Amphetamine use among detainees at the East Perth Watch House: What is the impact on crime?

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DISCLAIMER

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ABBREVIATIONS

ACC	Australian Crime Commission
AFP	Australian Federal Police
AGD	Attorney General's Department
AIC	Australian Institute of Criminology
AIHW	Australian Institute of Health and Welfare
AIQ	Amphetamines in Queensland
ATS	Amphetamine-type stimulants
DUCO	Drug Use Careers of Offenders
DUMA	Drug Use Monitoring in Australia
ECU	Edith Cowan University
MCDS	Ministerial Council on Drugs Strategy
NDRI	National Drug Research Institute
NDSHS	National Drug Strategy Household Survey

EXECUTIVE SUMMARY

Amphetamines have been increasingly available on the Australian drug markets since the early 1990s with a recent increase in clandestine laboratory detections as well as seizures by the Australian Federal Police (AFP) and Customs. Amphetamine use has been associated with psychological, physical and social harm, criminal behaviour and violence; however, much of the current research is descriptive. The present study was designed to utilise existing datasets from two major sources: the Drug Use Monitoring in Australia (DUMA) project and statistics on reported crime in Western Australia (WA). This enabled drug and crime data taken from several sources to be consolidated for the purpose of investigating the relationships between key variables of interest and trends in these variables over time.

The DUMA dataset for WA used in the present study yielded a total of 6993 usable cases for which demographic information and self-reported drug use information were available. The data used for this study was limited to detainee offences, self-reported demographic and drug use information, and urinalysis results for WA detainees for the period from Quarter 1, 1999 to Quarter 2, 2009 (a total of 42 quarters). The sample was then split into two groups (amphetamine users and amphetamine non-users) for the purpose of building a profile of amphetamine users and comparing them with amphetamine non-users on a range of variables including WA crime and drug seizures data.

Self-reported indicators of amphetamine use were moderately to strongly correlated with objective indicators of use. Self-reported amphetamine use was also associated with crimes against property and drug-related crime, whereas amphetamine non-users were more likely to commit public order offences, sexual offences and abduction/harassment related offences. Relative to amphetamine non-users, more amphetamine users were non-Indigenous, female, single, less educated, unemployed, first arrested prior to 18 years of age, had previously used a range of other illicit drugs, and consumed less alcohol. Overall, all indicators of amphetamine use pointed to a slight general downward trend in amphetamine consumption since 2000, prior to which there was a general upward trend.

While no statistical relationship was identified, there was a trend towards reduced amphetamine use indicators together with a trend in increasing weights of amphetamines seized in the final two years of available data.

This study highlights two particularly important factors related to age. Firstly, it is apparent that amphetamine users commence using various illicit and licit (for non-medical purposes) drugs at earlier ages on average than amphetamine non-users. Secondly, amphetamine users commence criminal careers at an earlier age than non-users on average. These findings emphasise both the importance of tackling

alcohol and drug issues early and of youth diversion strategies for amphetamine drug offences.

Given the generally lower socioeconomic status observed in the amphetamine using group in this study (compared to amphetamine non-users), assistance in acquiring stable housing and provision of education and training opportunities to improve employment prospects may reduce their likelihood of either using drugs and/or committing offences.

This study revealed the relationships between important indicators such as drug use, crime and interventions that can be used to provide support for the provision or cessation of specific intervention activities.

INTRODUCTION

ILLICIT DRUG USE AND CRIME

Illicit drug use is associated with a range of psychological, physical, health and financial harms to individuals, families and the wider community. The social cost of illicit drug use in 2004-05 was estimated at $8.2 billion, with $3.8 billion of this being illicit-drug attributable crime costs (Collins & Lapsley, 2008). Individuals who had used an illicit drug in the previous 12 months were more than twice as likely to report high or very high levels of psychosocial distress (Australian Institute of Health & Welfare, AIHW, 2008).

Different types of illicit drugs have been associated with different harms. For example, methamphetamine use has been associated with depression (Dyer & Cruickshank, 2005), heroin use with somatic complaints (Dyer & Cruickshank, 2005), benzodiazepine use with suicide and self harm (Neale & Smith, 2007), cannabis use with psychosis (Copeland, Gerber & Smith, 2006; Fergusson, Horwood & Swain-Campbell, 2003), ecstasy use with financial, occupational and social problems (Dunn, Degenhardt, Campbell, George, Johnston, et al., 2007), LSD use with panic reactions and psychosis (Abraham & Aldridge, 1993; Makkai & McAllister, 1998), and cocaine use with paranoia, psychosis and cardiovascular problems (Kaye, 2007). Additionally, the manner in which individuals financially support their drug use (e.g. employment versus crime) and their method of use (e.g. orally versus intravenously) will also change the associated consequences.

The 2007 National Drug Strategy Household Survey reported than 38.1 percent Australians aged 14 years or over had previously used an illicit drug, with 13.4 percent using illicit drugs in the preceding 12 months (AIHW, 2008a). Illicit drug use also fluctuated considerably between states and territories with the Northern Territory experiencing the highest rate of illicit drug use in the preceding 12 months (20.4% in the 14+ year old population) and New South Wales experiencing the lowest (12.1%) (AIHW, 2008b).

The relationship between drug use and crime is well established (Hammersley, Forsyth, Morrison & Davies, 1989; Maher, Dixon, Hall & Lynskey 2002). Santana, McGregor, Kirby and Wilkinson (2007) identified strong positive relationships between both self-reported and confirmed (positive urinalysis) heroin use among police detainees and reported burglaries in Western Australia (WA). Conversely, there was a significant negative relationship between the same two indicators and crimes against the person.

These findings suggested that heroin users were more likely to be involved in acquisitive crime and less likely to be involved in violent crime.

Pederson and Skardhamar (2009) found robust associations between cannabis use and later drug-related criminal charges in a longitudinal Norwegian adolescent population-based study. The authors controlled for confounding variables including socioeconomic background, conduct problems, school grades and previous criminal charges. Although cannabis use was not a predictor of future non-drug-related crime, they suggested "with regard to drug-specific crime, use of cannabis seems to be more important than use of alcohol and other illegal drugs in adolescence" (Pederson & Skardhamar, 2009, p. 115).

The Australian Drug Use Careers of Offenders (DUCO) study examined the illegal drug use and criminal careers of 2135 adult male offenders across four states and territories in 2001 (Makkai & Payne, 2003). Sixty-two percent of the sample reported regular illicit drug use in the six months preceding their most recent arrest. Makkai and Payne (2003) reported offenders typically began experimenting with cannabis followed by amphetamines, heroin and cocaine. Offenders who were categorised as non-regular offenders were most likely to attribute their offending to drugs and alcohol (33%), followed by regular multiple offenders or drug sellers (30% each), regular property offenders (27%), regular violent offenders and regular fraud offenders (26% each) (Makkai & Payne, 2003). Regardless of the determination of causality when linking illicit drug use and criminal behaviour, there is empirical support for an association between the two.

AMPHETAMINE-TYPE STIMULANTS

The term amphetamine-type stimulants (ATS) refers to a group of synthetic drugs that are chemically related to the parent compound phenylisopropylamine (Dyer & Cruickshank, 2005); typically including amphetamines and methylamphetamine (dependence forming drugs) and MDMA (see Table 1). ATS stimulate the central nervous system, activating, enhancing or increasing neural activity (Ministerial Council on Drugs Strategy, MCDS, 2004). Effects of ATS use include the positive effects of euphoria, self-confidence, heightened alertness, augmented sexual performance, and increased energy; as well as the negative effects of decreased appetite, anxiety, panic attacks, reduced sexual arousal and difficulty achieving an erection or reaching orgasm, irritability, agitation, hypertension, irregular body temperature, hallucinations, and psychosis (Wickes, 1993). Levels of use vary greatly amongst individuals and have

been broadly categorised as experimental, occasional, situation specific, intensive, or compulsive/dysfunctional use (Wickes, 1993).

Table 1. Amphetamine-type stimulants and method of use

	Amphetamine	**Dexamphetamine**	**Methamphetamine**	**Ecstasy (MDMA)**
Form	Powder Tablet Paste/base Liquid	Powder Tablet	Powder Liquid Crystalline	Powder Tablet Gel tablet
Method of use	Oral Intranasal Injected	Oral Intranasal Injected	Oral Intranasal Injected Smoked	Oral Intranasal Injected

Sources: NDRI, 2007; Wickes, 1993.

AMPHETAMINE USE IN AUSTRALIA

Amphetamines have been increasingly available on the Australian drug markets since the early 1990s (National Drug Research Institute, NDRI, 2007). Clandestine laboratory detections increased from 50 in 1996 to 250 in 2002 (MCDS, 2004), although use decreased slightly in the general population between 2004 and 2007 (Australian Institute of Health and Welfare, AIHW). There has additionally been an increase in the amount of high-grade amphetamine detected by Customs and the Australian Federal Police (AFP) although this may be the result of targeted police operations rather than an increase in the importation, manufacture or supply of amphetamines. In 2001 the AFP seized 412kg of ATS; in 2003, 233kg of crystal methamphetamine was seized by the AFP and Customs; in 2004 Customs detected 125kg of methamphetamine hidden in 624 candles within a shipping container; and in 2005, 400kg of ephedrine, a precursor drug to methamphetamine, was seized by the AFP and Customs (AFP, 2001, 2005; Attorney General's Department, AGD, 2006).

The 2007 National Drug Strategy Household Survey (NDSHS) indicated that 6.3% of Australians (1.1 million) aged 14 years and over had previously used amphetamines/methamphetamine (AIHW, 2008). Use was most common in the 20 – 29 year old age group, with more individuals in this group reporting having used previously as well as in the preceding 12 months. These figures make amphetamine the fourth most common drug used in the Australian community in 2007 (AIHW, 2008), down from the second most widely used illicit drug in 2005 (Dyer & Cruickshank, 2005).

The Amphetamines in Queensland (AIQ) project examined the views and experiences of 665 amphetamine users in both rural and urban Queensland (Lynch, Kemp, Krenske, Conroy & Webster, 2003). The most common forms of amphetamine used were powder (85.2%) and base (72.3%) which were used at a younger age (18.5 and 19 years respectively) compared with ice, amphetamine liquid and dexamphetamine (21, 21 and 20 years respectively) (Lynch et al., 2003). The majority of respondents (54.4%) described their use as 'recreational', whereas 20.8 percent reported being 'binge' users, and 13.3 percent described themselves as 'dependent' users (Lynch et al., 2003). Those who were dependent on amphetamines were more likely than the general population to experience moderate to severe disability in regard to their mental health (Lynch et al., 2003). As the majority of amphetamine use began as a result of someone offering the drug to the participant (74%), initiation into amphetamine use appears opportunistic and potentially preventable through social education of the associated harms.

Of all the Australian states and territories, Western Australia (WA) has the highest prevalence of amphetamine use (AIHW, 2008b). In 2007, 4.2% of Western Australians surveyed in the NDSHS had used amphetamines in the previous 12 months compared to 2.3% nationally (AIHW, 2008b). Data from the Drug Use Monitoring in Australia (DUMA) project shows that WA also has the highest prevalence of amphetamine use among police detainees (Adams, Sandy, Smith, & Triglone, 2008).

In order to combat the high prevalence of amphetamine use in Australia, the Attorney General's Department funded the National Strategy to Prevent the Diversion of Precursor Chemicals into Illicit Drug Manufacture in the 2003-04 budget (AGD, 2006). This strategy introduced an online recording system within Australian pharmacies ('Project STOP') with the aim of preventing the purchase of pseudoephedrine for the manufacture of methamphetamine. Pharmacists are required to record personal information from photographic identification upon purchase of pseudoephedrine as well as details about the quantity of drug sold. This enables pharmacists to identify individuals who purchase pseudoephedrine for illegitimate purposes, refuse sale of the precursor drug and provide intelligence to police (AGD, n.d.; Miller, 2009). In 2008, 56.5 percent of all Australian pharmacies were registered for Project STOP (Miller, 2009).

AMPHETAMINES AND CRIME

Of all the illicit drugs, amphetamines are of particular concern to crime prevention bodies because of the illicit and harmful nature of the manufacture, possession and

trafficking of these drugs. For the criminal justice system, amphetamines are associated with a range of criminal justice and public safety issues including organised crime, illicit drug markets, clandestine drug laboratories, violence associated with its use, illegal importation and precursor drug access. There is also the potential for an increase in identity fraud to obtain precursor chemicals used in the manufacture of amphetamines (Australian Crime Commission, 2008).

An early review of the literature examining amphetamine use and crime by Greenberg (1976) found mixed evidence for whether amphetamine use preceded, or occurred as a result of, delinquent behaviour. The review found that where crime appeared to occur as a result of amphetamine use, it may be due to money seeking behaviours or a reduction in inhibitions stemming from intoxication (Greenberg, 1976). In most other cases, criminal or delinquent behaviour preceded amphetamine use, but overall, amphetamine use was not highly concentrated in the criminal population. Greenberg (1976) also looked at the difference in crime types committed by amphetamine users versus users of other drugs. One of eight studies supported an increase in violent crime in the amphetamine user population; whereas, the remaining seven found no difference in crime types for amphetamine versus other drug users. Greenberg (1976, *p*. 118) suggested that:

> …if the relationship between amphetamine and violence, or drugs and crime in general, is to be understood, it will have to be analyzed in terms of the interaction between the drug effects, the individual's propensity toward crime prior to drug use, the structure of the drug-taking situation, and the organization of the drug distribution system.

Therefore, simply examining an individual's drug use and behaviour was not sufficient to draw causal inferences.

Australian research examining detained and imprisoned populations have found mixed results on Indigenous and non-Indigenous amphetamine use. Putt, Payne and Milner (2003) found that male Indigenous prisoners were less likely than male non-Indigenous prisoners to report using amphetamines in the six months prior to imprisonment. In contrast, Indigenous detainees were more likely than non-Indigenous detainees to have used amphetamines in the preceding 30 days. Kraemer, Gately and Kessell (2009) reported that Indigenous prisoners were more likely to report using amphetamines and methamphetamine in the 12 months prior to imprisonment than non-Indigenous prisoners. Further research is needed to examine this area.

The AIQ project reported relatively high levels of involvement in crime amongst their amphetamine-using community sample. Thirty-three percent of participants had committed a break and enter (burglary), 27 percent had committed assault, 26.8 percent had vandalised property, 22.7 percent had committed fraud, 21 percent had stolen a motor vehicle, 13 percent had committed robbery, and an additional seven percent had committed robbery with a weapon (Lynch et al., 2003). Twenty-six percent of participants who had previously committed crimes against the person, and 18.5 percent of those who had committed crimes against property, reported using amphetamines at the time of the offence (Lynch et al., 2003). Further, 39.1 percent of participants reported committing offences against the person whilst coming down from amphetamines, compared with 34.5% of participants who committed property offences whilst coming down. Additional to property and personal offences, nearly half of all participants reported previously selling amphetamines, with 16.4 percent dealing at the time of the survey (Lynch et al., 2003). The majority of participants who reported selling amphetamines began doing so between the ages of 15 and 19 years, and did so to support their own use. This research provides additional evidence of the link between amphetamine use and offending patterns.

McGregor and Gately (2008) examined DUMA data collected between January 2007 and March 2008 and found that significantly more detainees with amphetamine-positive urine test results (46.2%) were detained for theft and related offences compared to detainees with amphetamine-negative urine (33.5%, p = .009). Significant results were also found for illicit drug offences (59.3% amphetamine-positive vs 38.7% amphetamine-negative urine, p < .001); prohibited and regulated weapons and explosives offences (46.9% amphetamine- positive vs 34.5% amphetamine-negative urine, p = .011); traffic and vehicle regulatory offences (29% amphetamine-positive vs 17.1% amphetamine-negative urine, p = .004). However, after controlling for age and gender, two offence classifications: 'illicit drug offences' (principally possession or use and dealing or trafficking) and 'road traffic and regulatory vehicle offences' (principally driving without a licence) were the most significant positive predictors of having an amphetamine-positive urine test (McGregor & Gately, 2008). Further analysis investigating the relationship between drug use, drug offences and specific non-drug offences in a larger sample was indicated.

AMPHETAMINES AND VIOLENCE

There has been particular interest around amphetamine use and crimes of violence. Amphetamine use has been associated with criminal activity and aggression in

different study populations. Collins and Lapsley (2008, *p*.42) suggest that "of all violent offences for which prisoners are incarcerated, 24 per cent are estimated to be causally attributable to the consumption of illicit drugs and 15 per cent causally attributable to alcohol". The AIQ project reported seven percent of participants were often violent towards strangers and 5.1 percent were perpetrators of violence against their partners, directly related to their amphetamine use (Lynch et al., 2003). More females than males reported behaving violently as a result of amphetamine use (Lynch et al., 2003).

In a United Kingdom study, 47 percent of amphetamine users interviewed had committed a violent crime, and half of them associated the violence with their amphetamine use (Wright & Klee, 2001). In addition, 62 percent reported ongoing problems with aggression that was related to their amphetamine use. Significant associations between violence and the frequency of cocaine and amphetamine use have also been identified in other populations such as Canadian high school students (Smart, Mann & Tyson, 1997). In the United States, 11 percent of a large forensic sample was assessed as being amphetamine dependent (Kalechstein, Newton, Longshore, Anglin, van Gorp et al., 2000) while 43 percent of a large treatment-seeking sample of amphetamine users reported a history of violent behavioural problems (Zweben, Cohen, Christian, Galloway, Salinardi et al., 2004).

Recent research in Australia has failed to identify a clear association between amphetamine use and violence. In Smith and Rodwell's (2009) study, offenders who had been convicted of an amphetamine offence were no more likely than those without a prior drug offence to be later charged with a violent offence. However, the authors suggested caution in interpreting the results as there were no measures of the frequency or intensity of amphetamine use among the offenders. Further research is needed to identify the relationship between these factors and violence to clearly delineate any links between amphetamine use and violent offending (Smith & Rodwell, 2009).

CRIME FIGURES IN WESTERN AUSTRALIA

Western Australia Police verified crime figures (see Table 2) show an increase in the number of crimes against the person and drug offences between 1999 and 2010 and a decrease in property offences during this time (WA Police, 2011). Although these figures do not definitely reflect actual occurrences of all crimes and can be affected by police operations, media campaigns and other factors

influencing crime reporting and detection, they provide a general indication of crime trends in WA.

Table 2. Verified crime statistics[1] in Western Australia, Financial Year 1999-2010

	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Crimes against person	20,902	22,825	22,283	23,004	24,300	30,053	32,530	34,318	33,890	34,492	32,922
Crimes against property	189,561	200,685	207,087	209,384	187,785	164,889	171,439	173,656	177,846	169,263	143,844
Drug Offences	1,418	16,474	16,162	14,990	14,182	15,737	18,089	19,300	18,543	20,329	18,681

[1]Verified offences are all offences reported to or becoming known to police within the relevant time period that have not been determined to be falsely or mistakenly reported. The number of verified offences in this table were not necessarily committed in the period indicated.
Source: WA Police (2011), Annual Crime Statistics

SUMMARY

Investigations of specific illicit drug use and crime are at a relatively early stage and more work is clearly required. There is substantial evidence providing support for a relationship between illicit drug use, amphetamine use, criminal behaviour and violence. Australia, and particularly WA, experienced an increasing trend in amphetamine use throughout the 1990s, although this has reduced somewhat during the last decade. This reduction in prevalence of use may in part have resulted from Government initiatives such as Project Stop, police operations targeting amphetamine production and sales, and public awareness campaigns targeting amphetamine use. Amphetamine use can result in a number of physical, psychological and social harms, and more research is needed to examine relationships between amphetamine use and crime over extended periods of time.

PRESENT STUDY

One way of approaching the need for better data is to use existing data collections in a more efficient way. The DUMA project offers a unique opportunity to identify relationships and analyse patterns in illicit drug use and crime in Australia over time. The present study was designed to conduct a detailed analysis of the relationship between amphetamine use and crime among police detainees at the East Perth Watch House over an eleven year period between 1999 and 2009. As well as describing the characteristics of amphetamine users among the detainee population, the project identified the types of crime for which amphetamine users are being detained. The findings are compared to other data sources to corroborate the results and to identify potential markers for changes in crime patterns in the WA community.

STUDY OBJECTIVES

PRIMARY OBJECTIVES

Using the WA DUMA data for the 11 year period between 1999 and 2009, the primary objective of this project is to identify relationships between amphetamine use indicators and crime, specifically:

1. Identify and analyse the relationships between amphetamine use indicators and specific crime classifications taking account of potential confounders such as age, gender and other drug use;

2. Develop predictor variables for the links between amphetamine use indicators and specific crime classifications and

3. Identify and analyse co-occurring changes in amphetamine use indicators and trends in reported crime in WA over the six year period between 2002 and 2008.

SECONDARY OBJECTIVES

1. Describe the characteristics and develop a profile of amphetamine users among the detainee population in Western Australia;

2. Identify the degree of agreement between amphetamine use indicators from the DUMA dataset i.e. self-reported frequency and recency of use, self assessment of dependence and urinalysis results;

3. Analyse and describe trends in amphetamine use and crime in WA and

4. Produce a report on the identified relationship between amphetamine use and reported crime in WA providing recommendations including suggested means of translating research findings into policy, teaching and learning, training and practice.

METHODOLOGY

STUDY DESIGN

This project is designed to statistically analyse DUMA data from 1999-2009 and to compare data that are routinely collected by Western Australian agencies for monitoring and surveillance purposes.

DATA SOURCES

To conduct this study, three sources of secondary data were used. Data on amphetamine use indicators, crime statistics and drug seizures were sourced from:

1. The Drug Use Monitoring in Australia (DUMA) quarterly data covering the period from 1999 to 2009.
2. Western Australian (WA) Police monthly drug seizure data covering the period from 1999 to 2009.
3. Western Australian (WA) monthly reported crime data covering the period from 2002 to 2008.

The DUMA data was used to examine trends in amphetamine use and to analyse relationships between amphetamine use indicators and different classes of crime. The WA drug seizure and reported crime statistics data were used to identify trends in crime in WA and to assess the relationship between amphetamine use, drug seizures and reported crime.

The DUMA program, coordinated by the Australian Institute of Criminology, commenced in 1999 and provides a quarterly collection of information from police detainees in nine sites (police stations or Watch Houses) across Australia. East Perth in WA is one of the nine sites at which data is collected. This dataset provides information in two parts. The first part provides a combination of self-reported data collected via personal interviews, and objective data provided by police. The interviews are conducted by trained personnel who are independent of the police. The second part provides objective data from an analysis of urine samples that are tested for a range of drugs. The data used for this study was limited to detainee offences, self-reported demographic and drug use information, and urinalysis results for WA detainees for the period from Quarter 1, 1999 to Quarter 2, 2009 (a total of 42 quarters). This dataset yielded a total of 6993 usable cases for which there was demographic information and self-reported drug use information. Of these 6993 detainees, 1353 (19%) refused or did not try to provide a urine sample for analysis. Urinalysis data was available for approximately 70% of the detainees interviewed over this period. In instances where DUMA data was unavailable for the entire period under consideration due to new questions introduced after the

commencement of the data collection in 1999, analyses were conducted for the period over which the data for the relevant variables were available. For most variables of interest, the amount of missing data was low (less than 10%).

VARIABLES

A wide range of variables were determined to be relevant to this study. These variables are listed in the following table according to their treatment as a dependent, predictor or control variable.

Table 3. Variables of Interest

Control Variables and Covariates	Predictor Variables	Dependent Variables

1) Demographic variables
2) Other major drug use:
  a) Cannabis
  b) Illegal benzodiazepines
  c) Heroin
  d) Ecstasy
3) Alcohol use
4) Use of prescribed benzodiazepines
	1) Amphetamine use indicators	1) 14 ASOC crime classifications
		2) 2 Broad Crime Classifications – Crime against property
		Crime against a person

MEASURES

Measures for all of the variables listed above were drawn from the DUMA database for WA. Some recoding and grouping of variable categories was required to transform the data into a format that suited the analytical procedures for the study. The measures employed in the study are outlined below.

A. Demographic Variables

Eight demographic variables were measured and included in the analysis as control variables. These were:

Gender – measured a dichotomous categorical variable - male and female

Age – measured as a continuous variable using age at the time of the offence; in cases where this data was missing the detainee's age was estimated by taking the difference between the year charged and the year the detainee was born.

Indigenous Status – a dichotomous variable derived using responses to 2 questions: "What is your ethnic background?" and "Do you consider yourself Aboriginal or TSI?"

Level of education – measured as a categorical variable with: 1 = completed Year 10 or less; 2 = completed year 11 or 12; 3 = still at school/TAFE/university; 4 = Some TAFE/university; 5 = completed TAFE/university.

Marital status - measured as a categorical variable with: 1 = single and never been married; 2 = Defacto; 3 = Separated/divorced/widowed; 4 = Married.

Type of residence – measured as a categorical variable for where the person lived most of the time in the past 30 days with: 1 = in a house or apartment you own or rent; 2 = in someone else's house or apartment; 3 = other type of living arrangement.

Work status - measured as a categorical variable with: 1 = working full-time; 2 = working part-time; 3 = unemployed (various reasons); 4 = workforce non-participant.

Number of dependent children- measured as a continuous variable.

B. Covariates

Other major drug use – use of four other major drugs were included as potential covariates of types of offences. These were cannabis, heroin, illegal benzodiazepines and ecstasy. Two alternative measures of use of these drugs were included in separate analyses – self-reported number of days the specified drug was used in the past 30 days and a positive urinalysis result for the specified drug.

Alcohol use – measured as the number of self-reported days in past 30 days that the detainee had 5+ (males) or 3+ (females) alcoholic drinks in same day.

Use of prescribed benzodiazepines – measured a dichotomous categorical variable – self reported use of prescribed benzodiazepines using a yes/no response format.

C. Predictor variables

There was one main predictor variable for this study.
Amphetamine use – measures of five different amphetamine use indicators were evaluated in the analyses. These were:
   a. Self-reported use of amphetamines in past 12 months.
   b. Self-reported use of amphetamines in past 48 hours.
   c. Self-reported dependence on amphetamines.
   d. Self-reported number of days amphetamines were used in past 30 days.
   e. Positive amphetamine urinalysis result for the urine sample provided.

The first three and the last of these variables were coded as 'dummy variables' – 0 = amphetamine non-user and 1 = amphetamine user. The self=reported number of days amphetamines were used in the past 30 days was measured as a continuous variable from zero to 30.

For the purpose of the logistic regression analyses, the self-reported number of days amphetamines were used in past 30 days was transformed into a dichotomous variable whereby an amphetamine user was defined as a detainee who had used amphetamines at least one day in past 30 days.

D. Dependent Variables

To identify the crime classifications for which detainees were charged, the top 3 offences recorded in the interviews were grouped according to: (i) the Australian Standard Offence Classification and (ii) the two broad classes of crime against the person and crime against property. A total of 16 dependent variables were analysed under these two main groupings.

1) *ASOC crime classifications* – Australian Standard Offence Classification (ASOC) categories excluding the miscellaneous category were used as one set of dependent variables. The top three specific offences were recorded for each detainee according to which of the ASOC crime categories they come under. A preliminary analysis of the top three offences, however, revealed that more than half the detainees had offences against justice procedures, government security and government operations (ASOC 15) reflecting a high incidence of some type of "breach" being amongst the first three offences. It was deemed that this occurrence was likely to bias the detection of significant relationships in the analyses since this offence camouflages the original offence or offences to which the breach is related. Thus, the ASOC 15 offences were substituted with charges received in the past 12 months. This resulted in 14 ASOC crime classifications. These were:
   i. Homicide and related offences
   ii. Acts intended to cause injury
   iii. Sexual assault and related offences
   iv. Dangerous and negligent acts endangering persons
   v. Abduction, harassment and other offences against the person
   vi. Robbery, extortion and related offences
   vii. Unlawful entry with intent/burglary, break and enter
   viii. Theft and related offences
   ix. Fraud, deception and related offences
   x. Illicit drug offences
   xi. Prohibited and regulated weapons and explosives offences
   xii. Property damage and environmental pollution
   xiii. Public order offences
   xiv. Road traffic and vehicle regulatory offences

2) *Broad crime classifications* – two broad crime classifications were also analysed separately as dependent variables. These broad categories of crime were formulated by grouping various ASOC categories as follows:
   a. Crimes against a person – ASOC 1, ASOC 2, ASOC 3, ASOC 5 and ASOC 6.
   b. Crimes against property – ASOC 7, ASOC 8, ASOC 9 and ASOC 12.

Some minor recoding of offences was also required due to differences in the 1997
and 2008 ASOC crime classifications. Each of the 14 crime category variables used
were dummy coded (0 = not charged with the offence; and 1 = charged with the
offence) according to whether that specific crime appeared amongst the detainees
top three charges.

PROCEDURE

ETHICAL ISSUES

Ethics approval was obtained from the Edith Cowan University Human Research Ethics Committee and DUMA data release approval was obtained from the AIC. The data required for this study was in aggregated form and no identifying information was sought or required. Other data required for this study was accessed though the WA Police research division, and publicly available sources.

DATA ANALYSIS

DUMA DATA

For the period between quarter one 1999 and quarter two 2009, the DUMA data was amalgamated into a single dataset for analysis. For this period the DUMA dataset yielded a total of 6993 cases for analysis. The dataset was then fully cleaned and the extent and pattern of missing data was assessed for the variables of interest. With the exception of urinalysis results for which about 30% of cases had no data, the level of missing data was very low (no more than 5%). Thus, it was determined that the level and pattern of missing data was not a major concern. The data was then transformed into a format that best suited the analyses to be conducted.

The sample was then split into two groups – amphetamine users and amphetamine non-users. For the purpose of building a profile of amphetamine users and comparing them with amphetamine non-users on a range of variables, an amphetamine user was defined as "a person who self-reported using amphetamines on at least one day over the past 30 days". Using this definition, a total of 2997 (43%) amphetamine users and 3996 (57%) amphetamine non-users were identified in the DUMA dataset of WA detainees

Following this procedure, the following analyses were conducted:

1) Frequencies and descriptive statistics were produced to provide the basic descriptive data that enabled a profile of amphetamine users to be developed and contrasted with amphetamine non-users. This analysis also provided preliminary information on the extent and pattern of specific drug use and offences amongst detainees.
2) Where variables had been measured on an interval or a continuous scale they were tested for normality.

3) Chi-square tests were then conducted to identify significant differences in demographic characteristics of amphetamine users and amphetamine non-users, and to assess whether the pattern of offences amongst amphetamine users differed from the pattern of offences amongst amphetamine non-users. This was done for the two broad categories of crime as well as the 14 ASOC classifications used for this study.

4) T-tests were conducted where appropriate to identify significant differences in demographic characteristics of amphetamine users and amphetamine non-users that had been measured as continuous variables.

5) As the variables of interest were non-normal, Spearman's rho correlation analysis was conducted to evaluate whether there were any significant relationships between –
   a) The different amphetamine indicators;
   b) The variables of interest as provided in Table 1.

6) As the dependent variable was a categorical dichotomy, logistic regression analysis was conducted. Specifically, a separate logistic regression was conducted for 14 of the Australian Standard Offence Classification (ASOC) crime types and two broad categories of crime – crime against a person and crime against property. These analyses were conducted while controlling for key demographic variables including gender, age, Indigenous status, level of education, marital status, work status, type of residence and number of dependent children as potential confounding factors, as well as covariates that included other major drug use (cannabis, heroin, ecstasy, illegal benzodiazepines and alcohol) as these are other potential predictor variables. In the regression analyses, the self-reported days of amphetamine use in the past 30 days, the self-reported user/non-user dichotomy derived from this measure and the amphetamine urinalysis data were used alternatively to test for relationships with the different crime classifications.

As multiple analyses needed to be conducted on the same data, familywise error was a factor that needed to be considered. It was decided to employ a Bonferroni correction to address this issue. As a result all regression analyses were conducted and both the standard alpha level of .05 as well as a Bonferroni adjusted level of significance of .003 to assess if there were any substantive differences in identifying significant relationships.

All of these analyses were conducted using SPSS Version 18 for Windows.

WESTERN AUSTRALIAN (WA) POLICE MONTHLY REPORTED CRIME DATA AND WA MONTHLY DRUG SEIZURE DATA

To facilitate the interpretation of the relationship between amphetamine use and types of offences, the detainee amphetamine use data for self-reported amphetamine use in the last 30 days and positive amphetamine urinalysis results taken from the DUMA dataset were superimposed onto a graph of WA Police

reported crime data for selected classes of crime for the period 2002 to 2008. In addition, the same amphetamine use data was superimposed onto another graph of the WA drug seizure data for the period 1999 to 2009. To enable a direct comparison of the trends in these different variables, all data was transformed into annual figures and the patterns of variation examined.

RESULTS

DEMOGRAPHICS OF DETAINEES

Of the 6993 detainees, 81.5% were male and 18.5% were female. Most detainees (38.2%) were aged 18 to 24 years, followed by 25 – 34 years (36.5%), 35 – 44 years (18.2%), and 45+ years (7%). The majority of detainees reported their marital status as 'single and never married' (58.4%), followed by 'defacto' (23.8%), and 'separated, divorced or widowed' (11.7%). The majority also did not have children that were dependent on them (69.2%).

Slightly more than one-quarter (26.8%) of detainees identified themselves as Aboriginal or Torres Strait Islander. Detainees were most likely to have completed year 10 schooling or less (53.1%), although 17.4% had completed TAFE or university, and 17% had completed year 11 or 12. Most detainees were unemployed (48.2%), employed fulltime (24.8%) or were a workplace non-participant (18.4%; i.e. for reasons such as retired, disabled or full-time caregiver). They were most likely to report living at the home of another person (47.5%), or renting or owning their own home (38.8%). Over one-quarter (26.5%) of living arrangements were Homeswest or Housing Commission properties.

INCIDENCE OF DETAINEES OFFENCES

An initial analysis of the offences for which all detainees interviewed were detained at the time of being interviewed revealed that more than half (53%) of the detainees had offences that were classified as 'offences against justice procedures, government security and government operations'. The next top five crime categories were 'theft and related offences' (19%) and 'road traffic and motor vehicle regulatory offences' (19%), 'acts intended to cause injury' (14%), 'public order offences' (12%) and 'illicit drug offences' (12%).

The very high incidence of various breaches that were classified as 'offences against justice procedures, government security and government operations' was considered to be potentially problematic in enabling true relationships between amphetamine use and crime categories to be detected as it seemed likely that this class of crime could contribute to insufficient discrimination between groups of detainees as it essentially camouflages the original offence for which the person was detained. Thus, for those detainees charged with 'offences against justice procedures, government security and government operations', the offences committed within the past 12 months were used to replace the offences for these detainees.

Based on this modified set of offences, slightly more than one-third (35%) of detainees had offences classed as a crime against property and just over one-quarter of detainees had offences that were classed as crimes against the person. The highest incidence of offences were for theft and related offences (23%), road traffic and vehicle regulatory offences (23%), acts intended to cause injury (17%), public order offences (15%) and illicit drug offences (15%).

DRUG USE PATTERNS OF DETAINEES

An examination of the various self-report measures of drug use gathered under the DUMA project indicated that the most frequently used illegal drugs were cannabis and amphetamines with many detainees using multiple drug types. The proportion of all detainees interviewed who self-reported using alcohol and illegal drugs in the last 30 days was – 59% alcohol, 62% cannabis, 43% amphetamines, 13% heroin, 11% ecstasy and 10% illegal benzodiazepines. Those who reported using amphetamines were then isolated for further analysis.

AMPHETAMINE USE AMONG DETAINEES

The following sections outline the main findings from this research in the context of the specific research objectives for the study.

Objective 2.1:   Describe the characteristics and develop a profile of amphetamine users amongst the detainee population in Western Australia.

In order to build a profile of amphetamine users, three main analyses were undertaken:

1. An examination of key demographic characteristics of amphetamine users– gender, age, indigenous status, level of education, marital status, type of residence, work status and number of dependent children. These descriptive statistics were initially examined for the total cohort of amphetamine users across the 10 year period. A year by year comparison was then conducted to identify any trends in these characteristics over time.
2. The key demographic characteristics of amphetamine users and non-users were compared to identify significant differences using Chi-square and T-tests as appropriate.
3. The profiles of light, moderate and heavy amphetamine users were compared for significant differences in the key demographic characteristics as well as the first age at which they self-reported drinking alcohol (ever tried and first drank 5+/3+ alcoholic drinks in the same day), trying cannabis and amphetamines, and being arrested. Quartiles were used to delineate the three cohorts of amphetamine users with the bottom quartile defined as "light users" (2 or less days used in past 30 days); the middle two

quartiles defined as "moderate users" (3-19 days used in past 30 days); and the top quartile defined as "heavy users" (20+ days used in past 30 days). As there were no significant differences between moderate and heavy amphetamine users, these two cohorts were subsequently combined and compared with light users and non-users.

CHARACTERISTICS OF AMPHETAMINE USERS

Of the 2997 amphetamine users, 79.4% were male and 20.6% were female. The majority of amphetamine users were aged 25 – 34 years (41.7%), followed by 18 – 24 years (40.8%), 35 – 44 years (15.1%) and 45+ years (2.4%). Most amphetamine users identified as non-Indigenous (75.1%). The majority had completed a schooling level of year 10 or less (57.9%), followed by completion of TAFE or university (15.4%), and completion of year 11 or 12 (15%). Amphetamine users were most likely to report their marital status as 'single and never married' (61.6%) or defacto (26%), and were not likely to have dependent children at home (68.7%). The majority were unemployed (55.4%), employed fulltime (17.9%) or a workforce non-participant (17.9%). Most amphetamine users reported living in private accommodation (60.8%) at the home of another person (52.4%) or renting/owning their own home (33.2%).

Relative to amphetamine non-users, amphetamine users generally:
- Include a higher proportion of females;
- Are younger although the median age increased from 24 years to 28 years over the 10 year period;
- Include a small proportion of Indigenous detainees;
- Are less educated;
- More likely to be single;
- Less likely to rent or own their own home;
- More likely to unemployed;
- More likely to have been first arrested under 18 years of age;
- More likely to have first drunk alcohol and first drunk 5+/3+ alcoholic drinks in the same day before the age of 18 years but less likely to be a high consumer of alcohol now (i.e. less likely to have drunk 5+/3+ alcoholic drinks in the same day in the past 30 days);
- More likely to have first tried amphetamines before the age of 18 years;
- More likely to have tried other high use drugs (cannabis, opiates, illegal benzodiazepines, ecstasy) and first tried these under 18 years of age; and
- More likely to have used other high use drugs in the past 30 days.

(See Table 4 for a comparison).

Table 4. Summary comparison of the main demographic characteristics and alcohol and drug usage of amphetamine users compared to amphetamine non-users

Characteristics	Amphetamine Users[1]	Amphetamine Non-users[2]
Gender	**Greater proportion of females[3]** ($p < .001$) 20.6% female	16.9% female
Age	**Younger than non-users** ($p < .001$) Average = 27.6 Median = 26.0 < 25 years = 40.8% 25-34 years = 41.7%	Average = 30.4 Median = 28.0 < 25 years = 36.3% 35+ years = 32.6%%
Indigenous status	**Less likely to be of Indigenous origin** ($p = .002$) 24.9% Indigenous origin	28% Indigenous origin
Level of education	**Generally less educated than non-users** ($p < .001$) 57.9% completing Year 10 or less 15.4% completing TAFE/Uni	49.5% completing Year 10 or less 18.9% completing TAFE/Uni
Marital status	**More likely to be single and never married** ($p < .001$) 61.6% single and never married 26% defacto 9.3% separated/divorced/widowed 3.1% married	56% single and never married 22% defacto 13.6% separated/divorced/widowed 8.3% married
Type of residence	**More likely to live at the home of another person and less likely to own or rent own home** ($p < .001$) 52.4% live at the home of another person 33.2% live in house they own or rent	43.9% live at the home of another person 43% live in house they own or rent
Work status	**More likely to be unemployed and less likely to be in full-time employment** ($p < .001$) 55.4% unemployed 17.9% full-time employed 8.8% part-time employed 17.9% not in workforce	42.7% unemployed 30.0% full-time employed 8.5% part-time employed 18.8% not in workforce
Number of dependent children	**No significant difference** ($p = .701$) 68.7% no dependent children Average = 0.67 Median = 0	69.6% no dependent children Average = 0.65 Median = 0
First arrested	**More likely to have been first arrested under 18 years of age** ($p < .001$) 77.5% under 18 years	60.9% under 18 years

Table 4 (Contd). Summary comparison of the main demographic characteristics and alcohol and drug usage of amphetamine users compared to amphetamine non-users

Characteristics	Amphetamine Users[1]	Amphetamine Non-users[2]
First tried alcohol	**Slightly more likely to have tried alcohol; more likely to have first tried alcohol under 18 years of age** ($p < .001$) 99.5% tried alcohol 95.8% under 18 years	97.8% tried alcohol 85.9% under 18 years
High alcohol use (5+/3+ alcoholic drinks in same day)	**Slightly less likely to have drunk 5+/3+ alcoholic drinks in same day; more likely to have drunk 5+/3+ alcoholic drinks under 18 years; less likely to have drunk 5+/3+ alcoholic drinks in past 30 days** ($p < .001$) 72.1% drunk 5+/3+ alcoholic drinks in same day 64.5% under 18 years 58.1% drunk 5+/3+ alcoholic drinks in same day in past 30 days	75.4% drunk 5+/3+ alcoholic drinks in same day 57.7% under 18 year 64.2% drunk 5+/3+ alcoholic drinks in same day in past 30 days
Cannabis use	**More likely to have tried cannabis; first tried it under 18 years; used it in past 30 days** ($p < .001$) 98.2% tried cannabis 91% first tried under 18 years 79.3% used in past 30 days	80.8% tried cannabis 65% first tried under 18 years 49.8% used in past 30 days
Illegal benzodiazepines use	**More likely to have tried illegal benzodiazepines; first tried it under 18 years; used it in past 30 days** ($p < .001$) 44.1% tried illegal benzodiazepines 24% first tried under 18 years 17.9% used in past 30 days	16.9% tried illegal benzodiazepines 8.5% first tried under 18 years 3.9% used in past 30 days
Heroin use	**More likely to have tried heroin; first tried it under 18 years; used it in past 30 days** ($p < .001$) 60.4% tried heroin 25.9% first tried under 18 years 24% used in past 30 days	24% tried heroin 10.5% first tried under 18 years 6.5% used in past 30 days
First tried speed	**More likely to have tried speed under 18 years of age** ($p = .001$) 100% tried speed 57.2% first tried under 18 years	48.5% tried speed 25.6% first tried under 18 years

[1]Defined by self-report of having used amphetamines in past 30 days

[2]Defined by self-report of not having used amphetamines in past 30 days

[3]Despite the proportion of females being greater for users versus non-users, males still comprised the majority of amphetamine users

PROFILE COMPARISON OF NON-USERS, LIGHT USERS AND MODERATE-HEAVY USERS

A comparison was made between moderate-heavy amphetamine drug users, light users and non-users (see Table 5). A heavy amphetamine user was defined as a detainee in the top quartile of self-reported days of using amphetamines in the past 30 days (20+ days); a moderate user was defined as a detainee in the middle two quartiles (3-19 days); and a light user was defined as a detainee in the first quartile (1-2 days). A non-user is defined as a detainee who self-reported using amphetamines zero days in the past 30 days. To enable a valid statistical comparison between the types of amphetamine users it was necessary to combine the heavy and moderate users into a single group for comparison.

Table 5. Summary profile comparing moderate-heavy amphetamine users, light amphetamine users and amphetamine non-users for selected demographic and drug use characteristics.

Characteristics	Moderate-Heavy Amphetamine Users[2]	Light Amphetamine Users[2]	Amphetamine Non-users[1]
Gender	Higher proportion of females (21%) than amongst non-users	Similar to moderate-heavy users (20% female)	More likely to be male (17% female) than amongst users ($p = .001$)
Age	Younger than non-users Average = 27.4 Median = 26.0 < 25 years = 42% 35+ years = 17%	Similar to moderate-heavy users Average = 27.5 Median = 26.0 < 25 years = 42% 35+ years = 17%	Older than amphetamine users ($p < .001$) Average = 30.4 Median = 28.0 < 25 years = 36% 35+ years = 31%
Indigenous status	Less likely to be of Indigenous origin (24%) – lower than non-users and light users ($p = .029$)	28% Indigenous origin Similar to non-users	28% Indigenous origin More likely to be of Indigenous origin than moderate-heavy users ($p = .005$)
Level of education	Generally less educated than non-users and light users ($p = .008$) 59% completing Year 10 or less and 15% completing TAFE/Uni	Similar to non-users 52% completing Year 10 or less and 17% completing TAFE/Uni	Generally more educated than users ($p < .001$) 50% completing Year 10 or less and 19% completing TAFE/Uni

Table 5 (Contd). Summary profile comparing moderate-heavy amphetamine users, light amphetamine users and amphetamine non-users for selected demographic and drug use characteristics.

Characteristics	Moderate-Heavy Amphetamine Users[2]	Light Amphetamine Users[2]	Amphetamine Non-users[1]
Marital status	More likely to be single and never married (61%) than non-users but less likely than for light users (p = .044); Less likely to be separated/divorced/ widowed (10%) or married (2%) than non-users	More likely to be single and never married (66%) than moderate-heavy users and non-users; Less likely to be separated/divorced/widowed (7%) or married (3%) than non-users	Less likely to be single and never married (56%) than users; More likely to be separated/divorced/widowed (14%) or married (8%) (p < .001)
Type of residence	More likely to live at the home of another person (54%) and less likely to own or rent own home (33%) than non-users	Similar to moderate-heavy users	More likely to own or rent own home (43%) and less likely to live at the home of another person (44%) than non-users (p < .001)
Work status	Less likely to be in full-time employment (17%) and more likely to be unemployed (55%) than non-users and light users (p < .001)	Less likely to be in full-time employment (24%) than non-users but more likely than moderate-heavy users; More likely to be unemployed (47%) than non-users but less likely than moderate-heavy users	More likely to be in full-time employment (30%) and less likely to be unemployed (42%) than non-users (p < .001)
Number of dependent children (p = .714)	**Similar to light users and non- users** 68% have no dependent children Average = 0.65 Median = 0	72% have no dependent children Average = 0.61 Median = 0	70% have no dependent children Average = 0.66 Median = 0
First drank alcohol	Younger than non-users when first drank alcohol 96% under 18 years 4% 18+ years	Similar to moderate-heavy users when first drank alcohol (p = .025); younger than non-users 94% under 18 years 6% 18+ years	Older than users when had first drank alcohol (p < .001) 86% under 18 years 12% 18+ years

Table 5 (Contd). Summary profile comparing moderate-heavy amphetamine users, light amphetamine users and amphetamine non-users for selected demographic and drug use characteristics.

Characteristics	Moderate-Heavy Amphetamine Users[2]	Light Amphetamine Users[2]	Amphetamine Non-users[1]
First drank 5+/3+ alcoholic drinks in same day	Younger than non-users when first drank 5+/3+ alcoholic drinks in same day 27% never 66% under 18 years 7% 18+ years	Similar to moderate-heavy users to have never drunk 5+/3+ alcoholic drinks in same day ($p < .013$) 22% never 67% under 18 years 10% 18+ years	Older than users when first drank 5+/3+ alcoholic drinks in same day ($p < .001$) 25% never 58% under 18 years 12% 18+ years
First tried cannabis	More likely to use cannabis 46%) and to have started at a younger age than non-users and light users ($p < .001$)	More likely to have never tried cannabis (64%) than moderate-heavy users	More likely to have never tried cannabis (83%) than amphetamine users ($p < .001$)
First tried illegal benzodiazepines	More likely than non-users and light users ($p < .001$) to have tried illegal benzodiazepines (46%) and at a younger age – 25% under 18 years	Less likely than moderate-heavy users to have tried illegal benzodiazepines (64%) and older when first tried – 19% under 18 years	Much less likely than amphetamine users to have tried illegal benzodiazepines (17%) ($p < .001$)
First tried speed	Younger than non-users and light users ($p = .001$) when first tried amphetamines 58% under 18 years	Older than moderate-heavy users when first tried amphetamines 49% under 18 years	About half (52%) never tried amphetamines ($p < .001$)
First arrested	Younger than non-users when first arrested 77% under 18 years	Similar to moderate-heavy users 77% first arrested under 18 years ($p = .860$)	Older when first arrested ($p < .001$) 61% under 18 years

[1]p-values reported for chi-square or ANOVA tests comparing the three cohorts of moderate-heavy users, light users and non-users.
[2]p-values reported for chi-square or t-tests comparing moderate-heavy users with light users.

The greatest distinction was between the heavy-moderate users and non-users. They differed significantly from non-users on all characteristics except the number of dependent children. In contrast, light users shared characteristics with both moderate-heavy users (gender, age, type of residence, age first arrested, first drank alcohol, first drank 5+/3+ alcoholic drinks in the same day) and amphetamine non-users (Indigenous status, level of education, work status). On the work status and use of other drugs and alcohol, light users fit between these other two classes of amphetamine user. They are more likely to be in full-time employment and less

likely to be unemployed than heavy-moderate users and have more commonly never tried other high use drugs like cannabis, heroin, illegal benzodiazepines and ecstasy. On average they were also older when they first tried amphetamines.

Objective 2.2:   Identify the degree of agreement between amphetamine use indicators from the DUMA dataset i.e. self-reported frequency and recency of use, self-assessment of dependence and urinalysis results.

From the data available in the DUMA dataset, six different indicators of amphetamine use were derived. These were:

  i.   Self-reported use in the past 12 months (yes/no format)
  ii. Self-reported recent use – past 48 hours (yes/no format)
  iii. Self-reported dependence (yes/no format)
  iv. Self-reported days used in past 30 days
  v.   Self-reported user/non-user (derived from days used in past 30 days – zero days = non-user; 1+ days = user)
  vi. Positive urinalysis result

6 reports the correlations between these different indicators. Kendall's Tau-b correlations were selected as most of the variables are categorical and it has been suggested that this non-parametric correlation is a better estimate of the population correlation than Spearman's correlation (Field, 2005).

Table 6. Correlations between six different indicators of amphetamine use

Variables	Self-reported use in past 12 months	Self-reported use in past 48 hours	Self-reported Amphetamine dependence	Self-reported # days used in past 30	Self-reported User/Non-user[1]	Positive urinalysis result
Self-reported use in past 12 months	-					
Self-reported use in past 48 hours	.503***	-				
Self-reported amphetamine dependence	.428***	.420***	-			
Self-reported # days used in past 30	.687***	.657***	.489***	-		
Self-reported User/Non-user[1]	.792***	.628***	.446***	.862***	-	
Positive urinalysis result	.491***	.649***	.360***	.567***	.567***	-

*** $p < .001$
[1] An amphetamine user is defined an amphetamine user was defined as a person who self-reported using amphetamines at least one day in the past 30 days.

All correlations between the different amphetamine use indicators are moderate to very strong at a level of significance of less than .001. The strongest correlations

are between self-reported user/non-user dichotomy and the self-reported days used in the past 30 days, (.862), self-reported use in the past 12 months (.792), and self-reported use in the past 48 hours (.628); between self-reported use in the past 48 hours and self-reported days used in the past 30 days (.657), and a positive urinalysis result (.649); and between self-reported use in the last 12 months and self-reported days used in past 30 days (.687). Self-reported amphetamine dependence has the lowest overall correlations with the other indicators.

TRENDS IN AMPHETAMINE USE INDICATORS

By mapping the alternative indicators of amphetamine use over the 42 quarters for which the DUMA data was available (see Figure 1), it can be clearly seen that although the levels of usage differ across the different indicators, the relativities between the indicators and the general pattern of variation in the indicators has remained relatively consistent. All five indicators point to a slight general downward trend in amphetamine use since 2000, prior to which there was a general upward trend.

Objective 1.1: Identify and analyse the relationships between amphetamine use indicators and specific crime classifications taking account of potential confounders such as age, gender and other drug use.

Objective 1.2: Develop predictor variables for the links between amphetamine use indicators and specific crime classifications.

These two objectives are closely related and so were addressed collectively by:

a) Conducting a Chi-square test on amphetamine use and types of crime to assess if the pattern of offences amongst amphetamine users and amphetamine non-users differed.
b) Conducting correlation analysis between the variables of interest to identify statistically significant relationships.
c) Conducting a series of multiple logistic regression analyses to test if amphetamine use is related to specific types of crime.

Figure 1. A comparison of trends in amphetamine use indicators over 42 DUMA quarters in WA
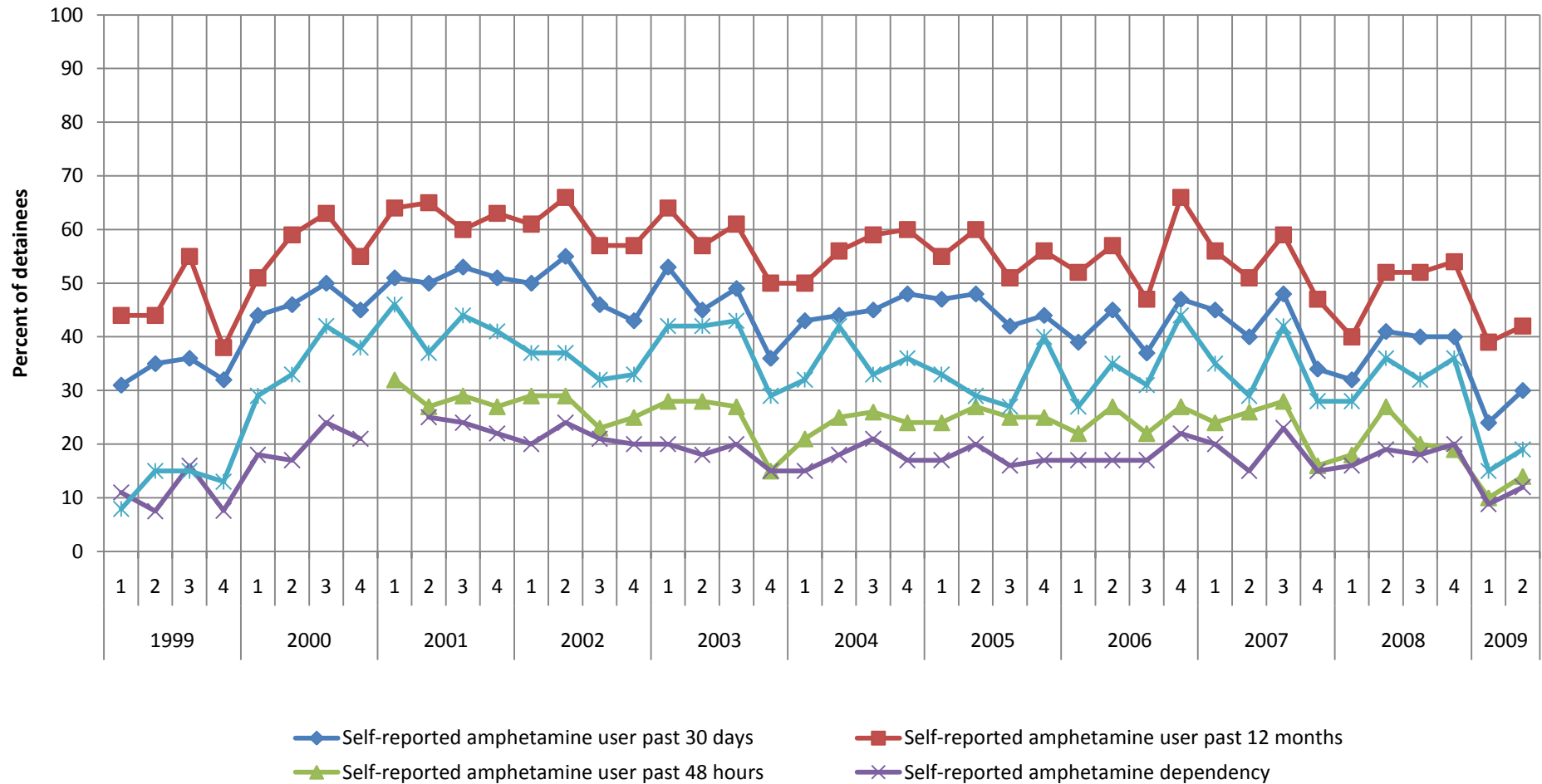
AMPHETAMINE USE AND OFFENCE TYPES

Chi-square Analysis Results

Using the modified set of 14 ASOC offences outlined previously, the proportions of amphetamine users and amphetamine non-users committing the various classes of offences were compared. Chi-square tests were conducted to detect any significant differences in the pattern of offences by amphetamine users and amphetamine non-users. For the purpose of this comparative analysis, an amphetamine user was defined as a person who self-reported using amphetamines at least one day in the past 30 days. Due to the potential for familywise error occurring due to making multiple comparisons on the same data, a Bonferroni correction was used. Thus using an overall 5% level of significance and allowing for 16 comparisons, a 0.0031% level of significance was used to assess significant differences on each of the individual tests. Table 7 provides a summary of the crime categories for which these two groups of detainees were charged.

Table 7. Results of the chi-square test on amphetamine use and type of offence

Crime Classification	Sample Size	Amphetamine Users[1+3]	Amphetamine Non-users[1]	All Detainees[1]
ASOC Crime Categories				
Homicide and related offences	6922	0.1%	0.3%	0.2%
Acts intended to cause injury	6922	15.9%	17.6%	16.9%
Sexual assault and related offences	6922	0.6%	2.3%[2]	1.6%
Dangerous and negligent acts endangering persons	6922	3.2%	3.6%	3.4%
Abduction, harassment and other offences against the person	6922	2.1%	3.5%[2]	2.9%
Robbery, extortion and related offences	6923	8.9%[2]	5.7%	7.1%
Unlawful entry with intent/burglary, break and enter	6922	10.8%[2]	5.6%	7.9%
Theft and related offences	6923	30.5%[2]	16.7%	22.6%

Table 7 (Contd). Results of the chi-square test on amphetamine use and type of offence

Crime Classification	Sample Size	Amphetamine Users[1,3]	Amphetamine Non-users[1]	All Detainees[1]
ASOC Crime Categories				
Fraud, deception and related offences	6922	6.8%[2]	4.9%	5.7%
Illicit drug offences	6924	22.3%[2]	8.7%	14.5%
Prohibited and regulated weapons and explosives offences	6922	6.1%[2]	2.9%	4.3%
Property damage and environmental pollution	6922	5.0%	6.0%	5.5%
Public order offences	6922	11.5%	17.4%[2]	14.8%
Road traffic and vehicle regulatory offences	6924	23.6%	22.0%	22.6%
Broad Crime Categories				
Crimes against the person	6930	25.6%	27.9%	26.9%
Crime against property	6930	43.1%[2]	28.4%	34.7%

[1] Multiple offences possible
[2] Proportion significantly larger ($p < .003$)
[3] An amphetamine user was defined as a person who self-reported using amphetamines at least one day in the past 30 days.

The Chi-square test indicated that there are a significantly greater proportion of amphetamine users who committed offences relating to:

- Robbery, extortion and related offences (1.6 times non-amphetamine user rate)
- Unlawful entry with intent/burglary, break and enter (1.8 times non-amphetamine user rate)
- Theft and related offences (1.8 times non-amphetamine user rate)
- Fraud, deception and related offences (1.4 times non-amphetamine user rate)
- Illicit drug offences (2.6 times non-amphetamine user rate)
- Prohibited and regulated weapons and explosive offences (2.1 times non-amphetamine user rate)
- Crime against property (1.5 times non-amphetamine user rate)

The differences are especially large for crime against property, illicit drug offences, theft and related offences, and unlawful entry with intent/burglary, break and enter.

In contrast, amphetamine non-users were found to have a significantly greater proportion of detainees committing offences relating to:

- Public order offences (1.5 times amphetamine user rate)
- Sexual assault and related offences (3.8 times amphetamine user rate)
- Abduction, harassment and other offences against the person (1.7 times amphetamine user rate)

Even though this comparative analysis was conducted using just one of the possible indicators of amphetamine use, a relatively consistent pattern of outcomes was found when alternative measures of amphetamine use were used (see Table 8). The least consistent result was for self-reported amphetamine dependence. This outcome reflects the lower correlation of this indicator of amphetamine use with the other indicators as noted earlier in this report.

Table 8. Correlation Analysis Results

Dependent Variables – Crime Classifications	Amphetamine Use Indicators					
	Self-reported User/Non-user	Self-reported # days used in past 30	Self-reported use in past 12 months	Self-reported use in past 48 hours	Positive urinalysis result	Self-reported Amphetamine dependence
ASOC 1 Homicide & related offences	-.024*	-.021*	-.034**	-.016	-.017	-.011
ASOC 2 Acts intended to cause injury	-.045***	-.055***	-.047***	-.073***	-.076***	-.021
ASOC 3 Sexual assault & related offences	-.070***	-.060***	-.084***	-.045***	-.060***	-.032**
ASOC 4 Dangerous or negligent acts endangering persons	-.006	.001	-.008	.008	-.012	.007
ASOC 5 Abductions & related offences	-.040***	-.039***	-.024*	-.040**	-.043**	-.009
ASOC 6 Robbery, extortion & related offences	.049***	.055***	.075***	.036**	.039**	.062***
ASOC 7 Unlawful entry with intent – burglary, break & enter	.081***	.078***	.087***	.086***	.066***	.057***
ASOC 8 Theft & related offences	.131***	.130***	.134***	.111***	.117***	.083***
ASOC 9 Deception & related offences	.012	.016	.010	.012	.008	.021

Table 8 (Contd). Correlation Analysis Results

Dependent Variables – Crime Classifications	Amphetamine Use Indicators					
	Self-reported User/Non-user	Self-reported # days used in past 30	Self-reported use in past 12 months	Self-reported use in past 48 hours	Positive urinalysis result	Self-reported Amphetamine dependence
ASOC 10 Illicit drug offences	.154***	.155***	.145***	.164***	.164***	.115***
ASOC 11 Weapons & explosive offences	.061***	.059***	.050***	.057***	.026	.020
ASOC 12 Property damage & environmental pollution	-.037**	-.035***	-.032**	-.044***	-.029*	.000
ASOC 13 Public order offences	-.091***	-.090***	-.094***	-.079***	-.113***	-.059***
ASOC 14 Road traffic & motor vehicle reg. offences	-.008	-.011	-.004	.011	.034*	-.030*
Crime against the person	-.051***	-.051***	-.041***	-.068***	-.082***	-.006
Crime against property	.111***	.111***	.115***	.091***	.093***	.086***

***$p<.001$ **$p<.01$ *$p<.05$

[1] An amphetamine user was defined as a person who self-reported using amphetamines at least one day in the past 30 days.

Significant associations were found between amphetamine use indicators and a range of offence categories with the most notable being drug offences and property crime, principally theft.

AMPHETAMINE USE AND CRIME TRENDS IN WA

Objective 1.3:   Identify and analyse co-occurring changes in amphetamine use indicators and trends in reported crime in WA over the seven year period 2002 - 2008.

Objective 2.3:   Analyse and describe trends in amphetamine use and crime in WA.

These two objectives can be addressed together. The quarterly data for the dichotomous amphetamine use indicators is graphed and overlayed with WA

crime data and drug seizure data to enable a comparison of trends over the index period (see Figures 2 and 3).

As shown in Figure 2, the trend between 2002 and 2008 of positive amphetamine urinalysis is similar to the trend pattern of theft and burglary offences, and therefore total property crimes. This indicates that where amphetamine use peaks and troughs, property crimes show a similar trend.

Figure 2. Trends in selected classes of crime against property and amphetamine use indicators
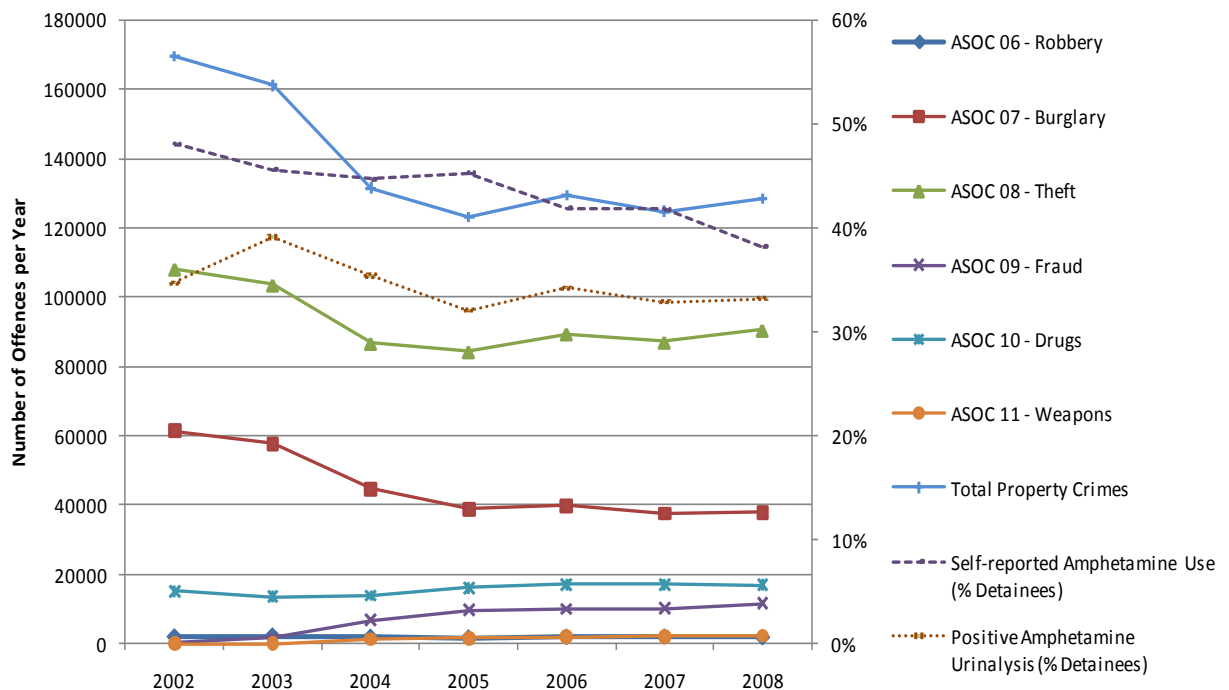

Figure 3 demonstrates trends in the percentage of detainees who self-reported amphetamine use in the past 30 days, the percentage of detainees with an amphetamine positive urinalysis, and WA Police amphetamine seizures between 1999 and 2009. For the purpose of analysing this data, the monthly WA police drug seizure data were aggregated into quarterly data to enable a direct comparison with the DUMA amphetamine use indicators. Visual inspection of the graph indicates a trend towards reduced amphetamine use indicators together with a trend in increasing weights of amphetamines seized in the final two years of available data.

Figure 3. Trends in amphetamine seizures and amphetamine use
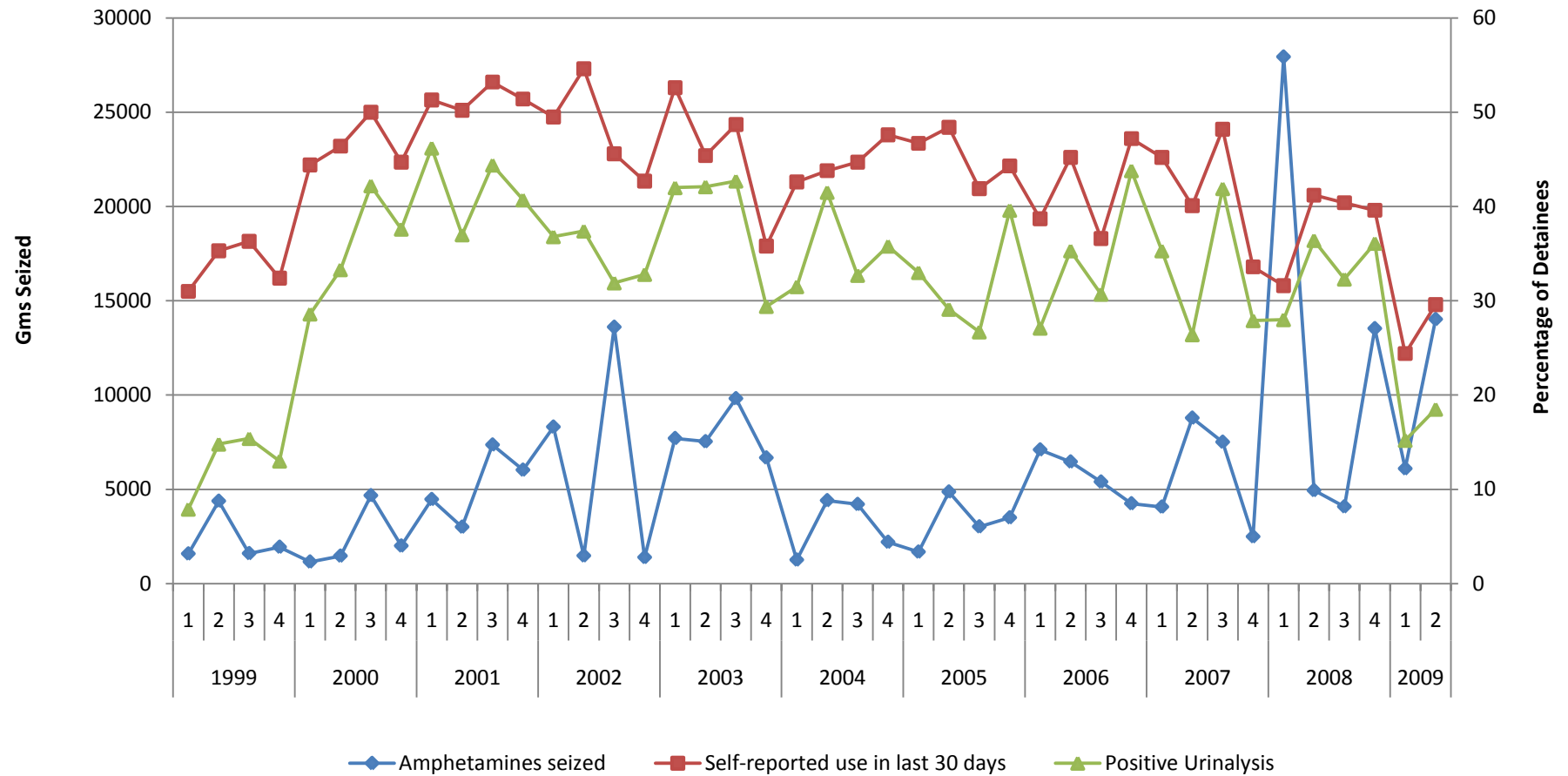
Correlation analyses (see Table 9) were then conducted allowing for up to a four-quarter timelag due to a lack of knowledge about the supply/availability of amphetamines on the streets subsequent to a major amphetamine seizure.

Table 9. Drug seizure correlations with amphetamine use indicators

Correlated with …	Sample points	Gms Amphetamines Seized	
		Spearman's Correlation	*p*-value
Percentage detainees self-reporting Amphetamine use in last 30 days (no lag)	42	.018	.912
Percentage detainees with positive urinalysis result for amphetamines (no lag)	42	.175	.267
Percentage detainees self-reporting Amphetamine use in last 30 days (1 Qtr lag)	41	-.135	.400
Percentage detainees with positive urinalysis result for amphetamines (1 Qtr lag)	41	.028	.860
Percentage detainees self-reporting Amphetamine use in last 30 days (2 Qtrs lag)	40	-.132	.416
Percentage detainees with positive urinalysis result for amphetamines (2 Qtrs lag)	40	.020	.904
Percentage detainees self-reporting Amphetamine use in last 30 days (3 Qtrs lag)	39	-.304	.060
Percentage detainees with positive urinalysis result for amphetamines (3 Qtrs lag)	39	-.160	.332
Percentage detainees self-reporting Amphetamine use in last 30 days (4 Qtrs lag)	38	-.139	.405
Percentage detainees with positive urinalysis result for amphetamines (4 Qtrs lag)	38	-.136	.414

Whilst no correlations were significant, a three-quarter timelag for the percentage of detainees self reporting amphetamine use in the past 30 days had a negative moderate correlation with amphetamine seizures at a close to significant level (*p*=.06). While this finding suggests a potential relationship, the lack of a significant result may be a product of the need to aggregate amphetamine seizures into quarterly data to match the DUMA data time-frames. The correlation may in fact be stronger if monthly data was available across both datasets.

DISCUSSION

In 2009, the Drug Use in Australia (DUMA) project celebrated its 10th birthday, providing a timely opportunity to examine trends in recorded drug use in the decade since its inception. Additionally, amphetamines were recognised as a growing problem both in WA and nationally, and problems associated with amphetamine use were commonly reported in state and national media. As a result, this project was conceptualised with the aim to:

1. Identify and analyse the relationships between amphetamine use indicators and specific crime classifications taking account of potential confounders such as age, gender and other drug use;
2. Develop predictor variables for the links between amphetamine use indicators and specific crime classifications.

Addressing these aims would identify the patterns of amphetamine use in Western Australia across a 10 year period, and would enable recommendations to be provided to government and health organisations. Additionally, it would identify the profile of a typical amphetamine user, allowing intervention and treatment programs to be tailored toward this population.

The study sample was drawn from police detainees at the East Perth Watchhouse as part of the ongoing DUMA project described above. Detainees who provided informed consent for their participation in the study were interviewed during the period of quarter 1, 1999 to quarter 2, 2009 (a total of 42 quarters). The study sample comprised 6993 detainees who provided data via semi-structured questionnaires designed to collect self-reported demographic and drug use information. Objective data from the police (for example the charges, date/time of detention etc) were also recorded in respect of each study participant. Of these, approximately 70% provided a urine sample which was tested for the presence of a range of drugs to provide objective data on recent drug use.

The Degree of Agreement between Self-Report and Objective Measures of Amphetamine Use

This project examined six different indicators of amphetamine use including self-reported use (in the previous 12 months, in the previous 30 days and the number of days used, and in the previous 48 hours), and self-reported dependence. Although the levels of usage differed across the different indicators, the relativities between the indicators and the general pattern of variation in the indicators remained relatively consistent. The strong interrelationship of different amphetamine use indicators supported existing study findings (e.g. Darke, 1998) that self-reported drug use is a reliable indicator of actual use. The reliability of self-reported drug use reported in this study was further strengthened by the strong, positive relationship identified between self-reported amphetamine use and objective measures of recent amphetamine use identified by urinalysis.

The relatively weak relationship between self-reported amphetamine dependence and other amphetamine use indicators may suggest that despite high levels of reported use, overall detainees did not regard their amphetamine use as reflecting dependence. However, it should be noted that dependence was assessed using a single question. Use of a validated dependence questionnaire may have produced a different result.

A Profile of Amphetamine Users in a detained population
The majority of amphetamine users were non-Indigenous males, aged 25 – 34 years, who were single and had never been married, had completed year 10 or less, lived at the home of another person (typically private property, not Homeswest or Housing Commission), were unemployed, and had no children in their household that were dependant on them. This profile did not differ greatly from the general profile of detainees over the 1999-2009 time period, with the exception that amphetamine users were slightly older and less likely to living in Government supplied housing.

Comparison of Amphetamine Users versus Non-Users
Although the general profile of an amphetamine user did not differ greatly to detainees in general, compared with an amphetamine non-user, significant differences did emerge. Compared with an amphetamine non-user, amphetamine users were more likely to be female, non-indigenous, 24 – 28 years of age, single with no dependent children, unemployed, educated to year 10 or lower, living at the home of another person, and first arrested prior to age 18. This suggests that amphetamine users among detainees are a high risk population in terms of their vulnerability to further offending. Homelessness and drug use are well established risk factors for offending (see for example Sanders, Lankenau, Jackson Bloom & Hathaz, 2009).

In regard to other substance use, a typical amphetamine user was more likely to have tried alcohol prior to age 18 but less likely to have drunk at risky levels in the previous 30 days, more likely to have used cannabis, heroin, illegal benzodiazepines and amphetamines prior to age 18, and more likely to have used cannabis, heroin and illegal benzodiazepines in the previous 30 days than amphetamine non-users. Therefore, amphetamine use among detainees was embedded within a pattern of multiple drug use. The combined use of several psychoactive substances is a known risk factor for a range of harms including overdose and death (McGregor, Ali, Lokan, Christie, & Darke, 2002).

This profile also suggests that amphetamine use among detainess in WA may have financial ramifications for both the individual through poverty; as well as public health costs as a result of poly-drug use. The profile also indicates a transient lifestyle and reduced ability of users to find employment which may be related to lower levels of education and current substance use. There may also be an increased risk in this population for mental health complaints either as a result of substance use or the associated lifestyle. Further, there is an associated vulnerability in the young age and gender of amphetamine users, and it is not

unreasonable to anticipate problems in female detainees who become pregnant. Studies have indicated that the combination of amphetamine use and the associated prenatal environment (ie. lack of proper nutrition) can increase the risk of preterm birth, growth retardation and adverse neurobehavioural outcomes (Wouldes, LaGasse, Sheridan & Lester, 2004). Furthermore, a Swedish follow up of children born to amphetamine using mothers over a ten year period indicated that amphetamine use during pregnancy negatively influenced the development of exposed children at least up to the age of 10 years (Eriksson & Zetterström, 2008).

Comparison of Non-users, Light Users and Moderate-Heavy Users
There is currently no standardised measure of typical patterns of amphetamine use. Therefore, this study used quartiles to distinguish light, moderate and heavy use. A heavy amphetamine user was defined as a detainee who self-reported using amphetamines for 20+ days in the previous 30 days; a moderate user was defined as a detainee who used amphetamines for 3-19 days in the previous 30 days; and a light user was defined as a detainee who used amphetamines for 1 -2 days in the previous 30 days. A non-user was defined as a detainee who self-reported using no amphetamines in the past 30 days. For comparison purposes, moderate and heavy users were categorised together.

The greatest distinction in profiles was between the heavy-moderate users and non-users. Heavy-moderate users differed significantly from non-users on all characteristics except the number of dependent children. In contrast, light users shared characteristics with both moderate-heavy users (gender, age, type of residence, age first arrested, first drank alcohol, risky drinking) and amphetamine non-users (Indigenous status, level of education, work status). On the work status and use of other drugs and alcohol, light users fit between these other two classes of amphetamine user. They were more likely to be in full-time employment and less likely to be unemployed than heavy-moderate users and had more commonly never tried other high use drugs such as cannabis, heroin, illegal benzodiazepines and ecstasy. On average they were also older when they first tried amphetamines.

This comparison is important because it identifies a difference between amphetamine users who use frequently compared with those who use less frequently. This suggests that interventions targeted at amphetamine users needs to identify their frequency of use in order to best address their needs.

Amphetamines and Crime
There has been considerable interest in identifying a possible pharmacological link between amphetamines and violence. Whilst the frequency, amount and route of administration influences the effect of the drug, amphetamine use has been associated with agitation, irritability and physical aggression (Kosten & Singha, 1999). Intravenous use in particular has been associated with psychosis, paranoia and delusions that may result in aggressive acts (Miczek & Tidey, 1989). In addition to these features compulsive behaviour has also been attributed to stimulant-induced psychosis (Kosten & Singha). These types of behaviours are commonly associated with violent behaviour. It is this association that has created

an interest in the link between amphetamine use and violence within the home and community.

For the present study, the relationship between amphetamine use and crime was explored by comparing the person who had reported using amphetamines at least one day in the past 30 days, and the non-user (did not use in the past 30 days). To control for potential confounding variables gender, age, Indigenous status, level of education, marital status, work status, type of residence and number of dependent children, as well as other major drug use (cannabis, heroin, ecstasy, illegal benzodiazepines and alcohol) were controlled. The linked between amphetamine use and violence was not observed. To the contrary, the results indicate that in the overall broad categories of crime against the person and crime against property, the amphetamine using detainee was more likely to commit crimes against property. Of particular note is that amphetamine users were no more likely to commit violent offences than amphetamine non-users, even when considering the frequency of amphetamine use. This supports and extends the findings of Smith and Rodwell (2002) who also found no association between amphetamine use and violent crime. This provides further evidence any relationship between amphetamine use and violence if present, is not a simple linear one.

More specifically this study determined that amphetamine users were more likely than amphetamine non-users to commit property offences, robbery and related offences, illicit drug offences, fraud offences and weapons offences. These results support the findings of the Amphetamines in Queensland project by Lynch et al. (2003) with the exception that the present study did not find a high prevalence of assault charges within this population. This difference may be explained by the type of data collected. Lynch et al (2003) used a community sample who self-reported previous offences, whereas the current project measured offence types based on current police charges at the time of data collection. The findings are also consistent with those of McGregor and Gately (2008) who reported a correlation between amphetamine use and theft, illicit drug and weapons offences. These findings identify common patterns in crimes committed by this amphetamine using detainee population in Western Australia.

Trends in Amphetamine Seizures

The West Australian Drug and Alcohol Strategy was implemented to prevent drug and alcohol problems within the community, provide early intervention, treatment and support for problematic use and assist law, justice and enforcement agencies with the frontline dealings and policies and laws that govern drug and alcohol manufacture, distribution and regulation (WA Drug & Alcohol Strategy (WAD&AS), 2005). One key strategy was to "disrupt and reduce the supply of illicit drugs to optimise the success of demand and harm reduction" (WAD&AS, pg. 16). There are several factors that have impacted on the amphetamine market in Western Australia.

1. The number of reported/detected drug offences in WA by financial year
2. The number of amphetamine drug seizure incidents
3. The number of clandestine laboratories dismantled in WA

The number of reported/detected number of drug offences in WA by financial year

In 2008, there was an increase in the number of reported and detected drug offences in Western Australia. 'Reported' refers to WA Police investigating a drug related offence after the community or police intelligence has lead to the offence being detected. 'Detected' refers to the detection of the drug as a consequence of either community information or police intelligence leading to an investigation whereby the drugs are coincidently detected at the same time as the original crime is being investigated. The number of (any) drug possession detections increased by 20% over the five year period. Drug trafficking offences (cultivate; manufacture; possess with intent to sell/supply; and sell/supply) increased 17% in 2008-09 from the previous year, but remained constant over the 2005-07 period as indicated in table below;

Table 10. Reported/detected number of drug offences in WA by financial year

	2004-05	**2005-06**	**2006-07**	**2007-08**	**2008-09**
Drugs (traffic)	2,437	2,700	2,716	2,462	2,891
Drugs (Possess)	12,286	14,097	14,929	13,955	14,800

Source: Western Australian Drug and Alcohol Strategy 2005-2009 p. 15

It is important to consider all drugs, as many users substitute when their drug of choice is unavailable or too expensive. It is also useful to compare actual amphetamine seizures to determine whether it has impacted on the level of availability. In the 2008-09 period there were 11,249 illicit drug seizure incidents in Western Australia, which represented an increase of 5% from the previous financial year. Specifically, amphetamine type substances represented approximately 26% of all illicit drug seizures in the 2008-2009 period.

Table 11. The number of amphetamine drug seizure incidents by financial year

	2004-05	**2005-06**	**2006-07**	**2007-08**	**2008-09**
ATS	1,752	2,088	2,581	3,023	2,921

Source: Western Australian Drug and Alcohol Strategy 2005-2009 pg. 16

Clandestine Laboratories

The manufacture of amphetamine type substances create many environmental issues as well as the harm associated with use. Clandestine drug laboratories or 'clan labs' create a dangerous environment for the manufacturers or 'cooks' and any personnel within the immediate vicinity, including children residing or visiting

the household; nearby residents; and outside agencies that deal with the detection or treatment in these areas including police, ambulance and/or environmental officers and other first responders (Galdicott, Pigou, Beattie & Edwards, 2004).

Metropolitan Perth is geographically isolated from the other states, with the Eastern State's capitals on the opposite seaboard, making cross country trafficking expensive with an increased risk of cross border detection. Therefore, much of the illicit amphetamine type substances are manufactured locally (Degenhardt et al., 2008).

In the 2004-05 financial period, 47 clandestine laboratories were dismantled by WA Police with this number increasing to 57 in the following financial year. In 2006-07 and 2007-08, 37 and 32 dismantlements occurred respectively. However in the 2008-09 period, there was a 265% increase with 85 laboratories dismantled (WAD&AS, p.19). At this stage it was the highest number recorded in the five year period. Police media documents indicate a special Operation "Kukri" utilised specialised teams of specifically trained detectives to deal with clandestine drug laboratory set-ups. Police attribute a significant increase in the number detections to increased police surveillance, information from the public and the implementation of Project Stop across WA. Whilst it is outside the period studied for this project, the following detection period increased dismantlement of 124 'backyard' drug laboratories indicating a success in police targeting 'backyard' and 'car boot' clandestine laboratories.

SUMMARY AND CONCLUSION

This project aimed to identify the typical characteristics and offence types of an amphetamine user who had been detained in Western Australia.

Relative to offending amphetamine non-users, the typical profile of an amphetamine user (defined as use within the past 30 days) emerged as including a higher proportion of females; non-indigenous, 24 – 28 years of age, unemployed with low levels of education completing year 10 or less. They were also more likely to be living at the home of another person and first arrested prior to age 18. In regard to other substance use, a typical amphetamine user was more likely to have tried alcohol prior to age 18 but less likely to have drunk at risky levels in the previous 30 days, more likely to have used cannabis, heroin, illegal benzodiazepines and amphetamines prior to age 18, and more likely to have used cannabis, heroin and illegal benzodiazepines in the previous 30 days than amphetamine non-users. This profile suggests that failure to reduce amphetamine use in WA may have financial ramifications through unemployment costs such as Centrelink payments; as well as public health costs as a result of poly-drug use.

The profile also indicates a transient lifestyle and reduced ability of users to find employment based on lower education and current substance use. There may also

be an increased risk in this population for mental health complaints either as a result of substance use or the associated lifestyle. Further, the young age and gender of amphetamine users is an associated vulnerability, and it is not unreasonable to anticipate problems in female amphetamine users if they become pregnant.

In regards to offence types, the study determined that amphetamine users were more likely than amphetamine non-users to commit property offences, robbery and related offences, illicit drug offences, fraud offences and weapons offences. These results support the findings of the Amphetamines in Queensland project by Lynch et al. (2003) with the exception that the present study did not find a high prevalence of assault charges within this population. This difference may be explained by the type of data collected. Lynch et al (2003) used a community sample who self-reported previous offences, whereas the current project measured offence types based on current police charges at the time of data collection. Our findings are also consistent with those of McGregor and Gately (2008) who reported a correlation between amphetamine use and theft, illicit drug and weapons offences. These findings identify common patterns in crimes committed by amphetamine users in Australia.

Of particular note is that amphetamine users were no more likely to commit violent offences than amphetamine non-users, even when considering the frequency of amphetamine use. This supports and extends the findings of Smith and Rodwell (2002) who also found no association between amphetamine use and violent crime. This provides further evidence against a relationship between amphetamine use and violence. In summary, amphetamine users present a significantly different profile to amphetamine non-users in Western Australia. Insufficient research is available to determine if a similar profile occurs in amphetamine users in different states. This project contributes to a growing body of knowledge on amphetamine use in Australia and presents implications to Government, health and community organisations.

LIMITATIONS

1. The sample consisted only of police detainees and cannot be generalised to non-detained populations

2. Data was collected almost exclusively from metropolitan locations and do not necessarily reflect the nature of regional and rural amphetamine use and crime patterns.

3. Despite a large sample size, the Perth Watchhouse only processes a small percentage of offenders. Therefore, results can only be generalised to detained amphetamine users in WA, and not all offenders who use amphetamines.

4. Crime figures only reflect reporting patterns and some crimes can be underreported. Changes in legislation can also impact reporting, such as the domestic violence legislation which increased the reporting of crimes against the person in 2004.

5. The definition of amphetamine user is determined by current amphetamine use rather than a typical amphetamine user. Drug dependent individuals will use other drugs if their drug of choice is not available.

6. There is likely to be a certain degree of exposure misclassification in relation to the user and non-user groups as a result of self-reporting. The likely consequence of this would be the presence of amphetamine users in the non-user group, which would most likely bias risk estimates towards the null. For example, the '2.6 times higher rate of illicit drug offences in amphetamine users' observation may be an underestimate (assuming there is indeed a causal relationship between amphetamine use and illicit drug offences). Whilst the use of urinalysis-positive data to create grouping would reduce the need to use self-reporting, it would likely underestimate the real proportion of what one might consider to be current amphetamine users due to the rapid elimination of amphetamines from the body.

7. It should also be noted that although all reasonable attempts were made to reduce the confounding effects of other factors (e.g. age, level of education, other major drug use, etc), some confounding is likely to remain which may influence the accuracy of estimates for relationships between variables.

RECOMMENDATIONS FOR FUTURE RESEARCH

There is preliminary evidence that a reduction in amphetamine use results in a reduction of property crime. Therefore, it is recommended that more resources are put into supply reduction operations that target amphetamine manufacturing, availability, and distribution.

In order to determine the relationship between WA Police amphetamine seizures and subsequent use reduction at the street level, it is necessary that databases obtain data across the same time periods.

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