			
(medium vs high)	<0.01	2.8	2.2 - 3.6
(low vs high)	<0.01	4.6	3.3 - 6.4
Family structure			
(other vs both original parents)	<0.01	1.5	1.2 - 1.9
School performance			
(below average vs average or above)	<0.01	2.6	1.8 - 3.6
Truancy			
(some vs none)	<0.01	3.4	2.6 - 4.5
(a lot vs none)	<0.01	9.4	6.2 - 14.4
Aboriginality			
(ATSI vs non-ATSI) ^a	0.07		
Parents' country of birth			
(ESB vs Australia) ^b	0.71		
(NESB vs Australia) ^b	0.08		
Gender			
(male vs female)	<0.01	1.9	1.5 - 2.4

^a ATSI refers to Aboriginal or Torres Strait Islander

^b ESB refers to English Speaking Background, NESB refers to Non-English Speaking Background

Frequent use of both alcohol and cannabis were more likely for secondary students who received a low or medium level of supervision compared with those who received a high level of supervision; for students who rated themselves as below average in school performance compared with those who rated themselves as average or above; for students who truanted compared with those who did not; and for male students compared with female students.

Supervision and truancy were particularly strong predictors of frequent substance use, as indicated by their high odds ratios. The odds of being a frequent alcohol user were two and a half times higher for secondary students who received medium level supervision and over three times higher for secondary students who received little supervision, compared with secondary students who received high level supervision. Similarly, the odds of being a frequent cannabis user were almost three times higher for secondary students receiving medium level supervision and over four and half times higher for secondary students receiving little supervision, compared with those receiving high level supervision.

For students who truanted sometimes, the odds of being a frequent alcohol user were over two and a half times higher, and the odds of being a frequent cannabis user were nearly three and a half times higher, compared with secondary students who did not truant. The odds of frequent substance use were even higher for secondary students who truanted a lot. Their odds of being a frequent user were three and a half times higher for alcohol and over nine times higher for cannabis use, compared with non-truants.

Family structure and ethnicity were significant predictors of frequent use of one substance. Family structure predicted frequent cannabis but not frequent alcohol use, with secondary students who did not live with both original parents being more likely to be frequent cannabis users than students who did live with both original parents. Ethnicity predicted frequent alcohol but not frequent cannabis use with secondary students with at least one parent born in a non-English speaking country being less

likely to be frequent alcohol users than students with both parents Australian born. Students with at least one parent born in an English speaking country (other than Australia) were no different from students with both parents Australian born.

Aboriginality was not a significant predictor of frequent use of either substance, in the presence of the other factors.

These findings generally mirror those of the bivariate analyses. The only differences were that family structure no longer had a significant effect on frequent alcohol use, and ethnicity and Aboriginality no longer had significant effects on frequent cannabis use, in the presence of other demographic and developmental factors.

In relation to our research questions, the findings indicate that the developmental predictors of substance use are similar, but not identical, to the developmental predictors of current participation in assault, malicious damage and acquisitive property crime. Supervision, truancy and gender were common predictors of current participation in all three offence types and frequent use of both substances. Truancy in particular was a strong predictor of each behaviour, as indicated by its high odds ratios. Self-perceived school performance was a common predictor of current participation in two of the three offence types and frequent use of both substances, while family structure was a common predictor of two of the three offence types and use of one of the substances. Aboriginality was a predictor of only assault and acquisitive property crime, and ethnicity was a predictor of only alcohol use, once other factors were taken into account.

5.4 THE RELATIONSHIPS BETWEEN DEVELOPMENTAL AND DEMOGRAPHIC FACTORS, SUBSTANCE USE AND CRIME

In the previous sections we have seen that developmental and demographic factors, in the absence of other factors, do predict participation in crime amongst NSW secondary students, as do the use of various types of substances, in the absence of any other factors. We have also seen that developmental and demographic factors predict substance use amongst NSW secondary students. In this section we examine whether substance use still has a significant effect on participation in crime when developmental and demographic factors are controlled for.

Models were fitted for current participation in each of assault, malicious damage and acquisitive property crime. Developmental and demographic factors and substances that were found to be significant predictors of the particular crime in the previous multivariate analysis (see Sections 5.1.2 and 5.2.2) were included in the model for that crime. Note that the levels of the developmental and demographic factors used in the models here are the same as those used in Section 5.1. The levels of substance used in the models are the same as those in Section 5.2. Note that full details of the models are provided in Section 3 of Appendix B.

5.4.1 Multivariate analysis

Assault

Table 15 shows the model for current participation in assault with developmental and demographic factors and current substance use as predictor variables. We have already seen that when developmental and demographic factors were considered on their own – supervision, family structure, school performance, truancy, Aboriginality and gender – were all significant predictors of current participation in assault in the presence of the other factors (see Table 5). When different types of substance use were considered on

their own, alcohol, cannabis and opiate use were all shown to be significant predictors of current participation in assault in the presence of the other substances (see Table 9). After developmental and demographic factors and substance use were included together as predictors, truancy, Aboriginality, gender, alcohol use and cannabis use remained significant predictors of current participation in assault. Supervision, family structure and school performance no longer had significant effects. The nature of these relationships is described below, together with those for malicious damage and acquisitive property crime.

Table 15: Assault – model for current participation with developmental and demographic factors and current use of substances as predictors

<i>Factors in model</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>Confidence interval (95%)</i>
Supervision			
(medium vs high)	0.59		
(low vs high)	0.57		
Family structure			
(other vs both original parents)	0.13		
School performance			
(below average vs average or above)	0.11		
Truancy			
(some vs none)	<0.01	1.4	1.1 - 1.7
(a lot vs none)	<0.01	2.1	1.4 - 3.1
Aboriginality			
(ATSI vs non-ATSI) ^a	<0.01	1.8	1.2 - 2.6
Gender			
(male vs female)	<0.01	1.9	1.7 - 2.2
Alcohol			
(infrequent use vs no use)	<0.01	1.6	1.3 - 1.9
(frequent use vs no use)	<0.01	1.5	1.2 - 1.9
Cannabis			
(infrequent use vs no use)	<0.01	1.5	1.2 - 1.8
(frequent use vs no use)	<0.01	2.3	1.9 - 2.9
Opiates			
(use vs no use)	0.14		
Factors not in model			
Stimulants			
(use vs no use)	-	-	-
Steroids			
(use vs no use)	-	-	-

^a ATSI refers to Aboriginal or Torres Strait Islander

Malicious damage

Table 16 shows the model for current participation in malicious damage with developmental and demographic factors and current substance use as predictor variables. Earlier we saw that of the developmental and demographic factors, supervision, truancy and gender were significant predictors of current participation in malicious damage (see Table 6). Of the substances, alcohol, cannabis and opiate use were significant predictors (see Table 10). After including developmental

Table 16: Malicious damage – model for current participation with developmental and demographic factors and current use of substances as predictors

<i>Factors in model</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>Confidence interval (95%)</i>
Supervision			
(medium vs high)	0.06		
(low vs high)	<0.01	1.5	1.2 - 1.8
Truancy			
(some vs none)	<0.01	1.9	1.5 - 2.3
(a lot vs none)	<0.01	2.7	1.9 - 4.0
Gender			
(male vs female)	<0.01	1.2	1.1 - 1.5
Alcohol			
(infrequent use vs no use)	<0.01	2.5	2.0 - 3.2
(frequent use vs no use)	<0.01	2.6	2.0 - 3.5
Cannabis			
(infrequent use vs no use)	<0.01	1.8	1.5 - 2.2
(frequent use vs no use)	<0.01	2.9	2.3 - 3.7
Opiates			
(use vs no use)	<0.01	2.1	1.3 - 3.4
Factors not in model			
Family structure			
(other vs both original parents)	-	-	-
School performance			
(below average vs average or above)	-	-	-
Aboriginality			
(ATSI vs non-ATSI) ^a	-	-	-
Stimulants			
(use vs no use)	-	-	-
Steroids			
(use vs no use)	-	-	-

^a ATSI refers to Aboriginal or Torres Strait Islander

and demographic factors and substance use together as predictors, each of these factors remained a significant predictor of current participation in malicious damage.

Acquisitive property crime

We have already seen that supervision, family structure, school performance, truancy, Aboriginality and gender were all significant predictors of current participation in acquisitive property crime (see Table 7). Similarly, use of each of the substances – alcohol, cannabis, opiates, stimulants and steroids – was shown to be a significant predictor of current participation in acquisitive property crime (see Table 11). Table 17 shows the model for current participation in acquisitive property crime with developmental and demographic factors and current substance use as predictors. The table shows that when all these factors were taken into account, supervision, truancy, Aboriginality, gender, alcohol, cannabis and steroid use remained significant predictors of current participation in acquisitive property crime. Family structure, school performance, opiate use and stimulant use no longer had significant effects.

Table 17: Acquisitive property crime – model for current participation with developmental and demographic factors and current use of substances as predictors

<i>Factors in model</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>Confidence interval (95%)</i>
Supervision			
(medium vs high)	0.04	1.2	1.0 - 1.4
(low vs high)	<0.01	1.5	1.2 - 2.0
Family structure			
(other vs both original parents)	0.53		
School performance			
(below average vs average or above)	0.63		
Truancy			
(some vs none)	<0.01	2.5	2.0 - 3.1
(a lot vs none)	<0.01	4.5	2.9 - 7.0
Aboriginality			
(ATSI vs non-ATSI) ^a	<0.01	1.9	1.3 - 2.9
Gender			
(male vs female)	<0.01	1.8	1.5 - 2.1
Alcohol			
(infrequent use vs no use)	<0.01	2.3	1.7 - 3.0
(frequent use vs no use)	<0.01	2.8	2.0 - 3.9
Cannabis			
(infrequent use vs no use)	<0.01	2.4	2.0 - 2.9
(frequent use vs no use)	<0.01	4.8	3.6 - 6.4
Opiates			
(use vs no use)	0.15		
Stimulants			
(use vs no use)	0.09		
Steroids			
(use vs no use)	0.05	2.1	1.0 - 4.2

^a ATSI refers to Aboriginal or Torres Strait Islander

The nature of the relationships between developmental and demographic factors and substance use and crime

When developmental and demographic factors and substance use were considered together we found that both types of factors were important for predicting participation in each type of crime. Truancy, gender, alcohol use and cannabis use predicted current participation in each of the three types of crime. Current participation was more likely in each type of crime for secondary students who had truanted compared with those who had not; for male students compared with female students; for students who were alcohol users compared with those who were non-alcohol users; and for students who were cannabis users compared with those who were non-users of cannabis.

Truancy remained a particularly strong predictor of each type of crime, as its odds ratios remained quite high. Compared with students who did not truant, the odds of students who sometimes truanted being current participants were almost one and a half times higher for assault, almost double for malicious damage, and two and a half times higher for acquisitive property crime. The odds were even higher for students who truanted

a lot. Their odds were more than double for assault, over two and a half times higher for malicious damage and four and a half times higher for acquisitive property crime, compared with students who did not truant.

Cannabis use remained a particularly strong predictor of acquisitive property crime. Compared with non-users of cannabis, the odds of participation increased almost two and a half times for infrequent users and almost five-fold for frequent users.

Supervision predicted two of the three types of crime – malicious damage and acquisitive property crime – with secondary students who received less supervision being more likely to participate in these types of crimes than those receiving more supervision. In the case of malicious damage, previously we have seen that the odds of participation were increased for both medium supervision and low supervision over high supervision (see Table 6). However, when developmental and demographic factors and substance use were included together as predictors the odds of participation were increased only for low supervision over high supervision (1.5 times). The odds of participation were no different between medium and high level supervision. For acquisitive property crime the odds of participation were higher for both medium and low level supervision, over high level supervision, by factors of 1.2 and 1.5, respectively.

Aboriginality also predicted two types of crime – assault and acquisitive property crime – with Aboriginal and Torres Strait islander students more likely to participate in both types of crime than other students.

Opiate use and steroid use each predicted one type of crime. Opiate users were more likely than non-users to participate in malicious damage and steroid users were more likely than non-users to participate in acquisitive property crime.

Overall, when all factors were considered our findings indicate that both types of factors – developmental and demographic, and substance use – have significant influences on participation in each of the three types of crime. In relation to our research question the findings suggest that substance use was a significant predictor of participation in crime, even when developmental and demographic factors were controlled for.

5.5 SUMMARY OF THE RELATIONSHIPS BETWEEN DEVELOPMENTAL AND DEMOGRAPHIC FACTORS, SUBSTANCE USE AND CRIME

Table 18 provides a summary of the predictors for each of current participation in assault, malicious damage and acquisitive property crime. The table shows the relevant odds ratio for each significant predictor when developmental and demographic factors only were included as predictors, when use of substances only were included as predictors and when developmental and demographic factors and use of substances were both included as predictors.

It can be seen that when both developmental and demographic factors and substance use are considered, each type of crime had a similar but slightly different set of predictors. Truancy, gender, alcohol use and cannabis use were common predictors of all three types of crimes. Aboriginality and supervision were common predictors of two of the three crimes, Aboriginality being a predictor of assault and acquisitive property crime, but not malicious damage, and supervision being a predictor of malicious damage and acquisitive property crime, but not assault. Opiate and steroid use were predictors of only malicious damage and acquisitive property crime, respectively.

Table 18: Summary of the odds ratios for the relationships between developmental and demographic factors, substance use and participation in crime

	<i>Developmental/ demographic factors only as predictors</i>			<i>Substance use only as predictors</i>			<i>Developmental/ demographic factors and substances use as predictors</i>		
	<i>Assault</i>	<i>Malicious damage</i>	<i>Acquisitive property crime</i>	<i>Assault</i>	<i>Malicious damage</i>	<i>Acquisitive property crime</i>	<i>Assault</i>	<i>Malicious damage</i>	<i>Acquisitive property crime</i>
DEVELOPMENTAL / DEMOGRAPHIC FACTORS									
Supervision									
(medium vs high)	1.3	1.6	1.9	-	-	-	•	•	1.2
(low vs high)	1.4	2.2	2.6	-	-	-	•	1.5	1.5
Family structure									
(other vs both original parents)	1.2	•	1.2	-	-	-	•	-	•
School performance									
(below average vs average or above)	1.4	•	1.5	-	-	-	•	-	•
Truancy									
(some vs none)	1.7	2.7	3.9	-	-	-	1.4	1.9	2.5
(a lot vs none)	3.2	4.7	8.8	-	-	-	2.1	2.7	4.5
Aboriginality									
(ATSI vs non-ATSI) ^a	1.7	•	1.7	-	-	-	1.8	-	1.9
Gender									
(male vs female)	2.0	1.3	1.9	-	-	-	1.9	1.2	1.8
SUBSTANCE ABUSE									
Alcohol									
(infrequent use vs no use)	-	-	-	1.6	2.7	2.2	1.6	2.5	2.3
(frequent use vs no use)	-	-	-	1.8	3.1	3.1	1.5	2.6	2.8
Cannabis									
(infrequent use vs no use)	-	-	-	1.5	1.9	2.7	1.5	1.8	2.4
(frequent use vs no use)	-	-	-	2.5	3.3	7.0	2.3	2.9	4.8
Opiates									
(use vs no use)	-	-	-	1.5	2.0	1.6	•	2.1	•
Stimulants									
(use vs no use)	-	-	-	•	•	1.6	-	-	•
Steroids									
(use vs no use)	-	-	-	•	•	2.1	-	-	2.1

Note: - denotes that the factor was not included in the model as a predictor.

• denotes that the factor was not a significant predictor in the model.

^a ATSI refers to Aboriginal or Torres Strait Islander

6. DISCUSSION

This study aimed to examine the prevalence of participation in crime and the risk factors underlying participation in crime amongst secondary school students in NSW. Many of our key findings were consistent with previous research and with our hypotheses that were based upon this research. We highlight some of our key findings before discussing the possible causal nature of some of the risk factors we identified and the wider policy implications of our findings.

6.1 THE PREVALENCE OF JUVENILE PARTICIPATION IN CRIME

Our key findings with respect to the prevalence of juvenile crime are that –

- Offending is widespread amongst NSW secondary school students as a large proportion of secondary students have at some stage participated in crime.
- While many NSW secondary students have participated in crime, most offend only on an infrequent basis. Typically, secondary students involved in crime commit no more than 1 to 2 offences of a particular type and no more than 1 to 2 different types of offences. For each offence, the median offending frequency among those who offend is 1 to 2 times in the preceding 12 months, and the median total number of offences ever committed is generally 1 to 2 times. The respective means were conservatively estimated at around 4 times in the preceding 12 months and 5 times in a lifetime.

We also found, with respect to prevalence, that –

- More NSW secondary students participate in assault and malicious damage than in acquisitive property crimes.
- Offending is male-dominated, with male students, almost without exception, having higher rates of participation than female students, at each year level. The offences of break and enter, and motor vehicle theft, are particularly male-dominated, with males outnumbering females generally by a factor of three or more.
- Participation amongst NSW secondary students tends to peak around Years 9 and 10 (that is, in the age range of 14 to 16 years) for each type of offence.
- A number of current offenders are heavily involved in crime, offending 10 or more times in the 12 months prior to the survey. These frequent offenders, however, form a small proportion of all NSW secondary students.

These findings about the prevalence of juvenile participation in crime are generally consistent with previous research in that offending was found to be widely but thinly spread, male-dominated and to peak in mid to late adolescence (see, for example, Blumstein et al. 1986; Graham & Bowling 1995).

The male domination in each offence, however, was not found in our study to the same extent as the male domination in NSW Children’s Court appearances for the same offences. In the case of malicious damage, for example, our study showed that males outnumbered females by a factor of only one and a half, whereas the Bureau’s criminal court statistics show that males outnumbered females in appearances in the NSW

Children's Court in 1995-96 by a factor of almost seven (NSW Bureau of Crime Statistics and Research 1997). This gender difference between self-reported offending and official crime statistics, however, is not unexpected as it has been found in previous overseas research as well (see Section 1.2.2).

The peak age for participation also varied slightly between our study and the Children's Court statistics. Whereas our study showed that the peak time for participation was in Years 9 and 10 (in the age range 14 to 16 years), the peak age for appearing in the NSW Children's Court was slightly later at 16 to 17 years (Bureau of Crime Statistics and Research 1997). The discrepancy in the peak age for criminal involvement may indicate that juveniles are involved in crime for some time before they are first caught, or are first taken to court. Alternatively the peak in our sample of secondary students might have occurred in Years 9 and 10, rather than later, because those most likely to be involved in criminal activity are also most likely to have left school after this age (see Section 2.2).

The only finding in relation to the prevalence of offending that appears substantially inconsistent with official statistics on offending is that, in our study, assault and destructive property crime were more prevalent than acquisitive property crime, whereas the Bureau's criminal court statistics show that there are more juvenile court appearances for acquisitive property crime than for assault or malicious damage (NSW Bureau of Crime Statistics and Research 1997). It is likely that this difference simply reflects the fact that the public is more likely to report acquisitive property crime (often for insurance purposes) than other forms of crime (Australian Bureau of Statistics 1997). Higher reporting rates are likely to lead to higher detection rates and therefore more court appearances.¹²

6.2 THE RISK FACTORS RELATED TO JUVENILE PARTICIPATION IN CRIME

In this study we examined developmental and demographic factors and substance use as potential risk factors underlying juvenile participation in crime. Note that in examining potential risk factors we are only able to establish that associations exist between risk factors and participation in crime, not that these associations are causal. We are able, however, to examine whether these associations are consistent with hypotheses about causal associations.

6.2.1 Developmental and demographic factors

When we examined developmental and demographic factors on their own we found that these factors were important risk factors for participation in violent, destructive property and acquisitive property crime, consistent with previous research. By and large, our hypotheses were supported by the data, with secondary students who received low level supervision, who truanted or who were male having higher participation rates in each type of crime. Students who did not live with both original parents, who reported performing poorly at school or who described themselves as Aboriginal or Torres Strait Islander also had higher rates of participation in violent crime and acquisitive property crime. Thus the crimes of assault and acquisitive property crime were most alike as they had the same set of developmental and demographic factors as predictors, that is supervision, family structure, school performance, truancy, Aboriginality and gender. Malicious damage, was slightly different, having a smaller set of developmental and

demographic factors as predictors – only supervision, truancy and gender were predictors. Our findings suggest then, as we expected, that the developmental and demographic factors were related to a general propensity to offend.

Truancy was found to be a particularly strong predictor of each type of crime. This finding may mean that factors such as supervision, school performance and family structure are not as important predictors of crime as truancy. However, it might also mean that truancy is simply a manifestation of other developmental factors. In other words, developmental factors such as weak supervision and poor school performance may increase the likelihood of truancy as well as increasing the likelihood of criminal involvement. Another possibility is that truancy emerged as a strong predictor of offending because we had a better measure of truancy than of the other factors. The question on supervision, for example, asked students about the number of nights they went out without adult supervision, but did not address the question of whether or not the students' parents knew where they were. The question also did not address the level of supervision students received in their younger years. These latter aspects of supervision may be more salient predictors of offending.

We also addressed the question of whether ethnicity might be related to participation in each of the three types of crime. The preliminary bivariate analysis showed that, in general, no relationship existed between parents' country of birth or language spoken at home and participation in crime. The only relationship found was between language spoken at home and participation in malicious damage. However, this relationship was in the opposite direction to what the popular view about ethnicity might have anticipated, with crime participation rates in malicious damage being higher for secondary students who spoke at least some English at home than for students who did not speak English at home.

6.2.2 Substance use

Substance use also emerged as an important risk factor for participation in different types of crime amongst NSW secondary school students, consistent with previous research. The findings, however, provided mixed support for the view that use of different substances would have different effects on different types of crime. Alcohol, cannabis and opiate use all had a general amplifying effect on participation in violent crime, destructive property crime and acquisitive property crime. Cannabis use, however, was a particularly strong predictor of acquisitive property crime. Stimulant and steroid users had higher rates of participation in acquisitive property crime, but their expected relationship with violent and destructive property crime was not observed.

However, our failure to observe the existence of more specific effects (for example, a relationship between steroid use and violent crime or a stronger relationship between opiate use and acquisitive property crime) does not necessarily imply that they do not exist. Certain substance use habits, such as stimulant, opiate and steroid use may have been simply too rare in our sample to allow us to detect their specific effects.

It is noteworthy in this regard that the two most widely used substances in our sample, alcohol and cannabis, had some of the effects we expected. Alcohol use was related to participation in both violent crime and destructive property crime and cannabis use was a particularly strong predictor of acquisitive property crime.

The nature of the study prevents us from drawing any firm conclusions about causality. However, our findings are consistent with the existence of both a general underlying propensity for deviance as well as more substance-specific effects.

The appearance of a more general effect of alcohol, cannabis and opiate use on crime does not necessarily mean that these substances actually cause participation in all types of crime. These general effects may simply reflect that those who are more likely to engage in crime are also more likely to engage in other forms of deviant behaviour such as substance abuse, as general deviance theory suggests.

The appearance of relationships between alcohol and violent crime and destructive property crime is also consistent with past research which suggests that substances, such as alcohol, have a direct psychopharmacological effect on crime by acting as disinhibitors of aggression and thus rendering involvement in violent and destructive crime more likely. In addition, the appearance of a strong relationship between cannabis use and acquisitive property crime is consistent with the view that substances, such as cannabis, have a more indirect effect on crime, whereby substance users commit crime to raise money to buy particular substances. Past research, showing that juvenile cannabis users are likely to resort to acquisitive property crime because it offers them a means of funding their consumption of cannabis, provides further support for this view (Salmelainen 1995; Stevenson & Forsythe 1998).

6.2.3 The relationships between substance use, developmental and demographic factors and crime

When we examined substance use in the presence of developmental and demographic factors we found that substance users generally still had higher participation rates in crime even after controlling for developmental and demographic factors. Demographic and developmental factors also generally remained significant predictors of crime in the presence of substance use factors. Alcohol use, cannabis use, truancy and gender, remained predictors of each type of crime, with cannabis use remaining a particularly strong predictor of acquisitive property crime. Aboriginality remained a predictor of two types of crime and steroid use remained a predictor of one type of crime. Supervision and opiate use dropped out as predictors of crime in some instances, while stimulant use, family structure and school performance dropped out altogether as predictors of crime.

The finding that some developmental factors, such as poor school performance and family structure and, in some instances supervision, tended to drop out as predictors of crime, in the presence of substance use, does not necessarily mean that these factors do not exert any influence on juvenile crime. It is possible that these developmental factors influence both substance use and involvement in crime, as general deviance theory suggests, or that the influence of developmental factors on crime is mediated by substance use. Our study is consistent with both these possibilities in that we found that the developmental and demographic factors which were predictors of participation in crime also tended to be predictors of frequent alcohol and cannabis use.

6.2.4 Cultural background

One of the more interesting findings in our study was our observation that ethnicity was, in general, not related to participation in crime amongst NSW secondary students. In fact where we found any relationship between ethnicity and participation in crime it indicated that students from an ethnic background had lower rates of participation in crime. It is also noteworthy that secondary students from ethnic backgrounds were

no more likely to be frequent cannabis users and were in fact less likely to be frequent alcohol users than secondary students from English speaking backgrounds.

Of course it does not follow from either of these findings that ethnicity is completely irrelevant to an understanding of juvenile involvement in crime. Some ethnic groups may have higher rates of involvement in crime than others. What our study does show, however, is that those who are from a non-English speaking background are, as a group, no more likely to be involved in crime than those from an English speaking background.

Aboriginality, on the other hand, was found to be related to participation in crime, with Aboriginal or Torres Strait Islander students having higher rates of participation in violent and acquisitive property crime, although not in destructive property crime. It is possible that the higher rates of involvement in crime amongst Aboriginal communities are attributable to other correlated risk factors, rather than due to Aboriginality itself having any intrinsic effect on involvement in crime. For example, the higher rates may be due to other correlated factors that we did not measure in the study, such as social disadvantage. The higher rates could also be due to other correlated factors which we did measure in this study such as poor supervision and poor school performance. These factors may have dropped out as predictors of crime, rather than Aboriginality, because measures of these factors may not have been sensitive enough.

6.3 POLICY IMPLICATIONS

Perhaps the most salient finding of this study is the observation that large numbers of juveniles in NSW offend, but they generally do not offend very often. If we compare our prevalence estimates with NSW Department of Juvenile Justice statistics it becomes clear that only a minority of juvenile offenders will ever be caught or come into contact with the criminal justice system. For example, we estimated that 23,800 NSW secondary students had participated in break and enter in the 12 months prior to the survey (1996). Unpublished Juvenile Justice statistics show, however, that for a similar period (1995-96), only 1,587 unique individuals appeared in break and enter matters finalised in the Children's Court. This means that only about seven per cent of secondary students who were active participants in break and enter appeared in court for a matter of this nature. Even lower detection rates were evident for each of the other offences we examined, and for some offences, such as malicious damage and receiving or selling stolen goods, the detection rate was lower than one per cent.

It is possible that some of our secondary students may have had some contact with the criminal justice system through receiving a caution for committing an offence, without actually appearing before the Children's Court. However, this number is likely to be small. The Bureau's most recently published statistics on police cautions, although they are from 1990-91, reveal that the number of cautions issued to juveniles represented only a fraction of the number of court appearances for most offences (NSW Bureau of Crime Statistics and Research 1993).

Clearly then, most juvenile offenders are unlikely to ever come to the attention of the police. This suggests that criminal justice approaches to reducing juvenile crime are likely to be ineffective because the vast majority of juvenile offenders will never come into contact with the criminal justice system. To the extent that the deterrent effect of tougher penalties depends on there being some realistic prospect of apprehension,

tougher penalties are unlikely to act as a deterrent for most juvenile offenders. Of course, the resources of the police can always be increased but it is unlikely that this would increase their ability to apprehend juvenile offenders. The Bureau's recorded crime statistics show that the clear-up rate for most offences has remained fairly stable over recent years despite increased police numbers (see Chilvers 1998). Other evidence suggests that the clear-up rate is more likely to be affected by the level of assistance the general public provides to the police in their investigations than by the resources of the police (Burrows & Tarling 1982).

It makes sense then to concentrate more on primary crime prevention strategies, rather than rely solely on strategies within the criminal justice system, if we are to be successful in dealing with juvenile crime. There are at least two useful types of primary crime prevention strategies. The first is a situational approach to primary crime prevention which involves reducing the incentives and opportunities for involvement in crime. The second involves altering the factors which cause juveniles to get involved in crime in the first place.

Situational approaches to crime prevention are many and varied and include better use and improvement of security devices such as locks, alarms, and security screens like those used in banks. Other examples of situational approaches are use of vandal-resistant materials, use of merchandise tagging in stores, use of surveillance by police, security guards or closed-circuit cameras, community-based programs such as Neighbourhood Watch and strict enforcement of underage drinking laws. Better lighting and urban design, particularly in crime-prone areas, can also be considered useful situational approaches. All these types of situational approaches make it more difficult to offend or increase the risk to the offender.

The second type of approach to primary crime prevention is to focus on the risk factors associated with juvenile crime, such as lack of parental supervision, poor school performance, truancy, and drug use, particularly cannabis use. This approach assumes that juvenile crime can be prevented by eliminating, reducing or mitigating the effects of some of these risk factors.

Family-based interventions appear best placed to tackle risk factors like poor supervision and other related family factors including lack of parental involvement and inconsistent and erratic discipline. Sherman (1997), Greenwood, Model and Rydell (1995) and Farrington (1994) have reviewed evaluations of various family-based pilot programs and concluded that early family-based interventions are promising in reducing crime or at least reducing some of the risk factors associated with crime, like parental neglect, early conduct problems and poor school achievement. They suggest that the programs that appear to be most successful are those that are implemented before school age and involve parental training in child rearing techniques, including skills in how to monitor children more effectively. These types of programs can be implemented through regular home visitations or in conjunction with preschool education. The benefits of such programs are potentially enormous, not only in terms of reduced crime, but also in terms of reduced substance abuse and other problems which share similar risk factors. However, such programs can be quite expensive to implement and many of their benefits do not accrue until the child reaches adolescence. Early family-based interventions can be made more cost-effective by targeting them at high-risk families, such as young and sole parent families and those experiencing other social and economic stress. However, as Sherman (1997) notes, targeting such families may also run the risk of further stigmatisation of these families.

Family-based interventions for families with older children are more difficult to implement as problem behaviour can be deeply entrenched by this stage. However, Sherman (1997) and Farrington (1994) suggest that there has been some success with family therapies delivered by clinical staff in reducing delinquent behaviour or associated risk factors in older or delinquent children. Such family therapy might include improving family interaction through encouraging better communication and using techniques such as modelling, prompting and reinforcement of appropriate behaviour.

School-based interventions are best placed to deal with school-related risk factors, such as poor school performance and truancy. Gottfredson (1997), Farrington (1994) and Hawkins, Catalano and Miller (1992) have reviewed evaluations of various school-based interventions. They have found that preschool enrichment programs designed to increase the academic and social skills of students have been successful in reducing later delinquency or related risk factors, such as school failure and early conduct problems. They also found that providing school students with comprehensive and long-term instruction on social competency skills such as stress management, self esteem, problem solving and assertiveness can be successful in reducing conduct problems and delinquency.

Other interventions that are known to reduce or prevent academic failure, but have not been investigated in relation to delinquency, such as individual tutoring for low achievers with problem behaviours and use of cooperative and interactive learning techniques, might also have some potential as avenues for crime prevention.

Truancy rates can be influenced by a school's attendance policies and discipline procedures and, in particular, their policies about notifying parents of students' truancy. Some programs aimed specifically at truancy are currently operating in NSW. One such program is the Home School Liaison Program of the Department of Education and Training. Home School Liaison Officers follow up truants, and through discussions with the student, their family and the school, try to identify what factors are contributing to the student truanting and what steps can be taken to get the student back to school. Another example is the result of a joint effort between schools and police in the Flemington area of Sydney. Students are required to obtain authorised passes from their school if they are to be absent from school during normal school hours. Police who identify children absent from school without authorisation can escort them back to their school or home. After three unauthorised absences a meeting is organised between the student, the student's family, the school principal, and the local Police Youth Liaison Officer to sort out the problem (Palladino 1998). Research needs to be conducted into programs like these to determine whether they are effective in reducing truancy and crime rates.

In addition to focussing on specific risk factors, schools can also operate on a broader level in crime prevention by providing an environment which signals what is appropriate behaviour to students. Gottfredson (1997) found in her review that altering the norms in the school environment can have a positive effect on the incidence of delinquency amongst students. One way of altering school norms is for schools to establish and clearly communicate rules for behaviour, and apply these rules consistently and fairly, through the appropriate use of both punishment and rewards. Behaviours that schools could focus on include bullying and other violent behaviour.

Substance use is another risk factor that could potentially be addressed in crime prevention programs. Substance use can be tackled through drug education programs

and drug treatment programs for adolescents, as well as potentially through the early family-based interventions and school-based interventions we have just described for preventing crime, given that substance use and crime share common risk factors.

Gottfredson (1997) and Hawkins, Catalano and Miller (1992), in reviews of the research on school drug education, suggest that drug education is most likely to succeed in reducing the initiation into and prevalence of substance use, particularly cannabis use, when programs emphasise teaching students social resistance skills and more general social competency skills, rather than merely educating them about the effects or harms associated with drug use. Such programs teach students the skills to recognise and resist the social influences on drug use, as well as more general social competency skills such as stress management, self esteem, problem solving and assertiveness. However, in their reviews, Gottfredson (1997) and Hawkins, Catalano and Miller (1992) found that these programs generally only had short-term benefits, and that they may not be as effective for those youths at higher risk of substance abuse as a result of family, school or other problems.

Drug treatment programs that are specifically designed for adolescents are also needed. Our study suggests that there is a particular need for treatment of adolescent cannabis dependence as frequent cannabis use was a predictor of all types of offences, and a strong predictor of acquisitive property crime, in particular. However, not a great deal is known about the effectiveness of cannabis treatment programs designed specifically for adolescents and, indeed, few such programs exist (see, for example, Trimboli, in press). There has been some empirical support for the effectiveness of treating adolescent substance use, in general, through methods such as cognitive-behavioural interventions and family-based interventions including family therapy and social competency training (Hawkins et al. 1987; De Graffenreid Riggs 1998). However, more research is needed in relation to the treatment of cannabis dependence. What is clear is that, in order to be successful, adolescent drug treatment programs need to be delivered on a long-term basis and they need to be multifaceted, addressing a range of other problems associated with substance use such as family problems and social, educational and vocational skills (see, for example, Dembo et al. 1991). Adolescent drug treatment programs might also be best targeted at young offenders because rates of substance use are known to be particularly high amongst this population, as we have mentioned earlier.

One final point to note about this study is that there is a large number of NSW secondary students who are willing to accept stolen goods (an estimated 22.8% had ever received or sold stolen goods). These students create a serious problem in that they provide a large market for stolen goods, thereby adding to the incentive to commit break and enter. The offence of receiving and selling stolen goods could be tackled through the preventative efforts we have just described. However, to deal with this offence amongst school students is no easy matter. Adults can be educated about the connection between receiving stolen goods and break and enter, highlighting the fact that by receiving stolen goods they are likely to face higher insurance premiums and add to the risk that their own home will be broken into. This strategy, however, is unlikely to have the same effect on students who do not pay insurance premiums or suffer the costs of replacing stolen goods.

A better approach might be to educate students about the laws and penalties for being in possession of stolen goods, stressing the fact that it is an offence to be in possession

of such goods, even where it cannot be proved that they purchased the goods knowing them to be stolen. Of course, if students do not believe that they will be caught for possession of stolen goods, this may not be an effective strategy. Our data show that the secondary students who committed break and enter were more likely to have received or sold stolen goods than those who had not committed break and enter.¹³ Our data also show that the more frequently secondary students commit break and enter the more frequently they receive or sell stolen goods, amongst participants in these offences.¹⁴ Police can capitalise on this fact by ensuring that juveniles who come to their attention for break and enter are thoroughly investigated about where they disposed of their stolen goods and whether they are also involved in receiving stolen goods. This strategy would also help increase the actual and perceived risk of being caught for possession of stolen goods.

In sum, this study has shown that juvenile crime is a large problem in NSW and there are a multitude of factors that influence juvenile participation in crime. It would appear that whilst the criminal justice system does have an important role to play in our society, it may not be the most effective way of reducing juvenile crime given that most juvenile offending is transient and most juvenile offenders will never come into contact with the system. For those juvenile offenders who do find themselves in the criminal justice system, the benefits of effective substance abuse treatment programs may well outweigh any deterrent or incapacitative effect the system has to offer. This study demonstrates the need to develop more comprehensive crime prevention programs which target the opportunities and incentives for involvement in crime as well as the multiple factors which lead juveniles to become involved in crime in the first place.

NOTES

- 1 Historically, series of surveys have been undertaken on State or national levels by different organisations at different time periods. As a result different methods and survey instruments have been used. For example NSW Health had surveyed NSW high school students about tobacco, alcohol and other drug use, whilst the NSW Cancer Council had surveyed NSW high school students on tobacco and alcohol use, one year apart from each other since 1983. National studies had also been conducted on smoking and alcohol use by the Centre for Behavioural Research in Cancer in conjunction with the State cancer organisations.
- 2 The reference group consisted of representatives from the Attorney General's Department, the Department of Gaming and Racing, the Department of Education and Training, the Catholic Education Commission, the Association of Independent Schools, the Centre for Mental Health, the Epidemiology and Surveillance Branch, the Centre for Disease Prevention and Health Promotion, in addition to the NSW Cancer Council and NSW Health.
- 3 Some other causal possibilities are that crime leads to substance use; a reciprocal relationship exists between crime and substance use, such that they both influence each other; substance use and crime coexist but are causally unrelated to each other and are caused by different sets of factors; or any combination of these possibilities. We do not consider these possibilities here as they do not feature as prominently in the literature.
- 4 Note that in this study missing data were assumed to be randomly distributed across students although we acknowledge that this is not likely to be the case. As missing data only formed a small proportion of the data, they are unlikely to have had much impact on the findings.
- 5 The fact that some inconsistencies were produced is not unexpected given the length of the questionnaire and the wide variety of questions. The students most likely to have produced inconsistencies in their responses were those who were male, who were in the youngest or oldest age ranges, who were of ethnic or Aboriginal background, who were substance users or who rated their schooling ability as below average. Thus some inconsistencies may have been due to language or comprehension difficulties.
- 6 Details of the cleaning process are provided in Section 1 of Appendix B.
- 7 Note that metropolitan areas were defined to include urban development and built-up areas (and hence include Sydney and other areas such as Newcastle and Wollongong) while non-metropolitan areas were defined to include major urban, rural and remote areas (see Forero et al. 1997).
- 8 Details of the geographical location of Area Health Services can be found in Public Health Division (1997).
- 9 Note that the level of truancy may vary throughout the year and the level of truancy at the time of the survey may not be typical.
- 10 Ever participated: $\chi^2_1=476.9, p<0.01, n=5042$. Currently participating: $\chi^2_1=535.9, p<0.01, n=4917$.
- 11 Personal communication.
- 12 It is also possible that the higher number of court appearances for acquisitive property crime reflects the fact that these type of offenders may be more likely than violent offenders to be repeat offenders.
- 13 Ever participated: $\chi^2_1=570.0, p<0.01, n=5018$. Currently participating: $\chi^2_1=637.5, p<0.01, n=4926$.
- 14 Lifetime participants in both offences only: Spearman's $\rho=0.49, p<0.01, n=309$. Current participants in both offences only: Spearman's $\rho=0.51, p<0.01, n=200$.

REFERENCES

- Australian Bureau of Criminal Intelligence 1997, Australian Illicit Drug Report 1996-97, Australian Bureau of Criminal Intelligence, Canberra.
- Australian Bureau of Statistics 1997, Crime and Safety, New South Wales, Cat No. 4509.1, ABS, Canberra.
- Barnes, G.M. & Farrell, M.P. 1992, 'Parental support and control as predictors of adolescent drinking, delinquency and related problem behaviours', *Journal of Marriage and the Family*, vol. 54, pp. 763-776.
- Blumstein, A., Cohen, J., Roth, J.A. & Visher, C.A. 1986, *Criminal Careers and "Career Criminals"*, Volume 1, National Academy Press, Washington, D.C.
- Braithwaite, J. 1977, 'Australian delinquency: Research and practical considerations', in *Delinquency in Australia: A Critical Appraisal*, ed. P.R. Wilson, University of Queensland Press, St Lucia.
- Burrows, J. & Tarling, R. 1982, *Clearing up Crime*, Home Office, London.
- Bushman, B.J. & Cooper, H.M. 1990, 'Effects of alcohol on human aggression: An integrative research review', *Psychological Bulletin*, vol. 107, no. 3, pp. 341-354.
- Cain, M. 1994, *Juveniles in Detention, Special Needs Groups: Young Women, Aboriginal and Indo-Chinese Detainees*, Department of Juvenile Justice, Sydney.
- Canter, R. 1982, 'Family correlates of male and female delinquency', *Criminology*, vol. 20, no. 2, pp. 149-167.
- Chilvers, M. 1998, *New South Wales Recorded Crime Statistics 1997*, NSW Bureau of Crime Statistics and Research, Sydney.
- Cohen, A.K. 1955, *Delinquent Boys: The Culture of the Gang*, Free Press, New York.
- Collins, J.J. 1982, 'Alcohol use and criminal behaviour: An empirical, theoretical, and methodological overview', in *Drinking and Crime: Perspectives on the Relationships between Alcohol Consumption and Criminal Behaviour*, ed. J.J. Collins, Tavistock Publications, London.
- Collins, J.J. 1986, 'The relationship of problem drinking to individual offending sequences', in *Criminal Careers and "Career Criminals"*, Volume 2, eds A. Blumstein, J. Cohen, J.A. Roth & C.A. Visher, National Academy Press, Washington, D.C.
- Commonwealth Department of Health and Family Services 1996, *National Drug Strategy Household Survey Report 1995*, AGPS, Canberra.
- Cookson, H.M. 1992, 'Alcohol use and offence type in young offenders', *British Journal of Criminology*, vol. 32, no. 3, pp. 352-360.
- Cooney, A., Dobbins, S. & Flaherty, B. 1994, *1992 Survey of Drug use by NSW Secondary School Students*, Drug & Alcohol Directorate, NSW Health, Sydney.
- Cromwell, P. 1994, 'Juvenile burglars', *Juvenile and Family Court Journal*, vol. 45, no. 2, pp. 85-91.
- De Graffenreid Riggs, P. 1998, The treatment of adolescent substance use disorders, paper presented at National Conference on Drug Addiction Treatment: From Research to Practice, National Institute on Drug Abuse, Washington D.C., 8-9 Apr.
- Dembo, R., Williams, L., Schmeidler, J., Wish, E.D., Getreu, A. & Berry, E. 1991, 'Juvenile crime and drug abuse: A prospective study of high risk youth', *Journal of Addictive Diseases*, vol. 11, no. 2, pp. 5-31.
- Dobinson, I. & Poletti, P. 1988, *Buying and Selling Heroin: A Study of Heroin User / Dealers*, NSW Bureau of Crime Statistics and Research, Sydney.
- Dobinson, I. & Ward, P. 1985, *Drugs and Crime: A Survey of NSW Prison Property Offenders 1984*, NSW Bureau of Crime Statistics and Research, Sydney.

- Elliott, D.S., Ageton, S.A. & Canter, R.J. 1979, 'An integrated theoretical perspective on delinquent behaviour', *Journal of Research in Crime and Delinquency*, vol. 16, pp.3-27.
- Elliott, D.S., Huizinga, D. & Ageton, S.S. 1985, *Explaining Delinquency and Drug Use*, Sage Publications, Beverley Hills, CA.
- Elliott, D.S., Huizinga, D. & Menard, S. 1989, *Multiple Problem Youth: Delinquency, Substance Use and Mental Health Problems*, Springer-Verlag, New York.
- Farrington, D.P. 1987, 'Early precursors of frequent offending' in *From Children to Citizens, Volume 3: Families, Schools, and Delinquency Prevention*, eds J.Q. Wilson & G.C. Loury, Springer-Verlag, New York.
- Farrington, D.P. 1994, 'Early developmental prevention of juvenile delinquency', *Criminal Behaviour and Mental Health*, vol. 4, no. 3, pp. 209-227.
- Forero, R., Rosier, M., Bauman, A., Ricci, F. & Mackie, D. 1997, *The 1996 Australian School Students' Alcohol and Drugs Survey (ASSAD) - NSW Component. Technical Report*, NSW Health and The NSW Cancer Council, Sydney.
- Freeman, K. 1996, *Young People and Crime*, Crime and Justice Bulletin No. 32, NSW Bureau of Crime Statistics and Research, Sydney.
- Gottfredson, D.C. 1997, 'School-based crime prevention', in *Preventing Crime: What Works, What doesn't, What's Promising*, eds L.W. Sherman, D. Gottfredson, D. MacKenzie, J. Eck, P. Reuter & S. Bushway, Office of Justice Programs, US Department of Justice, Washington, D.C.
- Gottfredson, M.R. & Hirschi, T. 1990, *A General Theory of Crime*, Stanford University Press, Stanford, CA.
- Graham, J. & Bowling, B. 1995, *Young People and Crime*, Home Office, London.
- Greenberg, S.W. 1982, 'Alcohol and crime: A methodological critique of the literature', in *Drinking and Crime: Perspectives on the Relationships between Alcohol Consumption and Criminal Behaviour*, ed. J.J. Collins, Tavistock Publications, London.
- Greenwood, P.W., Model, K.E. & Rydell, C.P. 1995, *The Cost-Effectiveness of Early Intervention as a Strategy for Reducing Violent Crime*, RAND, Santa Monica, CA.
- Hando, J. & Hall, W. 1993, *Amphetamine Use Among Young Adults in Sydney, Australia*, Drug and Alcohol Directorate, NSW Health Department, Sydney.
- Hawkins, J.D., Catalano, R.F. & Miller, J.Y. 1992, 'Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention', *Psychological Bulletin*, vol. 112, no. 1, pp. 64-105.
- Hawkins, J.D., Lishner, D.M., Jenson, J.M. & Catalano, R.F. 1987, 'Delinquents and drugs: What the evidence suggests about prevention and treatment programming', in *Youth at High Risk for Substance Abuse*, eds B. Brown & A. Mills, US Department of Health and Human Services, Rockville, MD.
- Herrnstein, R.J. 1995, 'Criminogenic Traits', in *Crime*, eds J.Q. Wilson & J. Petersilia, Institute for Contemporary Studies, San Francisco.
- Hindelang, M., Hirschi, T. & Weis, J. 1981, *Measuring Delinquency*, Sage Publications, Beverley Hills, CA.
- Hirschi, T. 1969, *Causes of Delinquency*, University of California Press, Berkeley, CA.
- Hirschi, T. & Gottfredson, M. 1988, 'Towards a general theory of crime', in *Explaining Criminal Behaviour*, eds W. Buikhuisen & S.A. Mednick, E.J. Brill, Leiden.
- Ireland, C.S. & Thommeny, J.L. 1993, 'The crime cocktail: Licensed premises, alcohol and street offences', *Drug and Alcohol Review*, vol. 12, no. 2, pp. 143-150.
- Jarjoura, G.R. 1993, 'Does dropping out of school enhance delinquent involvement? Results from a large scale national probability scale', *Criminology*, vol. 31, no. 2, pp. 175-185.

- Jarvis, G. & Parker, H. 1989, 'Young heroin users and crime: How do the new users finance their habits?', *British Journal of Criminology*, vol. 29, no. 2, pp. 175-185.
- Jessor, R. & Jessor, S. 1977, *Problem Behaviour and Psychosocial Development - A Longitudinal Study of Youth*, Academic Press, New York.
- Lauritsen, J.L. 1993, 'Sibling resemblance in juvenile delinquency: Findings from the National Youth Survey', *Criminology*, vol. 31, no.3, pp.387-409.
- Liang, K. & Zeger, S. 1993, 'Regression Analysis for Correlated Data', *Annual Review of Public Health*, vol. 14, pp. 43-68.
- Loeber, R. & Dishion, T. 1983, 'Early Predictors of Male Delinquency: A Review', *Psychological Bulletin*, vol. 94, no.1, pp. 68-99.
- Loeber, R. & Stouthamer-Loeber, M. 1986, 'Family factors as correlates and predictors of juvenile conduct problems and delinquency', in *Crime and Justice: An Annual Review of Research, Volume 7*, eds. M. Tonry & N. Morris, The University of Chicago Press, Chicago.
- Luke, G. & Cunneen, C. 1995, *Aboriginal Over-Representation and Discretionary Decisions in the NSW Juvenile Justice System*, Juvenile Justice Advisory Council of NSW, Sydney.
- McCarthy, B. & Hagan, J. 1992, 'Mean streets: The theoretical significance of situational delinquency among homeless youths', *American Journal of Sociology*, vol. 98, no.3, pp. 597-627.
- McMurran, M. & Hollin, C.R. 1989, 'Drinking and delinquency: Another look at young offenders and alcohol', *British Journal of Criminology*, vol. 29, no. 4, pp. 386-394.
- Maguin, E. & Loeber, R. 1996, 'Academic performance and delinquency', in *Crime and Justice: A Review of Research, Volume 20*, ed. M. Tonry, The University of Chicago Press, Chicago.
- Mak, A.S. 1994, 'Parental neglect and overprotection as risk factors in delinquency', *Australian Journal of Psychology*, vol. 46, no. 2, pp. 107-111.
- Maycock, B. & Beel, A. 1997, *Anabolic Steroid Abuse and Violence*, *Crime and Justice Bulletin No. 35*, NSW Bureau of Crime Statistics and Research, Sydney.
- Nagin, D.S. & Paternoster, R. 1991, 'On the relationship of past to future participation in delinquency', *Criminology*, vol. 29, no. 2, pp. 163-189.
- Nagin, D.S. & Smith, D.A. 1990, 'Participation in and frequency of delinquent behaviour: A test for structural differences', *Journal of Quantitative Criminology*, vol. 6, no.4, pp. 335-356.
- New South Wales Bureau of Crime Statistics and Research 1993, *New South Wales Criminal Courts Statistics 1992*, NSW Bureau of Crime Statistics and Research, Sydney.
- New South Wales Bureau of Crime Statistics and Research 1997, *New South Wales Criminal Courts Statistics 1996*, NSW Bureau of Crime Statistics and Research, Sydney.
- Palladino, T. 1998, 'A licence to leave school', *Police Service Weekly*, vol. 10, no. 25, pp.3-4.
- Parker, H. & Newcombe, R. 1987, 'Heroin use and acquisitive crime in an English community', *The British Journal of Sociology*, vol. 38, no.3, pp. 331-350.
- Public Health Division 1997, *The Health of the People of New South Wales - Report of the Chief Health Officer*, NSW Health, Sydney.
- Salmelainen, P. 1995, *The Correlates of Offending Frequency: A Study of Juvenile Theft Offenders in Detention*, NSW Bureau of Crime Statistics and Research, Sydney.
- Sherman, L.W. 1997, 'Family-based crime prevention', in *Preventing Crime: What Works, What doesn't, What's Promising*, eds. L.W.Sherman, D. Gottfredson, D. MacKenzie, J. Eck, P. Reuter & S. Bushway, Office of Justice Programs, US Department of Justice, Washington, D.C.
- Smith, C. & Thornberry, T.P. 1995, 'The relationship between childhood maltreatment and adolescent involvement in delinquency', *Criminology*, vol. 33, no. 4, pp. 451-481.
- Stevenson, R.J. & Forsythe, L.M.V. 1998, *The Stolen Goods Market in New South Wales: An Interview Study with Imprisoned Burglars*, NSW Bureau of Crime Statistics and Research, Sydney.

- Thornberry, T., Moore, M. & Christenson, R. 1985, 'The effect of dropping out of high school on subsequent criminal behaviour', *Criminology*, vol. 23, no. 1, pp. 3-18.
- Tremblay, R.E., Masse, B., Perron, D., Leblanc, M., Schwartzman, A.E. & Ledingham, J.E. 1992, 'Early disruptive behaviour, poor school achievement, delinquent behaviour, and delinquent personality: Longitudinal analyses', *Journal of Consulting and Clinical Psychology*, vol. 60, no. 1, pp. 64-72.
- Trimboli, L. (in press), *Treatment Programs for Adolescents Using Cannabis*, Crime and Justice Bulletin, NSW Bureau of Crime Statistics and Research, Sydney.
- Visher, C.A. & Roth, J.A. 1986, 'Participation in criminal careers', in *Criminal Careers and "Career Criminals"*, Volume 1, eds. A. Blumstein, J. Cohen, J.A. Roth & C.A. Visher, National Academy Press, Washington, D.C.
- Wallace, A. 1986, *Homicide: The Social Reality*, NSW Bureau of Crime Statistics and Research, Sydney.
- Warner, C. 1982, 'A study of the self-reported crime of a group of male and female high school students', *Australian and New Zealand Journal of Criminology*, vol. 15, pp. 255-272.
- Weatherburn, D. & Lind, B. 1997, *Social and Economic Stress, Child Neglect and Juvenile Delinquency*, NSW Bureau of Crime Statistics and Research, Sydney.
- Wish, E.D. & Johnson, B.D. 1986, 'The impact of substance abuse on criminal careers', in *Criminal Careers and "Career Criminals"* Volume 2, eds A. Blumstein, J. Cohen, J.A. Roth & C.A. Visher, National Academy Press, Washington D.C.

APPENDIX A: SURVEY QUESTIONS

The full survey questions relevant to this study are provided here. 'C' denotes the question was in the core questionnaire. 'S' denotes the question was in the supplementary questionnaire. The variable that each question is relevant to is noted in bold. The full core and supplementary questionnaires are available in Forero et al. (1997). Note that school regions and school type were provided by the survey coordinators.

Year level

C2. What year level (or form) are you in?

- 1 Year 7 (Form 1)
- 2 Year 8 (Form 2)
- 3 Year 9 (Form 3)
- 4 Year 10 (Form 4)
- 5 Year 11 (Form 5)
- 6 Year 12 (Form 6)

Gender

C4. What sex are you?

- 1 Male
- 2 Female

School performance

C7. At school work, do you consider yourself

- 1 A lot above average?
- 2 Above average?
- 3 Average?
- 4 Below average?
- 5 A lot below average?

Aboriginality

C9. Are you an Aborigine or Torres Strait Islander?

- 1 Yes - Aborigine
- 2 Yes - Torres Strait Islander
- 3 No

Alcohol use

C21. Have you had an alcoholic drink in the last twelve months?

- 1 Yes
- 2 No

C22. Have you had an alcoholic drink in the last four weeks?

- 1 Yes
- 2 No

C23. This question is about the number of alcoholic drinks you had during the last seven days including yesterday.

Put a tick near yesterday. Then in the space provided, write the number of alcoholic drinks you had yesterday. If you didn't have any alcoholic drinks, put in '0'. Start filling in the spaces beginning with yesterday, and follow the arrows.

Answer for every day of the week.

Write in the circle the number of alcoholic drinks you had each day.

Put '0' for each day you didn't drink any alcoholic drinks.

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

Cannabis use

C33. How many times, if ever, have you ever smoked or used marijuana: (grass, hash, cannabis, dope, mull, pot, a joint)

	None	Once or twice	3-5 times	6-9 times	10-19 times	20-39 times	40 or more times
a) In the last week?	1	2	3	4	5	6	7
b) In the last four weeks?	1	2	3	4	5	6	7
c) In the last year?	1	2	3	4	5	6	7
d) In your life time?	1	2	3	4	5	6	7

Steroid use

C34. How many times, if ever, have you ever used or taken steroids, "Muscle", or "roids" without a doctor's prescription in an attempt to make you better at sport, to increase muscle size or to improve your general appearance:

	None	Once or twice	3-5 times	6-9 times	10-19 times	20-39 times	40 or more times
a) In the last week?	1	2	3	4	5	6	7
b) In the last four weeks?	1	2	3	4	5	6	7
c) In the last year?	1	2	3	4	5	6	7
d) In your life time?	1	2	3	4	5	6	7

Stimulant use

C36. How many times, if ever, have you ever used or taken amphetamines (eg. speed, uppers, MDA, ox blood) other than for medical reasons:

	None	Once or twice	3-5 times	6-9 times	10-19 times	20-39 times	40 or more times
a) In the last week?	1	2	3	4	5	6	7
b) In the last four weeks?	1	2	3	4	5	6	7
c) In the last year?	1	2	3	4	5	6	7
d) In your life time?	1	2	3	4	5	6	7

C38. How many times, if ever, have you ever used or taken cocaine or crack:

	None	Once or twice	3-5 times	6-9 times	10-19 times	20-39 times	40 or more times
a) In the last week?	1	2	3	4	5	6	7
b) In the last four weeks?	1	2	3	4	5	6	7
c) In the last year?	1	2	3	4	5	6	7
d) In your life time?	1	2	3	4	5	6	7

Opiate use

C39. How many times, if ever, have you ever used or taken heroin (smack, horse, skag) or other opiates (narcotics) such as methadone, morphine or pethidine other than for medical reasons:

	None	Once or twice	3-5 times	6-9 times	10-19 times	20-39 times	40 or more times
a) In the last week?	1	2	3	4	5	6	7
b) In the last four weeks?	1	2	3	4	5	6	7
c) In the last year?	1	2	3	4	5	6	7
d) In your life time?	1	2	3	4	5	6	7

Family structure

S1. Who lives in your home with you? (You may circle more than one number)

- 1 Your father
- 2 Your stepfather
- 3 Your mother
- 4 Your stepmother
- 5 Your brother/s
- 6 Your stepbrother/s
- 7 Your sister/s
- 8 Your stepsister/s
- 9 Your grandparent/s
- 10 Somebody else

Parents' country of birth

S2. If your mother and/or father were not born in Australia, please write down in what country they were born.

Your mother's country of birth

Your father's country of birth

Language spoken at home

S3. What language do you speak at home?

(Please circle one number only)

- 1 English
- 2 English + other
- 3 Other

If you regularly speak a language other than English, please write down which language:

Supervision

S4. During a normal week, how many nights do you go out for fun and recreation, without adult supervision?

(If the activity includes sport, include casual sport but not organised team sport)

(Please circle one number only)

- 0 Usually none
- 1 one
- 2 two
- 3 three
- 4 four
- 5 five, six or seven

Truancy

S6. During the last four weeks of school, how many whole days of school have you missed?

(Please circle one number in each line)

Answer parts a, b and c

	None	1 day	2 days	3 days	4-5 days	6-10 days	11 or more
a. because of illness?	0	1	2	3	4	5	6
b. because you wagged school?	0	1	2	3	4	5	6
c. for other reasons?	0	1	2	3	4	5	6

Assault during sport

S24. Have you ever attacked someone to hurt them while playing sport?

(Do not include boxing or martial arts)

- 1 No
- 2 Yes

If Yes, how many times has this happened? (Please circle one number in each line)

Answer parts a and b

	None	1-2 times	3-5 times	6-9 times	10-19 times	20 or more times
a) In your lifetime?	0	1	2	3	4	5
b) During the last 12 months?	0	1	2	3	4	5

Assault outside sport

S25. Have you ever attacked someone to hurt them, apart from when you were playing sport?

(Please answer honestly. Remember your answers are completely confidential)

(Please circle one number only)

- 1 No
- 2 Yes

If Yes, how many times has this happened? (Please circle one number in each line)

Answer parts a and b

	None	1-2 times	3-5 times	6-9 times	10-19 times	20 or more times
a) In your lifetime?	0	1	2	3	4	5
b) During the last 12 months?	0	1	2	3	4	5

Motor vehicle theft

S27. Have you ever stolen or helped to steal a car, motorcycle or other vehicle? (Please answer honestly. Remember your answers are completely confidential)

(Please circle one number only)

- 1 No
- 2 Yes

If Yes, how many times has this happened? (Please circle one number in each line)

Answer parts a and b

	None	1-2 times	3-5 times	6-9 times	10-19 times	20 or more times
a) In your lifetime?	0	1	2	3	4	5
b) During the last 12 months?	0	1	2	3	4	5

Break and enter

S28. Have you ever broken into a house, shop or other building to steal something?

(Please answer honestly. Remember your answers are completely confidential)

(Please circle one number only)

- 1 No
- 2 Yes

If Yes, how many times has this happened? (Please circle one number in each line)

Answer parts a and b

	None	1-2 times	3-5 times	6-9 times	10-19 times	20 or more times
a) In your lifetime?	0	1	2	3	4	5
b) During the last 12 months?	0	1	2	3	4	5

Receiving or selling stolen goods

S29. Have you ever bought, sold or accepted stolen goods?

(Please answer honestly. Remember your answers are completely confidential)

(Please circle one number only)

- 1 No
- 2 Yes

If Yes, how many times has this happened?

(Please circle one number in each line)

Answer parts a and b

	None	1-2 times	3-5 times	6-9 times	10-19 times	20 or more times
a) In your lifetime?	0	1	2	3	4	5
b) During the last 12 months?	0	1	2	3	4	5

Shoplifting goods worth \$20 or more

S30. Have you ever stolen something worth \$20 or more from a shop?

(Please answer honestly. Remember your answers are completely confidential)

(Please circle one number only)

- 1 No
- 2 Yes

If Yes, how many times has this happened? (Please circle one number in each line)

Answer parts a and b

	None	1-2 times	3-5 times	6-9 times	10-19 times	20 or more times
a) In your lifetime?	0	1	2	3	4	5
b) During the last 12 months?	0	1	2	3	4	5

Malicious damage

S31. Have you ever purposely damaged or destroyed something (including damaging by graffiti) that did not belong to you?

(Please answer honestly. Remember your answers are completely confidential)

(Please circle one number only)

1 No

2 Yes

If Yes, how many times has this happened?

(Please circle one number in each line)

Answer parts a and b

		1-2 times	3-5 times	6-9 times	10-19 times	20 or more times
a) In your lifetime?	0	1	2	3	4	5
b) During the last 12 months?	0	1	2	3	4	5

APPENDIX B: FULL DETAILS OF ANALYSES

1. THE PROCESS USED TO CLEAN THE DATA

The questionnaire contained a large number of questions that addressed quite a wide range of issues. Often several questions were included in the questionnaire that related to the same issue. This made it possible for students to provide answers to certain questions that were inconsistent with other questions related to the same issue. For example, Questions C21, C22, and C23 in the survey all related to alcohol use, but referred to alcohol use in different time periods — in the last 12 months, in the last four weeks and during the last seven days. An inconsistency would arise, for example, when a student reported drinking alcohol in the last four weeks, but not in the last 12 months.

Some cleaning had already been performed on the national core data by the Centre for Behavioural Research in Cancer and on the NSW supplementary data by the market research agency sub-contracted to administer the survey. The Bureau performed some additional cleaning on the data set prior to analysing the data.

We adopted a number of guiding principles to clean the data. These guiding principles were generally adapted from the method used to clean the data relating to illicit substance use reported in Forero et al. (1997). The guiding principles were as follows:

- If students reported engaging in a certain type of behaviour (such as drinking alcohol or participating in a specific type of crime) in one question, and did not answer another question relating to the same type of behaviour (i.e. the data were missing) then it was assumed that the students had engaged in that behaviour and the missing data were recoded appropriately.
- If students reported that they had not engaged in a certain type of behaviour (such as drinking alcohol or participating in a specific type of crime) in one question, and did not answer another question relating to the same type of behaviour (i.e. data were missing) then it was assumed that the students had not engaged in that behaviour and the missing data were recoded appropriately.
- If students reported engaging in a certain type of behaviour a number of times in a certain time period (such as in their lifetime) in one question and reported engaging in that same behaviour a greater number of times in a shorter time period (such as a year) then it was assumed that the data for the shorter time period were more accurate. Thus the number of times the student had engaged in that behaviour in the longer time period was recoded to be the same as the number in the shorter period.
- If students reported inconsistent demographic information (such as age or ethnic background) in two related questions, we generally had no way of ascertaining which was the more accurate information. If a third related question provided information to support one or other of these two questions then the inconsistent answer was recoded accordingly.

Note that the number of inconsistencies was relatively small and formed at most two per cent of the sample for any two questions. The cleaning process therefore had minimal effect on the data.

2. BIVARIATE ANALYSIS

Note that the figures presented in the cross-tabulations all represent sample estimates, not population estimates, as they are associated with the inferential statistics.

Participation by region

Table B1: Summary of results of chi-square tests between participation in crime and school region

	<i>Ever participated Chi-square tests</i>	<i>Currently participating Chi-square tests</i>
Assault (outside sport)	$\chi^2_1 = 4.33, p=0.04, n=5043$	$\chi^2_1 = 0.04, p=0.84, n=4960$
Malicious damage	$\chi^2_1 = 5.70, p=0.02, n=5027$	$\chi^2_1 = 2.60, p=0.11, n=4943$
Receiving or selling stolen goods	$\chi^2_1 = 0.01, p=0.94, n=5032$	$\chi^2_1 = 0.04, p=0.85, n=4963$
Shoplifting goods worth \$20 or more	$\chi^2_1 = 0.09, p=0.76, n=5034$	$\chi^2_1 = 0.00, p=0.97, n=4999$
Break and enter	$\chi^2_1 = 19.96, p<0.01, n=5036$	$\chi^2_1 = 4.18, p=0.04, n=5003$
Motor vehicle theft	$\chi^2_1 = 0.02, p=0.88, n=5035$	$\chi^2_1 = 0.02, p=0.90, n=5012$
Any of the six offences	$\chi^2_1 = 11.34, p<0.01, n=5029$	$\chi^2_1 = 4.21, p=0.04, n=4848$

Table B2: Cross-tabulations of region by participation in crime

	<i>Ever participated</i>				<i>Currently participating</i>			
	<i>No</i>		<i>Yes</i>		<i>No</i>		<i>Yes</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Assault								
Metropolitan	1882	61	1211	39	2153	71	897	29
Non-metropolitan	1129	58	821	42	1343	70	567	30
Malicious damage								
Metropolitan	1898	62	1185	38	2197	72	836	28
Non-metropolitan	1131	58	813	42	1343	70	567	30
Receiving or selling stolen goods								
Metropolitan	2374	77	711	23	2563	84	480	16
Non-metropolitan	1500	77	447	23	1621	84	299	16
Shoplifting goods worth \$20 or more								
Metropolitan	2609	84	480	16	2764	90	296	10
Non-metropolitan	1649	85	296	15	1752	90	187	10
Break and enter								
Metropolitan	2824	92	260	8	2897	95	167	5
Non-metropolitan	1712	88	240	12	1806	93	133	7
Motor vehicle theft								
Metropolitan	2878	93	209	7	2918	95	149	5
Non-metropolitan	1814	93	134	7	1852	95	93	5
Any of the six offences								
Metropolitan	1213	39	1873	61	1550	52	1424	48
Non-metropolitan	672	35	1271	65	920	49	954	51

Developmental and demographic factors and current participation in crime

Table B3: Summary of results of chi-square tests between developmental and demographic factors and current participation in crime

	<i>Assault</i>	<i>Malicious damage</i>	<i>Acquisitive property crime</i>
Supervision	$\chi^2_2=55.31, p<0.01, n=4943$	$\chi^2_2=144.98, p<0.01, n=4927$	$\chi^2_2=230.66, p<0.01, n=4860$
Family structure	$\chi^2_1=15.28, p<0.01, n=4966$	$\chi^2_1=7.41, p<0.01, n=4948$	$\chi^2_1=19.67, p<0.01, n=4882$
School performance	$\chi^2_1=22.67, p<0.01, n=4883$	$\chi^2_1=13.81, p<0.01, n=4865$	$\chi^2_1=46.15, p<0.01, n=4800$
Truancy	$\chi^2_2=116.16, p<0.01, n=4253$	$\chi^2_2=266.82, p<0.01, n=4244$	$\chi^2_2=472.39, p<0.01, n=4202$
Aboriginality	$\chi^2_1=8.79, p<0.01, n=4866$	$\chi^2_1=7.99, p<0.01, n=4847$	$\chi^2_1=18.53, p<0.01, n=4783$
Parents' country of birth	$\chi^2_2=5.89, p=0.05, n=4966$	$\chi^2_2=5.42, p=0.07, n=4948$	$\chi^2_2=0.37, p=0.83, n=4882$
Language spoken at home	$\chi^2_2=0.69, p=0.71, n=4904$	$\chi^2_2=8.91, p=0.01, n=4890$	$\chi^2_2=0.46, p=0.80, n=4821$
Gender	$\chi^2_1=147.49, p<0.01, n=4904$	$\chi^2_1=30.64, p<0.01, n=4885$	$\chi^2_1=97.10, p<0.01, n=4820$

Table B4: Assault – cross-tabulations of developmental and demographic factors by current participation

	<i>Not a current participant in assault</i>		<i>Current participant in assault</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Supervision				
High	1885	75	645	25
Medium	1219	68	563	32
Low	380	60	251	40
Family structure				
Both original parents	2639	72	1027	28
Other	861	66	439	34
School performance				
Average or above average	3282	71	1317	29
Below average	165	58	119	42
Truancy				
None	2625	73	955	27
Some	305	59	210	41
A lot	63	40	95	60
Aboriginality				
Non-ATSI ^a	3336	71	1373	29
ATSI ^a	94	60	63	40
Parents' country of birth				
Australia	2126	70	926	30
ESB ^b	475	69	211	31
NESB ^b	899	73	329	27
Language spoken at home				
English only	2876	70	1209	30
English and other	479	71	194	29
Other only	107	73	39	27
Gender				
Male	1412	62	864	38
Female	2047	78	581	22

^a ATSI refers to Aboriginal or Torres Strait Islander

^b ESB refers to English Speaking Background, NESB refers to Non-English Speaking Background

Table B5: Malicious damage – cross-tabulations of developmental and demographic factors by current participation

	<i>Not a current participant in malicious damage</i>		<i>Current participant in malicious damage</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Supervision				
High	1978	78	547	22
Medium	1197	68	574	32
Low	354	56	277	44
Family structure				
Both original parents	2653	73	998	27
Other	891	69	406	31
School performance				
Average or above average	3321	72	1264	28
Below average	174	62	106	38
Truancy				
None	2710	76	858	24
Some	258	50	256	50
A lot	53	33	109	67
Aboriginality				
Non-ATSI ^a	3384	72	1309	28
ATSI ^a	95	62	59	38
Parents' country of birth				
Australia	2175	71	870	29
ESB ^b	464	69	211	31
NESB ^b	905	74	323	26
Language spoken at home				
English only	2895	71	1178	29
English and other	483	72	187	28
Other only	121	82	26	18
Gender				
Male	1539	68	727	32
Female	1966	75	653	25

^a ATSI refers to Aboriginal or Torres Strait Islander

^b ESB refers to English Speaking Background, NESB refers to Non-English Speaking Background

Table B6: Acquisitive property crime – cross-tabulations of developmental by demographic factors and current participation

	<i>Not a current participant in acquisitive property crime</i>		<i>Current participant in acquisitive property crime</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Supervision				
High	2146	86	355	14
Medium	1279	73	462	27
Low	369	60	249	40
Family structure				
Both original parents	2866	80	735	20
Other	943	74	338	26
School performance				
Average or above average	3578	79	941	21
Below average	174	62	107	38
Truancy				
None	2957	84	575	16
Some	270	53	236	47
A lot	48	29	116	71
Aboriginality				
Non-ATSI ^a	3641	79	993	21
ATSI ^a	95	64	54	36
Parents' country of birth				
Australia	2339	78	662	22
ESB ^b	531	79	142	21
NESB ^b	939	78	269	22
Language spoken at home				
English only	3142	78	872	22
English and other	512	77	152	23
Other only	112	78	31	22
Gender				
Male	1591	72	625	28
Female	2176	84	428	16

^a ATSI refers to Aboriginal or Torres Strait Islander

^b ESB refers to English Speaking Background, NESB refers to Non-English Speaking Background

Current substance use and current participation in crime

Table B7: Summary of results of chi-square tests between current substance use and current participation in crime

	<i>Assault</i>	<i>Malicious damage</i>	<i>Acquisitive property crime</i>
Alcohol	$\chi^2_2=120.74, p<0.01, n=4878$	$\chi^2_2=304.53, p<0.01, n=4862$	$\chi^2_2=366.65, p<0.01, n=4794$
Cannabis	$\chi^2_2=224.54, p<0.01, n=4849$	$\chi^2_2=415.68, p<0.01, n=4829$	$\chi^2_2=820.83, p<0.01, n=4767$
Opiates	$\chi^2_1=64.64, p<0.01, n=4870$	$\chi^2_1=118.08, p<0.01, n=4848$	$\chi^2_1=198.44, p<0.01, n=4782$
Stimulants	$\chi^2_1=84.37, p<0.01, n=4860$	$\chi^2_1=153.72, p<0.01, n=4840$	$\chi^2_1=320.94, p<0.01, n=4774$
Steroids	$\chi^2_1=18.96, p<0.01, n=4864$	$\chi^2_1=33.18, p<0.01, n=4843$	$\chi^2_1=98.33, p<0.01, n=4780$

Note that the relevant cross-tabulations involving substance use can be obtained from the Bureau once NSW Health has released its report on substance use for the 1996 school survey.

Developmental and demographic factors and frequent substance use

Table B8: Summary of results of chi-square tests between developmental and demographic factors and frequent alcohol and cannabis use

	<i>Frequent alcohol use</i>	<i>Frequent cannabis use</i>
Supervision	$\chi^2_2=397.86, p<0.01, n=5051$	$\chi^2_2=270.65, p<0.01, n=5015$
Family structure	$\chi^2_1=4.82, p=0.03, n=5081$	$\chi^2_1=46.83, p<0.01, n=5043$
School performance	$\chi^2_1=17.38, p<0.01, n=5060$	$\chi^2_1=99.87, p<0.01, n=5021$
Truancy	$\chi^2_2=256.39, p<0.01, n=4334$	$\chi^2_2=484.81, p<0.01, n=4310$
Aboriginality	$\chi^2_1=0.08, p=0.77, n=5038$	$\chi^2_1=26.46, p<0.01, n=4999$
Parents' country of birth	$\chi^2_2=26.04, p<0.01, n=5081$	$\chi^2_2=9.74, p<0.01, n=5043$
Language spoken at home	$\chi^2_2=37.68, p<0.01, n=5010$	$\chi^2_2=11.74, p<0.01, n=4976$
Gender	$\chi^2_1=32.48, p<0.01, n=5078$	$\chi^2_1=73.35, p<0.01, n=5040$

3. MULTIVARIATE ANALYSIS

Current participation in assault by developmental and demographic factors

Table B9: Assault – full details of model for current participation with developmental and demographic factors as predictors

-2LogLikelihood (deviance) = 4804.3
Degrees of freedom=4151
n=4160
Scale: 0.9975

<i>Terms in model</i>	<i>b</i>	<i>SE (empirical)</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>95% confidence interval</i>
Constant	-1.5614	0.0677	0.0000		
Supervision					
(medium vs high)	0.2505	0.0770	0.0011	1.28	1.10 - 1.49
(low vs high)	0.3509	0.1172	0.0027	1.42	1.13 - 1.79
Family structure					
(other vs both original parents)	0.2024	0.0812	0.0127	1.22	1.04 - 1.44
School performance					
(below average vs average or above)	0.3314	0.1420	0.0196	1.39	1.05 - 1.84
Truancy					
(some vs none)	0.5578	0.0891	0.0000	1.75	1.47 - 2.08
(a lot vs none)	1.1553	0.1890	0.0000	3.18	2.19 - 4.60
Aboriginality					
(ATS)					
(male vs female)	0.6945	0.0740	0.0000	2.00	1.73 - 2.32

^a ATSI refers to Aboriginal or Torres Strait Islander

Current participation in malicious damage by developmental and demographic factors

Table B10: Malicious damage – full details of model for current participation with developmental and demographic factors as predictors

-2LogLikelihood (deviance) = 4649.9
Degrees of freedom=4142
n=4151
Scale: 0.9979

<i>Terms in model</i>	<i>b</i>	<i>SE (empirical)</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>95% confidence interval</i>
Constant	-1.5741	0.0759	0.0000		
Supervision					
(medium vs high)	0.4717	0.0767	0.0000	1.60	1.38 - 1.86
(low vs high)	0.7881	0.1074	0.0000	2.20	1.78 - 2.71
Family structure					
(other vs both original parents)	0.0095	0.0823	0.9078	1.01	0.86 - 1.19
School performance					
(below average vs average or above)	0.1896	0.1345	0.1587	1.21	0.93 - 1.57
Truancy					
(some vs none)	0.9946	0.0993	0.0000	2.70	2.23 - 3.28
(a lot vs none)	1.5510	0.1861	0.0000	4.72	3.27 - 6.79
Aboriginality					
(ATSI vs non-ATSI) ^a	0.3353	0.1868	0.0726	1.40	0.97 - 2.02
Gender					
(male vs female)	0.2938	0.0772	0.0001	1.34	1.15 - 1.56

^a ATSI refers to Aboriginal or Torres Strait Islander

Current participation in acquisitive property crime by developmental and demographic factors

Table B11: Acquisitive property crime – full details of model with developmental and demographic factors as predictors

-2LogLikelihood (deviance) = 3763.0
Degrees of freedom=4100
n=4109
Scale: 1.0057

<i>Terms in model</i>	<i>b</i>	<i>SE (empirical)</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>95% confidence interval</i>
Constant	-2.4025	0.0925	0.0000		
Supervision					
(medium vs high)	0.6357	0.0856	0.0000	1.89	1.60 - 2.23
(low vs high)	0.9654	0.1234	0.0000	2.63	2.06 - 3.34
Family structure					
(other vs both original parents)	0.1855	0.0945	0.0497	1.20	1.00 - 1.45
School performance					
(below average vs average or above)	0.3981	0.1574	0.0114	1.49	1.09 - 2.03
Truancy					
(some vs none)	1.3626	0.1060	0.0000	3.91	3.17 - 4.81
(a lot vs none)	2.1769	0.2040	0.0000	8.82	5.91 - 13.15
Aboriginality					
(ATSI vs non-ATSI) ^a	0.5172	0.1818	0.0044	1.68	1.17 - 2.40
Gender					
(male vs female)	0.6497	0.0760	0.0000	1.91	1.65 - 2.22

^a ATSI refers to Aboriginal or Torres Strait Islander

Current participation in assault by current substance use

Table B12: Assault – full details of model for current participation with current use of substances as predictors

-2LogLikelihood (deviance) = 5518.9
Degrees of freedom = 4766
n = 4774
Scale: 0.9985

<i>Terms in model</i>	<i>b</i>	<i>SE (empirical)</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>95% confidence interval</i>
Constant	-1.5041	0.0712	0.0000		
Alcohol					
(infrequent use vs no use)	0.4491	0.0875	0.0000	1.57	1.32 - 1.86
(frequent use vs no use)	0.5628	0.0980	0.0000	1.76	1.45 - 2.13
Cannabis					
(infrequent use vs no use)	0.3825	0.0864	0.0000	1.47	1.24 - 1.74
(frequent use vs no use)	0.9340	0.1057	0.0000	2.54	2.07 - 3.13
Opiates					
(use vs no use)	0.4031	0.1989	0.0427	1.50	1.01 - 2.21
Stimulants					
(use vs no use)	0.2250	0.1432	0.1162	1.25	0.95 - 1.66
Steroids					
(use vs no use)	0.1816	0.2702	0.5014	1.20	0.71 - 2.04

Current participation in malicious damage by current substance use

Table B13: Malicious damage – full details of model for current participation with current use of substances as predictors

-2LogLikelihood (deviance) = 5133.1
Degrees of freedom = 4749
n = 4757
Scale: 1.0012

<i>Terms in model</i>	<i>b</i>	<i>SE (empirical)</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>95% confidence interval</i>
Constant	-2.1139	0.0912	0.0000		
Alcohol					
(infrequent use vs no use)	0.9787	0.1030	0.0000	2.66	2.17 - 3.26
(frequent use vs no use)	1.1366	0.1251	0.0000	3.12	2.44 - 3.98
Cannabis					
(infrequent use vs no use)	0.6203	0.0882	0.0000	1.86	1.56 - 2.21
(frequent use vs no use)	1.2045	0.1258	0.0000	3.34	2.61 - 4.27
Opiates					
(use vs no use)	0.6714	0.2321	0.0038	1.96	1.24 - 3.08
Stimulants					
(use vs no use)	0.2266	0.1599	0.1564	1.25	0.92 - 1.72
Steroids					
(use vs no use)	0.3996	0.2881	0.1655	1.49	0.85 - 2.62

Current participation in acquisitive property crime by current substance use

Table B14: Acquisitive property crime – full details of model with current use of substances as predictors

-2LogLikelihood (deviance) = 4070.4
Degrees of freedom = 4684
n = 4692
Scale: 1.0005

<i>Terms in model</i>	<i>b</i>	<i>SE (empirical)</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>95% confidence interval</i>
Constant	-2.7044	0.1341	0.0000		
Alcohol					
(infrequent use vs no use)	0.8059	0.1359	0.0000	2.24	1.72 - 2.92
(frequent use vs no use)	1.1233	0.1482	0.0000	3.08	2.30 - 4.11
Cannabis					
(infrequent use vs no use)	1.0033	0.0844	0.0000	2.73	2.31 - 3.22
(frequent use vs no use)	1.9520	0.1287	0.0000	7.04	5.47 - 9.06
Opiates					
(use vs no use)	0.4435	0.2181	0.0420	1.56	1.02 - 2.39
Stimulants					
(use vs no use)	0.4701	0.1788	0.0085	1.60	1.13 - 2.27
Steroids					
(use vs no use)	0.7423	0.3278	0.0235	2.10	1.10 - 3.99

Frequent alcohol use by developmental and demographic factors

Table B15: Frequent alcohol use – full details of model with developmental and demographic factors as predictors

-2LogLikelihood (deviance) = 4896.3
Degrees of freedom=4279
n=4290
Scale: 0.9911

<i>Terms in model</i>	<i>b</i>	<i>SE (empirical)</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>95% confidence interval</i>
Constant	-1.5177	0.0891	0.0000		
Supervision					
(medium vs high)	0.9083	0.0771	0.0000	2.48	2.13 - 2.88
(low vs high)	1.1166	0.1096	0.0000	3.05	2.46 - 3.79
Family structure					
(other vs both original parents)	0.0550	0.0766	0.4728	1.06	0.91 - 1.23
School performance					
(below average vs average or above)	0.3004	0.1321	0.0230	1.35	1.04 - 1.75
Truancy					
(some vs none)	0.9505	0.1050	0.0000	2.59	2.11 - 3.18
(a lot vs none)	1.2392	0.1831	0.0000	3.45	2.41 - 4.94
Aboriginality					
(ATSI vs non-ATSI) ^a	-0.1460	0.2069	0.4804	0.86	0.58 - 1.30
Parents country of birth					
(NESB vs Australia) ^b	-0.2645	0.0981	0.0070	0.77	0.63 - 0.93
(ESB vs Australia) ^b	0.1429	0.0972	0.1415	1.15	0.95 - 1.40
Gender					
(male vs female)	0.2611	0.0795	0.0010	1.30	1.11 - 1.52

^a ATSI refers to Aboriginal or Torres Strait Islander

^b ESB refers to English Speaking Background, NESB refers to Non-English Speaking Background

Frequent cannabis use by developmental and demographic factors

Table B16: Frequent cannabis use – full details of model with developmental and demographic factors as predictors

-2LogLikelihood (deviance) = 2476.7
Degrees of freedom=4254
n=4265
Scale: 0.9780

<i>Terms in model</i>	<i>b</i>	<i>SE (empirical)</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>95% confidence interval</i>
Constant	-3.6655	0.1616	0.0000		
Supervision					
(medium vs high)	1.0188	0.1275	0.0000	2.77	2.16 - 3.56
(low vs high)	1.5260	0.1651	0.0000	4.60	3.33 - 6.36
Family structure					
(other vs both original parents)	0.3834	0.1220	0.0017	1.47	1.16 - 1.86
School performance					
(below average vs average or above)	0.9384	0.1767	0.0000	2.56	1.81 - 3.61
Tuancy					
(some vs none)	1.2340	0.1334	0.0000	3.44	2.64 - 4.46
(a lot vs none)	2.2451	0.2145	0.0000	9.44	6.20 - 14.38
Aboriginality					
(ATSI vs non-ATSI) ^a	0.4667	0.2552	0.0674	1.59	0.97 - 2.63
Parents' country of birth					
(NESB vs Australia) ^b	-0.2409	0.1395	0.0841	0.79	0.60 - 1.03
(ESB vs Australia) ^b	0.0620	1.1685	0.7129	1.06	0.76 - 1.48
Gender					
(male vs female)	0.6610	0.1199	0.0000	1.94	1.53 - 2.45

^a ATSI refers to Aboriginal or Torres Strait Islander

^b ESB refers to English Speaking Background, NESB refers to Non-English Speaking Background

Current participation in assault by developmental and demographic factors and substance use

Table B17: Assault – full details of model for current participation with developmental and demographic factors and current use of substances as predictors

-2LogLikelihood (deviance) = 4572.2
Degrees of freedom=4047
n=4061
Scale: 0.9964

<i>Terms in model</i>	<i>b</i>	<i>SE (empirical)</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>95% confidence interval</i>
Constant	-1.8961	0.0783	0.0000		
Supervision					
(medium vs high)	0.0447	0.0838	0.5936	1.05	0.89 - 1.23
(low vs high)	0.0714	0.1266	0.5731	1.07	0.84 - 1.38
Family structure					
(other vs both original parents)	0.1316	0.0874	0.1320	1.14	0.96 - 1.35
School performance					
(below average vs average or above)	0.2344	0.1459	0.1080	1.26	0.95 - 1.68
Truancy					
(some vs none)	0.3191	0.0938	0.0007	1.38	1.14 - 1.65
(a lot vs none)	0.7391	0.1999	0.0002	2.09	1.42 - 3.10
Aboriginality					
(ATSI vs non-ATSI) ^a	0.5634	0.1986	0.0046	1.76	1.19 - 2.59
Gender					
(male vs female)	0.6533	0.0761	0.0000	1.92	1.66 - 2.23
Alcohol					
(infrequent use vs no use)	0.4504	0.0886	0.0000	1.57	1.32 - 1.87
(frequent use vs no use)	0.4235	0.1028	0.0000	1.53	1.25 - 1.87
Cannabis					
(infrequent use vs no use)	0.3939	0.0908	0.0000	1.48	1.24 - 1.77
(frequent use vs no use)	0.8423	0.1152	0.0000	2.32	1.85 - 2.91
Opiates					
(use vs no use)	0.3206	0.2168	0.1392	1.38	0.90 - 2.11
Terms not included in model					
Stimulants					
(use vs no use)	-				
Steroids					
(use vs no use)	-				

^a ATSI refers to Aboriginal or Torres Strait Islander

Current participation in malicious damage by developmental and demographic factors and substance use

Table B18: Malicious damage – full details of model for current participation with developmental and demographic factors and current use of substances as predictors

-2LogLikelihood (deviance) = 4278.2
Degrees of freedom=4041
n=4052
Scale: 0.9968

<i>Terms in model</i>	<i>b</i>	<i>SE (empirical)</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>95% confidence interval</i>
Constant	-2.3063	0.1087	0.0000		
Supervision					
(medium vs high)	0.1492	0.0805	0.0636	1.16	0.99 - 1.36
(low vs high)	0.3959	0.1111	0.0004	1.49	1.19 - 1.85
Truancy					
(some vs none)	0.6268	0.1084	0.0000	1.87	1.51 - 2.31
(a lot vs none)	1.0059	0.1879	0.0000	2.73	1.89 - 3.95
Gender					
(male vs female)	0.2199	0.0780	0.0048	1.25	1.07 - 1.45
Alcohol					
(infrequent use vs no use)	0.9280	0.1123	0.0000	2.53	2.03 - 3.15
(frequent use vs no use)	0.9701	0.1403	0.0000	2.64	2.00 - 3.47
Cannabis					
(infrequent use vs no use)	0.5987	0.0996	0.0000	1.82	1.50 - 2.21
(frequent use vs no use)	1.0636	0.1244	0.0000	2.90	2.27 - 3.70
Opiates					
(use vs no use)	0.7252	0.2490	0.0036	2.07	1.27 - 3.36
Terms not included in model					
Family structure					
(other vs both original parents)	-				
School performance					
(below average vs average or above)	-				
Aboriginality					
(ATSI vs non-ATSI) ^a	-				
Stimulants					
(use vs no use)	-				
Steroids					
(use vs no use)	-				

^a ATSI refers to Aboriginal or Torres Strait Islander

Current participation in acquisitive property crime by developmental and demographic factors and substance use

Table B19: Acquisitive property crime – full details of model with developmental and demographic factors and current use of substances as predictors

-2LogLikelihood (deviance) = 3295.2
Degrees of freedom=3992
n=4008
Scale: 0.9922

<i>Terms in model</i>	<i>b</i>	<i>SE (empirical)</i>	<i>Significance (p-value)</i>	<i>Odds ratio</i>	<i>95% confidence interval</i>
Constant	-3.2256	0.1471	0.0000		
Supervision					
(medium vs high)	0.1884	0.0900	0.0364	1.21	1.01 - 1.44
(low vs high)	0.4202	0.1334	0.0016	1.52	1.17 - 1.98
Family structure					
(other vs both original parents)	0.0676	0.1073	0.5284	1.07	0.87 - 1.32
School performance					
(below average vs average or above)	0.0919	0.1916	0.6315	1.10	0.75 - 1.60
Truancy					
(some vs none)	0.9132	0.1170	0.0000	2.49	1.98 - 3.13
(a lot vs none)	1.5110	0.2196	0.0000	4.53	2.95 - 6.97
Aboriginality					
(ATSI vs non-ATSI) ^a	0.6505	0.2089	0.0018	1.92	1.27 - 2.89
Gender					
(male vs female)	0.5741	0.0871	0.0000	1.78	1.50 - 2.11
Alcohol					
(infrequent use vs no use)	0.8120	0.1378	0.0000	2.25	1.72 - 2.95
(frequent use vs no use)	1.0327	0.1626	0.0000	2.81	2.04 - 3.86
Cannabis					
(infrequent use vs no use)	0.8817	0.0992	0.0000	2.42	1.99 - 2.93
(frequent use vs no use)	1.5678	0.1496	0.0000	4.80	3.58 - 6.43
Opiates					
(use vs no use)	0.3347	0.2343	0.1531	1.40	0.88 - 2.21
Stimulants					
(use vs no use)	0.3314	0.1956	0.0903	1.39	0.95 - 2.04
Steroids					
(use vs no use)	0.7179	0.3629	0.0479	2.05	1.01 - 4.17

^a ATSI refers to Aboriginal or Torres Strait Islander