THE RELATIONSHIP BETWEEN

ANTISOCIAL PERSONALITY DISORDER,

PSYCHOPATHY,

AND INJECTING HEROIN USE

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EXECUTIVE SUMMARY

Antisocial personality disorder (ASPD) is one of the most frequent diagnoses given to injecting drug users (IDUs) and is often regarded as co-extensive with the older concept of "psychopathy". It has been argued, however, that the illegal nature of injecting drug use inflates the proportion of this group who are considered psychopaths and that the prevalence will be much lower when the core psychological characteristics of psychopathy are considered.

A sample of 200 community methadone (CM) patients, 200 prison methadone (PM) patients, and 150 prison inmates with no history of heroin dependence (PNH) were interviewed using the DIS for a DSM-III-R diagnosis of ASPD and for a diagnosis of psychopathy, using the Psychopathy Checklist-Revised (PCL-R).

The proportions receiving diagnoses of ASPD and psychopathy, respectively, were CM (44% v 4%), PM (65% v 9%), and PNH (31% v 4%). In all cases, the proportions receiving ASPD diagnoses were significantly greater than concurrent diagnoses of psychopathy using the PCL. PM patients had significantly higher proportions of ASPD diagnoses than either of the other two groups. The prevalence of psychopathy did not differ between groups. Of those subjects who received a diagnosis of ASPD, only 11% also qualified for a diagnosis of psychopathy. Conversely, 94% of those who received a diagnosis of psychopathy also received a diagnosis of ASPD. Lack of remorse, the sole psychological symptom of ASPD, was present in 33% (CM), 36% (PM), and 61% (PNH) of those who received an ASPD diagnosis.

Those subjects whose criminal careers had preceded their drug-using careers were similar to those whose drug use preceded their criminal activity in terms of their drug use and treatment histories, but were more likely to have committed violent crimes to qualify for a diagnosis of ASPD (63% v 30%). There was no significant difference found between these two groups with respect to the prevalence of psychopathy (8% v 4%), but it is noted that the associated confidence interval was wide and should thus be interpreted with caution.

A diagnosis of ASPD was not related to performance in methadone maintenance treatment for either the CM or PM groups. In both groups there were no significant differences in methadone dose, time retained in treatment, proportions who had used heroin or other opioids recently, and proportions who had recently borrowed or lent needles.

The two-factor structure (behavioural and psychological) of psychopathy hypothesised by Hare was not replicated by confirmatory factor analyses. A more complex five-factor solution was generated which comprised three psychological factors, and two behavioural factors.

In summary, the present study demonstrated a marked discrepancy between the prevalence of ASPD and psychopathy among both injectors and non-injectors. When DSM-III-R criteria were applied, "psychopathy" was diagnosed in over half of IDUs and almost a third of non-IDUs. However, when the PCL-R was used, the prevalence of psychopathy fell to 7% among IDUs and 4% among non-IDUs. The likelihood of diagnosing "psychopathy" among both these populations, therefore, varies enormously, depending upon the diagnostic system that is used. ASPD appears to be a behavioural, rather than a personality, disorder and should not be equated with psychopathy.

1.0 INTRODUCTION

A diagnosis of antisocial personality disorder (ASPD) has consistently been found to be one of the most common psychiatric diagnoses made among injecting drug users (IDUs). Previous studies have reported the prevalence of ASPD as ranging from 35% to 61% (e.g. Brooner et al., 1990; Brooner et al., 1993; Darke et al., 1994; Khantzian & Treece, 1985). In contrast, the life-time prevalence among the general population has been estimated to be only 4% (Robins et al., 1991).

Associated with a diagnosis of ASPD among IDUs are higher levels of risk-taking with regard to injecting and sexual behaviour (as indicated by more frequent needle-sharing, and more needle-sharing and sexual partners) than among IDUs without an ASPD diagnosis. A higher seroprevalence of HIV has also been found among IDUs with a diagnosis of ASPD than among other IDUs (Brooner et al., 1990; Brooner et al., 1993; Gill et al., 1992) A diagnosis of ASPD among IDUs has also been associated with poorer outcomes in methadone maintenance programs (Woody et al., 1985), although there is evidence to suggest that this may not be the case for outcome measures such as retention in treatment, methadone dosage, and drug use whilst in treatment (Darke et al., 1994; Gill et al., 1992; Rousar et al., 1994).

Antisocial personality disorder is defined by the revised 3rd edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R; American Psychiatric Association, 1987) as being characterised by a pattern of antisocial and irresponsible behaviour that begins in childhood or early adolescence and continues into adulthood. In order for a diagnosis to be given, a number of criteria, presented in Table 1, must be met.

It should be noted that in the most recent edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994) the diagnostic criteria for ASPD are almost identical to those of DSM-III-R. There has, however, been some elaboration of

the juvenile symptoms, along with the addition of "bullying/threatening behaviour" and "staying out at night despite parental prohibitions". Conversely, the adult symptoms have been streamlined and the "parental irresponsibility" and "inability to sustain a monogamous relationship" criteria have been removed.

As Table 1 illustrates, once evidence of Conduct Disorder has been established, only four out of ten adult behaviours need be demonstrated in order to receive an ASPD diagnosis. No single behaviour is essential for a diagnosis. Whilst such a criterion may be sufficient to demonstrate a pattern of antisocial behaviour among the general population, it probably lacks discriminatory power among IDUs.

Table 1: DSM-III-R Criteria for Antisocial Personality Disorder

A. *Current age at least 18.*
B. *Evidence of Conduct Disorder with onset before age 15, as indicated by a history of at least three of the following:*
1. Often truant from school
2. Ran away from home more than once
3. Started fights often
4. Used a weapon in more than one fight
5. Forced others into sexual activity
6. Cruel to animals
7. Cruel to people
8. Deliberately destroyed property
9. Arson
10. Often lied
11. Stolen without confrontation
12. Stolen with confrontation
C. *Pattern of antisocial and irresponsible behaviour since age 15 as indicated by at least four of the following:*
1. Unable to sustain consistent work behaviour
2. Repeatedly performs illegal acts
3. Irritable and aggressive
4. Does not honour financial obligations
5. Fails to plan ahead
6. Lies frequently
7. Recklessness regarding safety
8. Irresponsible parent
9. Unable to sustain monogamous r/ship for more than 12 mths
10. Lacks remorse
D. *Antisocial behaviour does not occur exclusively during the course of schizophrenia or manic episodes.*

Unemployment (Wodak et al., 1992), unlawful acts (Ball et al., 1983; Hall et al., 1993), financial irresponsibility, and lying, for example, are common accompaniments of the habitual procurement and use of expensive, illegal drugs. As such, it is difficult to determine whether a diagnosis of ASPD among this group encapsulates behaviour motivated by an antisocial personality, or behaviour motivated by drug addiction.

The inclusion of behaviours that may be primarily attributable to drug use in the DSM-III and DSM-III- R criteria for ASPD reflects the view that whilst substance abuse may indeed result in antisocial behaviour, the syndrome underlying substance abuse is ASPD (Gerstley et al., 1990).

There has, however, been much speculation as to whether or not this is necessarily the case and whether antisocial behaviour among this population can be assessed independently of substance abuse (Gerstley et al., 1990). Ironically, the complex and problematic nature of the relationship between ASPD and substance abuse has arisen out of an attempt to define and objectively measure a somewhat nebulous construct, one that has been the subject of both philosophical and scientific debate for the last two centuries.

The notion of an "antisocial personality" can be traced back to Theophrastus, a student of Aristotle, who wrote of "The Unscrupulous Man". The clinical features of such a personality were brought under scrutiny at the end of the 18th century when psychiatrists argued over the nature of insanity and whether or not it necessarily implied a lack of reason (Millon, 1996). In 1801, Pinel proposed a form of insanity without impairment of reasoning ability, "manie sans délire" ("insanity without delirium"). It was later argued (c.f. Pritchard, 1835; in Millon, 1996) that individuals with this disorder suffered from defects in moral character and, hence, suffered from "moral insanity" (Millon, 1996).

The abandonment of an ascription of immorality to the disorder was signified by the proposal of several alternative aetiologies that ranged from physical or constitutional impairments to societal influences. With these shifts in emphasis came changes in terminology. The term "psychopathic" was introduced to reflect the idea that personality was physically based, or constitutional. Later the term "sociopathic", which was originally introduced to signify the social origins of antisocial behaviour (Millon, 1996), covered any deviation or pathology in social relations (Blackburn, 1988). Whilst they have each originally embraced different conceptualisations of the disorder, the terms "psychopathy", "sociopathy", and "antisocial personality disorder" are now frequently used interchangeably.

The development of psychoanalytic theory led to the notion that an antisocial personality, or "psychopathy", was due to a defective superego which resulted in the uninhibited expression of impulse, i.e. that the individual had failed to internalise parental or social norms and acted purely to satisfy instinctual urges via impulsive behaviour. Within the psychoanalytic tradition was Cleckley's (1941) description of the prototypical psychopath. Cleckley proposed that the

psychopath was characterised by an inability to experience guilt, remorse, or anxiety, or to form emotional attachments. The psychopath also manipulated others to achieve his/her own ends and displayed shallow emotions and superficial charm. Cleckley cautioned that such personalities were not only found in prisons but in highly respected social roles.

The psychoanalytic approach to psychopathy was reflected in the earliest editions of the DSM (DSM-I & DSM-II; American Psychiatric Association, 1952, 1968), particularly in DSM-II, which drew heavily on Cleckley's conceptualisation of the psychopath. The labels "Sociopathic Personality Disturbance: Antisocial Reaction" (DSM-I) and "Antisocial Personality" (DSM-II), however, appeared to belie the underlying aetiological theory. Irrespective of the nomenclature used, the diagnostic criteria of both DSM-I and DSM-II comprised core psychological traits. They excluded antisocial behaviours that were symptomatic of underlying neuroses, and therefore not indicative of "true" psychopathy. Subsequent versions of the DSM, however, did not distinguish between the "true", or "idiopathic", psychopath who exhibited antisocial behaviours and possessed the necessary personality characteristics, and the "symptomatic" psychopath who committed antisocial acts but was capable of experiencing guilt, remorse, and interpersonal relationships (Gerstley et al., 1990).

The diagnostic criteria of DSM-III for what had now been labelled "Antisocial Personality Disorder" were based entirely on behavioural predictors that had been identified by Robins (Gerstley et al., 1990). This was influenced by research conducted by Robins (1966) into childhood delinquency and its association with adult antisocial behaviour, and by concerns about the difficulty of reliably measuring personality traits (Robins, 1978).

Subsequently, there was criticism of the emphasis of DSM-III on socially deviant behaviour, rather than an underlying personality structure (Millon, 1981; Hare, 1985). In the reformulation of the ASPD criteria in the revised edition (DSM-III-R), "lack of remorse" was added as a contributory, but not required, symptom. There was even less change in the most recent edition of DSM (DSM-IV; American Psychiatric Association, 1994), in which the DSM-III-R criteria reappeared in a more simplified and/or clarified form.

Whilst the DSM-III and DSM-III-R emphasis on behavioural indicators of ASPD has resulted in a diagnostic category with a high degree of inter-rater reliability (Hare et al., 1991), there has been concern that the validity of the concept has been compromised. Zagon (1995), for example, has argued that the reliance of DSM-III-R on specific behaviours, rather than psychological characteristics, is a radical departure from clinical tradition (e.g. Cleckley, 1941), clinical practice (Davies & Feldman, 1981), and international diagnostic nomenclature (e.g. ICD-10, World Health Organization, 1993). Those items that are capable of assessing underlying personality traits, such as lack of remorse and failure to maintain a monogamous relationship, carry no greater weight than any of the other items. Hence, both true and symptomatic psychopaths have the potential to be given a diagnosis of ASPD (Gerstley et al., 1990). Gerstley et al. (1990) emphasise that DSM-III-R's failure to make this distinction may have particular implications for drug abusers. They hypothesise that a diagnosis of ASPD in this population is likely to include symptomatic psychopaths, whose drug abuse precedes and motivates their antisocial behaviour, as well as true psychopaths.

An alternative to the DSM-III and DSM-III-R conceptualisation and assessment of the antisocial personality was presented by Hare (1980). Hare argued that the concept of psychopathy has evolved from a pathological personality type to being almost synonymous with criminality and social deviance and that, as such, a diagnosis of ASPD is over-inclusive. For example, 76% of a sample of prison inmates met the DSM-III criteria for ASPD, yet only 33% would have been considered psychopaths according to a traditional clinical assessment of the disorder (Hare, 1978; cited in Hare, 1980). Using the criteria originally outlined by Cleckley (1941), Hare developed the Psychopathy Checklist (PCL) (Hare, 1980), and later the Revised Psychopathy Checklist (PCL-R) (Hare, 1991) as instruments that would measure psychopathy according to traditional clinical conceptions.

The PCL-R consists of 20 items (Table 2) that measure both antisocial behaviours and core psychological traits.

Table 2: Items of the Psychopathy Checklist - Revised (PCL-R)

1. Glibness/Superficial Charm

> 2. Grandiose Sense of Self-Worth
>
> 3. Need for Stimulation/Proneness to Boredom
>
> 4. Pathological Lying
>
> 5. Conning/Manipulative
>
> 6. Lack of Remorse
>
> 7. Shallow Affect
>
> 8. Callous/Lack of Empathy
>
> 9. Parasitic Lifestyle
>
> 10. Poor Behavioural Controls
>
> 11. Promiscuity
>
> 12. Early Behaviour Problems (i.e. before age 12)
>
> 13. Lack of Realistic Long-Term Goals
>
> 14. Impulsivity
>
> 15. Irresponsibility
>
> 16. Failure to Accept Responsibility for Own Actions
>
> 17. Many Short-Term Marital Relationships
>
> 18. Juvenile Delinquency
>
> 19. Revocation of Conditional Parole
>
> 20. Criminal Versatility

Hare (1991) asserted that there was strong evidence for the existence of two distinct but correlated factors that constitute the PCL and PCL-R (Hare et. al., 1990; Harpur et al., 1988). The first factor, *"selfish, callous, and remorseless use of others"*, is comprised of those psychological traits that are integral to the construct of psychopathy, such as "glibness", "grandiosity" and "lack of remorse".The second factor, *"chronically unstable and antisocial lifestyle; social deviance"* consists of behavioural patterns that include "parasitic lifestyle", "impulsivity", and "irresponsibility" (Hare, 1991). Substance abuse has been found to be significantly related to the general social deviance factor, but not to the core psychological factor (Smith & Newman, 1990).

Since DSM-III-R does not discriminate between antisocial behaviours that are a consequence of drug use and those that are independent of drug use, a diagnosis of ASPD may be applied more

liberally to IDUs than is warranted, with the result that IDUs are grossly over-represented in the sample of people with this disorder. The potential over-diagnosis of ASPD among IDUs warrants further research not only because of the inadequacies of this diagnostic system, but because of the implications that a diagnosis of ASPD has for the categorisation and treatment of the individual. Given the lack of an effective treatment for ASPD itself (Quality Assurance Project, 1991), and the general view that those with ASPD respond poorly to conventional treatments (Gerstley et al., 1990), IDUs may receive differential treatment according to whether or not they receive a diagnosis of ASPD.

The aim of the current study was to further examine the diagnosis of ASPD and psychopathy among IDUs. The potential of DSM-III-R to over-diagnose ASPD in this population was explored by comparing the prevalence of ASPD among methadone maintenance (MM) patients using DSM-III-R criteria, with that of psychopathy using the diagnostic methods outlined in the PCL-R. As Australia is one of the few countries to have a methadone maintenance program operating within the prison system (Dolan et al., 1995), patients in MM treatment in the community and in prison were assessed. In order to determine the degree to which the above issues are particularly problematic for IDUs, the prevalence of ASPD and psychopathy among MM patients was also compared to that among prisoners who were not IDUs.

1.1 *Study Aims*

Specifically, there were four aims of the current study:

1. To compare the prevalence of ASPD using DSM-III-R criteria with that of psychopathy using the PCL-R among a sample of methadone maintenance patients in both the community and in prison.

2. To explore the relationships between heroin use history and criminal history.

3. To assess the impact of a diagnosis of ASPD on performance in methadone maintenance treatment.

4. To examine the factor structure of psychopathy, as measured by the PCL-R, among methadone maintenance patients.

2.0 METHOD

2.1 *Procedure*

The sample comprised 550 subjects from 3 groups:

1. Two hundred community methadone maintenance patients from methadone clinics in the inner-city and inner-west regions of Sydney (CM).

2. Two hundred prison inmates enrolled in methadone maintenance programs in metropolitan (Long Bay; Mulawa) and rural (Goulburn; Grafton; Lithgow) prisons (PM) in NSW.

3. One hundred and fifty inmates from metropolitan (Long Bay; Mulawa) and rural (Goulburn; Grafton; Lithgow) NSW prisons who had no history of regular heroin use (PNH).

Community methadone subjects were recruited by way of advertisements placed in the clinic waiting rooms and by word of mouth. Prison methadone subjects were approached in the prison clinics during the methadone dosing periods. In prisons where the security protocol for these periods made this impracticable, prisoners were summoned to a suitable interviewing area after being identified by clinic staff as being maintained on methadone.

The eligibility criteria for both CM and PM subjects were that they be aged between 18 and 50 years and enrolled in a methadone maintenance program for the purpose of treating heroin dependence. Subjects in the PNH group were recruited by randomly selecting inmates who were not previously identified as being on methadone. Suitable inmates were brought to the interviewing area in the prison and screened for eligibility to participate in the study. The age criterion for the PNH subjects was the same as for the other two groups (18-50 yrs), but only those who had never injected heroin or who had only injected heroin sporadically (defined as five times or less in total) were eligible for inclusion in the study.

Once the screening process had been completed and an individual was deemed suitable for

inclusion in the study, an overview of the structure and content of the interview was given, as was a guarantee of anonymity and confidentiality. All potential participants were advised that they could terminate the interview at any time without consequence and that, if required, the principal investigators were available for debriefing. Those in the methadone groups were assured that their participation did not in any way affect the current or future provision of any treatment.

Each interview was conducted by one of two research assistants who had been trained in the administration of all components of the questionnaire. Community interviews were conducted either in private rooms in the methadone clinics or at public venues (e.g. parks, pubs, and cafés) determined by the subject. Prison interviews were conducted either in private clinic rooms or in areas designated for professional visits. Each interview took approximately 60-90 minutes to complete and, on completion, CM subjects were paid A$20 for participation in the study. In accordance with prison regulations, prisoners were not paid for their participation.

2.2 *Structured Interview*

The structured interview comprised the following sections:-

2.2.1 Demographic characteristics

The following demographic details were obtained: the age and gender of the subject, level of high school and tertiary education completed, employment status, length of time in current treatment (CM subjects) or in prison (PM & PNH subjects), types of treatments sought in the past, the age at which the subject first sought treatment, the longest period in treatment, and time elapsed since they were previously in treatment.

2.2.2 Drug use history

Past drug use was assessed by asking subjects which types of drugs they had ever used and, of those drugs ever used, which drugs they had ever injected. Subjects were also asked to give the

age at which they were first intoxicated and the ages at which each drug had: first been used, first been used regularly (at least once a month for at least six months), and last been used. Current drug use was measured by asking subjects which drugs they had used in the preceding six months and the number of days on which they were used. Of the drugs used during this period, subjects were asked to specify which ones they had injected. Previous research has consistently demonstrated that when subjects are given guarantees of anonymity and confidentiality, self-reported information about drug use and criminal behaviour is valid and reliable (Darke et al., 1992; Magura et al., 1987).

2.2.3 Injecting behaviour

Injecting behaviour was assessed by asking subjects the age at which they first injected a drug and the last time they borrowed and/or lent a used needle. Prisoners were asked how often they had borrowed and/or lent used needles since they had been in prison and, in the preceding month in prison, how often they had injected drugs and borrowed and/or lent used needles. Prisoners who had borrowed and/or lent used needles in the preceding month were also asked to estimate how many people had used the needle before or after them.

2.2.4 Criminal history

Criminal history was assessed by recording the number of arrests for criminal offences over the subject's lifetime, the ages at which they were first and last arrested, the nature of any offences for which the subject had been convicted, the ages at which each type of conviction had first occurred, and the age at which they were last convicted. The number of times a subject had been sentenced to a Juvenile Justice institution (JJI) and the age at which this first occurred were also recorded, as were the number of times and ages at which they were first and last sentenced to an adult prison.

2.2.5 Diagnostic Interview Schedule (DIS)

In order to assess whether or not subjects met the criteria for ASPD, subjects were given the

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ASPD module of the Diagnostic Interview Schedule (DIS) (Robins et al., 1981). This operationalizes the DSM-III-R criteria for ASPD in an interview schedule that asks a series of questions, each of which pertains to a specific juvenile or adult symptom that may contribute to a DSM-III-R diagnosis of ASPD. The presence or absence of each of the DSM-III-R symptoms of ASPD can thus be determined by the responses to the corresponding DIS questions. The majority of these questions require a yes/no answer (e.g. Have you ever used an alias or an assumed name?). If the answer is "yes", the ages at which the behaviour was first and last exhibited are obtained. Questions distinguishing child from adult behaviours delimit the age of onset (e.g. Did you start fights more than once before you were 15?; Since you were 15, have you ever used a weapon ...in a fight?).

2.2.6 Psychopathy Checklist Revised (PCL-R)

In assessing each of the PCL-R symptoms, Hare (1990) advocated a lengthy interview that included many open-ended questions. As it would not have been feasible to spend indefinite periods of time interviewing any one subject, a more structured interview was developed for the current study. In order to measure the degree to which the PCL-R symptoms applied to the subject, a set of questions was devised to assess each of the twenty symptoms. The majority of the questions were formulated by the third author (RFJ), a forensic psychiatrist, and required yes/no answers. These answers, as well as any additional information volunteered by the subject, formed the basis for a rating that reflected the degree to which the personality or behaviour of the subject matched Hare's (1990) description of the symptom.

The symptom ratings were given by the interviewer according to the following 3-point ordinal scale:

0 - Symptom definitely not present
1 - Symptom may be present/symptom present in some respects
2 - Symptom definitely present

Whereas the ratings for most of the PCL-R symptoms rely on the subjective judgement of the

interviewer, ratings for symptoms 17, 18, 19, and 20 (Table 2) are based on explicit criteria provided by Hare (1990). In order to determine whether or not a subject had a history of "Early behaviour problems" (Symptom 12), questions required not only a confirmation or denial that a particular antisocial behaviour had been exhibited, but the age at which it first occurred. Ratings for this symptom were based on following scale devised by the researchers:

0 - No persistent antisocial behaviours exhibited at or before age 12
1 - One or two forms of persistent antisocial behaviour exhibited at or before age 12
2 - Three or more forms of persistent antisocial behaviour exhibited at or before age 12

Impulsivity (Symptom 14) was measured using the Guilford-Zimmerman Temperament Survey (Restraint Scale) (Guilford & Zimmerman, 1949). In order to make the language more culturally specific to the target sample, some of the questions were rephrased by RFJ. For example, the original true/false question "You like parties you attend to be lively" was reworded to read " If you go to a party, do you like it to be a wild, raging one?". The total scores for the 28-item scale were trichotomized so that scores in the ranges of 0-8, 9-19, and 20-28 were equivalent to a rating of "0", "1", and "2", respectively.

The maximum score that can be attained on the PCL-R is 40, a diagnosis of psychopathy being applied in cases where the total score equals or exceeds 30 (Hare, 1990).

2.3 *Inter-rater Reliability*

In accordance with Hare's (1990) recommendation that acceptable levels of inter-rater reliability be achieved before using the PCL-R for diagnostic purposes, 50 interviews were conducted with prison and community methadone patients in the presence of two raters. Whilst one rater conducted the PCL-R interview, the other observed, with both raters making independent ratings for each of the 20 symptoms. Each interviewer conducted half, and observed half of the 50 interviews.

2.4 *Analyses*

In order to assess the internal reliability of the PCL-R, Chronbach's alpha (Chronbach, 1951) was calculated. Pearson correlations were calculated to determine the item-total correlations of the 20 PCL-R items. The inter-rater reliability of each of the 20 PCL-R items was calculated using the weighted kappa statistic. The inter-rater reliability of determining whether or not subjects qualified for a diagnosis of psychopathy was measured using the kappa statistic (Agresti, 1990).

For continuous variables, comparisons between each of the three groups were undertaken via planned pairwise comparisons. In order to control the familywise error rate at 0.05, Bonferroni-adjusted t-tests were conducted for each contrast. The analysis of categorical variables entailed using chi-square tests (χ^2) with Bonferroni adjustments. Where variable distributions were highly skewed, medians were reported and data were analyzed using the Mann-Whitney U test, a non-parametric analogue of the t-test, at a Bonferroni adjusted significance level. Unless otherwise stated, all reported medians were calculated for the total number of subjects in each group selected for analysis. McNemar's test for paired proportions was used to compare the prevalence of ASPD and psychopathy within each of the three groups.

In order to identify those factors that were independently associated with performance in MM treatment, simultaneous multiple regressions and logistic regressions were conducted (Cohen & Cohen, 1993) using the SYSTAT package (Wilkinson, 1990).

In order to test the two-factor model of the PCL-R identified by Hare, a confirmatory factor analysis was performed on the first 376 methadone maintenance subjects (CM: n = 200; PM: n = 176). As each of the items of the PCL-R was scored according to an ordinal scale, polychoric intercorrelations were calculated using the PRELIS module in SPSS (Joreskog & Sorbom, 1988). The resulting correlation matrix was then imported into SYSTAT and subjected to a path analysis using the RAMONA module (Wilkinson & Hill, 1994). As an earlier factor analysis of the PCL-R (Hare, 1991) revealed that three of the items did not load above 0.40 on either of the two factors, only 17 out of the 20 items were included in the model. Dependence relationships between these items and the factors were defined on the basis of the results of the above analysis.

In accordance with the correlation of .50 that Hare (1991) found between the two PCL-R factors, a covariance path between factors 1 and 2 was included, as were covariance paths between the error terms. The final model was estimated using the maximum Wishart likelihood method.

3.0 RESULTS

3.1 *Sample Characteristics*

The demographic characteristics of each group comprising the sample are summarised in Table 3. The mean age of subjects did not significantly differ between groups (CM=33.3 yrs vs PM=31.6 yrs vs PNH=32.4 yrs). There was, however, a higher proportion of males in the PNH group than in the PM group (95% vs 81%, $\chi^2_1 = 13.60$, p<.001) and, in turn, a higher proportion of males in the PM group than in the CM group (81% vs 55%, $\chi^2_1 = 29.64$, p<.001). The low proportion of females (19%) in the PM group is consistent with the ratio of male to female inmates on the NSW Prison Methadone Program (5:1). Similarly, the even lower proportion of females in the PNH group (5%) reflects the 20:1 ratio of male to female inmates in the NSW prison population (Corrections Health Service, 1995). Subjects in the CM group, on average, completed a greater number of school years than subjects in the PM group (10.0 yrs vs 9.0 yrs, $t_{546} = 6.48$, p<.001), as did subjects in the PNH group (9.9 yrs vs 9.0, $t_{546} = 5.14$, p<.001). CM and PNH subjects were also more likely than those in the PM group to have completed trade or tertiary courses after leaving school (CM = 52% vs PM = 32%, $\chi^2_1 = 14.84$, p<.001; PNH = 53% vs PM = 32%, $\chi^2_1 = 15.24$, p<.001). As is evident from Table 3, almost three-quarters (72%) of the community methadone subjects were unemployed.

Table 3: Demographic characteristics of CM, PM, & PNH groups

	CM (n=200)	PM (n=200)	PNH (n=150)
Age (Yrs)	33.3	31.6	32.4
Gender (% Male)	55	81	95
Yrs of School (Yrs)	10.0	9.0	9.9
After School (%) :			
Trade	41	30	41
University/ College	11	2	12
Employment (%) :			
Unemployed	72	-	-
Full Time	6	-	-
Part Time/ Casual	11	-	-
Student	3	-	-
Home Duties	9	-	-

3.2 *Drug Use and Treatment History*

Subjects in the PNH group were first intoxicated significantly later than those in both the CM (15.1 yrs vs 14.0 yrs, $t_{534} = 2.73$, p<.01) and PM (15.1 yrs vs 13.5 yrs, $t_{534} = 3.82$, p<.001) groups. However, there was no significant difference between the age at which subjects in the CM and PM groups were first intoxicated (14.0 yrs vs 13.5 yrs) (Table 4). The ages at which subjects first used heroin and first injected a drug were reported for all groups. Although experienced heroin injectors were excluded from the PNH group, 23% of these subjects had tried heroin, and 24% had injected a drug, at some time. The only significant difference between the ages at which each group first used heroin was that those in the PNH group started using heroin at a later age than those in the PM group (20.9 yrs vs 18.2 yrs, $t_{430} = 3.01$, p<.01), whilst there were no

significant differences between the age at which subjects in each of the three groups first injected a drug (18.5 vs 17.7 vs 18.6).

The polydrug use histories of the CM and PM groups were not significantly different. Subjects did not differ in the median number of drug classes that they had ever used (10 vs 10), but both groups had used more drug classes than the PNH group (CM=10 vs PNH=4, $Z = -13.17$, $p<.001$; PM=10 vs PNH=4, $Z = -12.87$, $p<.001$). Similar results were obtained for the number of drug classes that subjects had injected. The PNH group had injected fewer drug classes than the CM (0 vs 4, $Z = -14.89$, $p<.001$) and PM groups (0 vs 4, $Z = -14.85$, $p<.001$), which did not differ from each other.

The CM and PM groups did not significantly differ with respect to either the age at which subjects first entered a treatment program for opiate addiction (23.9 yrs vs 22.5 yrs) or the median number of different types of treatment they had received in the past (e.g. methadone, therapeutic community, drug counselling) (4 vs 3). They did differ in the longest time spent in any one type of treatment. This was longer among the CM group than the PM group (30 mths vs 24 mths, $Z = -2.49$, $p<.02$). At the time of interview, however, the PM group had been maintained on methadone for a longer period of time (58 mths vs 24 mths, $Z = -8.68$, $p<.001$).

Table 4: Drug use and treatment history of CM, PM, & PNH groups

	CM (n=200)	PM (n=200)	PNH (n=150)
Age first intoxicated (Yrs)	14.0	13.5	15.1 (n=139)
Ever used heroin (%)	100	100	23
Ever injected a drug (%)	100	100	24
Age first used heroin (Yrs)	19.0	18.2	20.9 (n=34)
Age first injected a drug (Yrs)	18.5	17.7	18.6 (n=38)
No. of drug classes ever used (Median)	10	10	4
No. of drug classes ever injected (Median)	4	4	0
Age first entered opiate treatment (Yrs)	23.9	22.5	-
No. of past treatments (Median)	4	3	-
Longest time in any treatment (Median mths)	30	24	-
Time spent in current methadone maintenance treatment (Median mths)	24	58	-

3.3 *Current Drug Use*

As Table 5 illustrates, almost three-quarters (74%) of the CM group and over half (53%) of the PM group had used heroin in the 6 months preceding the interview. This difference was statistically significant ($\chi^2_1 = 18.18$, p<.001). Similarly, the median number of days on which subjects had used heroin during this period was greater for those in the CM group than for those in the PM group (9 vs 1, Z = -3.68, p<.001).

There was no statistically significant difference between the CM and PM groups in the use of other opiates in the 6 months prior to the interview (17% vs 16%). The number of different drug classes that subjects in the CM group used during this period, however, was significantly greater than that of the PM group (4 vs 3, Z = -3.61, p<.001). The proportion of CM subjects that had injected a drug in the previous 6 months (84%) was also greater than that of PM subjects (64%) ($\chi^2_1 = 20.67$, p<.001).

An examination of needle-sharing behaviour in the 6 months prior to the interview revealed that significantly more PM than CM subjects had used a needle after someone else (31% vs 18%, $\chi^2_1 = 9.14$, p<.001). Similarly, significantly more PM than CM subjects had used a needle before someone else during this period (39% vs 22%, $\chi^2_1 = 13.63$, p<.001).

Subjects in the PNH group who had used heroin (5%) or other opiates (4%) in the previous 6 months were in the minority. Similarly, injecting drug use and needle-sharing during this period was reported by only 8% and 1%, respectively, of PNH subjects.

Table 5: Current drug use

	CM (n=200)	PM (n=200)	PNH (n=150)
Used heroin in last 6 mths (%)	74	53	5
No. of days used heroin in last 6 mths (Median)	9	1	0
Used other opiates in last 6 mths (%)	17	16	4
No. of drug classes used in last 6 mths (Median)	4	3	2
Injected a drug in last 6 mths (%)	84	64	8
Borrowed a used needle in last 6 mths (%)	18	31	1
Lent a used needle in last 6 mths (%)	22	39	1

3.4 *Criminal History*

As a defining feature of the PM and PNH groups was that the subjects were current prison inmates, the proportion that had been arrested at least once prior to the time of interview was 100%. As illustrated in Table 6, 93% of subjects in the CM group had also been arrested at some time in their lives. The mean ages at which subjects in each group were first arrested differed significantly, with subjects in the PM group being arrested earlier than subjects in the CM group (15.1 yrs vs 19.4 yrs, t_{531}= -6.21, p<.001) who, in turn, were arrested earlier than those in the PNH group (19.4 yrs vs 21.8 yrs, t_{531} = -3.26, p<.01). Similarly, the median number of times that the PM group had been arrested was significantly greater than that for the CM group (25 vs 8, Z = -8.66, p<.001), for which the number of arrests was greater than that for the PNH group (8 vs 5, Z = -2.53, p<.02).

Subjects in the PM group were more likely to have been sentenced to a Juvenile Justice institution (JJI) than subjects in either the CM (51% vs 18%, χ^2_1= 46.31, p<.001) or PNH (51% vs 26%, χ^2_1= 21.24, p<.001) groups. The latter two groups did not significantly differ in the proportion that had received a JJI sentence (18% vs 26%). Of the subjects in the PM and PNH groups, 95% and 63%, respectively, had previously served, or were currently serving, a prison sentence, the rest being on remand (i.e. awaiting trial). Over half (52%) of the CM group had previously received a prison sentence, but this proportion was significantly less than that for the PM group (52% vs 95%, χ^2_1= 91.28, p<.001), as was the proportion of PNH subjects (63% vs 95%, χ^2_1= 54.43, p<.001). There was no significant difference between the CM and PNH groups in the proportion that had received a prison sentence (52% vs 63%).

An examination of the types of offences for which subjects had previously been convicted revealed that a greater proportion of subjects had been convicted of major theft and "break and enter" offences in the PM group than in either the CM (77% vs 39%, χ^2_1= 59.18, p<.001) or PNH (77% vs 30%, χ^2_1= 75.28, p<.001) groups. A similar pattern was observed for robbery, armed robbery and "robbery with assault" offences (PM = 44% vs CM = 17%, χ^2_1= 33.44, p<.001; PM = 44% vs PNH = 15%, χ^2_1= 31.90, p<.001). The CM and PNH groups, however, did not significantly differ in the proportions of subjects that had been convicted of either theft (39% vs

30%) or robbery (17% vs 15%) offences.

The PM group were more likely than the CM group to have been convicted of "simple assault" (38% vs 9%, χ^2_1= 45.86, p<.001) and "assault causing bodily harm" (25% vs 13%, χ^2_1= 9.45, p<.01). Whilst there were no significant differences between the PM and PNH groups with respect to the proportion of subjects convicted of assault offences (simple assault: 38% vs 27%, assault causing injury: 25% vs 20%), PNH subjects were more likely to have been convicted of simple assault than CM subjects (27% vs 9%, χ^2_1= 20.65, p<.001), although they were no more likely to have been convicted of assault causing bodily harm (20% vs 13%). The proportion of subjects who had previously been convicted for fraud was significantly lower in the PNH group than in both the CM (13% vs 43%, χ^2_1= 34.34, p<.001) and PM (13% vs 41%, χ^2_1= 30.45, p<.001) groups, whereas the CM and PM groups did not differ in this respect (43% vs 41%).

Table 6: Criminal history of CM, PM, & PNH groups

	CM (n=200)	PM (n=200)	PNH (n=150)
Ever arrested (%)	93	100	100
Ever sentenced to JJI (%)	18	51	26
Ever sentenced to prison (%)	52	95	63
No. of arrests (Med)	8	25	5
Age first arrested (Yrs)	19.4 (n=185)	15.1	21.8
No. of times in JJI (Med)	0	1	0
No. of prison sentences (Med)	1	4	1
Prior convictions (%):			
Major theft/ Break & enter	39	77	30
Robbery/ armed robbery/ robbery with violence	17	44	15
Simple assault	9	38	27
Assault causing grievous bodily harm	13	25	20
Fraud	43	41	13

3.5 *Reliability of the PCL-R*

The alpha coefficient for the PCL-R was 0.85 for the total sample; and 0.84, 0.83, and 0.86 for the CM, PM, and PNH samples, respectively. These coefficients indicate high internal reliability among the PCL-R items. Item-total correlations for the total sample ranged from 0.11 (many short-term marital relationships) to 0.60 (conning/manipulative) (Table 7). When item-total correlations were calculated for each of the three groups, it was found that, as for the total sample, the lowest correlation was for "many short-term marital relationships" (CM: $r = 0.08$, PM: $r = 0.02$, PNH: $r = 0.10$). The mean inter-item correlation was 0.23 for the total sample, 0.21 for the CM sample, 0.20 for the PM sample, and 0.25 for the PNH sample. In order for a scale to be considered homogeneous, the proposed cut-off point for mean inter-item correlations is 0.20 (Green, Lissitz, & Mulaik, 1977).

As Table 7 illustrates, weighted kappas for the individual PCL-R items ranged from 0.51 (irresponsibility) to 1.00 (early behaviour problems, lack of realistic long-term goals), indicating a high degree of inter-rater reliability. In terms of whether or not subjects qualified for a diagnosis of psychopathy, there was 100% agreement between raters (kappa=1.00) and a high correlation between the raters' total PCL-R scores ($r = 0.94$).

Table 7: Item-total correlations and weighted kappa for inter-rater agreement for PCL-R items

Item	Item-total correlations (n=550)	Weighted kappa (n=50)
Glibness/Superficial Charm	0.38	0.64
Grandiose Sense of Self-Worth	0.38	0.65
Need for Stimulation /Proneness to Boredom	0.47	0.88
Pathological Lying	0.50	0.76
Conning/Manipulative	0.60	0.70
Lack of Remorse	0.56	0.56
Shallow Affect	0.42	0.67
Callous/Lack of Empathy	0.49	0.67
Parasitic Lifestyle	0.47	0.63
Poor Behavioural Controls	0.54	0.66
Promiscuity	0.35	0.71
Early Behaviour Problems	0.38	1.00
Lack of Realistic Long-Term Goals	0.42	1.00
Impulsivity	0.43	0.88
Irresponsibility	0.56	0.51
Failure to Accept Responsibility for Actions	0.41	0.61
Many Short-Term Marital Relationships	0.11	0.98
Juvenile Delinquency	0.42	0.89
Revocation of Conditional Parole	0.37	0.87
Criminal Versatility	0.54	0.98

3.6 *Prevalence of ASPD*

The prevalence of ASPD among the PM group was significantly higher than the CM group (65% vs 44%, $\chi^2_1 = 16.12$, p<.001) which, in turn, was higher than that of the PNH group (44% vs 31%, $\chi^2_1 = 5.90$, p<.02) (Table 8).

Whilst the CM and PM groups did not significantly differ with respect to the proportion of subjects who met the adult criteria for ASPD (84% vs 88%), both of these groups contained greater proportions of such subjects than the PNH group (CM=84% vs PNH=61%, $\chi^2_1 = 20.75$, p<.001; PM=88% vs PNH=61%, $\chi^2_1 = 32.51$, p<.001). There was a significantly higher proportion of the PM group that met the criteria for conduct disorder than of the CM group (68% vs 47%, $\chi^2_1 = 16.34$, p<.001), and an even higher proportion than that of the PNH group (68% vs 39%, $\chi^2_1 = 26.40$, p<.001). The difference, however, between the proportions of CM and PNH subjects qualifying for a diagnosis of conduct disorder (47% vs 39%) failed to reach a level of statistical significance.

An examination of the prevalence of ASPD with respect to gender revealed that, of the males in each of the groups, the highest prevalence of ASPD was found in the PM group (65%) followed by the CM group (48%) and, finally, the PNH group (32%). These differences proved to be statistically significant (65% vs 48%, $\chi^2_1 = 6.92$, p<.01; 48% vs 32%, $\chi^2_1 = 6.01$, p<.02). Among the females, the only statistically significant difference was that a higher proportion of females in the PM group qualified for a diagnosis of ASPD than in the CM (64% vs 40%, $\chi^2_1 = 5.65$, p<.02) and PNH (64% vs 13%, $\chi^2_1 = 7.15$, p<.02) groups. Within each group, males were equally as likely as females to receive a diagnosis of ASPD (CM: 48% vs 40%; PM: 65% vs 64%; PNH: 32% vs 13%).

3.7 *Prevalence of Psychopathy*

Of those subjects who qualified for a diagnosis of ASPD (n=263), only 11% also qualified for a diagnosis of psychopathy (Table 8).

The prevalence of psychopathy did not significantly differ between any of the three groups as a whole (4% vs 9% vs 4%), nor when only males were included in the analysis (7% vs 9% vs 4%). There were only four females in the PM group, and none in either the CM or PNH groups, that qualified for a diagnosis of psychopathy.

Among the PM group, males were no more likely than females to receive a diagnosis of psychopathy (9% vs 10%). Due to the absence of psychopathy diagnoses among females in the CM and PNH groups, such comparisons yielded a wide confidence interval. As it would be difficult to draw any firm conclusions from such results, they have not been reported.

Of those subjects who qualified for a diagnosis of psychopathy (n=32), 94% also qualified for a diagnosis of ASPD. The two subjects who met the criteria for psychopathy, but not for ASPD, failed to meet the criteria for conduct disorder in childhood.

For each group, the prevalence of ASPD was compared with that of psychopathy. This analysis revealed significantly higher proportions of subjects qualifying for a diagnosis of ASPD than psychopathy in the CM (44% vs 4%, $\chi^2_1 = 76.11$, p<.001), PM (65% vs 9%, $\chi^2_1 = 107.08$, p<.001), and PNH (31% vs 4%, $\chi^2_1 = 38.03$, p<.001) groups.

Table 8: Prevalence of ASPD & psychopathy among CM, PM, and PNH groups

	CM (n=200)	PM (n=200)	PNH (n=150)
ASPD (%)	44	65	31
Males receiving diagnosis (%)	48	65	32
Female receiving diagnosis (%)	40	64	13
Met DSM-III-R juvenile criteria (%)	47	68	39
Met DSM-III-R adult criteria (%)	84	88	61
Psychopathy (%)	4	9	4
Males receiving diagnosis (%)	7	9	4
Females receiving diagnosis (%)	0	10	0

3.8 *Prevalence of DSM-III-R adult symptoms*

As previously noted (Section 3.6), the proportions of subjects in the CM, PM, and PNH groups that met the adult criteria for a diagnosis of ASPD were 84%, 88%, and 61%, respectively.

As illustrated in Table 9, the most common adult symptoms of ASPD among the CM group were "unlawful behaviour" (97%), "inconsistent work behaviour" (92%), and "failure to plan ahead" (71%). The most common adult symptoms among the PM group were "unlawful behaviour" (100%), "inconsistent work behaviour" (79%), and "irritability and aggression" (78%). Among the PNH group, the most common adult symptoms were "unlawful behaviour" (92%), "inconsistent work behaviour" (59%), and "irritability and aggression" (57%). Given that all of the PNH subjects were incarcerated at the time of the interview, it would seem to follow that "unlawful behaviour" should be applicable to 100% of this group. The observed proportion of PNH subjects with this symptom is less than 100% because the group contained people who had not yet been convicted of the offence with which they were charged and had not previously engaged in unlawful behaviour.

Lack of remorse, the only core psychological trait included in the list of antisocial behaviours that may contribute to a diagnosis of ASPD, was common to 31% of the CM group, 31% of the PM group, and 29% of the PNH group. When only those subjects that qualified for a diagnosis of ASPD were selected for analysis, "lack of remorse" was present in 33% of the CM group (n=88), 36% of the PM group (n=129), and 61% of the PNH group (n=46).

Table 9: Proportions of groups with adult symptoms of ASPD (%)

	CM (n=200)	PM (n=200)	PNH (n=150)
Inconsistent work behaviour	92	79	59
Unlawful behaviour	97	100	92
Irritability and aggression	62	78	57
Financial irresponsibility	55	38	23
Failure to plan ahead	71	59	45
Lying frequently	64	77	47
Recklessness	31	56	41
Irresponsible parent	18	18	13
No monogamous relationship for more than 12 mths	9	15	17
Lack of remorse	31	31	29

3.9 *Prevalence of PCL-R symptoms*

As previously noted (Section 3.6), the proportion of subjects who qualified for a diagnosis of psychopathy was 4% among the CM group, 9% among the PM group, and 4% among the PNH group.

For each of the PCL-R symptoms, the proportion of subjects in each group for whom the symptom was definitely present is shown in Table 10. The most common symptoms among subjects in the CM group were "many short-term relationships" (50%), "proneness to boredom/need for stimulation" (37%), and "early behaviour problems" (34%). Among the PM group, the most common symptoms were "criminal versatility" (80%), "revocation of parole (63%), and "juvenile delinquency" (58%). Among the PNH group, "many short-term relationships" (37%), "juvenile delinquency" (36%), and "criminal versatility" (31%) were the symptoms that were most likely to be definitely present.

Table 10: Proportion of groups scoring "2" for PCL-R symptoms (%)

	CM (n=200)	PM (n=200)	PNH (n=150)
Glibness/Superficial Charm	14	19	22
Grandiosity	9	9	12
Proneness to Boredom	37	49	25
Pathological Lying	10	12	6
Conning/ Manipulative	11	18	13
Lack of Remorse	10	15	17
Shallow Affect	11	12	9
Callous/Lack of Empathy	6	13	12
Parasitic Lifestyle	19	15	8
Poor Behavioural Control	14	22	21
Promiscuity	13	13	21
Early Behaviour Problems	34	52	29
No Realistic Long Term Goals	31	21	18
Impulsivity	9	14	5
Irresponsibility	23	21	11
Failure to Accept Responsibility for Own Actions	14	16	16
Many Short-Term Relationships	50	55	37
Juvenile Delinquency	19	58	36

Revocation of Parole	14	63	27
Criminal Versatility	32	80	31

3.10 *Onset of heroin use and criminal history*

The relationship between the onset of heroin use and of criminal behaviour was investigated among the total sample of IDUs (i.e. CM and PM subjects). Over three-quarters (77%) of this sample had been engaged in some form of criminal activity prior to their first use of heroin. These subjects were evenly distributed across the CM and PM groups (48% vs 52%), and will hereafter be referred to as "primary antisocials". Conversely, 20% of the sample initiated heroin use prior to committing their first indictable offence ("secondary antisocials"). It should be noted that these terms were applied irrespective of whether or not a diagnosis of ASPD was warranted. The remaining 3% of subjects reported that they had not engaged in any criminal behaviour either before or after they first used heroin.

Primary antisocials were significantly younger (32.1 yrs vs 33.7 yrs, $t_{386} = -2.09$, p<.05) and more likely to be male (71% vs 54%, $\chi^2_1 = 7.40$, p<.01). There was no significant difference between primary and secondary antisocials in the number of school years that subjects had completed (9.5 yrs vs 9.7 yrs) (Table 11).

Primary antisocials had used heroin for a shorter period of time (13.5 yrs vs 15.8 yrs, $t_{386} = -3.04$, p<.01) than secondary antisocials, although there were no significant differences between the age at which the two groups had first used heroin (18.6 yrs vs 17.9 yrs). Primary and secondary antisocials did not significantly differ either in the age at which they first injected a drug (18.1 yrs vs 17.8), or the median number of drugs that they had ever used (10 vs 10). Nor were there any significant differences in the proportions of each group who had spent time in any form of treatment prior to their current treatment (93% vs 93%). Similarly, the ages at which primary and secondary antisocial first entered treatment did not significantly differ (23.0 yrs vs 23.1 yrs).

Whilst primary antisocials were more likely than secondary antisocials to have been arrested (98% vs 93%, $\chi^2_1 = 3.74$, p<.05), they were no more likely to have been convicted of a criminal offence (96% vs 91%), or sentenced to prison (74% vs 75%). There were no significant differences between the two groups with respect to the median number of times that subjects had been arrested in the past (16 vs 11) and, similarly, the median number of prison sentences that primary and secondary antisocials had received (including sentences currently being served), did not significantly differ (2 vs 2).

A significantly higher proportion of primary antisocials had committed robberies, armed robberies, or robberies involving violence than secondary antisocials (41% vs 25%, $\chi^2_1 = 6.88$, p<.01). Approximately twice as many had assaulted someone with a weapon (43% vs 22%, $\chi^2_1 = 10.29$, p<.01) and had cruelly hurt or tortured a person (24% vs 12%, $\chi^2_1 = 4.61$, p<.05). The difference between the proportions of primary and secondary antisocial that had ever committed rape (4% vs 0%) was not statistically significant.

Table 11: Demographics, drug use history, and criminal history of primary and secondary antisocials

	Primary antisocials (n=307)	Secondary antisocials (n=81)
Demographics:		
Age (Yrs)	32.1	33.7
Gender (% Male)	71	54
Years of school (Yrs)	9.5	9.7
Drug use history:		
Age first used heroin (Yrs)	18.6	17.9
Length of heroin using career (Yrs)	13.5	15.8
Age first injected a drug (Yrs)	18.1	17.8
No. of drugs ever used (Median)	10	10
Ever received treatment prior to current treatment (%)	93	93
Age first entered treatment (Yrs)	23.0	23.1
Criminal history:		
Ever arrested (%)	98	93
No. of arrests (Median)	16	11
Ever convicted of a criminal offence (%)	96	91
Ever received prison sentence (%)	74	75
No. of prison sentences served (Median)	2	2
Offences committed (%):-		
Robbery/ armed robbery/ robbery with violence	41	25
Assault using a weapon	43	22
Rape	4	0
Cruelly hurt or tortured a person	24	12

As Table 12 illustrates, primary antisocials were significantly more likely to qualify for a diagnosis of ASPD than secondary antisocials (63% vs 30%, $\chi^2_1 = 27.39$, p<.001). Whilst primary antisocials were not significantly more likely to qualify for a diagnosis of psychopathy than secondary antisocials (8% vs 4%), the proportions involved were small. Consequently, the confidence interval associated with this comparison was wide and should be interpreted with caution.

Table 12: Prevalence of ASPD and psychopathy among primary and secondary antisocials

Diagnosis	Primary antisocials (n=307)	Secondary antisocials (n=81)
ASPD (%)	63	30
Psychopathy (%)	8	4

3.11 *Current MM treatment and ASPD*

3.11.1 <u>ASPD and performance in MM treatment among community patients</u>

The mean methadone dose at the time of interview did not significantly differ between CM subjects with ASPD (ASPDs) and CM subjects without ASPD (non-ASPDs) (60.3 mg vs 64.5 mg). Similarly, there was no significant difference between the length of time that ASPDs and non-ASPDs had been retained in current MM treatment (23 mths vs 24 mths).

There were no significant differences between ASPDs and non-ASPDs with respect to the proportion that had used heroin (72% vs 76%) or other opiates (18% vs 15%) in the 6 months preceding the interview (Table 13). The median days of heroin use in the previous 6 months did not significantly differ between ASPDs and non-ASPDs (6 vs 10), nor did the proportion of subjects who had injected a drug during this period (86% vs 83%).

Needle-sharing behaviour in the previous 6 months did not vary according to whether or not the subject qualified for a diagnosis of ASPD, with similar proportions of ASPD and non-ASPD subjects borrowing (19% vs 17%) and lending (25 vs 20%) used needles. There were also no significant differences in the proportion that borrowed (10% vs 11%) or lent (14% vs 9%) a used needle in the month preceding the interview.

The potential masking of any effects of ASPD on retention in treatment by other variables was investigated by conducting simultaneous multiple regressions. Variables entered into the model predicting retention time were: age, gender, ASPD diagnosis, methadone dosage, and length of heroin using career. A diagnosis of ASPD did not prove to be a significant predictor of retention ($t = -0.70$, $p < .50$).

Logistic regressions were also conducted in order to determine whether any effects of ASPD on the use of heroin in the preceding 6 months had been masked by other variables. Variables entered into the model predicting use of heroin during this period were: age, gender, ASPD diagnosis, methadone dosage, length of heroin using career, and time in current methadone treatment. A diagnosis of ASPD was not a significant predictor of heroin use in the preceding 6 months ($t = -1.44$, $p < .20$).

Table 13: Performance in community methadone maintenance patients with and without a diagnosis of ASPD (n=200)

	ASPD (n=88)	Non-ASPD (n=112)
Methadone dose (mg)	60.3	64.5
Time spent in current MM (Median mths)	23	24
Used heroin in last 6 mths (%)	72	76
No. of days used heroin in last 6 mths (Median)	6	10
Used other opiates in last 6 mths (%)	18	15
Injected in last 6 mths (%)	86	83
Borrowed used needle in last 6 mths (%)	19	17
Borrowed used needle in last 1 mth (%)	10	11
Lent used needle in last 6 mths (%)	25	20
Lent used needle in last 1 mth (%)	14	9

3.11.2 ASPD and performance in MM treatment among prison patients

The length of time that PM subjects had been retained in current MM treatment was not included in the following analyses due to the potential confounding of retention time by the length of time that an individual had spent in prison.

The mean methadone dose prescribed for PM subjects at the time of the interview, presented in Table 14, did not significantly differ between ASPD and non-ASPD subjects (79.8 mg vs 70.9 mg), nor did the proportion of subjects who had used heroin (54% vs 51%) or other opiates (19% vs 11%) in the preceding 6 months. Furthermore, the median number of days on which heroin was used during this period did not significantly differ between ASPDs and non-ASPDs (1 vs 1).

There were no significant differences between the proportion of ASPD and non-ASPD subjects who had injected a drug (66% vs 61%), borrowed a used needle (33% vs 27%), or lent a used needle (43% vs 32%) during the 6 months prior to the interview. Similarly, the differences between the proportions of ASPD and non-ASPD subjects who borrowed (16% vs 13%) or lent (20% vs 14%) a used needle during the preceding month failed to achieve statistical significance.

In order to determine whether any effects of ASPD on the use of heroin in the preceding 6 months were masked by other variables, logistic regressions were conducted. Variables entered into the model predicting heroin use were: age, gender, ASPD diagnosis, methadone dosage, and length of heroin using career. A diagnosis of ASPD was not a significant predictor of heroin use in the preceding 6 months ($t = 0.004$, $p < 1.0$).

Table 14: Performance in prison methadone maintenance patients with and without a diagnosis of ASPD (n=200)

	ASPD (n=129)	Non-ASPD (n=71)
Methadone dose (mg)	79.8	70.9
Used heroin in last 6 mths (%)	54	51
No. of days used heroin in last 6 mths (Median)	1	1
Used other opiates in last 6 mths (%)	19	11
Injected in last 6 mths (%)	66	61
Borrowed used needle in last 6 mths (%)	33	27
Borrowed used needle in last 1 mth (%)	16	13
Lent used needle in last 6 mths (%)	43	32
Lent used needle in last 1 mth (%)	20	14

3.12 *Factor structure of psychopathy*

The model fit was measured by the Root Mean Squared Error of Approximation (RMSEA), which will be zero when there is a perfect fit of the model. The RMSEA was 0.11 (90% CI 0.10-0.12). Following the conventions outlined by Wilkinson and Hill (1994), which suggest that a close fit in relation to the degrees of freedom is indicated by a Root Mean Squared Error of Approximation (RMSEA) # 0.05 and a reasonable fit is indicated by a RMSEA # 0.08, the obtained RMSEA value of 0.11 indicates a poor fit of the model. Similarly, as the lower limit of the confidence interval for the RMSEA was greater than 0.05, the null hypothesis of close fit was rejected at the .05 level.

The estimates for those parameters in dependence relationships, i.e. between the items and the factors they were supposed to load on, ranged from 0.41 to 0.71, whilst the estimate for the covariance relationship between the two factors was 0.56.

As the two-factor model of the PCL-R proposed by Hare (1991) did not appear to fit the data obtained from the samples in the present study, the possibility that the composition of the variables in the model contributed to the appearance of bad fit was explored. Indeed, the problems associated with the factor analysis of scales with three or more categories have been well recognised (Floyd & Widaman, 1995). The ratings for each of the PCL-R items were dichotomized such that scores of 0 and 1 were recoded to a score of 0 and scores of 2 were recoded to a score of 1. The confirmatory factor analysis outlined previously was repeated using the dichotomized variables.

The estimates for parameters in dependence relationships ranged from 0.38 to 0.83, whilst the estimate for the covariance relationship between the two factors was 0.66. The obtained RMSEA value was 0.14 (0.13-0.15), and the lower confidence interval limit greater than 0.05. These data suggest an even poorer fit of the model to the re-categorized data than to the original data. As such, the null hypothesis of close fit was again rejected at the 0.05 level.

Given the poor fit of the model to the data in both its original and recoded forms and the

subsequent need to investigate the factor structure of PCL-R in the context of the present sample, a series of Principal Components Analyses were performed using SYSTAT.

The first analysis was based on polychoric correlations of the 20 original item ratings of 0, 1, or 2 and entailed a varimax rotation of the factors. The analysis produced five factors with Eigenvalues >1, that accounted for 61.1% of the total variance. Only those factor loadings deemed significant (>0.4) have been reported (Table 15) and, in the case of items with split-loadings, only the highest loading has been included in the interpretation.

Factor 1 accounted for 14.5% of the variance and comprised 4 psychological items: glibness, grandiosity, pathological lying, and conning/manipulative. Factor 2 accounted for 13.8% of the variance and comprised 4 behavioural items: early behaviour problems, juvenile delinquency, revocation of parole, and criminal versatility. Factor 3 was a predominantly psychological factor that accounted for 14.0% of the variance and comprised 5 items: lack of remorse, shallow affect, callous, poor behavioural controls, and failure to accept responsibility for actions. Factor 4 accounted for 12.5% of the variance and comprised 5 predominantly psychological items: prone to boredom, parasitic lifestyle, lack of realistic long-term goals, impulsivity, and irresponsibility. Factor 5 accounted for 6.4% of the variance and comprised 2 behavioural items: promiscuity and many marital relationships.

In order to account for the possibility that the factors produced by the Principal Components Analysis were correlated, an oblique rotation of the factors was also performed. Whilst this analysis also produced five factors accounting for 61.1% of the total variance, each factor comprising the same items as the varimax rotated factors, the variance explained by each factor was slightly different with factors 1 to 5 explaining 15.7%, 14.5%, 11.2%, 13.1%, and 6.6% of the variance, respectively. The correlations among the factors ranged from 0.02 to 0.37.

Table 15: Rotated factor structure of PCL-R items among 376 methadone patients

Factor 1		Factor 2	
Glibness	(0.84)	Criminal versatility	(0.85)
Grandiosity	(0.70)	Juvenile delinquency	(0.80)
Pathological lying	(0.63)	Revocation of parole	(0.79)
Conning/manipulative	(0.63)	Early behav. problems	(0.58)

Factor 3		Factor 4	
Callous	(0.74)	Lack realistic goals	(0.73)
Failure to accept responsibility	(0.69)	Irresponsibility	(0.63)
		Parasitic lifestyle	(0.62)
Shallow affect	(0.61)	Prone to boredom	(0.60)
Lack remorse	(0.58)	Impulsivity	(0.57)
Poor behav. controls	(0.55)		

Factor 5	
Many marital relations	(0.91)
Promiscuous	(0.47)

N.B. Values enclosed in parentheses represent factor loadings.

4.0 DISCUSSION

4.1 *Major findings*

One of the major findings of this study was that the prevalence of ASPD was much higher than the prevalence of psychopathy in all three of the groups comprising the study. Furthermore, whilst almost all of the subjects who qualified for a diagnosis of psychopathy also qualified for one of ASPD (94%), only 11% of those with ASPD qualified for a diagnosis of psychopathy.

A second major finding was that whilst the prevalence of ASPD differed between the three groups, with the PM group containing a higher proportion of subjects qualifying for a diagnosis than either the CM or PNH groups, the prevalence of psychopathy did not differ between groups.

The prevalence of ASPD was also found to be higher among those subjects who were defined as "primary antisocials" than among those defined as "secondary antisocials" (63% vs 30%), although no significant difference was found between these two groups with respect to the prevalence of psychopathy.

Irrespective of whether subjects came from a community or prison sample, a diagnosis of ASPD had no implications for performance in methadone maintenance. Specifically, there were no significant differences between subjects with and without ASPD in terms of methadone dosage, time retained in treatment, recent heroin or other opiate use, recent drug injecting, or recent needle-sharing, in either the CM or PM groups.

The final major finding was that the two-factor structure of psychopathy proposed by Hare (1991) was not replicated by confirmatory factor analyses conducted using the PCL-R ratings either in their original (trichotomized) or dichotomized form. Rather, a more complex five-factor solution was generated from the data, three of these factors being comprised of predominantly psychological characteristics, and two factors which were behavioural in their composition.

4.2 *Prevalence of ASPD and psychopathy diagnoses*

The high prevalence of ASPD found among the CM (44%) and PM (65%) groups was consistent with previous research, in which ASPD has been repeatedly shown to be one of the most common psychiatric diagnoses made among IDUs (e.g. Brooner et al., 1990; Brooner et al., 1993; Darke et al., 1994; Khantzian & Treece, 1985). There were, however, substantial discrepancies between the prevalence of ASPD and psychopathy among all three of the groups, with only a small proportion of subjects with ASPD also qualifying for a diagnosis of psychopathy. Given that nearly all of those subjects with a diagnosis of psychopathy also received a diagnosis of ASPD, these findings suggest that whilst the diagnostic criteria for ASPD are encompassed within the behavioural symptoms of psychopathy, most people who receive a diagnosis of ASPD do not meet the criteria for psychopathy. Whilst it is possible for a diagnosis of ASPD to be based purely on a number of behavioural symptoms, as evidenced by the low proportion of ASPD subjects in the CM and PM groups that demonstrated a lack of remorse, a diagnosis of psychopathy cannot be based on antisocial behaviour alone.

The above results provide support for Hare's early research which yielded similar differences between the prevalence of ASPD and psychopathy in a prison population, as well as his subsequent assertion that a diagnosis of ASPD is over-inclusive and synonymous with criminality rather than psychopathy (1978; cited in Hare, 1980). Moreover, the greater proportion of ASPD subjects in the CM and PM groups than in PNH group indicates that IDUs are even more likely to be given an ASPD diagnosis using DSM-III-R criteria than subjects with only a criminal history, even though they are no more likely to receive a diagnosis of psychopathy using the PCL-R. The over-diagnosis of ASPD among IDUs in the present study provides support for the hypothesis that behaviours which are a consequence of drug use, rather than an underlying personality disorder, are likely to act as a confounding factor in the diagnosis of ASPD. Hence, the implications of over-diagnosing ASPD, such as the potentially inappropriate categorisation and treatment of those who receive such a diagnosis, are particularly pertinent to the IDU population.

4.3 *ASPD and methadone maintenance treatment*

The absence of any effect of an ASPD diagnosis on methadone maintenance treatment characteristics, i.e. dosage and retention time, or on drug use whilst in treatment, is consistent with previous research (Darke et al., 1994; Gill et al., 1992; Rousar et al., 1994). In contrast to the results of previous studies conducted in the United States (Brooner et al., 1990; Brooner et al., 1993; Gill et al., 1992; Nolimal et al., 1989), there were no significant differences between ASPDs and non-ASPDs in terms of the recent borrowing or lending of used injecting equipment. In the community setting, these disparate observations may be explained by the fact that, unlike the United States, Australia plays host to a wide network of needle and syringe exchanges as well as community pharmacies from which needles can be purchased without recrimination. However, in the prison setting, injecting equipment is prohibited and, consequently, much harder to obtain. Hence, the conflict between the results obtained from the PM group and those yielded by the aforementioned US studies is unlikely to be due to differences in the availability of injecting equipment.

Although drug use and needle-sharing did not differ between ASPDs and non-ASPDs in either the CM or PM groups, the PM group was more likely to have both borrowed and lent used injecting equipment in the 6 months prior to interview than the CM group. This was the case even though they were less likely to have injected heroin or any other drug during this period. Therefore, even though the frequency of drug use among subjects in prison was lower than that of subjects in the community, there was a higher prevalence of risk-taking behaviour associated with such use. Previous investigations into drug use and risk-taking behaviour in prison (Dolan et al., 1996a; Dolan et al., 1996b) have yielded similar results. Given the association between these behaviours and the spread of blood-borne viruses, such as HIV and Hepatitis (B and C), this finding has serious implications for the health of the prison population and the wider community.

The above results indicate that patients with a diagnosis of ASPD respond to pharmacotherapy just as well as other patients, irrespective of whether they are in a community or a prison setting.

4.4 *Differences between the CM, PM, and PNH groups*

Whilst the CM and PNH groups had attained similar levels of both secondary and tertiary education, and were equally likely to have completed skilled trade courses, the PM group left school earlier and were less likely to have subsequently completed trade or tertiary courses. The PM group first used heroin earlier, and both the CM and PM groups were first intoxicated earlier and had broader drug use histories, than the PNH group. The CM and PM groups did not differ in these respects. Given that subjects in each of the groups were of a similar age, it is not surprising that subjects with a history of heroin dependence, such as those in the CM and PM groups, would have a longer and more diverse drug-using career than the PNH group.

An unexpected finding was that the CM and PM groups had very different criminal histories, even though they were similar in terms of their drug use histories and over half of the CM group had served a prison sentence. The PM group had first been arrested earlier and had been arrested a greater number of times than both the CM and PNH groups. The CM group had also been arrested earlier and more frequently than the PNH group. Whilst the illegality of heroin may account for such differences between the PNH and other two groups, it does not explain the fact that the PM group had enjoyed a longer and richer criminal history than the CM group.

The higher proportions of both CM and PM subjects that had been convicted for fraud may be due to the fact that the IDU's need to illegally obtain money to buy drugs is typically more frequent and urgent than the needs of the wider criminal population. Fraud may appeal to a greater proportion of IDUs because it presents a non-violent alternative to armed robbery and robbery with assault, and may appear to pose less of a threat of apprehension. This would account for the finding that whilst more PM subjects had been convicted of theft and robbery offences than CM subjects, the two groups were equivalent with respect to the proportions that had been convicted of fraud. Alternatively, IDUs may be more likely to get caught for fraud offences than non-IDUs because of a more spontaneous and disorganized approach to crime. As noted in Section 4.1, the prevalence of ASPD was highest among the PM group. Given the similarity between the drug use histories of the CM and PM groups, it would appear that the PM group was more likely to warrant a diagnosis of ASPD due to factors other than a history of heroin dependence and the behaviours with which such dependence is associated. The fact that

equivalent proportions of these two groups met the adult criteria for a diagnosis of ASPD, yet a higher proportion of PM subjects met the criteria for conduct disorder, suggests that the antisocial behaviour of the PM subjects became evident earlier, and was of a more serious nature. Evidence for a greater prevalence of juvenile antisocial behaviour among the PM group is also provided by the significantly higher proportion of PM subjects who qualified for the PCL-R symptom of juvenile delinquency.

The CM group differed from the PNH group in terms of the proportion of subjects meeting the adult criteria for ASPD, but not in terms of the proportion of subjects meeting the juvenile criteria. Hence, the higher prevalence of ASPD among this group than among the PNH group appears to reflect a greater prevalence of adult antisocial behaviours. Since heroin use did not, on average, commence in this group until after the age of 15, this may be directly associated with drug use. The PM group, however, differed from the PNH group in terms of the proportion of subjects that met the juvenile criteria for ASPD, as well as the proportion of subjects that met the adult criteria. The even higher prevalence of ASPD among the PM group, therefore, suggests that this group is comprised of individuals that are more antisocial than those in either the CM and PNH groups.

As previously noted, the results suggest that the PM group has had a longer and more severe history of antisocial behaviour than either the CM or PNH groups. However, the lack of any differences in the prevalence of psychopathy for each group would appear to indicate that the core personality traits of the PM group are no more indicative of psychopathy than those of the other two groups.

4.5 *The relationship between crime and drug use*

Whilst those subjects whose criminal careers had preceded their drug-using careers ("primary antisocials") appeared to be similar to those whose drug use preceded their criminal activity ("secondary antisocials") in terms of their drug use and treatment histories, primary antisocials were more likely to have committed violent crimes than secondary antisocials and to qualify for a diagnosis of ASPD. The greater severity of the antisocial behaviour among primary antisocials,

as well as its independence from drug use, suggests that a diagnosis of ASPD among this group is more likely to reflect "true" ASPD. A diagnosis of ASPD among secondary antisocials, on the other hand, may reflect "symptomatic" ASPD. The proportions of primary and secondary antisocials qualifying for a diagnosis of psychopathy, however, were not significantly different. This indicates that whilst primary antisocials are behaviourally different from secondary antisocials, they are no more likely to possess the personality characteristics that are typical of the "true" psychopath, as defined by Hare.

As has been previously noted (Section 4.2), the prevalence of psychopathy among IDUs in the present study was significantly higher than that among non-IDUs. However, when the sample of IDUs was broken down into primary and secondary antisocials, the prevalence of ASPD among secondary antisocials was no higher than that among the non-IDU (PNH) group, whereas among primary antisocials, the prevalence of ASPD was more than double that among non-IDUs. This suggests that the higher prevalence of ASPD among IDUs is confounded by whether the onset of drug use precedes, or is subsequent to, the onset of crime. As such, the data do not lend support to the DSM-III-R notion that substance abuse is a reflection of ASPD (Gerstley et al., 1990). If substance abuse were, in fact, an expression of ASPD, then primary and secondary antisocials should be equally likely to receive a diagnosis, for ASPD would be the precursor to both drug use and crime, and, hence, the order in which they occur should be of no consequence to whether or not a diagnosis is warranted.

4.6 *The factor structure of psychopathy*

The two-factor structure of psychopathy that has been suggested by previous research (Hare et al., 1990; Harpur et al., 1988; Harpur et al., 1989) was not confirmed by factor analyses conducted on the PCL-R scores. Furthermore, the failure to replicate a two-factor model of psychopathy can not be attributed to the fact that scores for each the PCL-R items are trichotomized. Even when the scores were dichotomized, analyses failed to confirm a two-factor model. Exploratory factor analyses of the data, however, yielded five interpretable factors , a result which is more consistent with the findings of earlier investigations into the factor structure of psychopathy, in which larger sets of factors were extracted from the PCL-R (Hare, 1980; Raine, 1985). Three of

the five factors generated by the present analyses were comprised predominantly of psychological characteristics, whilst the other two factors were comprised exclusively of antisocial behaviours.

The results of both confirmatory and exploratory factor analyses, therefore, suggest that the construct of psychopathy can not be reduced to a simple "psychological versus behavioural" structure. Each psychological factor, for instance, can be seen to represent a different personality type. Factor 1 may be interpreted as characterizing the extroverted, egotistical, and manipulative type, while Factor 3 appears to describe the emotionless, cruel, aggressive type who blames anyone but themselves for the predicaments in which they find themselves. Factor 4, on the other hand characterizes the type of person who is irresponsible and easily bored, which leads them to act impulsively and to live each day as it comes without any goals or consideration for the future. Similarly, the two behavioural factors appear to describe different types of behaviour, with Factor 2 referring to delinquent and criminal behaviour, as opposed to the interpersonal behaviours described by Factor 5.

The factor structure of psychopathy, as measured by the PCL-R, therefore appears to be far more complex than a dichotomy between psychological and behavioural characteristics. Moreover, it seems more logical to view psychopathy as a multi-dimensional construct, given the heterogeneity of the symptoms comprising both the psychological and behavioural components of psychopathy.

4.7 *Conclusions and recommendations*

The present study demonstrated a substantial discrepancy between the prevalence of ASPD and psychopathy among both IDUs and non-IDUs. When DSM-III-R criteria were applied, "psychopathy" was diagnosed in over half of IDUs and almost a third of non-IDUs. However, when the PCL-R was used, the prevalence of psychopathy fell to 7% among IDUs and 4% among non-IDUs. The "psychopathy" of both these populations, therefore, varies greatly according to the diagnostic system that is used. Given that the lifetime prevalence of ASPD in the general population has been estimated to be only 4%, it is clear that, among IDU and criminal populations, ASPD is grossly over-represented. A diagnosis of ASPD, therefore, can be regarded

as being almost synonymous not only with criminality as Hare (1980) argued, but with injecting drug use as well. Consequently, the validity of the DSM-III-R criteria for ASPD, as well as that of DSM-IV, should be called into question. In particular, the stipulation that Psychoactive Substance Abuse Disorder should be regarded as a diagnosis that may be associated with ASPD, rather than a confounding and possibly causal factor, should be replaced by a caveat emphasising the need to distinguish between antisocial behaviours that are a consequence of drug use and those independent of it. It should be noted, however, that the findings of the present study also suggest that even if the high prevalence of ASPD among IDUs were to be taken at face value, it does not mean that ASPDs will perform more poorly in treatment.

Whilst the present findings indicate that a diagnosis of ASPD among IDUs is likely to include both "true" and "symptomatic" antisocials, Gerstley et al.'s (1990) hypothesis that "true" and "symptomatic" psychopathy is encompassed within a diagnosis of ASPD is misleading. Given that psychopathy is a personality disorder and, thus, infers the presence of stable and enduring personality traits in addition to the behaviours manifested by these traits, the notion of "symptomatic" psychopathy would appear to be somewhat illogical. Misnomers such as this can be seen to be due to the propensity of clinicians, researchers, and laypeople to equate "psychopathy" with "ASPD". The term "psychopathy" should be used to describe a particular set of core psychological and behavioural characteristics that comprise a prototypical personality type. It is, however, commonly used interchangeably with the terms "antisocial personality disorder" and "sociopathy", which were traditionally associated with what is essentially a set of behaviours that deviate from the norms of society. As such behaviours form the basis of the DSM-III-R and DSM-IV criteria for ASPD, it is clear that ASPD can be regarded as a behavioural, rather than a personality, disorder and should not be equated with psychopathy. Moreover, antisocial behaviour forms only part of the behavioural component of psychopathy which also includes other maladaptive behaviours. Although the diagnostic criteria for ASPD are included within the diagnostic framework of psychopathy, psychopathy is a far more complex and restrictive construct which should only be measured by an instrument that assesses all of its dimensions, such as the PCL-R.

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