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Comparative rates of violent crime amongst methamphetamine and opioid users: Victimisation and offending

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Executive Summary

Background

There have been marked changes in methamphetamine use over the past decade as more potent forms of the drug have become increasingly available, particularly crystalline methamphetamine. A major concern of stronger potency methamphetamine is the increased potential for harm, such as psychotic symptoms and violent behaviour. Little is currently known about what effects methamphetamine use has on violent behaviour. The current research was undertaken to improve our understanding of the association between methamphetamine use and violent victimisation and offending. Comprehensive measures including prevalence, type of offence, circumstances surrounding victimisation and offending, and the predictors of violent behaviour were used to achieve a more complex understanding of the issues surrounding methamphetamine use and violence.

Methodology

A sample of 400 regular methamphetamine and heroin users from the greater Sydney region were interviewed face-to-face regarding their lifetime and most recent experiences of violent victimisation and offending. Participants in the study were recruited through advertisements placed in needle and syringe programs (NSPs), therapeutic communities, street press publications, and word of mouth. To be eligible for inclusion in the survey, respondents had to be at least 18 years of age, have a satisfactory understanding of English, and have used either methamphetamine or illicit opiates at least weekly over the past 12 months. The sample was categorised into three key groups based on whether they used methamphetamine or heroin most regularly: primary methamphetamine users (PM), primary heroin users (PH), and combined primary methamphetamine and heroin users (PMH). Only physical violence was measured in this study, which included assault, armed robbery, homicide, and sexual assault.

Key findings

Violent victimisation

The lifetime risk of violent victimisation was nearly universal. Across the whole sample, 95% had ever been a victim of violence, and nearly half (46%) had experienced victimisation in the past 12 months. The overwhelming majority had been victimised on multiple occasions across a lifetime measure.

Methamphetamine use was not a significant risk factor for violent victimisation. The results indicate that the major predictors of violent victimisation among illicit drug users were severity of alcohol use, a predisposition towards antisocial behaviour (i.e. a childhood history of Conduct Disorder), and drug dealing. The data indicates that being involved in illicit drug markets substantially increases the risk of victimisation and that, at some point, those who remain in these environments have a high risk of being assaulted.

Almost two-thirds of those who had been victimised were also under the influence of a substance at the time they were last victimised. The substances that were most commonly used prior to the most recent victimisation episode were alcohol (25%), psychostimulants (24%), and illicit opioids (24%). Nearly one-quarter of the respondents had used multiple substances prior to most recently being victimised.

Violent offending

The prevalence of violent offending was also high, with 82% having ever committed a violent crime, and approximately two in five having violently offended in the past 12 months. There were no group differences in the risk of lifetime offending. In the past 12 months, however, the PM group was more likely to have committed a violent crime than the PH group (51% v 35%). Nearly three-quarters (74%) of the sample had ever committed more than one violent crime.

Methamphetamine use significantly increased the risk of violent offending in the past 12 months, particularly more frequent methamphetamine use. The increased risk of violent offending associated with methamphetamine use was consistent across a number of indicators, including being at greater risk for being arrested for assault and weapon offences in the preceding 12 months, and methamphetamine users being at greater risk of committing violent crime within the past month.

Apart from methamphetamine use, other factors that were found to increase the risk of committing violence were heavier alcohol use, Conduct Disorder, selling drugs, and being younger.

Risk perceptions of violence

The majority of the sample perceived that it would be 'unlikely' or 'very unlikely' that they would be either a victim of violence (78%) or violent offender (87%) in the following 12 months, despite the high prevalence of violent victimisation and offending experienced in the previous 12 months. The majority of respondents had also witnessed high levels of victimisation and offending, and this also appears to have no impact on their own perceived risk of being exposed to violence in the future. Among those who had recently (i.e. in the last 12 months) been a victim of violence, or physically assaulted someone, the perceived risk of future victimisation and offending was higher than those who had not recently been exposed to violence.

Key points: Summary of violent crime among illicit drug users

- Violent victimisation was almost universal, with 95% of the sample having ever been victimised, and 46% having been a victim of violence in the past 12 months.
- Violent offending was also highly prevalent, with 82% of respondents having committed a violent crime across their lifetime, and 41% having done so in the past 12 months.
- Methamphetamine use did not increase the lifetime, or past 12 month, risk of violent victimisation.
- Heavier methamphetamine use was associated with a significantly higher risk of violent offending in the past 12 months.
- The main form of methamphetamine used did not affect risk of violent victimisation or offending.
- The perceived risk of being a victim or offender of a violent crime in the following 12 months was very low, despite the high rates of victimisation, and of committing violent crime, in the past 12 months.

Chapter one: Introduction

Substance use is a major risk factor in both fatal and non-fatal violent crime among illicit drug users (Allen et al. 1997; Boles & Miotto 2003; Friedman, Kramer & Kreisher 1999; Logan, Walker & Leukefeld 2001; Marshall et al. 2008; Merikangas et al. 1998; Tyner & Fremouw 2008). This contention is supported by evidence from toxicological and other empirical studies that have found that more than half of all homicides involve alcohol or other drugs, and substance use is implicated in an even greater proportion of non-fatal violent assaults (Erickson 2001; Fagan & Chin 1990; Stretesky 2008). The risk of violence thus appears to be substantially increased by involvement with alcohol or illicit drugs.

The significance of the association between substance use and violence is further highlighted when rates of violent crime amongst the general population are compared to those experienced within IDU populations. The Australian Bureau of Statistics (ABS) Personal Safety Survey (2006) found that 6% of women had been a victim of violence in the preceding 12 months (4.7% experienced physical violence and 1.6% experienced sexual violence). Similarly, 11% of males reported that they had been a victim of violence in the same period, with the majority of incidents involving physical violence (10.4%), and less than one percent involving sexual violence (ABS 2006). The survey also found that 35% of respondents had been the victim of at least one episode of physical violence since age 15 (ABS 2006). In contrast, studies of illicit drug users have found that over 70% of respondents have a lifetime prevalence of being physically attacked (Marshall et al. 2008; McKeganey, Neale & Robertson 2005). Furthermore, the lifetime prevalence of sexual assault among the general population has been estimated to range between 12–32% for women, and 3-16% percent for men, with women at significantly greater risk of being sexually assaulted than men (Zinzow et al. 2008). Braitstein et al. (2003) reported that among injecting drug users (IDU), 68% of females and 19% of males had a lifetime history of sexual violence. Thus, the rates of physical and sexual violence are significantly higher than those found among the general population, highlighting how extensive the problem is among illicit drug users in particular. Violent offending is also a much more common occurrence among those with a lifetime history of a substance use disorder (Makkai & Payne 2003).

Methamphetamine: background and associated harms

According to the National Drug Strategy Household Survey (NDSHS) (AIHW, 2008), 6.3% of the Australian general population have ever used methamphetamine, and 2.3% used it in the preceding 12 month period. Prior to 2001, amphetamine sulphate, more commonly known as 'amphetamine', or by its street name 'speed', was the most available form of illicit amphetamine in Australia (Black et al. 2007). In the early 1990s, legislative controls were implemented which prohibited the distribution of the main precursor chemicals used in making amphetamine (ephedrine, pseudoephedrine), which led to different recipes for 'cooking' amphetamine, and the increased distribution of methamphetamine (Black et al. 2007; Sommers, Baskin & Baskin-Sommers 2006). Methamphetamine now dominates the Australian psychostimulant market, and is sold in three main forms: methamphetamine powder ('speed'), methamphetamine base ('base'), and crystalline methamphetamine ('ice', 'crystal meth') (Australian Crime Commission 2007; Black et al. 2007; Tyner & Fremouw 2008).

The purity of these methamphetamine derivatives ranges significantly. Methamphetamine powder is generally considered to be the least pure form of methamphetamine, with a median purity of 10%, and crystalline methamphetamine the most pure form, with a median purity

of 80% (Black et al. 2007; McKetin, McLaren & Kelly 2005; Topp et al. 2002). Crystalline methamphetamine is estimated to be between four and eight times more pure than any other form of methamphetamine currently available in Australian jurisdictional markets (McKetin, McLaren & Kelly 2005). The increase in global methamphetamine use, coupled with the availability of purer methamphetamine, is concerning because methamphetamine use, particularly heavier use, has been linked to rapid psychopathological decline, and increases in aggressive or violent behaviour (Black et al. 2007; Tyner & Fremouw 2008; Stretesky 2008; Wardlaw 1993).

Methamphetamine users may experience elevated rates of a number of physical and psychopathological harms, including dependence, cardiovascular and cerebrovascular problems, blood-borne viruses, toxicity, mortality, depression, anxiety, psychosis and methamphetamine-induced aggression (Darke et al. 2008; McKetin et al. 2006; Sommers, Baskin & Baskin-Sommers 2006). The psychopathological harms, such as psychosis and aggression, are of the greatest interest to the current research as they have been most strongly linked to violent behaviour (Chermack & Blow 2002; Darke et al. 2008; Sokolov & Cadet 2006; Sokolov, Schlinder & Cadet 2004; Tyner & Fremouw 2008). Unlike other illicit drugs such as opioids, psychostimulants can induce temporary psychosis which may include auditory or visual hallucinations and persecutory delusions, and disorganised or hostile behaviour to a lesser extent (Darke et al. 2008; McKetin, McLaren & Kelly 2005). Chronic psychostimulant use has also been experimentally linked to increases in aggressive behaviour (Sokolov & Cadet 2006; Sokolov, Schlinder & Cadet 2004). The magnitude of these harms varies according to individual differences, route of administration, amount used, and purity of the drug (McKetin et al. 2006; Tyner & Fremouw 2008).

Despite the limited evidence for a causative association between methamphetamine use and violent crime, a substantial proportion of methamphetamine users have committed violence. Sommers, Baskin and Baskin-Sommers (2006) reported that 35% of methamphetamine users had a lifetime prevalence of violent offending whilst under the influence of methamphetamine. Notably, almost half of these individuals had never committed a violent crime prior to the onset of their methamphetamine use (Sommers, Baskin & Baskin-Sommers 2006). Toxicological studies have also found that the psychostimulants are one of the most commonly detected classes of illicit substances found in homicide offenders and victims (Darke, in press; Darke & Duflou 2008; Tardiff et al. 2005). Methamphetamine use thus appears to increase both the risk of committing violent crime and being a victim of violence.

Understanding the drug–violence relationship

Efforts to causally understand the association between substance use and violence have been complicated because there are a number of other factors to consider, specifically what roles individualistic, situational, pharmacological, and other risks play in producing violent outcomes. The model which is most widely used to examine the relationship between violence and substance use was developed by Goldstein (1985). The model proposes that 'pharmacological', 'systemic', and 'economic-compulsive' risks are the key causes of violence amongst drug users. This model is particularly pertinent to the current research because the key issue being examined here is whether methamphetamine directly engenders violent behaviour (pharmacological violence), or whether violence is more strongly associated with the situational risks related to a drug-using lifestyle (systemic and economic-compulsive violence).

Pharmacological violence

Pharmacological violence refers to violence caused by the effects of substance use upon the body's chemistry (Boles & Miotto 2003; Goldstein 1985; McKetin et al. 2006; Neale, Bloor &

Weir 2005). Acute alcohol intoxication has been most strongly implicated in the occurrence of both serious violent offending and victimisation (Boles & Miotto 2003; Chermack & Blow 2002; Darke & Duflou 2008; Leonard & Quigley 1999; Scott, Schaefer & Greenfield 1999; Wells & Graham 2003). Toxicological studies of alcohol-related mortality show that alcohol is present in approximately 50% of all homicide cases (Darke & Duflou 2008; Fagan & Chin 1990; Parker & Auerhahn 1998). Similarly, arrest and self-report data show that nearly half of all homicide offenders are under the influence of alcohol at the time of committing a violent offence (Arseneault et al. 2000; Boles & Miotto 2003; Homel & Tomsen 1993). It has also been reported that as population alcohol use levels decline, so do homicide rates, suggesting a causative association between alcohol and violence (Chermack & Blow 2002; Pridemore 2002; Rossow 2004). The available evidence indicates that alcohol-induced disinhibition increases the risk of violence.

At present, the evidence for a pharmacological link between illicit drugs and violence is limited and inconsistent (Chermack & Blow 2002; Parker & Auerhahn 1998; Tyner & Fremouw 2008). The strongest pharmacological association between illicit drugs and violence pertains to psychostimulant use. There is experimental evidence from animal studies which suggests that chronic methamphetamine use can increase levels of aggressive behaviour, and thus the potential to be involved in violence (Chermack & Blow 2002; Sokolov & Cadet 2006; Sokolov, Schlinder & Cadet 2004; Tyner & Fremouw 2008). This effect was only seen among mice which received repeated methamphetamine injections, and not among those who were injected with the methamphetamine only once. The key implication of these studies is that long-term, chronic use of methamphetamine may significantly increase the likelihood of aggressive or violent behaviour. To date, there is no data available on the pharmacological effects of methamphetamine use and violence in humans.

Prolonged methamphetamine use can also lead to the onset of transient psychotic symptoms, such as paranoia, anxiety, agitation, persecutory delusions and audio-visual hallucinations (Boles & Miotto 2003; Darke et al. 2008; McKetin, McLaren & Kelly 2005; McKetin et al. 2006). McKetin et al. (2006) found that 23% of methamphetamine users had experienced a clinically significant psychotic symptom in the preceding 12 months, particularly hallucinations and suspiciousness. The risk for experiencing a clinically significant psychotic symptom was higher among dependent or regular (more than weekly) methamphetamine users (McKetin et al. 2006). Methamphetamine psychosis resulting from chronic use can be accompanied by irrational, hostile, or aggressive behaviour (Boles & Miotto, 2003; Darke et al. 2008; Goldstein 1985; Parker & Auerhahn 1998), increasing susceptibility to both violent offending and victimisation.

Economic-compulsive violence

Economic-compulsive violence refers to violence which is committed to obtain money or drugs to support expensive drug-using habits (Boles & Miotto 2003; Goldstein, 1985). Due to their high costs, heroin and cocaine have been most strongly linked to financially motivated crime, yet there is little evidence to suggest that illicit drug users commit violent crimes to obtain money for drugs (Goldstein 1985). As such, economic-compulsive risk is not considered a significant component of violence among drug users (Goldstein 1985; Inciardi & Potteiger 1991). In the absence of legitimate means of financing drug use, drug users are more likely to engage in acquisitive crimes, such as property crime or fraud, rather than violence (Boles & Miotto 2003; Goldstein 1985; McKetin, McLaren & Kelly 2005).

Systemic violence

Systemic violence refers to violence which arises from the need to protect systems of drug distribution and use, and to uphold and regulate cultural norms and values (Goldstein 1985; Neale, Bloor & Weir 2005; Topalli, Wright & Fornango 2002). Retributive threats, intimidation and physical punishment are used as primary forms of social control in illicit drug markets, as those involved in illegal activities (i.e. drug dealing and drug use) have limited access to legal recourse to settle disputes (Boles & Miotto 2003; Fagan & Chin 1990; Friedman, Kramer & Kreisher 1999; Goldstein 1985; Neale, Bloor & Weir 2005; Parker & Auerhahn 1998; Stretesky 2008). Self-report data from convicted drug dealers shows that nearly two-thirds had either non-fatally or fatally injured someone as a direct result of their role as drug dealers (Dembo et al. 1993). Violent crime has also been found to occur at comparable levels among different classes of injecting drug users, which indicates that systemic factors associated with a drug-using lifestyle play a significant role in increasing the risk of violence beyond specific drug effects (McKetin, McLaren & Kelly 2005). The circumstances surrounding systemic risks associated with illicit drug use thus appear to significantly increase the risk of experiencing violence.

The systemic model is also relevant to licit drug markets, as there are significant systemic risks related to drinking in public locations. In licensed premises, factors such as overcrowding, aggressive staff, irresponsible service of alcohol, and glasses being left on tables, make these settings highly conducive to violence (Graham & Homel 1997; Homel & Tomsen 1993). Young men are particularly at risk for violence in these environments (Homel & Tomsen 1993; Neale, Bloor & Weir 2005). Police statistics estimate that at least one in five assaults occur in, or around, licensed premises (Homel & Tomsen 1993). Drinking in bars, or within close proximity to bars, appears to involve a significant risk of violent offending and victimisation.

Psychopathological violence

A fourth potential causative link between drug use and violence is that of psychopathological risk, which argues that violent behaviour is the result of underlying antisocial personality traits, rather than a subsequent effect of drug use. Two such antisocial disorders, Conduct Disorder (CD) and Antisocial Personality Disorder (ASPD), have been commonly associated with violent behaviour in adulthood (Buitelaar, Montgomery, Zweiten-Boot 2003; Moffitt 1993; Odgers et al. 2007). Kaye, Darke and Finlay-Jones (1998) found that violent behaviour among adult heroin users was strongly related to a predisposition towards antisocial behaviour. Similar results have been found in studies which examined violence among non-heroin drug user populations (Odgers et al. 2007; Tremblay et al. 1999). Both general population and treatment population longitudinal studies have also consistently found that a childhood history of CD increases the risk of violent offending in adulthood (Fulwiler & Ruthazer 1999; Hodgins et al. 2008; Odgers et al. 2007; Tremblay et al. 1999). Conduct Disorder has also been found to be an independent predictor of violent offending among illicit drug users after controlling for confounding from substance use problems (Allen et al. 1997; Arseneault et al. 2000; Crocker et al. 2005; Fulwiler & Ruthazer 1999; Hodgins et al. 2008; Mueser et al. 2006; Odgers et al. 2007). These findings highlight that violent behaviour is, to an extent, determined by psychopathology.

The association between violent victimisation and psychopathology is less clear. Few studies have examined this association, but the available evidence indicates that ASPD is associated with elevated rates of mortality, particularly unnatural deaths such as homicide (Black et al. 1996; Repo-Tiihonen et al. 2002). This risk was found to be highest among young men (Black et al., 1996; Repo-Tiihonen et al. 2002); however, being young and male are also significant risks for victimisation in the context of alcohol-related violence (Homel & Tomsen 1993). These studies did not control for alcohol as a possible confounding variable, making it difficult to determine whether ASPD directly contributed to victimisation, or whether the relationship between ASPD and victimisation was an artefact of alcohol use. There may, however, be an association between CD

and violent victimisation as prior involvement in violent offending has been found to increase the risk of violent victimisation (Hodgins et al., 2008; Mouzos & Smith, 2007; Neale, Bloor & Weir, 2005). Thus, as CD has been found to be a predictor of violent offending, it may also subsequently increase the risk of victimisation.

Study rationale

As previously noted, the Australian methamphetamine market has undergone significant change over the past decade and, as a result, purer forms of methamphetamine are now more readily available (Black et al. 2007; McKetin, McLaren & Kelly 2005). A major concern of the availability of stronger potency methamphetamine is that the likelihood of experiencing adverse effects of methamphetamine use may also be increased—in particular, violent behaviour. Whilst associations between methamphetamine and violence are often anecdotally commented upon, little is actually known about what effects methamphetamine use has on violent offending *and* victimisation behaviours. The current research was undertaken to improve our understanding of the nature of the association between methamphetamine use, violent victimisation, and violent offending. Comprehensive measures of prevalence, type of offence, circumstances surrounding violence, and the predictors of violent behaviour were used to achieve this.

In order to determine whether violence was related to the direct effects of methamphetamine use, or whether it was the result of drug dependence more generally, it was necessary to compare the violent experiences of regular methamphetamine users to regular users of other substances. Regular heroin users were chosen as an appropriate comparison group because heroin is a major problem drug in Australia, with 1.6% of the Australian general population having used heroin at least once during their lifetimes, and 0.2% having used it within a 12 month period (AIHW 2008). Also, heroin use has a wide, strongly documented association with violence and crime (Goldstein, 1985), without being associated with psychotic symptoms or increased levels of aggression after administration. Psychopathological histories, including Post Traumatic Stress Disorder (PTSD), CD, and ASPD, are also diagnosed in similar proportions amongst regular methamphetamine and heroin users, making them comparable in respect to psychopathological risks (Cottler et al. 1992; Mills et al. 2006; Najavits et al. 1998; Trull et al. 2000). Both methamphetamine and heroin user groups are also exposed to similar levels of systemic risk associated with being involved in illicit drug markets. Thus, by comparing two groups at similar risk for violence, it is possible to determine whether there is a specific drug effect on the risk for violence beyond the risk that is normally associated with drug use.

Study aims

1. To determine the prevalence of violent crime perpetrated by a sample of methamphetamine users;
2. To determine the types of violent crime committed by methamphetamine users;
3. To determine the prevalence and types of violent crime committed upon a sample of methamphetamine users;
4. To determine the circumstances leading to violent crime, and the factors that predict such crime, amongst methamphetamine users; and
5. To compare the prevalence, types and circumstances of violent crime amongst the methamphetamine sample with those of a sample of heroin users.

Chapter two: Method

Procedure

All respondents were volunteers who were reimbursed A$30 for participation in the study. Recruitment took place between September 2007 and November 2008, and various recruitment strategies were used which included advertisements placed in needle and syringe programs (NSPs), therapeutic communities, and in street press publications, as well as by word of mouth. Data was collected from a range of geographical locations in the Sydney metropolitan area, as well as the Hunter Valley and Wollongong.

All respondents underwent a screening process to determine eligibility to be interviewed, which was either done in person or over the phone. In addition to the eligibility criteria items, respondents were asked a number of 'dummy' questions such as what suburb they resided in, employment status and whether they were currently enrolled in drug and alcohol treatment, to keep them blind to the inclusion criteria. To be eligible for participation, respondents had to be at least 18 years of age; had to have a satisfactory understanding of English; and had to have used either methamphetamine or illicit opiates at least weekly over the 12 months preceding the interview.

Respondents were administered a structured interview. Interviews were conducted in private rooms at NSPs and in therapeutic community facilities, at public venues (e.g. cafés, parks) that were convenient to the participant, and at rooms in the National Drug and Alcohol Research Centre. Participants were assured of both confidentiality and anonymity. All interviews were conducted by members of the research team, and took approximately 40 minutes to complete.

Sample

Interview data was collected from 400 respondents. Respondents were divided into comparison groups based on which criterion drug they had used most regularly in the past 12 months. Thus, respondents in the primary methamphetamine (PM) group were those who had used methamphetamine at least weekly or more in the past 12 months, and had irregular to no heroin use in that period (N =118). Similarly, the primary heroin (PH) group were those who had used heroin at least weekly in the past 12 months, and if they had used methamphetamine, it was on a less than weekly basis (N =161). The third group, the combined methamphetamine and heroin group (PMH), comprised respondents who had used both methamphetamine and heroin weekly or more in the past 12 months.

Respondents were drawn from both methamphetamine- and heroin-using populations for comparative purposes—that is, to be able to discern whether violent crime was directly related to methamphetamine use, or whether violent crime was more strongly related to drug dependence, and the situational risks associated with such a lifestyle.

Structured interview

Demographics

The demographic details obtained included: gender, age, marital status, level of high school completion, tertiary education completion, employment status, main source of income, and drug treatment history.

Drug use history

In order to gain an indication of overall drug use, respondents were asked about how old they were when they were first intoxicated, how old they were when they first injected any drug, and the drug they first injected. Respondents were also asked about which drug classes they had ever used and had ever injected, and which ones they had injected in the past six months. An estimation of how many days they had used each drug class in the preceding six months was also obtained.

Dependence on heroin and methamphetamine was assessed using the Severity of Dependence Scale (SDS) (Gossop et al. 1995). Scores range from 0 to 15, with higher scores indicating greater drug dependence. Scores greater than four on the SDS for methamphetamine are indicative of problematic methamphetamine use (Topp & Mattick 1997), whilst scores of three or greater on the heroin SDS indicate problematic heroin use (Gonzalez-Saiz et al. 2009).

Hazardous and harmful drinking patterns were screened for using the Alcohol Use Disorders Identification Test (AUDIT) (Babor et al. 2001). This brief assessment tool was designed as a simple method of identifying excessive drinking patterns. Respondents who score '8 or more' are considered to be hazardous or harmful drinkers. Those who score over '20' on the AUDIT screener are classified as dependent drinkers. Higher scores are associated with greater alcohol dependence.

Psychological functioning

The International Classification of Diseases (10th edition) (ICD-10) diagnosis of Borderline Personality Disorder (BPD) was screened for using the National Study of Mental Health and Well Being (NSMHWB) version of the Composite International Diagnostic Instrument (CIDI) (Andrews et al. 1999). The Conduct Disorder diagnosis was based on the fourth edition of the Diagnostic and Statistical Manual (DSM-IV) (American Psychiatric Association 2000). The CD diagnosis was obtained using a modified version of the Diagnostic Interview Schedule (DIS) (Robins et al. 1981).

The Brief Symptom Inventory (BSI) (Derogatis 1975) was used to diagnose psychopathological distress. Symptoms were rated on a five point Likert scale of distress (not at all, a little bit, moderately, quite a bit, extremely). Nine symptom dimensions are scored within the BSI (somatisation, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism) as well as a global severity score. Psychological health status was assessed using the mental health component of the Short Form 12-item Health Survey (SF-12) (Ware, Kosinski, Keller 1996).

Criminal histories

Respondents were asked about the frequency of their involvement in property crime, fraud, selling drugs and violent crime in the preceding month (none, less than once a week, once a week, more once a week, daily) based on the crime section of the Opiate Treatment Index (OTI) (Darke et al. 1992). Respondents were also asked questions about their arrest histories for violent crimes, such as whether they had ever been arrested, how long ago they were most recently arrested, and whether the charge culminated in a conviction. The history and recency of imprisonment were also measured. Violent offences were categorised using the ABS Australian Standard Offences

Classifications (McLennan 1997), and included offence categories such as assault, aggravated assault, aggravated robbery, murder, manslaughter, sexual assault, and weapons offences.

Violent offending and victimisation

Violent victimisation and offending were measured using the same set of questions, which included whether they had ever 'been a victim of a physical attack' and whether they had 'physically attacked someone', and how long ago their most recent episode of victimisation/offending occurred. Questions were also asked about the frequency of the violent incidents, how old the respondent was at the time of first being a victim/offender of violence, and how severe the attacks were (i.e. whether a weapon was involved, whether medical treatment was required, and whether police were involved). The term 'violence' as used in this study refers only to physical forms of violence, such as assault, armed robbery, sexual assault, and homicide.

The most recent episodes of victimisation and offending were examined in detail using critical incident methodology. This refers to an in-depth analysis of the circumstances surrounding the most recent episodes of victimisation and offending, including questions about the location of the incident, what time it took place, whether it occurred on a weekday or a weekend, who was involved, and whether substance use was involved.

Risk perceptions

In order to gain information about risk perceptions regarding victimisation and offending, respondents were asked how likely they thought it would be that they would be a victim of a violent crime in the following 12 months, and how likely it would be that they would commit a violent crime in the following 12 months (very likely, likely, unlikely, very unlikely). Respondents were also asked about how often they had witnessed fellow drug users being victims and offenders of violent crime in the preceding 12 months (daily, weekly or more, monthly, less than monthly, never).

Statistical analysis

Dichotomous categorical variables were analysed using odds ratios (ORs) and 95% confidence intervals (CIs). ANOVAs with Scheffe protected post hoc comparisons were used to examine group differences in illicit drug use onset, polydrug use, alcohol use, BSI dimensional scores, and SF-12 psychological health scores. In cases where variable distributions were highly skewed, medians and Mann-Whitney *U* tests were reported. Logistic regressions with backwards elimination were used to determine the independent effects of drug use on the prevalence of violent victimisation and offending in the past 12 months. Variables of age, sex, CD diagnosis, BSI caseness, AUDIT score, drug dealing, recent injecting history, and primary drug use were controlled for in the regressions. For the purposes of analysing the relationships between violent crime and drug use, the sample was divided into three groups according to whether respondents most regularly used methamphetamine (PM), heroin (PH), or used both methamphetamine and heroin weekly or more (PMH). All analyses were conducted using SPSS for Windows, version 15.0 (SPSS Inc. 2006).

Chapter three: Results

Sample characteristics

The mean age of subjects was 35.4 years (SD 8.6, range 18–75 years), and the majority of subjects were male (70%) (Table 1). There was an overall significant age difference among the groups ($F_{(2,397)}$=6.55, $p < 0.01$), with the PH group being significantly older than the PM group ($p < 0.01$). This was the only significant demographic group difference. The mean years of formal school education was 9.8 (SD 1.6, range 4–12 years). Forty percent had completed a trade or technical course, and 7% had completed a university or college degree. The majority of subjects were unemployed (85%), with 3% in full-time employment, and a further 6% in part-time or casual employment.

Sixty-two percent were currently enrolled in a drug treatment program, with the most common drug treatment type being pharmacotherapy (methadone maintenance and buprenorphine treatment). The median length of current pharmacotherapy treatment was 24 months (SD 55.5, range 0.25–360 months).

Table 1: Demographic characteristics

	PM (N=118)	PH (N=161)	PMH (N=121)	Total (N=400)
Male (%)	74	70	65	70
Mean age (yrs)	33.1	36.9	35.5	35.4
Marital status (%)				
Single	67	57	63	62
Married/De facto	26	33	26	29
Divorced/Widowed	7	10	11	9
Mean completed school (yrs)	9.8	9.7	9.9	9.8
Tertiary education (%)				
None	55	53	51	53
Trade/Technical	38	41	41	40
University/College	7	6	8	7
Employment (%)				
Unemployed	86	86	82	85
Full time	6	1	2	3
Part time/Casual	4	6	10	6
Other	4	7	6	6
Current treatment status (%)				
Not in treatment	35	41	38	38
Methadone/Buprenorphine	24	48	50	42
Therapeutic community	40	10	12	19
Detoxification	1	1	0	1

Drug use history

The mean age of first intoxication was 14.3 years (SD 3.7, range 5–39 years) and the mean age of first injecting was 20.4 (SD 6.0, range 11–46 years) (Table 2). There were no significant differences in the age of onset of intoxication or injecting. Heroin was the most common drug injected (50%), and methamphetamine the second most common (42%). Whilst the majority had injected drugs, the PH and PMH groups were significantly more likely to have ever injected (PH v PM: OR=25.26, CI=3.03-166.67; PMH v PM: OR=8.67, CI=1.94-38.79) and to have injected in the past six months (PH v PM: OR=14.93, CI=4.39-50.00; PMH v PM: OR=16.82, CI=3.89-72.68) than the PM group.

Table 2: Drug use characteristics

	PM (N=118)	PH (N=161)	PMH (N=121)	Total (N=400)	Comparisons
Onset (mean)					
Age first intoxicated (yrs)	14.1	14.0	14.9	14.3	No differences
Age first injected (yrs)	21.1	19.8	20.6	20.4	No differences
Age first regular injecting (yrs)	22.5	21.3	21.5	21.7	No differences
Drug first injected (%)					
Heroin	30	60	50	50	
Methamphetamine	53	30	42	42	
Cocaine	4	4	4	5	
Hallucinogens	0	1	1	1	
Methamphetamine (6 months)					
Used (%)	100	53	100	77	
Days used (mdn)*	72	5	48	30	
Heroin (6 months)					
Used (%)	26	100	100	76	
Days used (mdn)*	6	100	90	90	
Injected any drug					
Ever	87	99	98	96	PMH, PH>PM
Past six months	78	98	98	92	PMH, PH>PM
Injecting past month (%)					PMH, PH>PM
Not at all	40	12	11	20	
<= Once a week	6	11	5	8	
> Once a week < Daily	39	34	40	37	
Daily	15	44	44	35	
Severity of Dependence (SDS)					
Heroin (mean)	1.9	9.9	8.8	7.8	PMH, PH>PM
Methamphetamine (mean)	7.7	0.9	5.7	4.4	PM>PMH>PH
No. of drug classes used					
Ever (mean)	9.3	9.8	10.3	9.8	PMH>PM
Past 6 months (mean)	6.7	7.4	8.3	7.5	PMH>PH>PM

* Used in last six months only

Thirty-five percent had injected an illicit substance at least daily in the preceding month, whilst 37% had injected more than once a week, but less than daily (Table 2). One-fifth had not injected in the preceding month. Significant differences were noted in respect to 'no injecting' and 'daily injecting'. There was a significantly higher proportion of non-injecting among the PM group (PM v PH: OR=4.95, CI=2.70-9.05; PM v PMH: OR=5.00, CI=2.56-10.00). Conversely, the PH and PMH groups had significantly higher levels of daily injecting than the PM group (PH v PM: OR=4.27, CI=2.37-7.69; PMH v PM: OR=4.33, CI=2.34-8.03).

The PH and PMH groups reported similar levels of heroin dependence; however, both groups had significantly higher heroin dependence scores than the PM group ($F_{(2,363)}$=136.00, p<0.001; PH v PM, p<0.001; PMH V PM, p<0.001). Conversely, the PM group had significantly higher methamphetamine dependence scores than the PMH and PH groups ($F_{(2,388)}$=135.59, p<0.001; PM v PH, p<0.001; PM v PMH, p<0.001) whilst the PMH group also had higher methamphetamine dependence scores than the PH group (p<0.001).

There was a significant amount of polydrug use among the sample. The lifetime mean number of drug classes used was 9.8 (SD 1.7, range 3–12), with a mean of 7.5 (SD 1.4, range 4–11) classes used in the past six months (Table 2). There were significant group differences in respect to both lifetime and recent polydrug use histories. The PMH group had significantly greater lifetime polydrug use than the PM group ($F_{(2,397)}$=9.94, p<0.001; PMH v PM p<0.01). The PMH group also had greater polydrug use in the past six months than the PH or PM groups ($F_{(2,397)}$=46.91, p<0.001; PMH v PH, p<0.001; PMH v PM, p<0.001), whilst the PH group had greater polydrug use than the PM group in the past 6 months (PH v PM, p<0.001).

Whilst the PM and PMH groups both regularly used methamphetamine in the past six months, the PM had used methamphetamine on significantly more days (72 v 40; U=5191, p<0.001). Reflecting the polydrug-using nature of these populations, approximately half of the PH group had also used methamphetamine in the past six months, but only infrequently (mdn: 5 days) and at significantly lower frequency than either the PM (U=787.5, p<0.001) or PMH (U=2753, p<0.001) groups. Similarly, the PH and PMH both used heroin on a regular basis in the past six months, with no significant differences in the median number of days used (100 days v 90 days) (Table 2). Approximately one-quarter of the PM group had used heroin in the past six months, but again, only sporadically (mdn: 6 days) and at significantly lower frequency than either the PH (U=86.5, p<0.001) or PMH (U=300, p<0.001) groups.

Heroin, methamphetamine and cocaine were the most commonly injected illicit drugs across both lifetime and recency measures (Table 3).

Table 3: Drug use history

	Ever used (%)	Ever injected (%)	Used in the past 6 months (%)	Injected last 6 months (%)	Days used last 6 months*
Heroin	91	89	76	74	90
Other opioids	86	55	68	37	180
Methamphetamine	98	89	77	66	30
Cocaine	92	81	52	46	10
Ecstasy	80	27	20	5	3
Hallucinogens	68	13	4	1	2
Benzodiazepines	80	23	56	4	24
Antidepressants	59	2	30	0	180
Alcohol	99	5	66	1	24
Cannabis	99	n/a	74	n/a	96
Inhalants	31	n/a	1	n/a	5
Tobacco	99	n/a	95	n/a	180

* Median days used among those who used drugs in the last six months
n/a = not applicable

Across the three groups, crystalline methamphetamine was consistently the main form of methamphetamine that had ever, and recently, been used (Table 4).

Table 4: Methamphetamine forms used in last six months

	PM (N=112)	PH (N=85)	PMH (N=106)	Total (N=303)
Any forms used last 6 months (%)				
Powder/speed	46	27	26	34
Base	45	34	35	38
Crystalline methamphetamine/ice	89	87	92	89
Other	3	1	3	2
Main form used last 6 months (%)				
Powder/speed	12	13	8	11
Base	9	13	9	10
Crystalline methamphetamine/ice	78	74	82	78
Other	1	0	1	1

NB: Percentage of those who had used methamphetamine in last six months

Approximately half (52%) of the sample were 'low risk' drinkers, whilst one-fifth were 'high risk/dependent' (Table 5). Respondents in the PM and PMH groups were significantly more likely to be 'high risk/dependent' drinkers than those in the PH group (PM v PH: OR=2.48, CI=1.35-4.58; PMH v PH: OR=1.92, CI=1.02-3.59). The PM group had significantly higher mean AUDIT scores than the PH group ($F_{(2,397)}$= 4.25; $p<0.05$; PM v PH, $p<0.05$); however, no differences were found between the PM and PMH groups, or the PH and PMH groups.

Table 5: AUDIT groups

	PM (N=118)	PH (N=161)	PMH (N=121)	Total (N=400)	Comparisons
AUDIT level of drinking (%)					
Low risk	47	55	51	52	No differences
Risky/hazardous	21	27	25	24	No differences
High risk/harmful	5	5	2	4	No differences
High risk/dependent	27	13	22	20	PM, PMH>PH
AUDIT score (mean)	12.6	9.0	10.7	10.6	PM>PH

Psychopathology

Suicide attempts and self-harm were prevalent, with 32% reporting a lifetime history of attempted suicide. Nineteen percent of the sample had multiple suicide attempts across their lifetime. Twenty-eight percent of respondents had a lifetime history of self-harm, and 21% had self-harmed on multiple occasions. There were no group differences in respect to the prevalence of either suicide attempts or self-harm incidences (Table 6).

Table 6: Psychopathology

	PM (N=118)	PH (N=161)	PMH (N=121)	Total	Comparisons
Suicide attempt (%)					
Ever	33	30	34	32	No differences
12 months	9	4	5	6	No differences
Self-harm (%)					
Ever	33	25	28	28	No differences
12 months	12	6	6	8	No differences
Personality disorders (%)					
BPD caseness	37	39	41	39	No differences
CD caseness	72	77	73	74	No differences
BSI caseness (%)	83	75	81	80	No differences
BSI dimensions (mean)					
Obsessive-compulsive	62.8	65.4	65.8	64.8	No differences
Interpersonal-sensitivity	61.9	61.9	62.6	62.1	No differences
Depression	64.1	66.6	65.9	65.7	No differences
Anxiety	60.2	62.1	62.7	61.7	No differences
Hostility	59.4	60.1	60.9	60.1	No differences
Phobic anxiety	59.4	60.1	60.8	60.1	No differences
Paranoid ideation	63.9	65.4	67.1	65.5	PMH>PM
Psychoticism	65.9	66.2	66.6	66.2	No differences
Somatisation	57.7	63.4	63.9	61.8	PMH, PH>PM
Global Severity Index	65.3	67.2	67.9	66.8	No differences
Psychiatric health (SF-12) (mean)	36.3	36.9	34.8	36.1	No differences

There were high levels of psychopathology. Seventy-four percent met criteria for a DSM-IV Conduct Disorder diagnosis, and 39% screened positive for Borderline Personality Disorder (BPD) (Table 6). Eighty percent screened positive for diagnosable psychopathology according to BSI. There were no significant group differences in respect to the proportions meeting criteria for CD, BPD, or BSI caseness. In respect to individual BSI dimensions, the PMH group had significantly higher 'paranoid ideation' scores than the PM group ($F_{(2,397)}$=3.04, p<0.05; PMH v PM, p<0.05), and both the PMH and PH groups scored significantly higher in the 'somatisation' dimension than the PM group ($F_{(2,397)}$=11.63, p<0.001; PMH v PM: p<0.001; PH v PM: p<0.001).

Criminal history

Sixty-one percent reported that they had ever been charged with committing a violent offence, and 9% in the past 12 months. The majority of those who had been charged with a violent offence had also been convicted (Table 7). The PH and PMH groups were significantly more likely to have ever been charged for a violent offence than the PM group (PH v PM: OR=1.64, CI=1.01-2.63; PMH v PM: OR=2.27, CI=1.34-3.85). The PH and PMH groups were also significantly more likely to have been convicted for a violent crime than the PM group (PH v PM: OR=1.61, CI=01.01-2.63; PMH v PM: OR=2.15, CI=1.28-3.61). There were no significant differences between the PH and PMH groups in terms of lifetime or recent risk of being charged with a violent offence, or in terms of being convicted for a violence-related charge.

The most common offences for which respondents were arrested were: assault (47%), weapons offences (27%), threatening behaviour (22%), aggravated assault (19%) and aggravated robbery (17%) (Table 7). The PH and PMH groups were significantly more likely to have ever been charged

with aggravated robbery (PH v PM: OR=3.03, CI=1.43-6.25; PMH v PM: OR=2.27, CI=1.02-5.05), and with weapon offences (PH v PM: OR=1.96, CI=1.10-3.45; PMH v PM: OR=2.28, CI=1.25-4.18) than the PM group. The PM group was significantly more likely to have been charged with assault in the past 12 months than either the PH or PMH groups (PM v PH: OR=2.43, CI=1.13-5.22; PM v PMH: OR=2.94, CI=1.32-6.25), and more likely to have been charged with weapons offences in the past 12 months than the PMH group (PM v PMH: OR=4.35, CI=1.19-16.67). Also, the PMH group was more likely to have ever been charged with attempted murder than the PM group (OR=8.28, CI=1.02-67.30).

Table 7: Arrest history for violent crimes

	PM (N=118) %	PH (N=161) %	PMH (N=121) %	Total (N=400) %	Comparisons
Any violent crime					
Charged (ever)	50	62	69	61	PMH, PH>PM
Charged (12 months)	11	6	9	9	No differences
Convicted	46	58	65	56	PMH, PH>PM
Assault					
Charged (ever)	44	43	55	47	No differences
Charged (12 months)	20	11	12	14	PM > PH, PMH
Convicted	37	37	46	40	No differences
Aggravated assault					
Charged (ever)	14	22	20	19	No differences
Charged (12 months)	5	4	4	4	No differences
Convicted	12	19	17	16	No differences
Aggravated robbery					
Charged (ever)	9	22	17	17	PH, PMH > PM
Charged (12 months)	3	0	2	2	No differences
Convicted	9	20	14	15	No differences
Threatening behaviour					
Charged (ever)	24	20	24	22	No differences
Charged (12 months)	9	5	5	6	No differences
Convicted	20	16	21	19	No differences
Murder					
Charged (ever)	0	1	2	1	No differences
Charged (12 months)	0	0	0	0	No differences
Convicted	0	0	1	0.5	No differences
Attempted murder					
Charged (ever)	1	3	7	4	PMH>PM
Charged (12 months)	0	0	1	0.5	No differences
Convicted	0	1	5	2	No differences
Sexual assault					
Charged (ever)	0	1	1	1	No differences
Charged (12 months)	0	0	0	0	No differences
Convicted	0	0	1	0.5	No differences
Weapons offences					
Charged (ever)	18	30	33	27	PH, PMH > PM
Charged (12 months)	7	5	4	5	PM>PMH
Convicted	14	25	30	23	No differences

Fifty-five percent had a lifetime history of imprisonment, with the PH and PMH groups being significantly more likely to have ever been imprisoned than the PM group (PH v PM: 60% v 41%, OR=2.17, CI=1.33-3.45; PMH v PM: 64% v 41%, OR=2.55, CI=1.52-4.30). Twenty-one percent had been imprisoned in the past 12 months, with no group differences reported. Males were more likely to have ever been imprisoned (62% v 39%, OR=2.54, CI=1.64-3.93), and imprisoned within the last 12 months (23% v 14%, OR=1.89, CI=1.05-3.37) than females.

In the past month, selling drugs was the most commonly committed crime (41%), followed by property crime (32%) (Table 8). Whilst there were no significant group differences in respect to any of the non-violent crimes, the PMH group was significantly more likely to have committed violent crime than the PH group in the past month (19% v 9%, OR=2.28, CI=1.14-4.60).

Table 8: Crime committed in the past month

	PM (N=118) %	PH (N=161) %	PMH (N=121) %	Total (N=400) %	Comparisons
Property crime					No differences
Not at all	70	70	63	68	
< Daily	29	24	31	28	
Daily	1	6	6	4	
Selling drugs					No differences
Not at all	63	56	59	59	
< Daily	30	38	31	34	
Daily	7	6	10	7	
Fraud					No differences
Not at all	93	86	91	89	
< Daily	7	13	8	10	
Daily	0	1	1	1	
Violent crime					PMH>PH
Not at all	83	91	81	85	
< Daily	17	9	19	15	
Daily	0	0	0	0	

Violent victimisation

Nearly all respondents (95%) reported having ever been a victim of violence, 46% within the past 12 months. There were no significant group differences in respect to the lifetime or recent victimisation. Eighty-eight percent had been victimised on multiple occasions. Among those who had been victimised, they had been physically attacked a median of 10 times (range 1–>20), and the mean age of first being a victim of violence was 16 years (SD 8.8, range 1–74 yrs). There were no differences between males and females in lifetime (94% v 97%) or 12 months (46% v 47%) victimisation (Table 9).

The PMH and PH groups were significantly more likely to have ever been attacked with a weapon (PH v PM: OR=2.56, CI=1.51-4.17; PMH v PM: OR=1.86, CI=1.09-3.16). There was greater police involvement in victimisation incidents among the PMH group than the PM group (OR=2.08, CI=1.19-3.63). No group differences were found in respect to being attacked with a weapon, receiving medical treatment, or police involvement within the past 12 months.

Table 9: Victimisation prevalence and circumstances

	PM (N=118)	PH (N=161)	PMH (N=121)	Total (N=400)	Comparisons
Victim (%)					
Ever	95	93	97	95	No differences
12 months	50	40	50	46	No differences
Frequency of victimisation (mdn)*	10.0	10.0	10.0	10.0	No differences
Multiple victimisation incidences (%)	87	87	92	88	No differences
Mean age of onset (years)*	15.7	16.2	15.9	16.0	No differences
Attacked with a weapon (%)					
Ever	48	67	64	61	PMH, PH>PM
12 months	19	14	18	17	No differences
Received medical treatment (%)					
Ever	63	65	67	65	No differences
12 months	16	13	15	15	No differences
Police were involved (%)					
Ever	54	60	71	62	PMH>PM
12 months	25	17	26	22	No differences

*Victims of violence only (N=378)

Respondents who had been victimised were most commonly attacked by drug-using acquaintances (57%), partners (51%) and unknown persons (50%) (Table 10). Females were at greater risk of being attacked by a partner (86% v 35%, OR=11.63, CI= 6.49-20.83), and sex-work clients (9% v 3%, OR=3.72, CI=1.40-9.80) than males. Males were at greater risk of being attacked by drug-using acquaintances (63% v 45%, OR=2.06, CI=1.33-3.20), drug using non-acquaintances (50% v 28%, OR=2.62, CI=1.64-4.18), other non-drug using acquaintances (47% v 28%, 2.24, CI=1.40-3.59), police (27% v 14%, OR=2.30, CI=1.27-4.17), unknown persons (60% v 27%, OR=3.97, CI=2.47-6.38), and others, particularly prison inmates (10% v 3%, OR=3.30, CI=1.13-9.66).

Table 10: Relationship to attacker (lifetime prevalence)

	PM (N=118)	PH (N=161)	PMH (N=121)	Total (N=378)
Relationship to attacker (%)				
Partner	52	50	53	51
Family member	36	38	50	41
Drug-using acquaintance	59	60	52	57
Other acquaintance	39	48	33	41
Drug using non-acquaintance	41	42	47	43
Drug dealer	16	14	16	15
Sex-work client	3	4	9	5
Unknown persons	46	53	49	50
Others	7	10	7	8

NB: Table represents percentage of those who were victimised

In the most recent physical attack, respondents were most likely to be assaulted by a drug-using acquaintance (25%), unknown persons (22%), and partners (20%). Again, females were more

likely than males to be attacked by a partner (50% v 6%, OR=16.39, CI=8.69-31.25), whilst males were more likely to be attacked by a drug using non-acquaintance (14% v 3%, OR=4.73, CI=1.65-13.59), and by an unknown person (29% v 7%, OR=5.47, CI=2.54-11.78).

Table 11: Circumstances of most recent episode of victimisation

	PM (N=112) %	PH (N=149) %	PMH (N=117) %	Total (N=378) %
Location				
Residential dwelling	46	36	39	40
Public area	41	49	50	47
Prison	5	8	3	6
Other	8	7	8	7
Time of day				
00.01–06.00 hours	20	13	13	15
06.01–12.00 hours	15	12	21	16
12.01–18.00 hours	26	37	28	31
18.01–24.00 hours	36	35	37	36
Don't know	3	3	1	2
Type of day				
Weekday	59	68	74	67
Weekend	36	21	19	24
Who attacked you				
Partner	21	16	23	20
Family member	5	5	9	6
Drug-using acquaintance	29	24	22	25
Other acquaintance	6	11	4	8
Drug using non-acquaintance	5	11	16	11
Drug dealer	5	1	3	3
Sex-work client	0	1	2	1
Unknown persons	23	24	18	22
Other persons	6	7	3	5
Initiated fight	11	8	8	9
Received medical treatment	29	38	39	36
Police were involved	36	38	41	38

NB: Table represents percentage of those who were victimised

The majority of the most recent victimisation episodes took place in public areas (street, hotel) (47%), and in residential dwellings (victim's own home, other home) (40%) (Table 11). Females were at significantly greater risk of being attacked in a residential dwelling than males (67% v 25%, OR=6.25, CI=4.00- 10.00), whilst males were found to be at significantly greater risk of being a victim of violence in a public area (53% v 24%, OR=3.65, CI=2.26-5.89).

The majority (61%) were under the influence of a substance at the time they were last victimised (Table 12). The most commonly used substances prior to the last incident of victimisation were alcohol (25%), illicit opiates (24%) and psychostimulants (24%). Nearly one-quarter had used

multiple substances within the two hours prior to being attacked. The victimisation experiences of the PMH group were significantly more likely to be related to conflict about drugs than the PM group (OR=1.70, CI=1.00-2.89). Twenty- three percent had used more than one substance in the two hours prior to being victimised, and there were no significant group differences in respect to whether multiple drugs had been used.

Table 12: Intoxication circumstances in most recent victimisation episode

	PM (N=112) %	PH (N=149) %	PMH (N=117) %	Total (N=378) %	Comparisons
Intoxicated at time of assault	67	56	62	61	No differences
Assault related to drug conflict	37	42	50	43	PMH>PM
Drug used (<2hrs prior to assault)					
Opiates	8	35	24	24	
Psychostimulants	44	6	28	24	
Benzodiazepines	3	8	7	6	
Cannabis	19	11	9	13	
Alcohol	32	22	21	25	
Multiple substances used	27	21	21	23	No differences

NB: Table represents percentage of those who were victimised

A logistic regression with backwards elimination was conducted to determine the factors independently associated with violent victimisation in the past 12 months. The factors controlled for in the model were: age, sex, primary drug used, AUDIT score, CD caseness, BPD caseness, BSI caseness, recent injecting history and involvement in selling drugs. The final model was significant (x^2_{3df}=36.21, p<0.001) and had a good fit to the data (Hosmer and Lemeshow: x^2_{8df}=6.71, p=0.57). Methamphetamine use was not an independent predictor of victimisation. The factors that did significantly predict victimisation were: CD (OR=1.74, CI=1.06-2.85), AUDIT score (OR=1.04, CI=1.02-1.07), and involvement in drug dealing (OR=1.84, CI=1.21-2.78). Thus, the risk of victimisation in the past 12 months was associated with heavier drinking, CD and selling drugs.

Violent offending

Eighty-two percent reported that they had a lifetime history of committing violent crime, 41% in the past 12 months (Table 13). The PM group was at significantly greater risk of committing a violent crime in the past 12 months than the PH group (OR=1.94, CI=1.19-3.15); however, no differences existed between the PM and PMH group or the PMH and PH groups. Thus, it was the group with the highest methamphetamine use who committed the most violence in the past 12 months. Three-quarters (74%) had offended on more than one occasion, and among those who had offended, they had done so a median of eight times (range 1–>20). The mean age of onset for offending was 18.4 years (SD 7.6, range 3–48). There were no sex differences in lifetime or recent violent offending.

The PM group was more likely to have committed a violent crime that resulted in medical treatment in the past 12 months than the PMH group (OR=2.56, CI=1.10-5.88). There were no significant group differences in respect to the lifetime prevalence of weapon use, medical treatment, or police involvement in violent offences. The PMH and PH groups were more likely to have a lifetime history of carrying a weapon on them than the PM group (PH v PM: OR=2.13, CI= 1.28-3.45; PMH v PM: OR=2.09; CI=1.23-3.55).

Table 13: Offending prevalence and circumstances

	PM (N=118)	PH (N=161)	PMH (N=121)	Total (N=400)	Comparisons
Offender (%)					
Ever	81	81	84	82	No differences
12 months	51	35	41	41	PM>PH
Frequency offending (mdn)*	10.0	6.0	10.0	8.0	No differences
Multiple violent offences (%)	72	72	78	74	No differences
Mean age of onset (yrs)*	17.6	18.1	18.7	18.1	No differences
Weapon (%)					
Ever	25	35	28	30	No differences
12 months	9	11	8	10	No differences
Any medical treatment (%)					
Ever	36	40	36	38	No differences
12 months	17	11	7	12	PM>PMH
Police (%)					
Ever	47	47	53	49	No differences
12 months	24	16	18	19	No differences
Ever carried a weapon (%)	35	51	53	47	PMH, PH>PM

*Those who committed a violent offence (N=327)

There was an association between violent offending and victimisation. Those who had committed a violent crime in the past 12 months were approximately 13 times more likely to have been a victim of violence in the past 12 months (79% v 23%; OR=13.23, CI=8.14-21.50).

The majority of violent crimes were committed against persons known to the offender, with drug-using acquaintances (59%), partners (47%) and other acquaintances (46%) being the main victims (Table 14). Unknown persons accounted for 38% of all victims. Females were more likely to have physically attacked a partner (76% v 32%, OR=6.85, CI=3.94-11.90), whereas males were more likely to have attacked a drug-using acquaintance (64% v 48%, OR=1.94, CI=1.19-3.14), other non-drug using acquaintance (52% v 29%, OR=2.67, CI=1.60-4.45), drug using non-acquaintance (47% v 24%, OR=2.84, CI=1.66-4.84), drug dealers (29% v 8%, OR=4.49, CI=2.07-9.78), and unknown persons (47% v 17%, OR=4.47, CI=2.46-8.11).

Table 14: Relationship to victim (lifetime prevalence)

	PM (N=95) %	PH (N=131) %	PMH (N=101) %	Total (N=327) %
Who you attacked				
Partner	43	41	51	47
Family member	33	26	35	31
Drug-using acquaintance	61	55	63	59
Other acquaintance	43	49	44	46
Drug using non-acquaintance	40	37	46	40
Drug dealer	21	22	26	23
Sex-work client	4	5	4	4
Police	18	15	19	17
Unknown persons	42	37	36	38
Others	7	8	6	7

NB: Table represents percentage of those who offended

In the most recent episode of violent offending, the majority of violent crimes were committed in public areas (47%) and in residential dwellings (40%), with no group differences found (Table 15). Females were more likely to commit violence in a residential dwelling (42% v 22%, OR=2.56, CI=1.54-4.35), whilst males were more likely to commit violent crime in public areas (47% v 33%, OR=1.79, CI=1.09-2.94).

The majority of the most recent violent offences were committed against persons known to the perpetrator, specifically drug-using acquaintances (28%) and partners (21%), whilst violent offences against unknown persons accounted for 16% of most recent attacks. Females were more likely to have attacked a partner (42% v 12%, OR=5.18, CI=2.94-9.09), whilst males were at greater risk of attacking a stranger (22% v 2%, OR=12.98, CI=3.09-54.53).

Table 15: Most recent episode of violent offending

	PM (N=95) %	PH (N=131) %	PMH (N=101) %	Total (N=327) %
Location				
Residential dwelling	45	39	36	40
Public areas	40	46	54	47
Prison	6	7	5	6
Other	9	8	5	7
Time of day				
00.01–06.00 hours	17	10	7	11
06.01–12.00 hours	15	11	21	15
12.01–18.00 hour	29	44	35	37
18.01–24.00 hours	35	31	35	34
Don't know	4	4	2	3
Type of day				
Weekday	29	16	24	22
Weekend	58	69	64	64
Don't know	13	15	12	14
Relationship to victim				
Partner	27	17	20	21
Family member	5	5	8	6
Drug-using acquaintance	25	28	31	28
Other acquaintance	8	17	6	11
Drug using non-acquaintance	7	10	14	10
Drug dealer	1	2	2	2
Sex-work client	0	1	0	1
Police	1	0	4	2
Unknown persons	21	14	13	16
Others	4	6	3	5
Initiated fight	46	44	52	47
Received medical treatment	23	37	23	28
Police were involved	35	39	32	35

NB: Table represents percentage of those who offended

The majority were under the influence of a substance during their most recent episode of offending (66%), with no group differences reported (Table 17). Alcohol was the most prevalent substance used within two hours of committing violence (28%), followed by psychostimulants (25%) and illicit opiates (23%). Twenty-one percent had used multiple drugs prior to offending, with no group differences reported.

Table 16: Intoxication circumstances in most recent episode of offending

	PM (N=95) %	PH (N=131) %	PMH (N=101) %	Total (N=327) %	Comparisons
Intoxicated at time of assault	64	65	70`	66	No differences
Assault related to drug conflict	36	46	49	44	No differences
Drug used (< 2hrs prior to attack)					
Opiates	7	29	31	23	
Psychostimulants	41	13	25	25	
Benzodiazepines	3	8	6	6	
Cannabis	12	12	6	10	
Alcohol	31	26	27	28	
Multiple substances used	22	21	19	20	No differences

NB: Table represents percentage of those who offended

A logistic regression with backwards elimination was conducted to determine the factors independently associated with violent offending in the past 12 months. The factors controlled for in the model were: age, sex, primary drug used, AUDIT score, CD caseness, BPD caseness, BSI caseness, recent injecting history and involvement in selling drugs. The final model was significant (x^2_{5df}=60.08, p<0.001) and had a good fit to the data (Hosmer and Lemeshow, x^2_{8df}=8.86, p=0.36). Methamphetamine use (OR=1.31, CI=1.00-1.72), CD (OR 2.37, CI 1.39-4.07), AUDIT score (OR 1.04, CI 1.01-1.06), selling drugs (OR 2.13, CI 1.38-3.30), and age (OR=0.96, CI=0.94-0.99) were independently associated with violent offending in the past 12 months. Violent offending was predicted by heavier methamphetamine use, being younger, problematic alcohol use, drug dealing, and CD.

Risk perceptions related to violence

Although nearly half the sample had been either victimised, or committed a violent crime in the last 12 months, the majority perceived that it was unlikely that they would experience violence in the following 12 months. Seventy-eight percent reported that they perceived it was 'unlikely' or 'very unlikely' that they would be a victim of a violent crime in the next 12 months, whilst 87% thought it 'unlikely' or 'very unlikely' that they would commit a violent crime in the next 12 months (Table 17).

Among respondents who indicated that it was 'likely' or 'very likely' that they would be a victim of violence in the next 12 months (N=87), the most common reasons given for expecting an attack included that they would be attacked in order for someone to obtain drugs or money (31%), that they expected to be attacked as a result of being involved in the drug culture (14%), that illicit drugs may cause the perpetrator to be aggressive (14%), and because they owed people money (13%).

Of those who perceived their likelihood of committing a violent offence in the next 12 months to be 'likely' or 'very likely' (N=54), the most common reasons given were that they would only commit a violent assault in self-defence (33%), that they would commit assault because they were owed money (13%), and that violence was likely to directly result from illicit drug use, specifically methamphetamine use and aggressive behaviour (11%).

Table 17: Risk perceptions of violence (next 12 months)

	PM (N=118) %	PH (N=161) %	PMH (N=121) %	Total (N=400) %
Victimisation				
Very likely	4	5	8	6
Likely	18	12	17	16
Unlikely	36	43	45	41
Very unlikely	42	40	29	37
Offending				
Very likely	3	3	4	3
Likely	9	10	12	10
Unlikely	25	36	34	31
Very unlikely	63	51	50	56

Respondents who had been victims of violence in the past 12 months were more likely to believe they would be attacked in the following 12 months (30% v 14%, OR=2.61, CI=1.59-4.28). Similarly, respondents who had committed a violent crime in the past 12 months were significantly more likely to expect that they would commit a violent offence in the following 12 months (26% v 5%, OR=7.18, CI=3.57-14.42).

Sixty-six percent of respondents reported that they had witnessed other drug users being physically attacked in the past 12 months, and 66% had also witnessed other drug users committing a violent crime in the past 12 months.

Chapter four: Discussion

Major findings

The current study found that the experiences of violent victimisation and offending were almost universal among the sample. The overwhelming majority had a lifetime history of violent assault (95%) and of committing violent crime (82%). The majority had also experienced multiple episodes of victimisation and offending across their lives. Violent victimisation and offending were also highly prevalent in the preceding 12 months, with 46% of respondents experiencing at least one episode of victimisation, and 41% of respondents having committed at least one violent crime in this period.

Methamphetamine use was not a significant predictor of violent victimisation in the past 12 months. Instead, the major risks for victimisation were alcohol use problems, drug dealing, and a predisposition towards antisociality. In contrast, methamphetamine use *did* predict violent offending within the past 12 months—specifically, heavier methamphetamine use was strongly associated with an increased risk of offending. The significant association between methamphetamine use and violent offending was consistent across a number of indicators, including being at greater risk of being charged with common assault and weapon offences in the past 12 months, and also that regular methamphetamine users were more likely to have committed a violent crime in the past month when compared to the regular heroin users. Other factors that predicted violent offending were again alcohol use, drug dealing, and CD, as well as being younger.

Gender was not associated with risk of victimisation or offending, across both lifetime and past 12 month measures of violence. In the general population, there are clear sex differences in respect to violent victimisation and offending. Males are generally at greater risk of being both victims and offenders of physical violence (Karer & Langan 2001; Kellerman & Mercy 1992; Neale, Bloor & Weir 2005), whilst being a victim of sexual violence is significantly associated with being female (Zinzow et al. 2008). Thus, the absence of gender differences in this study suggests that involvement in illicit drug markets, and other situational factors associated with a dependent drug-using lifestyle, universally increase the risk of being exposed to violence.

Violent victimisation

Violent victimisation was highly prevalent, with only 5% reporting that they had never been physically attacked. Close to half had experienced a physical assault in the past 12 months. In the Australian general population the risk of violent victimisation is substantially lower, with 5% being physically assaulted in a similar 12 month period (ABS, 2005). Given that there were no significant gender or drug group differences in the prevalence of lifetime physical assault among this sample, it appears that involvement in illicit drug use cultures universally increases the risk of victimisation. The majority of respondents had experienced multiple episodes of victimisation, with a median of 10 victimisation episodes across their lives.

In respect to the circumstances of victimisation, one of the few significant group differences was lifetime risk of being attacked with a weapon. The PH and PMH groups had a greater lifetime risk of being attacked with a weapon than the PM group. This risk may be linked to the finding that the PH and PMH groups were also more likely to have ever carried a weapon on them than the PM group, thus potentially increasing their risk of having their own weapon used against them. The other significant finding was that police were more likely to have responded to incidents in which

the PMH group were physically assaulted, compared to the PM group. Again, this finding may be explained by the greater likelihood of the PMH group being attacked with a weapon, and thus they are potentially involved in more serious assaults than the PM group which may attract more police attention. In summary, there appears to be a specific connection between opioid use and the threat of weapon involvement in victimisation incidents.

Factors associated with victimisation

Methamphetamine use was not a significant predictor of violent victimisation. Instead, the major predictors of victimisation were problematic alcohol use, drug dealing, and CD. It appears then that the situational risks associated with a drug-using lifestyle, as well as having an antisocial personality, more strongly increase the likelihood of being physically assaulted.

Consistent with previous work (Darke & Duflou 2008; Fagan & Chin 1990; Homel & Tomsen 1993; Neale, Bloor & Weir 2005; Parker & Auerhahn 1998), problematic alcohol use was found to be a major predictor of violent victimisation. Chronic alcohol use has been linked to violence both because of its disinhibitory effects (Darke & Duflou 2008; Fagan & Chin 1990), but also because drinking in public areas, such as on the street and in hotels, has been found to heighten the risk of victimisation (Graham & Homel 1997; Homel & Tomsen 1993; Neale, Bloor & Weir 2005). As almost half of all victimisation incidents took place in public areas, there appears to be an association between alcohol use and location of victimisation that is consistent with previous studies.

Respondents who sold drugs were 1.8 times more likely to be a victim of violence. Illicit drug distribution has been implicated as a key factor in violent victimisation, as drug dealers are vulnerable to violent robbery and involvement in territorial disputes (Boles & Miotto 2003; Chermack & Blow 2002; Dembo et al. 1993; Erickson 2001; Fagan & Chin 1990; Neale, Bloor & Weir 2005; Parker & Auerhahn 1998; Topalli, Wright & Fornango 2002).

The final factor associated with violent victimisation was childhood CD. There is currently only limited evidence to support an association between CD and victimisation, and the best support for this association centres around an offender-victim hypothesis, where the risk of being violently victimised is increased by prior involvement in violent offending (Mouzos & Smith 2007; Neale, Bloor & Weir 2005). Violent offending was found to significantly increase the risk of victimisation 13 times among this sample, providing support for this hypothesis. As previous studies have found that CD is associated with increased risk of violent offending (Arseneault et al. 2000; Fergusson, Horwood & Ridder 2005; Hodgins et al. 2008; Moffitt 1993; Odgers et al. 2007), individuals with CD then also are potentially at greater risk of victimisation.

To summarise, higher methamphetamine use was not found to directly increase the likelihood of being physically assaulted. Exposure to victimisation was more strongly related to systemic and antisocial personality risk factors, as well as the pharmacological and systemic effects of chronic alcohol use.

Violent offending

High rates of violent offending were also found, with only one in five reporting that they had never committed a violent crime, and over 40% had offended in the past 12 months. There were no group differences in the proportions committing violent offences across the lifetime measure. The PM group, however, was significantly more likely to have committed a violent crime in the past 12 months than the PH group and, moreover, methamphetamine use remained a significant predictor of offending after other factors were controlled for. The increased risk of violent offending

associated with methamphetamine use appears to be consistent across a number of indicators within the past 12 months, including the PM group being at greater risk of being charged with common assault and weapon offences, and the PMH group being significantly more likely to commit violent crime in the past month than the PH group.

The circumstances surrounding offending were similar across the three groups, the only difference being that the PM group was more likely than the PMH group to commit a violent offence in the past 12 months which resulted in at least one party receiving medical treatment. This may indicate that the recent violent offences committed by the PM group were of a more serious nature than those committed by the PMH or PH groups, and this may be related to their greater likelihood of being charged with weapons offences.

Factors associated with violent offending

Unlike victimisation, methamphetamine use *was* found to be a significant predictor of recent violent offending, with regular methamphetamine use being associated with higher levels of offending. It appears that frequency of methamphetamine use is most strongly associated with likelihood of offending as this difference in risk was only found between the PM and PH groups, and not the PMH and PH groups, despite the PMH group also being regular users of methamphetamine. The PM group had used methamphetamine over significantly more days than the PMH group in the past six months and, as there were no differences in the forms of methamphetamine used by the PM and PMH groups, it appears that more frequent methamphetamine use is a strong indicator of violent offending, which is consistent with previous research (McKetin, McLaren & Kelly 2005).

A similar association between methamphetamine use and violent offending was seen in respect to recent arrest histories and violent crime committed in the past month. The association between methamphetamine use and violence was consistent with greater risk of being charged with assault and weapons offences in the past 12 months. Also, the PMH group was more than twice as likely as the PH group to have committed a violent crime in the preceding month. Given that there were no significant differences in the offending profiles of the PMH and PH groups, it is likely that the PMH group's risk of recent offending is directly related to their methamphetamine use. Again, this finding reiterates that heavier methamphetamine use is positively correlated with risk of committing violent crime. Whilst no significant differences were found in the prevalence of violent offending between the PM and PH groups in the past month, the PM group did commit more violent crime than the PH group (17% v 9%), which may also be a reflection of greater methamphetamine use.

As with victimisation, drug dealing was strongly associated with increased risk of violent offending. Respondents who had recently been involved in drug dealing were more than twice as likely to have committed violent crime recently, compared to those with no such involvement. Similar findings have been reported in previous studies (Dembo et al. 1993; Goldstein 1985; Topalli, Wright & Fornango 2002).

Problematic alcohol use was another important predictor of violent offending. Respondents who screened positive for having an alcohol use problem were at significantly greater risk of committing a violent offence than those with low risk alcohol use. Previous studies have shown that heavier alcohol use increases the risk of violent offending, due to both its disinhibiting effects (Boles & Miotto 2003; Darke & Duflou 2008; Fagan & Chin 1990; Parker & Auerhahn 1998) and the environmental risks associated with drinking in public areas, such as overcrowding and irresponsible service of alcohol (Arseneault et al. 2000; Graham & Homel 1997; Homel & Tomsen 1993).

Conduct Disorder was also a significant predictor of violent offending, which is again consistent with previous work. Previous studies have found that CD is not only consistently associated with an increased risk of committing violence, but that it independently predicts violent offending in adulthood (Arseneault et al. 2000; Fulwiler & Ruthazer 1999; Hodgins et al. 2008; Moffitt 1993; Mueser et al. 2006; Odgers et al. 2007).

Being younger also increased the risk of committing violence, with there being a four percent decrease in the risk for violent offending for every yearly age increase. This finding is consistent with previous research on predictors of criminality amongst drug users, which show that younger drug users are at increased risk of criminal offending (Black et al. 1996; Homel & Tomsen 1993; McKetin, McLaren & Kelly 2005).

Finally, it is also important to note that the risk of victimisation offending was not associated with recent injecting patterns. Whilst previous studies have reported a relationship between injecting and greater risk of committing violence (Giannini et al. 1993; Hall & Hando 1994), the findings of this study do not support such an association. The PM group were less likely to have injected drugs in the past six months then either the PH or PMH groups, yet were more likely to have committed a violent offence in the past 12 months. Thus, it appears that violent offending is more strongly linked to drug dependence, particularly methamphetamine dependence, rather than route of administration.

Thus, illicit drug users who are at the greatest risk of committing violent crime are those who engage in more frequent methamphetamine use, are younger, with a history of antisocial behaviour, have more chronic alcohol use, and are involved in drug dealing networks.

Risk perceptions

The perceived risk of being physically attacked in the following 12 months was contradictory to the high levels of violent victimisation experienced. Only one in five respondents perceived that it was 'likely' or 'very likely' that they would be attacked in the next 12 months. The main reasons for expecting to be victimised in the future were: (i) someone attempting to steal money or drugs from them, (ii) owing money or drugs, and (iii) that violence was simply perceived as a 'normal' part of the culture and thus at some point they would be exposed to it.

The vast majority also perceived that is was 'unlikely' or 'very unlikely' that they would *commit* a violent crime within the following 12 months and, again, this was despite extensive histories of violent offending. The main reasons for expecting to commit a future violent offence were: (i) 'self defence' due to being attacked for money or drugs, or because of owing money, and (ii) drug-fuelled aggression, particularly after using crystalline methamphetamine.

The perceived risks of future violent victimisation and offending were significantly associated with experiences of victimisation and offending in the past 12 months. Respondents who had been violently victimised within the past 12 months were significantly more likely to believe they would be attacked in the following 12 months. Similarly, those who had committed violence in the past 12 months more were significantly more likely to believe they would physically attack someone in the future. These findings are consistent with previous studies which reported that personal experience of a traumatic event, such as violence, is associated with increased perception of personal risk (Helweg-Larsen, Harding & Kleinman 2008; Helweg-Larsen & Shepperd 2001).

Finally, even though the majority of the sample had witnessed fellow regular drug-users being physically attacked and committing violent offences in the past year, this clearly did not impact on their own perceived risk of being victimised or committing a violent crime, as the overwhelming majority did not expect to be victimised or commit a violent crime in the following 12 months.

Implications

The current study indicates that violence is a major problem among illicit drug users. Apart from violent victimisation and offending being highly prevalent, the data also highlights that the violence experienced was quite serious, involving high levels of weapon involvement and medical intervention. There are some key issues then that police need to consider. Police perceptions that methamphetamine use is associated with higher levels of aggressive behaviour and violence appear to be well founded, as methamphetamine use did predict violent offending. The data highlights that police face significant occupational, health and safety hazards when responding to violent incidents which involve substance use. Indeed, the risk is illustrated by the fact that the victims in one in five of most recent assaults by methamphetamine users were police. Methamphetamine users are unpredictable, high proportions have psychotic symptoms, and are liable to an agitated delirium that evokes violent behaviours. It should also be borne in mind that psychostimulants are one of the most commonly detected classes of illicit substances found amongst homicide offenders and victims. In dealing with methamphetamine users, police need to be aware of the high potential for pharmaceutically induced violence, even amongst street-level users not involved in dealing networks.

More broadly, an implication of these findings is that the active supply reduction of methamphetamine in Australia may reduce the overall level of societal violence. Such reductions would follow from reductions in 'systemic', and 'economic-compulsive' violence, but more specifically through a reduction in 'pharmacological' violence directly caused by methamphetamine intoxication. Given the strong over-representation of psychostimulants amongst offenders and homicide victims, substantial reductions in methamphetamine supply and use could impact upon homicide rates. The study also illustrates the need for treatment amongst methamphetamine users to reduce both methamphetamine use and the levels of violence associated with such use. Recent Australian data has demonstrated that treatment for methamphetamine dependence may substantially reduce methamphetamine use (Cogger, McKetin, Ross & Najman 2008). As such, diversion into drug treatment programmes would appear to be a valid response option for problematic methamphetamine users. The fact that these individuals may have histories of violence should not prevent entrance to treatment, as it is these very methamphetamine-induced behaviours that treatment may successfully reduce.

Despite high levels of public concern regarding the risk of violent victimisation, the majority of violent incidents occurred among drug user networks, particularly amongst males. Consistent with other studies (e.g. Cohen, Dickow, Horner, et al. 2003; Darke & Duflou 2008), however, a substantial proportion of violence was domestic. This was particularly relevant to females, who were more likely than males to assault their partners, and to be assaulted by them. Of course, in many cases both partners in a relationship will be methamphetamine users. Domestic violence is a major concern, and psychostimulant use clearly engenders a proportion of such violence. Domestic violence also raises issues about the risk to the children of methamphetamine users. It would appear appropriate for treatment agencies admitting methamphetamine users, whether through diversion schemes or otherwise, to conduct risk assessment of children living in families where the parents are active methamphetamine users.

From a public health perspective, the finding that the majority of respondents had been victims or perpetrators of violence, whilst the perceived risk of future victimisation or offending was overwhelmingly low, is important. Given that previous behaviour is a strong predictor of future behaviour (Bonta et al. 1996), there is a significant risk of future exposure to violence. Education campaigns could be directed at regular drug users regarding the major risks surrounding violent victimisation and offending, with particular emphasis on alcohol as a risk for both victimisation and offending. Treatment agencies could also implement programs that teach drug users how to decrease their risk of being involved in violence, such as anger management training and increased awareness of the harms associated with alcohol use.

Limitations

The first caveat to be raised about the current study is its representativeness. It is not possible to obtain a random, stratified sample of illicit drug users as they are a hidden population; however, any potential sampling biases were minimised by having a large sample, recruiting drug users through a number of different methods, and collecting data from a range of geographical locations in the greater Sydney metropolitan area. So whilst care should be taken extrapolating the findings of the current study to other drug-using populations, the demographics characteristics of this sample were found to be similar to other studies of heroin and methamphetamine users in Australia (Black et al. 2007; Kaye, Darke & Finlay-Jones 1998; McKetin et al. 2006). Also, given that the study included only 'regular' drug users, care should also be taken extending the findings to recreational users.

Secondly, all data collected for this current study was based on self report. Self report is one of the most commonly used data collection measures in illicit drug research due to its cost-effective nature. Self report can capture information about illicit drug use patterns and violent crime incidences that were not reported, or did not result in conviction, that other measures would be unable to capture. As such, it would be difficult to conceive how research based on illicit drug user populations would be undertaken without the collection of self-report data. Previous studies have found that when participants are provided with guarantees of confidentiality and anonymity, self-report data is a reliable and valid source of information among substance users (Jackson et al. 2004; Rueter, Chao & Conger 2000; Welp et al. 2003).

Finally, whilst the study compared violence amongst regular methamphetamine and heroin users, there was some sporadic use of the 'opposite' drug (i.e. the PM group using heroin, and the PH group using methamphetamine). The PH and PM groups, however, reported less than monthly use of the 'opposite' drug, and also did not meet criteria for dependence on the 'opposite' drug. Thus, the infrequent non-dependent use of the 'opposite' drug by the PM and PH groups does not seem likely to have had any effect on the measures of violence. Given that polydrug use is a common behaviour amongst regular drug users, recruiting methamphetamine and heroin users who were not polydrug users would have provided an atypical sample, thus affecting the representativeness of the study.

Summary

The current study demonstrates that both violent victimisation and offending are widespread problems amongst regular illicit drug users, to the extent that violence is almost an 'expected' part of a drug-using lifestyle. Methamphetamine use was not found to contribute to the risk of victimisation. Instead, involvement in drug dealing and a predisposition towards antisociality pose the greater risks for victimisation. Severity of methamphetamine use, however, was found to significantly increase the risk of committing a violent crime. Whilst the prevalence of offending was high across the different drug-user groups as a result of dependent, drug-using lifestyles, methamphetamine use was an added risk to the broader systemic risks associated with committing violent crime. As more potent forms of methamphetamine have become easily available in Australia over the past decade, we are potentially seeing that a major adverse effect of chronic use of these higher potency drugs is increased risk of violent behaviour.

References

Allen, T. J., Moeller, F. G., Rhoades, H. M., & Cherek, D. R. (1997). Subjects with a history of drug dependence are more aggressive than subjects with no drug use history. *Drug and Alcohol Dependence, 46,* 95-103.

American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Health Disorders: Text revision (4th Edition)*. American Psychiatric Association: Washington, USA.

Andrews, G., Hall, W., Teesson, M. & Henderson, S. (1999). *The Mental Health of Australians: National Survey of Mental Health and Wellbeing*. Canberra: Commonwealth Department of Health and Aged Care.

Arseneault, L., Moffitt, T. E., Caspi, A., Taylor, P. J., & Silva, P. A. (2000). Mental disorders and violence in a total birth cohort: results from the Dunedin study, *Archives of General Psychiatry, 57*, 979-986.

Australian Bureau of Statistics. (2005). *Crime and Safety, Australia*, 4509.0, Australian Bureau of Statistics: Canberra.

Australian Bureau of Statistics. (2006). *Personal Safety Survey Australia 2005 (reissue)*, No. 4906.0, Australian Bureau of Statistics: Canberra.

Australian Crime Commission (ACC). (2007). *Australian Illicit Drug Data Report 2005/06*, Canberra, ACC.

Australian Institute of Health and Welfare (AIHW) (2008), 2007. National Drug Strategy Household Survey: First Results. *Drug Statistics Series, No. 20*. Canberra: AIHW.

Babor, T. F, Higgins-Biddle, J. C, Saunders, J. B, and Monteiro, M. G. (2001). *The Alcohol Use Disorders Identification Test: Guidelines for use in primary care (2nd Edition)*. Geneva: World Health Organization.

Black, D. W., Baumgard, C. H., Bell, S. E., and Kao, C. (1996). Death rates in 71 men with Antisocial Personality Disorder: A comparison with general population mortality, *Psychosomatics, 37*, 131-136.

Black, E., Roxburgh, A., Degenhardt, L., Bruno, R., Campbell, G., de Graaff, B., Fetherston, J., Kinner, S., Moon, C., Quinn, B., Richardson, M., Sindicich, N., & White, N. (2007). *Australian Drug Trends 2007: Findings from the Illicit Drug Reporting System (IDRS)*, Australian Drug Trends Series No. 1, NDARC: Sydney.

Boles, S. M. & Miotto, K. (2003). Substance abuse and violence: a review of the literature, *Aggression and Violent Behaviour, 8*, 155-174.

Bonta, J., Harman, W. G., Hann, R. G., and Cormier, R. B. (1996). The prediction of recidivism among federally sentenced offenders: A re-validation of the SIR scale, *Canadian Journal of Criminology, 38,* 61-79.

Braitstein, P., Li, K., Tyndall, M., Spittal, P., O'Shaughnessy, M. V., Schilder, A., Johnston, C., Hogg, R. S., & Schechter, M. T. (2003). Sexual violence among a cohort of injection drug users, *Social Science & Medicine, 57*, 561-569.

Buitelaar, J. K., Montgomery, S. A., & van Zwieten-Boot, B. J. (2003). Conduct disorder: guidelines for investigating efficacy of pharmacological intervention. *European Neuropsychopharmacology, 12*, 305-311.

Chermack, S. T. & Blow, F. C. (2002). Violence among individuals in substance abuse treatment: the role of alcohol and cocaine consumption. *Drug and Alcohol Dependence, 66*, 29-37.

Cohen, J.B., Dickow, A., Horner, K., Zwebern, J.E., Balabis, J., Vandersloot, D. & Reiber, C. (2003). Abuse and violence history of men and women in treatment for methamphetamine dependence. *American Journal of the Addictions, 12*, 377-85.

Cogger, S., McKetin, R., Ross, J. & Najman, J. (2008). *Methamphetamine Treatment Evaluation Study (MATES): findings from the Brisbane site*. National Drug and Alcohol Research Centre Technical Report No. 295. University of New South Wales: National Drug and Alcohol Research Centre.

Cottler, L., Compton, W. M., Mager, D., Spitznagel, E. L., & Janca, A. (1992). Posttraumatic stress disorder among substance users from the general population. *The American Journal of Psychiatry, 149*, 664-670.

Crocker, A. G, Mueser, K. T, Drake, R. E., Clark, R. E., Mchugo, G. J., Ackerson, T. H., & Alterman, A. I., (2005). Antisocial personality, psychopathy, and violence in persons with dual disorders: a longitudinal analysis. *Criminal Justice and Behaviour, 32*, 452-476.

Darke, S. (in press) The toxicology of homicide offenders and victims: a review. *Drug and Alcohol Review*.

Darke, S., & Duflou, J. (2008). Toxicology and circumstances of death of homicide victims in New South Wales, Australia 1996–2005. *Journal of Forensic Sciences, 53*, 447-451.

Darke, S., Hall, W., Heather, N., Wodak, A., & Ward, J. (1992). Development and validation of a multi-dimensional instrument for assessing outcome of treatment among opioid users: The Opiate Treatment Index. *British Journal of Addiction, 87*, 593-602.

Darke, S., Kaye, S., McKetin, R., and Duflou, J. (2008). The major physical and psychological harms of methamphetamine use. *Drug and Alcohol Review, 27*, 253-262.

Dembo, R., Hughes, P., Jackson, L., & Mieczkowski, T. (1993). Crack Cocaine Dealing by Adolescents in Two Public Housing Projects. *Human Organization, 52*, 89-96.

Derogatis, L. R. (1975). *Brief Symptom Inventory*. Baltimore: Clinical Psychometric Research.

Erickson, P. G. (2001). Drugs, violence and public health: what does the harm reduction approach have to offer, Vancouver: Fraser Institute.

Fagan, J. & Chin, K. (1990). Violence as regulation and social control in distribution of crack, pp. 8-43. In, *Drugs and Violence: Causes, correlates, and consequences*, M. De La Rosa, E. Y. Lambert, and B. Gropper (eds), National Institute on Drug Abuse: Rockville, USA.

Fergusson, D. M., Horwood, L. J., & Ridder, E. M. (2005). Show me the child at seven: the consequences of conduct problems in childhood for psychosocial functioning in adulthood. *Journal of Child Psychology and Psychiatry, 46*, 837-849.

Friedman, A. S., Kramer, S., & Kreisher, C. (1999). Childhood predictors of violent behaviour. *Journal of Clinical Psychology, 55*, 843-855.

Fulwiler, C. & Ruthazer, R. (1999). Premorbid risk factors for violence in adult mental illness. *Comprehensive Psychiatry, 40*, 96-100.

Giannini, A. J., Miller, N. S., Loiselle, R. H., & Turner, C. E. (1993). Cocaine-associated violence and relationship to route of administration. *Journal of Substance Abuse Treatment, 10*, 67-69.

Goldstein, P. J. (1985). The drugs/violence nexus: a tripartite conceptual framework. *Journal of Drug Issues, 39,* 143-174.

Gonzalez-Sais, F., Domingo-Salvany, A., Barrio, G., Sanchez-Niubo, A., Brugal, M. T., de la Fuente, L., Alonso, J., and the ITINERE Investigators. (2009). Severity of Dependence Scale as a diagnostic tool for heroin and cocaine dependence. *European Addiction Research, 15,* 87-93.

Gossop, M., Darke, S., Griffiths, P., Hando, J., Powis, B., Hall, W., & Strang, J. (1995). The Severity of Dependence Scale (SDS): psychometric properties of the SDS in English and Australian samples of heroin, cocaine and amphetamine users. *Addiction, 90,* 607-614.

Graham, K., & Homel, R. (1997). Creating safer bars. In *Alcohol: minimising the harm*, Plant M, Single E., Stockwell T. (eds). London: Free Association Press.

Hall, W., & Hando, J. (1994). Route of administration and adverse effects of amphetamine use among young adults in Sydney. Australia, *Drug and Alcohol Review, 13*, 277-284.

Helweg–Larsen, M., & Shepperd, J. A. (2001). Do moderators of optimistic bias affect personal or target risk estimates? A review of the literature, *Personality and Social Psychology Review, 5,* 74-95.

Helweg-Larsen, M., Harding, H. G., & Kleinman, K. E. (2008). Risk perceptions of dating violence among college women: the role of experience and depressive symptoms, *Journal of Social and Clinical Psychology, 27*, 600-620.

Hodgins, S., Cree, A., Alderton, J., & Mak, T. (2008). From conduct disorder to severe mental illness: associations with aggressive behaviour, crime and victimization. *Psychological Medicine, 38*, 975-987.

Homel, R., & Tomsen, S. (1993). Hot spots for violence: the environment of pubs and clubs, pp. 53-66. In *Homicide: patterns, prevention and control: proceedings of a conference held 12–14 May 1992*, H. Strang and S-A. Gerull (eds) Canberra: Australian Institute of Criminology.

Inciardi, J., & Potteiger, A. (1991). Kids, Crack and Crime. *Journal of Drug Issues 21*, 257-70.

Jackson, C. T., Covell, N. H., Frisman, L. K., Essock, S. M. (2004). Validity of self-reported drug use among people with co-occurring mental health and substance use disorders. *Journal of Dual Diagnosis, 1,* 49-63.

Karer, M. D. and Langan, N. P. (2001). Gender differences in predictors of prison violence: assessing the predictive validity of a risk classification system. *Crime & Delinquency, 47*, 513-536.

Kaye, S., Darke, S., & Finlay-Jones, R. (1998). The onset of heroin use and criminal behaviour: does order make a difference? *Drug and Alcohol Dependence, 53,* 79-86.

Kellerman, A. L. and Mercy, J. A. (1992). Men, women and murder: gender-specific differences in rates of fatal violence and victimisation, *Journal of Trauma: Injury, Infection, & Critical Care, 33,* 1-5.

Leonard, K. E., Quigley, B. M., (1999). Drinking and marital aggression in newlyweds: an event-based analysis of drinking and the occurrence of husband marital aggression. *Journal of Studies on Alcohol, 60,* 537-545.

Logan, T. K., Walker, R., & Leukefeld, C. G. (2001). Intimate partner and non-intimate violence history among drug-using, incarcerated men. *International Journal of Offender Therapy and Comparative Criminology, 45*, 228-243.

Makkai, T., & Payne, J. (2003). Drugs and crime: a study of incarcerated male offenders. *Research and Public Policy Series, No. 52*, Canberra: Australian Institute of Criminology.

Marshall, B. D., Fairbairn, N., Li, K., Wood, E., & Kerr, T. (2008). Physical violence among a prospective cohort of injection drug users: A gender-focused approach. *Drug and Alcohol Dependence, 97*, 237-246.

McKeganey, N., Neale, J., & Robertson, M. (2005). Physical and sexual abuse among drug users contacting drug treatment services in Scotland. *Drugs: Education, Prevention and Policy, 12*, 223-232.

McKetin, R., McLaren, J., & Kelly, E. (2005). *The Sydney methamphetamine market: patterns of supply, use, personal harms and social consequences*, NDLERF monograph series, No.13, Sydney: National Drug and Law Enforcement Research Fund.

McKetin, R., McLaren, J., Lubman, D., & Hides, L. (2006), The prevalence of psychotic symptoms among methamphetamine users. *Addiction, 101*, 1473-1478.

McLennan, W. (1997). *Australian Standard Offence Classification*. Canberra: Australian Bureau of Statistics.

Merikangas, K. R., Mehta, R. J, Molnar, B. E, Walters, E. E., Swendsen, J. D., Aguilar-Gaziola, S., Bijl, R., Borges, G., Caraveo-Anduaga, J. J., Dewit, D. J., Kolody, B., Vega, W. A., Wittchen, H-U., & Kessler, R. C. (1998). Comorbidity of substance use disorders with mood and anxiety disorders: results of the International Consortium in Psychiatric Epidemiology. *Addictive Behaviours, 23*, 893-907.

Mills, K. L., Lynskey, M., Teesson, M., Ross, J., & Darke, S. (2006). Post-traumatic stress disorder among people with heroin dependence in the Australian treatment outcome study (ATOS): prevalence and correlates. *Drug and Alcohol Dependence, 77*, 243-249.

Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behaviour: a developmental taxonomy. *Psychological Review, 100*, 674-701.

Mouzos, J. & Smith, L. (2007). Partner violence among a sample of police detainees. *Trends & Issues in Crime and Criminal Justice, No. 337*, Canberra: Australian Institute of Criminology.

Mueser, K. T., Crocker, A. G., Frisman, L. B, Drake, R. E., Covell, N. H., & Essock, S. M. (2006). Conduct disorder and antisocial personality disorder in persons with severe psychiatric and substance use disorders. *Schizophrenia Bulletin, 32*, 626-636.

Najavits, L. M., Gastfiend, D. R., Barber, J. P., Reif, S., Muenz, L. R., Blaine, J., Frank, A., Crits-Christoph, P., Thase, M., & Weiss, R. D. (1998). Cocaine dependence with and without PTSD among subjects in the National Institute on Drug Abuse Collaborative Cocaine Treatment Study. *American Journal of Psychiatry, 155,* 214–219.

Neale, J., Bloor, M., & Weir, C. (2005). Problem drug users and assault. *International Journal of Drug Policy, 16*, 393-402.

Odgers, C. L., Caspi, A., Broadbent, J. M., Dickson, N., Hancox, R. J., Harrington, H., Poulton, R., Sears, M. R., Thomson, W. M., & Moffitt, T. E. (2007). Prediction of differential adult health burden by conduct problem subtypes in males. *Archives of General Psychiatry, 64*, 476-484.

Parker, R. N. & Auerhahn, K. (1998).Alcohol, drugs, and violence. *Annual Review of Sociology, 24,* 291-311.

Pridemore, W. A. (2002). Vodka and violence: alcohol consumption and homicide rates in Russia, *American Journal of Public Health, 92*, 1921-1930.

Repo-Tiihonen, E., Halonen, P., Tiihonen, J., & Virkkunen, M. (2002). Total serum cholesterol level, violent criminal offences, suicidal behaviour, mortality and the appearance of conduct disorder in Finnish male criminal offenders with antisocial personality disorder. *European Archives of Psychiatry and Clinical Neuroscience, 252,* 8-11.

Robins, L. N., Helzer, J. E., Croughan, J. & Ratcliff, K. S. (1981). National Institute of Mental Health Diagnostic Interview Schedule: Its history, characteristics, and validity. *Archives of General Psychiatry, 38,* 381-389.

Rossow, I. (2004). Alcohol consumption and homicides in Canada, 1950–1999. *Contemporary Drug Problems, 31,* 541-559.

Rueter, M. A., Chao, W., & Conger, R. D. (2000). The effect of systematic variation in retrospective conduct disorder reports on antisocial personality disorder diagnoses. *Journal of Consulting and Clinical Psychology, 68*, 307-312

Scott, K. D., Schafer, J., Greenfield, T. K. (1999). The role of alcohol in physical assault perpetration and victimization. *Journal of Studies on Alcohol, 60*, 528-536.

Sokolov, B. P. & Cadet, J. L. (2006). Methamphetamine causes alteration in the MAP kinase-related pathways in the brains of mice that display increased aggression. *Neuropsychopharmacology, 31,* 956-966

Sokolov, B. P., Schlinder, C. W., & Cadet, J. L. (2004). Chronic methamphetamine increases fighting in mice. *Pharmacology, Biochemistry and Behaviour, 77*, 319-326

Sommers, I., Baskin, D., & Baskin-Sommers, A. (2006). Methamphetamine use among young adults: health and social consequences. *Addictive Behaviors, 31*, 1469-1476.

SPSS Inc. (2006). *SPSS for Windows,* 15.0, Chicago: SPSS Inc.

Stretesky, P. B. (2008). National Case-Control Study of Homicide Offending and Methamphetamine Use. *Journal of Interpersonal Violence*, First Published 20th October 2008.

Tardiff, K., Wallace, Z., Tracy, M., Piper, T. M., Vlahov, D., & Galea, S. (2005). Drug and alcohol use as determinants of New York City homicide trends from 1990 to 1998. *Journal of Forensic Sciences, 50,* 470-474

Topalli, V., Wright, R., & Fornango, R. (2002). Drug dealers, robbery and retaliation: vulnerability, deterrence and the contagion of violence. *British Journal of Criminology, 42*, 337-351

Topp, L., Degenhardt, L., Kaye, S., & Darke, S. (2002). The emergence of potent forms of methamphetamine in Sydney, Australia: a case study of the IDRS as a strategic early warning system. *Drug and Alcohol Review, 21*, 341-348.

Topp, L. and Mattick, R. P. (1997). Choosing a cut-off on the Severity of Dependence Scale (SDS) for amphetamine users,. *Addiction, 92*, 839-845

Tremblay, R. E., Japel, C., Perusse, D., McDuff, P., Boivin, M., Zoccolillo, M., & Montplaisir, J. (1999). The search for the age of 'onset' of physical aggression: Rosseau and Bandura revisited. *Criminal Behaviour and Mental Health, 9,* 8-23.

Trull, T. J., Sher, K. J., Minks-Brown, C., Durbin, J. & Burr, R. (2000). Borderline Personality Disorder and substance use disorders: a review and integration. *Clinical Psychology Review, 20*, 235-253.

Tyner, E. A., & Fremouw, W. J. (2008). The relation of methamphetamine use and violence: a critical review. *Aggression and Violent Behavior, 13*, 285-297.

Wardlaw, G. (1993). Supply reduction (law enforcement) strategies pertaining to illicit use of psychostimulants. In D. Burrows, B. Flaherty, & M. MacAvoy (eds.) *Illicit Psychostimulant Use in Australia*. Canberra, Australian Government Publishing Service.

Ware, J. E. (Jr)., Kosinski, M., Keller, S. (1996). A 12-Item Short-Form Health Survey: Construction of Scales and Preliminary Tests of Reliability and Validity. *Medical Care, 34,* 220-233

Wells, S., & Graham, K. (2003). Aggression involving alcohol: relationship to drinking patterns and social context. *Addiction, 98*, 33-42.

Welp, E. A., Bosman, I., Langedam, M. W., Totte, M., Maes, R. A., & van Ameijden, E. J. (2003). Amount of self-reported illicit drug use compared to quantitative hair test results in community-recruited young drug users in Amsterdam. *Addiction, 98,* 987-994

Zinzow, H. M., Grubaugh, A. L., Frueh, B. C., & Magruder, K. M. (2008). Sexual assault, mental health, and service use among male and female veterans seen in Veterans Affairs primary care clinics: A multi-site study. *Psychiatry Research, 159,* 226-236.