

Accepted Manuscript

Motivations, substance use and other correlates amongst property and violent offenders who regularly inject drugs

Rachel Sutherland, Natasha Sindicich, Emma Barratt, Elizabeth Whittaker, Amy Peacock, Sophie Hickey, Lucy Burns

PII: S0306-4603(15)00046-5
DOI: doi: [10.1016/j.addbeh.2015.01.034](https://doi.org/10.1016/j.addbeh.2015.01.034)
Reference: AB 4482

To appear in: *Addictive Behaviors*



Please cite this article as: Sutherland, R., Sindicich, N., Barratt, E., Whittaker, E., Peacock, A., Hickey, S. & Burns, L., Motivations, substance use and other correlates amongst property and violent offenders who regularly inject drugs, *Addictive Behaviors* (2015), doi: [10.1016/j.addbeh.2015.01.034](https://doi.org/10.1016/j.addbeh.2015.01.034)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Motivations, substance use and other correlates amongst property and violent offenders who regularly inject drugs

Rachel Sutherland^{*1}, Natasha Sindicich¹, Emma Barratt¹, Elizabeth Whittaker¹, Amy Peacock², Sophie Hickey³, Lucy Burns¹

¹National Drug and Alcohol Research Centre, University of New South Wales, Australia

²School of Medicine (Psychology), University of Tasmania, Australia

³School of Social Science, University of Queensland, Australia

Corresponding Author*: Rachel Sutherland

National Drug & Alcohol Research Centre, University of New South Wales, Sydney, NSW, 2052,

AUSTRALIA; Phone: +61 2 9385 0256; Facsimile: +61 (0)2 9385 0222; E-mail: rachels@unsw.edu.au

Motivations, substance use and other correlates amongst property and violent offenders who regularly inject drugs**Abstract**

Objective: To examine the prevalence, correlates and motivations for the commission of property and violent crime amongst a sample of people who inject drugs (PWID).

Method: Data were obtained from the 2013 Illicit Drug Reporting System (IDRS), which includes a cross-sectional sample of 887 PWID.

Results: Eighteen percent of PWID had committed a property offence and 3% had committed a violent offence in the month preceding interview. Opioid dependence (AOR 2.57, 95%CI 1.29-5.10) and age (AOR 0.96, 95%CI 0.93-0.99) were found to be the strongest correlates of property crime. The majority of property offenders (75%) attributed their offending to financial reasons, however those under the influence of benzodiazepines were proportionately more likely to nominate opportunistic reasons as the main motivation for their last offence. Stimulant dependence (AOR 5.34, 95% CI 1.91-14.93) was the only significant correlate of past month violent crime, and the largest proportion of violent offenders (47%) attributed their offending to opportunistic reasons. The majority of both property (71%) and violent offenders (73%) reported being under the influence of drugs the last time they committed an offence; the largest proportion of property offenders reported being under the influence of benzodiazepines (29%) and methamphetamine (24%), whilst violent offenders mostly reported being under the influence of heroin and alcohol (32% respectively).

Conclusion: Criminal motivations, substance use and other correlates vary considerably across crime types. This suggests that crime prevention and intervention strategies need to be tailored according to individual crime types, and should take into account self-reported criminal motivations, as well as specific risk factors that have been shown to increase the likelihood of offending.

Keywords: PWID, offending, crime, substance use, injecting, severity of dependence scale, motivations

Word count: 3435

1. Introduction

The relationship between substance use and criminal activity has been studied extensively over the past few decades, with both international and Australian studies showing that people who use drugs are more likely to engage in crime than those who do not (AIHW, 2011; Bennett et al., 2008). Previous studies report the odds of offending to be three to four times greater for drug users than non-drug users, with the odds of offending varying across drug classes (Bennett et al., 2008).

Property crime has traditionally been associated with heavier and more frequent use of illicit opioids, namely heroin, often as a means to purchase more drugs (Bennett & Holloway, 2005b; Bradford & Payne, 2012; Blumstein et al., 1986). There is, however, growing literature to suggest that methamphetamine use is also associated with property offending (Crime and Misconduct Commission, 2005; Gizzi & Gerkin, 2010; Klee & Morris, 1994; McKetin et al., 2005; Wilkins & Sweetsur, 2010). A large Australian sample of police detainees found that heavy users (i.e. 16-30 days of use in the preceding 30 days) of illicit opioids and amphetamines had significantly more property charges than less frequent (i.e. 1-15 days of use in the past month) and non-drug using individuals (Bradford & Payne, 2012). Furthermore, the number of drugs used by an individual influences crime, with poly drug users at increased risk of committing a property offence compared to those using a single drug (Makkai, 2001; Bennett & Holloway, 2005a).

As noted above, motivations for property crime have been linked with income-raising to support drug addiction (Bennett & Holloway, 2005a; Goldstein, 1985; Klee & Morris, 1994; Weatherburn et al., 2000) and are highly correlated with the severity of use and cost of the drug (Blumstein et al., 1986). To date, however, these outcomes have predominantly been explored in the context of heroin use (Ball et al., 1983; Bennett & Holloway, 2005b; Klee & Morris, 1994). Indeed, it has been reported that heroin users are the most likely to attribute their offending to economic reasons (i.e. needed money to buy drugs), followed by cocaine and other illegal opiate users (Payne & Gaffney 2012).

Similarly, substance use has consistently been shown to be associated with an increased risk of violent crime (Hoaken & Stewart, 2003). Studies have shown that individuals with substance use disorders contribute more to the public health burden of violent behaviour than all other psychiatric disorders combined (Pulay et al., 2008). Three popular theories surrounding the link between substance use and violent behaviour were proposed by Goldstein (1985) including: psychopharmacological violence, whereby it is argued the violence committed is a direct physiological effect of the substances used (Kuhns & Clodfelter, 2009); systemic violence, which is

associated with the aggressive patterns of interaction involved with dealing and trafficking substances; and economic-compulsive violence, the perpetration of economically oriented violent crime to support the costs of their substance use. Violence occurs in this instance due to unanticipated circumstances such as the presence of a weapon or the reaction of the victim (Goldstein et al., 1989). Drugs most associated with economic-compulsive violence are heroin and cocaine due to their compulsive pattern of use and financial cost (Goldstein, 1985; Hunt, 1991; Nurco et al., 1991). Other environmental factors that have been found to be correlated with substance use and violence include lower education, unemployment, a history of imprisonment, as well as a higher number of psychiatric diagnoses.

Indeed, the drug-crime nexus can vary considerably across drug classes and crime types. The importance of examining different types of crime separately was recognised by Horyniak and colleagues (in press), who examined the correlates of property and violent crime amongst a sample of people who inject drugs (PWID) over a ten year period. It was found that property crime was significantly associated with age, recent heroin injection, employment status, recent benzodiazepine use and recent arrest; whilst violent crime was associated with age, Indigenous status, daily alcohol consumption, recent arrest and lifetime prison history (Horyniak et al., in press). However, the study did not account for a number of important variables that have been shown to lead to an increased risk of offending, including severity of substance use, polydrug use, drug expenditure and mental health. This paper will build upon the work done by Horyniak and colleagues by including such variables.

Whilst a number of studies have examined the relationship between substance use and crime, very few studies directly ask the individuals about their criminal motivations. In addition, little is known about how particular drugs influence motivations to commit property and violent crime. Subsequently, this paper will examine the prevalence, correlates and motivations for the commission of property and violent crime amongst a sample of PWID. Identification of self-reported motivations for offending will improve our understanding of the complex relationship between substance use and crime, and assist with targeting both prevention and intervention efforts.

2. Method

2.1 Study design and participants

This paper uses data from the 2013 Illicit Drugs Reporting System (IDRS). The IDRS is an Australian national monitoring study funded by the Australian Government under the Substance Misuse

Prevention and Service Improvement Grants Fund. It is aimed at detecting emerging trends in illicit drug markets and has been conducted in all states and territories of Australia since 2000. The main component of the IDRS involves conducting face-to-face interviews with people who regularly inject drugs. In order to be eligible, IDRS participants had to be 16 years of age or older, have a minimum six-month injecting history (with at least month injecting), and have been residing in the city where the interview took place for at least 12 months prior to the interview. Participants were recruited through drug treatment services and by peer referral, and were reimbursed AUD\$40 for their participation. In 2013, 887 participants were recruited across June-August.

2.2 Measures

The interview schedule covers various topics including demographics, lifetime and past six-month licit and illicit substance use, health-related trends associated with substance use (including injection-related harms, risk behaviours, overdose) and law enforcement-related harms associated with substance use (including prison history and recent criminal activity). In 2013, all participants were asked the Severity of Dependence Scale (SDS; Gossop et al., 1995) for opioids and stimulants. The SDS is a 5-item questionnaire which generates a score between 0-15; the higher the score, the higher the level of dependence. The cut-off score for stimulant dependence varies according the type of stimulant being consumed. Since the majority (89%) of stimulant users answered the SDS in relation to their methamphetamine use, a cut-off score of four has been used to measure stimulant dependence, as previously recommended (Topp & Mattick, 1997). A cut-off value of five was used to measure opioid dependence (Castillo et al., 2010).

To assess mental health, participants were also administered the Kessler 10 (K10) Psychological Distress Scale (Kessler et al., 2003). The K10 is a brief screening measure of psychological distress and involves ten questions about emotional states each with a five-point response scale (1 'none of the time' to 5 'all of the time'). The minimum score that can be obtained is 10 (indicating no distress) and the maximum is 50 (indicating very high psychological distress). A cut-off score of 22 or more was used to measure high to very high levels of psychological distress. The K10 has been shown to be a reliable and valid screening tool for current affective disorders amongst PWID, with a high internal consistency (Cronbach's $\alpha=0.84$) and high predictive accuracy for the presence of Diagnostic and Statistical Manual IV affective disorder diagnosis (77%) (Hides et al., 2007). Participants also answered self-reported questions about their mental health and attendance to a mental health professional over the previous six-month period.

From its inception, the IDRS has measured crime using the Opiate Treatment Index (OTI; Darke et al., 1991). The Criminality Scale of the OTI gathers self-report data on four types of crime: property crime, dealing, fraud and violent crime (in the month preceding interview). In 2013, participants were also asked whether they were under the influence of drugs and/or alcohol the last time they committed an offence in the past month, as well as their main motivation for committing the offence. The main motivation for committing their last offence was asked as an open-ended question, and coded into the appropriate pre-coded response categories. The response categories were adopted from the 2006 Australian Institute of Criminology DUMA (Drug Use Monitoring in Australia study) and were as follows: (1) needed money to buy drugs, (2) needed money to support myself, (3) needed money to repay debts, (4) other financial reasons, (5) enjoy the rush, (6) lost your temper, (7) looking for revenge/payment, (8) urged by your friends, (9) acting on the spur of the moment, (10) the opportunity arose, (11) helping a friend out, (12) you were under the influence of drugs, (13) you were coming down, (14) you were hanging out, (15) self-defence and (16) other. Motivations were then collapsed into four different categories: financial (response categories 1-4), opportunistic (response categories 5-11), psychopharmacological (response categories 12-14) and self-defence (response category 15).

It should be noted that self-report data is collected in the IDRS, as this is the most feasible and ethical methodology when investigating potentially sensitive and illicit behaviours, such as undetected criminal behaviour, needle sharing and sexual risk taking. Self-report has been found to be a reliable and valid form of data collection: previous research by Darke (1998) has indicated that self-reported drug use and drug-related risk behaviours by people who regularly use drugs was sufficiently reliable and valid when compared to biomarkers (e.g. urinalysis or hair samples), criminal records and collateral interviews. In addition, research has shown that when anonymity and confidentiality are assured, and participants are informed that there are no right or wrong answers, the reliability and validity of self-report data is enhanced (Darke 1998; Podsakoff et al., 2003).

2.3 Statistical analysis

Appropriate measures of central tendency and variance have been provided to describe the characteristics of the sample. The sample was then divided into groups based on whether participants had committed any property or violent crime in the month preceding interview (property crime vs. no property crime; violent crime vs. no violent crime). Between-group comparisons of categorical variables were analysed using chi-squared tests (χ^2). For normally distributed continuous variables, *t*-tests were employed and means with their standard deviations

(SD) reported. Where continuous variables were skewed (i.e. skewness $> \pm 1$ or kurtosis $> \pm 3$) Mann–Whitney U-tests were conducted, with medians and the corresponding range of responses reported. The Benjamini-Hochberg procedure was applied to control the false discovery rate of the twenty five univariate comparisons, and was used because it yields much greater power than the widely administered Bonferroni technique (Thissen et al., 2002).

Those variables that were found to be significant were then placed into a multivariate logistic regression model, which estimates adjusted odds ratios (AOR) after controlling for potential confounders. These analyses were applied to those who had committed any property or violent crime in the month preceding interview. Associations were set for statistical significance at the $p < 0.05$ level. All analyses were conducted using IBM SPSS software, version 22.

3. Results

3.1 Demographics

Eight hundred and eighty-seven IDRS participants were interviewed in 2013 (Sydney $n=151$, Melbourne $n=150$, Hobart $n=107$, Canberra $n=100$, Adelaide $n=100$, Brisbane $n=100$, Darwin $n=91$, Perth $n=88$), reflecting predetermined quotas. Briefly, 64.20% of PWID were male with a mean age of 40.28 years (SD 9); 95.90% were of English speaking background, 49.04% were tertiary qualified, 83.50% were unemployed and 47.13% were currently in drug treatment. Over half (56.20%) had a prison history and one-third (33.60%) had been arrested in the 12 months preceding interview.

3.2 Prevalence of property and violent crime

Eighteen percent (17.50%) of IDRS participants reported past month involvement in a property offence and 3.40% reported past month involvement in a violent offence. Twenty percent of the sample (19.62%; $n=174$) had committed a property or violent offence in the month preceding interview. Eleven participants reported that they had recently committed both a property and violent offence. The sample was divided into those who had committed a property offence in the past month ($n=150$) and those who had committed a violent offence in the past month ($n=30$). These figures include participants who had committed both a property and violent offence.

3.3 Property crime correlates

At a bivariate level, those who had committed a recent property offence were younger at the time of interview (36.83 years vs. 41.01 years, $t_{883}=-5.40$, $p<0.001$) and had initiated injecting at a younger

age (17.00 years vs. 18.00 years, $U=49100$, $p<0.01$). They were also more likely to self-report a recent mental health problem (57.90% vs. 44.00%, [OR 1.75 95%CI 1.22-2.51]), were twice as likely to score in the K10 'high' or 'very high distress' category (i.e. score between 22-50) (70.50% vs. 51.70%, [OR 2.24 95%CI 1.52-3.29]), were more likely to have been arrested in the twelve months preceding interview (45.80% vs. 30.90%, [OR 1.89 95%CI 1.32-2.69]) and had also spent more money on drugs on the day preceding interview (\$50.00 vs. \$20.00, $U=48312$, $p<0.01$).

In relation to substance use, those who had recently committed a property crime were twice as likely to report methamphetamine use (78.10% vs. 63.30%, [OR 2.07 95%CI 1.37-3.11]), illicit pharmaceutical stimulant use (17.40% vs. 9.60%, [OR 2.0 95% CI 1.23-3.23]) and illicit benzodiazepine use (63.20% vs. 43.90%, [OR 2.20 95%CI 1.54-3.15]) in the six month period preceding interview. They were also significantly more likely to report polydrug use, with property offenders reporting that they had used a higher number of drug classes over the last six months (7.01 vs. 5.87, $t_{883}=4.64$, $p<0.001$) than non-property offenders. Those in the property crime group were also significantly more likely to qualify for opioid dependence (84.70% vs. 71.70%, [OR 2.18 95%CI 1.33-3.57]) and stimulant dependence (51.70% vs. 36.20%, [OR 1.88 95%CI 1.25-2.82]) as measured by the SDS. When these significant factors were entered into a logistic regression model, controlling for sex, the following factors remained significant: being younger as well as being categorised opioid dependent.

Insert Table 1

3.4 Substance use and motivations for property crime offences

The majority of participants who disclosed having committed a property offence in the past month reported being under the influence of drugs and/or alcohol at the time of their last property offence (70.67%). The substances that were reported at the time of the offence included benzodiazepines (28.30%), methamphetamine (23.60%), alcohol (20.80%), methadone (15.50%), cannabis (14.20%) and morphine (8.50%). Over half of drug-affected property offenders (56.44%) reported being under the influence of only one substance the last time they committed an offence; one-third (31.68%) were under the influence of two substances; and 11.88% reported being under the influence of more than two substances at the time of last offence.

All participants who had committed a property crime in the past month were asked their main motivation for committing that offence. The majority reported that the reason was financial (74.70%), with smaller proportions reporting that the main motivation for their last property offence

was opportunistic (16.70%) or psychopharmacological (4.00%). Five percent of property offenders reported some 'other' reason which did not categorise into the above motivations.

Interestingly, participants who reported being under the influence of drugs and/or alcohol the last time they committed an offence were significantly less likely to nominate financial reasons as the main motivation for their last property offence (69.80% vs. 86.40%, [OR 0.37 95% CI 0.14-0.95]). Furthermore, participants who reported being under the influence of benzodiazepines at the time of their last property offence were significantly less likely to attribute their offending to financial reasons (14.80% vs. 31.70%, [OR 0.38 95% CI 0.16-0.87]) and proportionately more likely to attribute it to opportunistic reasons, although this did not reach statistical significance (28.00% vs. 17.70%, [OR 1.81 95% CI 0.68-4.83], $p>0.05$). There were no other significant differences in regards to substance use and criminal motivations.

Insert Table 2

3.5 Violent crime correlates

At a bivariate level, those who committed a recent (past month) violent offence were younger (35.67 years vs. 40.45 years, $t_{883}=-2.92$, $p<0.01$), almost three times as likely to have unstable accommodation (43.30% vs. 21.30%, [OR 2.82 95% CI 1.35-5.93]) and almost five times as likely to have been arrested in the twelve months preceding interview (70.00% vs. 32.30%, [OR 4.89 95% CI 2.21-10.82]) than those who had not recently committed a violent offence. In relation to substance use, violent offenders were more than three times as likely to have used cocaine in the six months preceding interview (36.70% vs. 14.80%, [OR 3.33 95% CI 1.55-7.16]) and almost six times more likely to have scored in the dependence category for the stimulant SDS (78.30% vs. 37.80%, [OR 5.91 95% CI 2.16-16.17]). When these significant factors were entered into a logistic regression model, controlling for sex, only stimulant dependence remained significant.

3.6 Substance use and motivations for violent crime offences

It was found that the majority of participants who reported having committed a violent offence in the past month were under the influence of drugs and/or alcohol at the time of their last violent offence (73.30%). The substances reported at the time of the offence included heroin (31.80%), alcohol (31.80%), methamphetamine (22.70%), cannabis (13.60%), methadone (9.10%) and benzodiazepines (9.10%). Almost two-thirds (63.60%) of drug-affected participants reported being

under the influence of only one substance the last time they committed a violent offence, whilst over one-third (36.40%) reported being under the influence of two substances.

All participants who had committed a violent offence in the past month were asked their main motivation for committing that offence, to which the highest proportion reported that the reason was opportunistic (46.70%). Within this category, reasons such as 'the opportunity arose' and 'acting on the spur of the moment' were included. This was followed by an action of self-defence (20.00%), with smaller proportions reporting that the offence was psychopharmacological (13.30%) or financial (10.00%). Due to small numbers, it was not possible to determine whether there were any significant differences in regards to substance use and the self-reported motivations of violent offenders.

4. Discussion

A number of key findings emerged from this study. Firstly, the prevalence of property crime amongst PWID was found to have remained relatively stable over the history of the IDRS, whilst a decline in the prevalence of violent crime was noted. In 2013, 17.50% of PWID had committed a property offence in the month preceding interview (compared to 19.36% in 2000) and 3.40% had committed a violent offence (compared to 7.73% in 2000) (Topp et al., 2001). When compared to other drug using populations, property crime amongst PWID appears to be relatively low, with previous studies reporting past month prevalence rates of 38-39% (McKetin et al., 2008; Patterson et al., 2000; Ross et al., 2005).

In regards to the correlates of property and violent offending, this study builds upon the work done by Horyniak and colleagues (in press) by including measures of drug dependence, polydrug use, drug expenditure and mental health. It was found that participants who were dependent on opioids were almost three times as likely to have committed a property offence, whilst those who were dependent on stimulants were more than five times as likely to have committed a violent offence in the month preceding interview. In addition, property offenders were significantly younger than those who had not committed a recent property offence. This is consistent with previous research, with Horyniak and colleagues reporting that each five year increase in age amongst IDRS participants resulted in a 15% reduction in past month property crime (Horyniak et al., in press). These findings suggest that crime prevention strategies should be targeted towards younger PWID, and that they should be tailored according to individual crime types.

The large majority of both property and violent offenders were found to have been under the influence of drugs the last time they committed an offence. This is not surprising given that the IDRS

sample is made up of people who inject drugs regularly; however, it is important to note that participants were not necessarily intoxicated at the time of offence. Indeed, when asked about the main reason for committing a property or violent offence, very few participants reported 'psychopharmacology' as the main cause. This is in contrast to a study of police detainees, which found that 40% of detainees attributed their current offending to being high and/or drunk (Payne & Gaffney, 2012).

The largest proportion of drug-affected property offenders reported being under the influence of benzodiazepines the last time they committed a property offence. This raises important questions regarding the relationship between pharmaceutical drugs and crime, with a growing body of research suggesting that benzodiazepine use can lead to disinhibited, aggressive and bizarre behaviour (Fry et al., 2007). Indeed, it has been found that illicit (non-prescribed) benzodiazepine users who attributed their offending to these drugs nominated the psychopharmacological effect as the main reason for the drug-crime connection (Payne & Gaffney, 2012). Given the high use of benzodiazepines amongst PWID, and the potential link between criminal activity and benzodiazepine use, it may be of benefit for future research to examine whether the recent rescheduling of alprazolam to a Schedule 8 drug¹ results in a reduction in use, and a subsequent reduction in criminal offending.

In relation to violent crime, drug-affected violent offenders most commonly reported being under the influence of heroin and alcohol at the time of their last offence. However, despite most violent offenders reporting that they were under the influence of depressant drugs at the time of their last offence, stimulant dependence was the only factor found to be significantly associated with violent crime. It is possible that psychological symptoms specific to methamphetamine dependence (such as agitation, psychosis and aggression) could explain this discrepancy. Indeed, research has indicated that individuals with methamphetamine dependence report increased difficulty controlling anger and violent behaviour (Zweben et al., 2004).

Although there are many theories about why people commit crime, few studies appear to have asked offenders themselves why they committed a particular crime. Our study offers a valuable contribution to the criminological literature on criminal motivations. Self-reported motivations for committing a property crime were found to be largely financial in nature; however, property

¹ Schedule 8 (S8) drugs and poisons, otherwise known as 'Controlled Drugs', are substances and preparations for therapeutic use which have high potential for abuse and addiction. The possession of these medications without authority is an offence. In the context of alprazolam, it also means that medical practitioners intending to prescribe this medication to drug-dependent patients must first obtain authorisation from the relevant regulatory body.

offenders who reported being under the influence of benzodiazepines at the time of their last offence were significantly less likely to attribute their offending to financial reasons, and proportionately more likely to attribute it to opportunistic reasons. This provides support for the argument that benzodiazepine use can lead to impulsive and disinhibited behaviour, and also suggests that different drugs can have varying impacts on criminal motivations. In contrast to property offending, motivations for committing a violent crime were found to be largely opportunistic. This suggests that violent offenders have higher levels of impulsivity than property offenders, thus highlighting the importance of incorporating impulse management into intervention and treatment programs targeted at violent offenders.

4.1 Limitations

This study has certain limitations. Firstly, it is important to acknowledge that the IDRS sample is not representative, but rather, is a sentinel sample which allows examination of behaviours amongst a sensitive population at high risk of offending and incarceration. The benefit of using such a sample is that it allows the early identification of problems and risk behaviours, which in turn provides an important evidence base for policy and identifies areas that require further research and monitoring. Secondly, the present study relies solely on self-report data. Although self-report among offenders and substance using populations has been shown to be reliable (Darke 1998; Haapasalo & Moilanen, 2004), it is possible that the relationships detected between substance use and crime in the present study could be partially attributed to the 'common methods bias' (Podsakoff et al., 2003). That is, participants who openly reported one stigmatised behaviour (e.g. drug use) may have been more likely to report other stigmatised behaviours (e.g. crime). Future studies might like to include other measures of substance use and criminal offending, such as urine tests, court record data and collateral interviews, to substantiate their findings. Finally, the small sample size of the violent crime group (n=30) increases the probability of type II errors and it is possible that a number of noteworthy associations were missed when examining the variables associated with violent offending. Further investigations could recruit larger samples to examine a more representative sample of injecting drug users and rigorously investigate the relationships between specific substance use and types of crime. In addition, the present study highlights the importance of future research to include measurement of the motivations for perpetrating crime, in addition to measures of substance use and criminal behaviour.

References

- Ball, J. C., Shaffer, J. W. & Nurco, D. N. 1983. The day-to-day criminality of heroin addicts in Baltimore – A study in the continuity of offence rates. *Drug and Alcohol Dependence*, 12, 119-142.
- Bennett, T. & Holloway, K. 2005a. The association between multiple drug misuse and crime. *International Journal of Offender Therapy and Comparative Criminology*, 49 (1), 63-81.
- Bennett, T. & Holloway, K. 2005b. Disaggregating the relationship between drug misuse and crime. *The Australian and New Zealand Journal of Criminology*, 38 (1), 102-121.
- Biernacki, P. & Waldorf, D. 1981. Snowball sampling: Problems and techniques of chain referral sampling. *Sociological Methods and Research*, 10 (2), 141-163
- Blumstein, A., Cohen, J., Roth, J. A. & Visher, C.A. 1986. *Criminal careers and “career criminals”*. Washington, D.C.: National Academy Press.
- Bradford, D. & Payne, J. 2012. Illicit drug use and property offending among police detainees, *Contemporary Issues in Crime and Justice*, no.157, Sydney: NSW Bureau of Crime Statistics and Research
- Castillo, I.I., Saiz, F.G., Rojas, O.L., Vazquez, M.A.L. & Lerma, J.M.J. 2010. Estimation of cutoff for the Severity of Dependence Scale (SDS) for opiate dependence by ROC analysis, *Actas Españolas de Psiquiatría*, 38 (5), 270-277
- Crime and Misconduct Commission. 2005. *Property crime in Queensland: A strategic assessment*. Crime Bulletin No. 7. Brisbane: Crime and Misconduct Commission.
- Darke, S. 1998. Self report among injecting drug users: A review. *Drug & Alcohol Dependence*, 51 (3), 253-263
- Darke, S., Ward, J., Hall, W., Heather, N. & Wodak, A. 1991. *The Opiate Treatment Index (OTI) Researcher’s Manual*. Technical Report No. 11. Sydney: National Drug and Alcohol Research Centre
- Fry, C., Smith, B., Bruno, R., O’Keefe, B. & Miller, P. 2007. *Benzodiazepine and Pharmaceutical Opioid Misuse and Their Relationship to Crime: An Examination of Illicit Prescription Drug Markets in Melbourne, Hobart and Darwin*. Monograph series No.21. Hobart: National Drug Law Enforcement Research Fund.
- Goldstein, P. J. 1985. The drugs/violence nexus: A tripartite conceptual framework. *Journal of Drug Issues*, 39, 143-174.
- Goldstein, P. J. , Brownstein,H.H., Ryan, P.J. & Bellucci, P.A. 1989. Crack and homicide in New York City, 1988: A conceptually based event analysis. *Contemporary Drug Problems*, 16, 651-687.
- 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(5), 607-14.
- Gizzi, M.C. & Gerkin, P. 2010. Methamphetamine use and criminal behavior. *International Journal of Offender Therapy and Comparative Criminology*, 54 (6), 915-36.

Haapasalo, J., & Moilanen, J. 2004. Official and self-reported childhood abuse and adult crime of young offenders. *Criminal Justice and Behavior*, 31, 127-149.

Hides, L., Lubman, D.I., Devlin, H., Cotton, S., Aitken, C., Gibbie, T. & Hellard, M. 2007. Reliability and validity of the Kessler 10 and patient health questionnaire among injecting drug users. *The Australian and New Zealand Journal of Psychiatry*, 41(2), 166-168.

Hoaken, P. & Stewart, S. 2003. Drugs of abuse and the elicitation of human aggressive behavior, *Addictive Behaviors*, 28, 1533-1554.

Horyniak, D., Dietze, P., Degenhardt, L., Agius, P., Higgs, P., Bruno, R., Alati, R. & Burns, L. In press. Age-related differences in patterns of criminal activity among a large sample of polydrug injectors in Australia. *Journal of Substance Use*, Accepted 30th July 2014.

Hunt, D. E. 1991. Stealing and dealing: Cocaine and property crimes. *NIDA Research Monograph Series: The Epidemiology of Cocaine Use and Abuse*, 110, 139-150

Indig, D., Topp, L., Ross, B., Mamoon, H., Border, B., Kumar, S. & McNamara, M. 2010. *2009 NSW Inmate Health Survey: Key findings report*. Sydney: Justice Health.

Kessler, R.C., Barker, P.R., Colpe, L.J., Epstein, J.F., Gfroerer, J.C., Hiripi, E., Howes, M.J., Normand, S.L., Manderscheid, R.W., Walters, E.E. & Zaslavsky, A.M. 2003. Screening for serious mental illness in the general population. *Archives of General Psychiatry*, 60(2), 184-9.

Kinner, S., George, J., Campbell, G. & Degenhardt, L. 2009. Crime, drugs and distress: Patterns of drug use and harm among criminally involved injecting drug users in Australia. *Australian and New Zealand Journal of Public Health*, 33 (3), 223-227.

Klee, H. & Morris, J. 1994. Crime and drug misuse: Economic and psychological aspects of the criminal activities of heroin and amphetamine injectors. *Addiction Research*, 1 (4), 377-386.

Makkai, T. 2001. Patterns of recent drug use among a sample of Australian detainees. *Addiction*, 96, 1799-1808.

Kuhns, J.B. & Clodfelter, T.A. 2009. Illicit drug-related psychopharmacological violence: The current understanding within a causal context. *Aggression and Violent Behavior*, 14, 69-78

McKetin, R., McLaren, J., & Kelly, E. 2005. *The Sydney Methamphetamine Market: Patterns of Supply, Use, Personal Harms and Social Consequences*. National Drug Law Enforcement Research Fund Monograph Series No. 13. Adelaide: Australasian Centre for Policing Research.

McKetin, R., Ross, J., Kelly, E., Baker, A., Lee, L., Lubman, D. & Mattick, R. 2008. Characteristics and harms associated with injecting versus smoking methamphetamine among methamphetamine treatment entrants, *Drug and Alcohol Review*, 27, 277-285

McKetin, R., Lubman, D.I., Najman, J.M., Dawe, S., Butterworth, P. & Baker, A.L. 2014. Does methamphetamine use increase violent behaviour? Evidence from a prospective longitudinal study. *Addiction*, 109(5), 798-806

- Nurco, D.N., Hanlon, T.E. & Kinlock, T.W. 1991. Recent research on the relationship between illicit drug use and crime. *Behavioral Sciences and the Law*, 9, 221–242.
- Patterson, S., Lennings, C.J. & Davey, J. 2000. Methadone clients, crime, and substance use. *International Journal of Offender Therapy and Comparative Criminology*, 44, 667–680.
- Payne, J. & Gaffney, A. 2012. How much crime is drug or alcohol related? Self-reported attributions of police detainees, *Trends & Issues in Crime and Criminal Justice*, Canberra: Australian Institute of Criminology.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.-Y., & Podsakoff, N.P. 2003. Common method biases in behavioural research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88 (5), 879-903.
- Pulay, A.J., Dawson, D.A., Hasin, D.S., Goldstein, R.B., Ruan, W.J., Pickering, R.P., Huang, B., Chou, S.P. & Grant, B.F. 2008. Violent behavior and DSM-IV psychiatric disorders: Results from the national epidemiologic survey on alcohol and related conditions. *Journal of Clinical Psychiatry*, 69. 12–22.
- Ross, J., Teesson, M., Darke, S., Lynskey, M., Ali, R., Ritter, A. & Cooke, R. 2005. The characteristics of heroin users entering treatment: Findings from the Australian Treatment Outcome Study (ATOS). *Drug and Alcohol Review*, 24, 411–418.
- Stafford, J. and Burns, L. 2014. Australian Drug Trends 2013. Findings from the Illicit Drug Reporting System (IDRS). *Australian Drug Trend Series No. 109*. Sydney: National Drug and Alcohol Research Centre, UNSW Australia.
- Thissen, D., Steinberg, L. & Kuang, D. 2002. Quick and easy implementation of the Benjamini-Hochberg procedure for controlling the false positive rate in multiple comparisons. *Journal of Educational and Behavioral Statistics*, 27 (1), 77-83.
- Topp, L., Darke, S., Bruno, R., Fry, C., Hargreaves, K., Humeniuk, R., McAllister, R., O'Reilly, B. & Williams, P. 2001. *Australian Drug Trends 2000: Findings of the Illicit Drug Reporting System*. Sydney: National Drug & Alcohol Research Centre, UNSW Australia.
- Topp, L. & Mattick, R. 1997. Choosing a cut-off on the Severity of Dependence Scale (SDS) for amphetamine users. *Addiction*, 92 (7), 839-845.
- Torok, M., Darke, S., Kaye, S., Ross, J. & McKetin, R. 2008. *Comparative Rates of Violent Crime Amongst Methamphetamine and Opioid Users: Victimisation and offending*. Monograph series No. 32. Hobart: National Drug Law Enforcement Research Fund.
- Weatherburn, D., Topp, L., Midford, R. & Allsop, S. 2000. *Drug Crime Prevention and Mitigation: A Literature Review and Research Agenda*. Sydney: NSW Bureau of Crime Statistics and Research.
- Wilkins, C. & Sweetsur, P. 2010. The association between spending on methamphetamine/ amphetamine and cannabis for personal use and earnings from acquisitive crime among police detainees in New Zealand. *Addiction*, 106, 789-797.
- Zweben, J.E., Cohen, J.B., Christian, D., Galloway, G.P., Salinardi, M., Parent, D. & Iguchi, M. 2004. Psychiatric symptoms in methamphetamine users. *The American Journal on Addictions*, 13, 181-190.

Table 1: Correlates amongst IDRS participants that had committed a property or violent offence in the past month

	Property crime past month				Violent crime past month									
	Yes (n=155)		No (n=732)		Multivariate			Yes (n=30)		No (n=857)		Multivariate		
	%	%	OR/t	95%CI	AOR	95% CI	p-value	%	%	OR/t	95%CI	AOR	95%CI	p-value
Mean age (SD)	36.83 (8.52)	41.01 (8.77)	$t_{883}=-5.403$	$p<0.001^*$	0.96	0.93-0.99	$p<0.01$	35.67 (8.60)	40.45 (8.83)	$t_{883}=-2.915$	$p<0.01^*$	0.97	0.92-1.03	$p>0.05$
Sex (male)	59.40	65.20	0.78	0.55-1.11	1.12	0.65-1.93	$p>0.05$	73.30	63.90	1.56	0.69-3.54	1.36	0.49-3.73	$p>0.05$
Median age first injected (range)	17.00 (12-60)	18.00 (9-47)	$U=1.68$	$p<0.01^*$	1.01	0.97-1.06	$p>0.05$	16.00 (10-40)	18.00 (9-60)	$U=9672.50$	$p<0.05$			
Median years at school (range)	10.00 (6-12)	10.00 (0-12)	$U=0.05$	$p>0.05$				9.00 (6-12)	10.00 (0-12)	$U=10276.50$	$p>0.05$			
In a relationship	41.30	39.80	1.06	0.75-1.51				46.70	39.80	1.32	0.64-2.74			
Unemployed	85.80	83.10	1.23	0.76-2.01				96.70	83.10	5.91	0.79-43.70			
Unstable housing [^]	27.30	21.00	1.42	0.95-2.12				43.30	21.30	2.82	1.35-5.93 [*]	2.29	0.93-5.66	$p>0.05$
Self-reported mental health problem [#]	57.90	44.00	1.75	1.22-2.51 [*]	1.39	0.82-2.37	$p>0.05$	50.00	46.30	1.16	0.56-2.41			
K10 score ≥ 22	70.50	51.70	2.24	1.52-3.29 [*]	0.98	0.56-1.71	$p>0.05$	69.00	54.50	1.86	0.84-4.13			
Heroin use [#]	60.60	59.40	1.05	0.74-1.50				73.30	59.20	1.90	0.84-4.31			
Methamphetamine ^{##} use [#]	78.10	63.30	2.07	1.37-3.11 [*]	1.54	0.53-4.48	$p>0.05$	73.30	65.60	1.44	0.64-3.28			
Alcohol use [#]	61.30	59.00	1.10	0.77-1.57				63.30	59.30	1.19	0.56-2.53			
Cannabis use [#]	77.40	70.40	1.45	0.96-2.17				83.30	71.20	2.03	0.77-5.35			
Cocaine use [#]	18.70	14.90	1.32	0.84-2.07				36.70	14.80	3.33	1.55-7.16 [*]	1.75	0.70-4.43	$p>0.05$
Illicit Benzodiazepine use [#]	63.20	43.90	2.20	1.54-3.15 [*]	1.57	0.88-2.78	$p>0.05$	50.00	47.10	1.12	0.54-2.32			
Illicit Morphine use [#]	36.80	34.80	1.09	0.76-1.56				23.30	35.60	0.55	0.23-1.30			
Illicit Oxycodone use [#]	39.40	30.30	1.49	1.04-2.13				46.70	31.40	1.91	0.92-3.98			
Illicit Pharmaceutical Stimulant use [#]	17.40	9.60	2.0	1.23-3.23 [*]	1.46	0.74-2.90	$p>0.05$	10.00	11.00	FET=1.0				
Illicit Methadone use [#]	22.80	31.00	1.52	1.04-2.22				23.70	40.00	2.15	1.02-4.53			
Poly drug use classes (mean; SD)	7.01 (2.69)	5.87 (2.82)	$t_{883}=4.64$	$p<0.001^*$	0.97	0.87-1.09	$p>0.05$	7.27 (2.70)	6.02 (2.83)	$t_{883}=2.370$	$p<0.05$			
Median drug expenditure ^{^^}	\$20.00	\$50.00	$U=48312$	$p<0.01^*$	1.00	1.00-1.00	$p>0.05$	\$25.00	\$60.00	$U=10076.50$	$p<0.05$			
SDS (opioids) ≥ 5	84.70	71.70	2.18	1.33-3.57 [*]	2.57	1.29-5.10	$p<0.01$	77.80	73.90	1.24	0.49-3.11			
SDS (stimulants) ≥ 4	51.70	36.20	1.88	1.25-2.82 [*]	1.59	0.96-2.63	$p>0.05$	78.30	37.80	5.91	2.16-16.17 [*]	5.34	1.91-14.93	$p<0.01$
Prison history	54.20	56.70	0.91	0.64-1.28				70.00	55.70	1.85	0.84-4.10			
Recent arrest (past year)	45.80	30.90	1.89	1.32-2.69 [*]	1.52	0.90-2.54	$p>0.05$	70.00	32.30	4.89	2.21-10.82 [*]	2.42	0.96-6.12	$p>0.05$

^{*}denotes significance using the Benjamini-Hochberg procedure; [^]Unstable housing includes those who were living in a boarding house/hostel, shelter/refuge, or who had no fixed address; [#]in the six months preceding interview; ^{##}methamphetamine includes: speed powder, base and ice/crystal; ^{^^}On the day prior to interview. Controlling for sex

Table 2: Motivations amongst IDRS participants that had committed a property or violent offence in the past month

	Under the influence of drugs and/or alcohol during last property crime					Under the influence of drugs and/or alcohol during last violent crime				
	Yes (n=106)	No (n=44)	Total (N=150)	OR	95% CI	Yes (n=22)	No (n=8)	Total (N=30)	OR	95% CI
Motivations for last property offence %										
Financial [#]	69.80	86.40	74.70	0.37	0.14-0.95*	13.60	0.00	10.00	-	-
Opportunistic ^{##}	18.90	11.40	16.70	1.81	0.63-5.19	50.00	37.50	46.70	1.16	0.32-8.74
Psychopharmacological ^{###}	5.70	0.00	4.00	-	-	18.20	0.00	13.30	-	-
Self-defence	0.00	0.00	0.00	-	-	13.60	37.50	20.00	0.26	0.04-1.72
Committed last property offence for financial reasons										
	Yes (n=114)	No (n=41)	p value	OR	95% CI	Committed last property offence for opportunistic reasons				
	Yes (n=25)	No (n=130)	P value	OR	95% CI					
Drug under the influence of at time of last offence %										
Methamphetamine	18.40	9.80	<i>p</i> >0.05	2.09	0.67-6.50	12.00	16.90	<i>p</i> >0.05	0.67	0.18-2.43
Heroin	15.80	14.60	<i>p</i> >0.05	1.09	0.40-2.98	24.00	13.80	<i>p</i> >0.05	1.97	0.69-5.58
Cannabis	11.40	4.90	<i>p</i> >0.05	2.51	0.54-11.64	8.00	10.00	<i>p</i> >0.05	0.78	0.17-3.70
Alcohol	14.90	12.20	<i>p</i> >0.05	1.26	0.43-3.67	12.00	14.60	<i>p</i> >0.05	0.80	0.22-2.93
Benzodiazepines	14.90	31.70	<i>p</i> <0.05*	0.38	0.16-0.87	28.00	17.70	<i>p</i> >0.05	1.81	0.68-4.83
Methadone	16.90	12.50	<i>p</i> >0.05	1.42	0.42-4.81	10.00	16.90	<i>p</i> >0.05	0.55	0.11-2.63
Morphine	5.30	7.30	<i>p</i> >0.05	0.70	0.17-2.95	12.00	4.60	<i>p</i> >0.05	2.82	0.66-12.11

**p*<0.05[#]Financial includes: needed money to buy drugs, needed money to support myself/family, needed money to repay debts, other financial reasons (e.g. needed money for food, savings, needed to buy something)^{##}Opportunistic includes: enjoy the rush, lost your temper, looking for revenge, urged on by your friends, acting on spur of moment, opportunity arose, helping a friend out^{###}Psychopharmacological includes: under the influence of drugs, coming down and hanging out