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# UNDERSTANDING SUBSTANCE MISUSE AMONGST THE MENTALLY ILL:

# AN INVESTIGATION OF THE CONTEXT OF, AND MOTIVATIONS FOR, DRUG AND ALCOHOL USE IN AN IN-PATIENT SAMPLE OF INDIVIDUALS WITH PSYCHOTIC ILLNESS

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# ABSTRACT

**Understanding substance misuse amongst the mentally ill: an investigation of the context of, and motivations for, drug and alcohol use among an in-patient sample of individuals with psychotic illness**

**Background**

Dual diagnosis (substance misuse and mental illness) is recognised as a significant clinical problem. However there is little evidence contributing to the understanding of what motivates people with psychotic illnesses to use drugs and alcohol, and in what social context. There is still less evidence concerning the correlates of dual diagnosis in in-patient settings; including the relationship between mental health service settings and the initiation and maintenance of substance misuse. This study reports the prevalence, social context of, and motivations for substance use in a sample of in-patients with psychotic illnesses.

**Methods and measures**

Staff on 9 acute mental health wards and 2 psychiatric intensive care units in North London used a Clinician Drug and Alcohol Use Rating Scale to assess whether working age in-patients with psychotic illness also met the criteria for harmful alcohol or drug use, or dependence during the preceding six months. Those meeting the criteria for harmful use or dependence were then approached to participate in the study. Participants were interviewed and asked to report on the nature, extent, social context and attributions of their substance use, and whether they had continued to use whilst an in-patient. Measures used included an Inventory of Alcohol and Drug Use Situations, a Self-Medication Questionnaire, a demographic schedule and a structured set of questions concerning substance use history and it's relationship to mental health service settings.

**Results**

All working age adult in-patients (264) were screened for a current or recent substance use disorder. One hundred and twenty nine individuals met the study criteria (48.9%), whilst a further 39 (15%) had a substance use history, but no associated impairment; of these, 102 agreed to take part in the study (response rate 79%). Those with dual diagnosis were younger on average and more likely to be male, than those with psychosis alone. The majority (76%) suffered from schizophrenia and were detained under the Mental Health Act (1983), with 19% being street homeless. A wide range of substances including opiates, stimulant substances and khat were used by participants, but alcohol, cannabis and cocaine (respectively) were the most frequently used substances. Eighty one percent of the participants reported using on the ward during their current admission, with almost half of the participants buying substances from other in-patients. Methods of using reflected the wide range of substance use reported, and included intravenous injection, chasing, and smoking. A third of participants reported feeling pressurised to buy, or use substances with other in-patients. For the majority substance use was clearly a social activity; with three quarters of the partcipants reporting that they typically used or drank with others. Sixteen percent of the participants reported typically using with other mental health service users. Two principal components analyses of use situations and self medication data each revealed three factors , explaining 68% and 66% of the variance respectively. All factors had high mean scores, and elicited motivations for substance use. They were (use related to): negative personal and social states (48% variance), pleasant social conditions (13% variance), reward (7% variance), social interaction and boredom (41%) social acceptance (14% variance), and medication side effects (9% variance). An exploratory cluster analysis aimed at identifying sub-groups with distinctive patterns of motivations for use. Scores within clusters varied, with the membership of one cluster scoring highly on all factor items while other cluster members scored low on several items, clearly influencing their motivations for use. This exploratory analysis gives some indication that there are a number of distinctive patterns of use, including

people who use in a wide range of situations with a variety of motivations, those who primarily use for relief of unpleasant feelings and social anxiety, and those whose use is predominantly social.

## Conclusions

Substance misuse is a common problem in users of adult mental health services, and innovative solutions to understand and address these problems are needed. Although it was uncommon for individuals to directly medicate the symptoms of their illness with substances, their motivations for use reflected a range of social difficulties, isolation and other affective problems. Further investigation of demographic variables and substance use motivations in a larger sample may be an effective way of delineating sub groups with distinct motivations and of developing treatment strategies which take these motivations into account.

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Zero tolerance + Zero compassion

= Zero

**G. Alan Marlatt (1998)**

*Dedicated to my parents,*

*For motivation, love and encouragement*

*Alan (1949-1985) and Christine (1951- )*

# DECLARATION

I hereby certify that the work embodied in this thesis is the result of my own investigations, except where stated otherwise.

Peter A. Phillips

London, 2006

# PUBLICATIONS

A paper based on the review of the literature (Chapter 1) has been published:

*Phillips, P. and Johnson, S. (2001) How does drug and alcohol develop among people with psychotic illness? A literature review. Social Psychiatry and Psychiatric Epidemiology (36) 269-276*

A further paper describing the initial results of the study (Chapter 3) was published:

*Phillips, P. and Johnson, S. (2003) Drug and alcohol misuse among in-patients in three Inner London psychiatric units. Psychiatric Bulletin. 27 217-220*

These papers are attached as Appendix B.

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# 1.0 RESEARCH AND CLINICAL BACKGROUND

## 1.1 Introduction

This chapter will outline current definitions of dual diagnosis and the status of research evidence on this theme, focusing especially on the literature relevant to the current study. The chapter will begin with a discussion of the definitions of dual diagnosis and substance use disorders, and their diagnostic categorisation and nosology. The clinical background to dual diagnosis will be discussed in the context of why and how it has become an important clinical problem in mental health service settings. The socio-demographic characteristics of patients with dual diagnosis will be discussed as will the evidence concerning violence, aggression and dual diagnosis.

The background to the current study will then be outlined, focusing on the following questions which relate to the aetiology and development of dual diagnosis:

- The epidemiology of dual diagnosis.
- The temporal sequence of the disorders (mental illness and substance use disorder).
- Whether substance use leads to the development of mental illness.
- Neurobiological associations between substance use disorders and mental illness.
- Associations between dual diagnosis and personality disorder.
- The self-medication hypothesis.
- At the social level, issues concerning deinstitutionalisation and the social difficulties of the mentally ill will be discussed as possible contributing factors to the development of dual diagnosis.
- Finally the relationship between substance use disorders and mental health service settings will be discussed, prior to a final summary of the literature.

## 1.2 What is dual diagnosis and how is it defined?

The term 'Dual diagnosis' literally describes the co-existence of two disorders, and has been used as a label for a number of medical and psychiatric conditions, e.g. learning disability and mental illness, personality disorder and depressive illness. More recently it has been commonly used as a label to describe people with mental health problems who also have a substance use disorder. The use and misuse of alcohol and illicit drugs has increased significantly since the 1960s across many communities, cultures, social class groups and age groups and in different parts of the world (United Nations Office on Drugs and Crime, 2005). Research evidence suggests some people with mental health problems have participated in this general trend of increased substance use. Cuffell (1992) identifies this by suggesting that the year of report of prevalence data of dual diagnosis is highly correlated to the actual prevalence rate reported; the later the report, the higher the prevalence rate reported in the study. Some individuals with mental health problems have then gone on to develop substance use disorders and this phenomenon has been called dual diagnosis. Critically, there is no single diagnostic criterion for dual diagnosis, as it is not a homogenous syndrome and there is no consistent set of symptoms or illness course, but rather there is a wide range of patterns and types of substance use, effects on symptoms and prognosis.

## 1.3 Categorisation and nosology of dual diagnosis

The literature concerning this phenomenon has largely identified and defined the mental health aspect of dual diagnosis as the presence of a functional psychotic illness such as schizophrenia, manic-depressive psychosis, delusional disorder, schizoaffective disorder, depressive illness with psychotic symptoms, but is less specific when identifying the substance use aspect of dual diagnosis. It can be argued that this definition is excessively narrow since it excludes those patients with non-psychotic mental health problems from the potential benefit of any

specialist help or evidence based intervention available to those with substance use disorders and functional psychotic illness.

It is possible that the patients' own self-identity and 'primary' service engagement are critical factors relating to these arguments, as studies (Lamb 1982) identify high levels of psychological and psychiatric morbidity in drug users, and high levels of substance use among general psychiatric patients with personality disorder, depression and anxiety (Regier *et al.* 1990), yet these individuals are not included in the most commonly used clinical and academic definitions of dual diagnosis. However, these arguments concerning definition can be contrasted against the relative merits of the label of 'dual diagnosis' since there is a limited clinical or academic consensus about what actually constitutes dual diagnosis, and there is as yet only a limited evidence base concerning which forms of treatment and therapeutic intervention work most effectively for those with this combination of diagnoses.

## 1.4 How are substance use disorders defined?

The terminology used to describe the use of, and problems relating to substance use is manifold, and often varies from country to country, and between the general population and those whose professional or family life brings them into contact with substance users. Some of the terms commonly used are based on diagnostic language (misuse, misuse), while others have a pejorative meaning (Junky, addict, misuser). Within the two psychiatric classification systems (the ICD-10 and the DSM-IV) there are two major groups of diagnoses which relate to ongoing severe and problematic drug and alcohol use; these are harmful use and the dependence syndrome. The ICD-10 (World Health Organisation 1992) describes harmful use as a pattern of psychoactive substance use that is causing damage to the individual's health. The damage may relate to either physical health (as in the case of hepatitis from injection drug use behaviour) or mental health (as in depressive disorder secondary to heavy alcohol use), or indeed both. The ICD-10 identifies four main criteria for harmful use, these are; 1) clear evidence that the substance

use was responsible for (or substantially contributed to) physical or psychological harm, including impaired judgement or dysfunctional behaviour. 2) the nature of the harm should be clearly identifiable (and specified). 3) the pattern of use has persisted for at least one month, or has occurred repeatedly within a twelve month period, and 4), the disorder does not meet criteria for any other mental or behavioural disorder related to the same drug in the same time period (except for acute intoxication).

Dependence syndrome is a cluster of behavioural, cognitive, and physiological phenomena that develop after repeated substance use, and usually include a strong subjective desire to take the substance, difficulty in controlling its use, persisting in its use despite harmful consequences, a higher priority given to substance use than other activities and obligations, increased tolerance and sometimes physical withdrawal states. The dependence syndrome may be present for a specific psychoactive substance (e.g. diazepam), or for a class of substances (e.g. opiates), or for a wide range of pharmacologically different substances. The ICD-10 (World Health Organisation, 1992) identifies six main criteria for dependence, of which three must be present for a period of at least one month or, if persisting for periods of less than one month, should have occurred together repeatedly within a twelve month period: 1) a strong subjective desire or compulsion to take the substance, 2) impaired capacity to control substance taking behaviour in terms of its onset, termination, or levels of use, as demonstrated by the substance being taken in larger amounts or over a longer period than intended, or by a persistent desire or unsuccessful efforts to reduce or control substance use, 3) a physiological withdrawal state when substance use is reduced or ceased, followed by further substance use in order to relief or avoid withdrawal symptoms. 4) evidence of tolerance to the effects of the substance(s), so that there is a need for significantly increased amounts of the substance(s) to achieve intoxication or the desired effect, or a markedly diminished effect with continued use of the same amount of the substance, 5) a preoccupation with substance use, as manifest by

important alternative pleasures, interests or activities being given up or reduced because of substance use; or a great deal of time spent in obtaining, taking or recovering from the effects of the substance. 6) persistent substance use despite clear evidence of harmful consequences of such use of which the individual is subjectively aware. The DSM-IV also uses the same broad criteria in categorising substance use disorders (substance dependence and substance misuse), using the term substance misuse in place of harmful use, used in the ICD-10. Both classification systems also have diagnoses for intoxication (for each substance, e.g., in the ICD-10 acute intoxication due to use of Opioids (F11.0), and for withdrawal for each substance, e.g. in the DSM-IV, alcohol withdrawal (291.8). A wide range of substances are listed in relation to acute intoxication, withdrawal, harmful use, and dependence, these include:

- Mental and behavioural disorders due to the use of alcohol.
- Mental and behavioural disorders due to the use of opioids.
- Mental and behavioural disorders due to the use of cannabinoids.
- Mental and behavioural disorders due to the use of sedatives or hypnotics.
- Mental and behavioural disorders due to the use of cocaine.
- Mental and behavioural disorders due to the use of stimulants (including caffeine).
- Mental and behavioural disorders due to the use of hallucinogens (there is no recognised withdrawal state for hallucinogenic drugs).
- Mental and behavioural disorders due to the use of tobacco.
- Mental and behavioural disorders due to the use of volatile solvents.
- Mental and behavioural disorders due to multiple drug use and the use of other psychoactive substances.

Further to this both the ICD-10 and the DSM-IV classify substance induced psychotic disorder, and substance induced amnesic disorder (Korsakov's psychosis) separately from the above diagnoses.

## 1.5 Why is dual diagnosis considered an important problem?

It has been suggested service users with both mental illness and substance use disorders often present different problems to those with either substance use disorders or psychosis alone, and dual diagnosis has been identified internationally in the past decade (particularly) as an important clinical problem in service provision for the severely mentally ill (Farris *et al*, 2003, Timko and Moos, 2002, McCrone *et al.* 2000, Smith and Hucker 1994). It has been associated with a substantial number of significant problems, and there is evidence of varying strength reported largely from north American studies which associates dual diagnosis with a range of poor outcomes including: relapse of psychotic illness, exacerbation of psychotic symptoms, poor medication compliance and efficacy, contact with the criminal justice system, limited engagement and retention in (mental health or substance misuse) treatment, poor social functioning, increased prevalence serious physical health problems such as viral hepatitis, HIV, venous thrombosis and cardiac disease in intravenous injectors, respiratory disease including pneumonia in those who smoke drugs, higher incidence of suicide, increased service utilisation and management of residential mental health facilities. (Smith and Hucker 1994, Dixon 1999, Gearon *et al.* 2001, Murray *et al.*, 2002, Cantwell 2003). These outcomes have largely yet to be demonstrated in patients with dual diagnosis in a British, or European context, although there is robust evidence associating dual diagnosis with increased violence, aggression and offending behaviours (discussed in 1.7 and 1.8), and difficulties in managing patient care either in residential mental health facilities or among community patients. The impact of these clinical problems has had a significant effect on mental health service

development in the U.K., and on both undergraduate curricula and postgraduate training of professional mental health workers, many of whom have not traditionally understood their role as helping those with substance use disorders (Phillips and Hassan 1997). The National Health Service in the United Kingdom has responded by issuing good practice guidance in the care and management of those with dual diagnosis (Department of Health 2002) which recognises that mental health services and substance misuse services in the U.K. have evolved separately both in terms of financial arrangements and also philosophically and practically (Department of Health 2002). It recommends that those with dual diagnosis are treated and managed largely by adult mental health services ("mainstreaming"). The suggested effect of so called "mainstreaming" is the reduction of the number of health service agencies involved with individual patients, using research evidence from North America which identifies reduced treatment efficacy in patients involved with several different services (e.g. substance misuse services, mental health services and social care agencies). The guidance also recommends that all assertive outreach team workers are "trained and equipped to work with dual diagnosis", and, further, that adequate numbers of staff in in-patient services, community mental health teams, crisis resolution teams and early intervention teams are suitably trained. The guidance also instructs services that patients with dual diagnosis should be subject to the Care Programme Approach (Department of Health 2002).

## 1.6 What are the socio-demographic and clinical characteristics of patients with dual diagnosis?

Substance use problems and disorders are reported more commonly in male patients (Drake *et al.* 1989, Hambrecht and Häfner 1996, Cuffel 1992, Mueser *et al.* 2000). Menezes *et al.* (1996) reported male patients with psychotic illness in a South London study were twice as likely as their female counterparts to have a substance misuse problem, reflecting

gender differences in the reported rates of substance misuse in the general population. However the under representation of women in substance misuse treatment services is well documented (Mirlees-Black 1999, Ditton and Taylor 1990), and it may be that lower reported rates of substance misuse in women reflect women's reluctance to disclose substance misuse, or seek help from treatment services because of greater stigma, and/or fear that any children may be removed, thereby creating artificially low prevalence and incidence of dual diagnosis in women. Patients with a dual diagnosis tend to have an earlier onset of psychotic illness than patients who do not use substances (Breakey *et al.* 1974, Drake *et al.* 1989, Cuffel 1992). Hambrecht and Häfner et al. (2000) reports that the mean age of onset of psychotic illness in patients misusing drugs prior to their first admission was 24.6 years, whilst for those with psychotic illness alone it was 31.1 years. No studies report a later age of onset to be associated with dual diagnosis.

Amminger *et al.* (1999) report that the premorbid characteristics of patients with dual diagnosis are often different from those with psychosis alone. Childhood behavioural problems have been found to have been more common among psychotic patients who did not misuse drugs. Possibly related to these findings are reports of better premorbid personality, social adjustment and interpersonal relationships in people with schizophrenia and substance misuse than those with schizophrenia only (Turner and Tsuang, 1990). One possible explanation for this is that those pre schizophrenic individuals who have demonstrated abnormal childhood function require little additional stress to develop a frank psychotic illness in adult life; whereas those with little or no abnormal childhood functioning are likely to need more in the way of other risk factors such as drug and alcohol misuse before they become psychotic. Additionally those schizophrenic patients who did experience childhood functioning problems are less likely to have acquired the social skills necessary first to be exposed to the substance misuse culture and then to negotiate the drug market.

Menezes *et al.* (1996) report from a South London study of people with psychotic illness in treatment with the Maudsley Hospital that patients who had substance misuse problems had attended the psychiatric emergency clinic 1.3 times more frequently over the previous two years, and had spent 1.8 times as many days in hospital, as their non drug using counterparts. Gerding *et al.* (1999) found that psychotic patients with alcohol dependence were at higher risk for hospital admission, and once admitted, tended to have longer hospital stays than psychotic patients who were not dependent on alcohol. Greater utilisation of in-patient and emergency services is often accompanied by higher overall service costs. Dickey and Azeni (1996) concluded that people with dual diagnosis incurred costs 60% higher than those with psychotic illness alone. In Holland, Linszen *et al.* (1994) compared cannabis-using schizophrenic community patients with their non-using counterparts over a 12 month follow-up period. The users, (particularly heavy users), were more likely to have a relapse, and indeed many reported an increase in their psychotic symptoms soon after using cannabis. Caspari (1999) followed up 27 patients with schizophrenia with a history of cannabis use for a mean of 69 months, and compared their outcome with that of schizophrenic patients without such a history. About half of the cannabis users ceased their consumption or switched to alcohol. Nevertheless, those with a history of cannabis had significantly more hospitalisations, tended to worse psychosocial functioning, and showed more thought disorder and hostility. Grech *et al.* (2005) replicated these findings in a prospective four year follow-up of 98 patients with a history of psychosis of less than five years duration in South London. Those who were noted to misuse cannabis at both index and follow-up interviews had the most chronic outcome. There was a dose dependent adverse influence of cannabis intake on subsequent positive but not negative psychotic symptoms.

Owen *et al.* (1996) report a significant association between substance misuse and medication non-compliance in people with schizophrenia, a relationship which may to some extent mediate the relationship between schizophrenia and some of its other adverse associations. They suggest that reasons for this increased rate of non-compliance may include

neglecting to take medication when intoxicated and increased side effects because of an interaction between anti-psychotics and the substances taken. They also suggest that some substances users with schizophrenia stop taking medication because they have been told not to combine medication with substances of misuse.

Compared to their non-using counterparts, those with co-existing substance misuse have higher rates of homelessness (Drake *et al.*, 1989, Reinking *et al.* 2001), more unemployment (Mitchell *et al.* 2002), and a higher rate of suicidal behaviour (Kovaznay *et al.*1993). In the US, several studies have found high rates of HIV and other blood borne viral illnesses and infections among people with dual diagnosis (RachBeisel *et al.* 1999b).

## 1.7 Substance misuse and violence

The association between violence and substance misuse is well documented, and further evidence concerning the specific relationship between dual diagnosis and violence and offending has been reliably established.

Certain drugs and alcohol have been associated with an increased likelihood of violence, most notably the use, either short term or chronic, of crack cocaine. The effects of crack cocaine are reported as intense feelings of increased libido, increased self-confidence and energy. A Manchester University study (Parker and Bottomley 1997) estimated that on average, crack users spent approximately twenty thousand pounds each year on maintaining their crack use. Johns (1997) also notes that the direct effects of other drugs, of a hallucinatory nature, e.g. LSD (acid) may be causally related to episodes of violent behaviour by the content of the hallucinatory experience. This suggestion fits well with risk assessment practices which associate 'command hallucinations' with increased likelihood of violence (Vinestock 1996, Gunn 1993). Further data are seen in a preliminary report of the MacArthur Violence Risk

Assessment Study (Dyer 1996). This study involved the comprehensive follow up of 1,000 subjects aged between 18 - 40 years, who were discharged from acute mental health settings in three cities in the United States of America. The diagnostic groups of the subjects were as follows: 23.9% Substance misuse/dependence, 40% Depression, 13.5% Bipolar illness or mania, 11% Schizophrenia, 1.7% Personality disorder. Six homicides had occurred perpetrated by subjects from this sample, including two committed by the same subject. It was found that those with schizophrenia showed less violence than others with affective or other psychotic disorders, however the overall finding was that the risk of violence in individuals with dual diagnosis was increased four fold. The study also suggests that the manner in which the violence occurs is mediated by sociological, pharmacological and psychological factors within the individual. Being of male gender, 'younger', and of lower socioeconomic status significantly increased the risk of violence, with or without a psychiatric diagnosis. Hodge (1993) suggests that violence is not a psychopharmacological attribute of drug or alcohol misuse, however, he also reports that states of intoxication are often accompanied by irritability, autonomic arousal, and temporary cognitive impairment, which may lead to feelings of aggression, and hostile behaviour. It is further suggested that this may account for the increase in aggression, seen in individuals who are intoxicated with sedatives, such as benzodiazepines, alcohol, and barbiturates.

The relationship between drug and alcohol withdrawal, and violence varies between substances, individual experiences, and previous experience of withdrawal. Most features of withdrawal are reported to be highly unpleasant at least, often being accompanied by states of autonomic arousal, and feelings of extreme craving. The withdrawal from 'crack' cocaine occurs relatively quickly after its consumption, due to its short acting effect, and is most noted as leading to acute dysphoria, and aggression. These features, together with an overwhelming experience of craving may lead to violent and impulsive offending. This is concerning since the current range of treatments for crack cocaine users is limited (Phillips 2000).

## 1.8 Dual diagnosis, aggression, violence and offending

In a British study of a forensic psychiatric service in south west England Smith *et al.* (1994) investigated all admissions (33 total 29 men, 4 women) to the Devon and Cornwall medium secure unit, during 1991 for a history of drug/alcohol use. A substance misuse or dependency history was found in eighteen of the patients, or 54.5%. In only seven (or 21%) of the group had substance misuse been recorded in the clinical records of the patient. Further evidence from the study indicated that in sixteen cases (or 48.5%) the substance misuse behaviour was identified as being definitely present in the period before admission, although only seven of the patients were noted as being intoxicated at the time the index offence occurred. The mean age of the patients with a substance misuse history was 27.5 years, compared with 37.5 years in the non substance misuse group. The main diagnosis of the substance misuse group was schizophrenia (45%), followed by mood disorders. Nineteen of the patients in the study were admitted to the unit because of violent behaviour, and all but four of these patients had been dependent on alcohol or other substances prior to admission. Polysubstance (more than two substances and/or alcohol) misuse was present in all nine of the violent patients with schizophrenia and substance misuse. A number of other studies confirm and reiterate the strong correlation between dual diagnosis violence and aggression (Scott *et al.* 1998, Soyka 2000, Cantor-Graae *et al.* 2001). In a study of patients in south London with dual diagnosis, compared with controls with no history of substance use disorders those with dual diagnosis were significantly more likely to report a history of committing an offence, or recent hostile behaviours, and their keyworkers were again significantly more likely to report recent aggression amongst their dually diagnosed patients when compared to those patients with psychosis only. A criticism of some studies of dual diagnosis and offending is that much offending among those with dual diagnosis may be drug or alcohol related (public order offences or Misuse of Drugs Act 1971 related). However this study used the Criminal Profile Schedule (Gunn and Roberston 1976) which separated types of

offending, so that drug and alcohol related offences could be clearly identified. Theft was the most commonly reported offence (Scott *et al.* 1998). A recent of Swedish study of the correlates of schizophrenia (Cantor-Graae, *et al.* 2001) found a significant relationship between criminal offending and dual diagnosis (50% of patients with dual diagnosis had a history of criminal offences versus 11% with psychosis only.

## 1.9 Background to the current study

There is little evidence contributing to the understanding of why, and in what circumstances people with schizophrenia and other psychotic illnesses use drugs and alcohol. The aim of this section is to define a set of questions which are useful in attempting to understand the aetiology and development of comorbid substance misuse or dependence and severe mental illness (dual diagnosis), and to review comprehensively the literature relevant to each of these. Much of the research evidence concerns schizophrenia only, so that this is the main emphasis of this section, but evidence regarding other psychotic illnesses has been included where it was available. The current research literature on dual diagnosis focuses on the prevalence of substance misuse among the severely mentally ill, its social and clinical correlates, and the interventions which might be effective in people with a dual diagnosis. This emphasis on prevalence and clinical management seems to be predicated on an acceptance that the two problems do co-exist and therefore need to be addressed in combination, without it being necessary to investigate how comorbidity has developed or which problem has arisen first. Once both problems are present, treatment will often need to address both, so that this approach is pragmatic, but it leaves substantial questions unanswered in trying to understand the aetiology and context of development of dual diagnosis. Formulation of an explanatory model or models for the development of this comorbidity is desirable as a potentially fruitful source of preventive and therapeutic strategies.

Epidemiological, social, psychological and neurobiological levels of explanation may each be useful in seeking to understand dual diagnosis. The set of questions examined below encompass each of these levels and has been formulated so as to address each of the main forms of explanation of dual diagnosis so far proposed. The various possible explanations are not mutually exclusive, and it is highly probable that more than one aetiological factor is important.

## 1.10 Review methodology

Details of the strategy used to carry out a comprehensive literature search are given in table 1 below.

These key words and search terms were used to update the literature search in 2006 using the same sources as originally used. Other key pieces of literature relevant to each of the nine questions were also included in the updated literature review.

| Key Words | Search Terms | Sources Used |
|---|---|---|
| **Dual Diagnosis** | **Dual Diagnosis** | **MedLine to 2001** |
| **Aetiology** | **Illicit Drug Use and Mental Illness** | **PsycLIT 1965 – 2001** |
| **Development** | **Aetiology and Dual Diagnosis** | **Cochrane Database Current Version** |
| **Social Difficulties of the Mentally Ill** | **Development and Dual Diagnosis** | **ISDD Database 1965 – 2001** |
| | **Drug Misuse and Mental Illness** | **Cinhal to 2001** |
| | **Substance Misuse and Mental Illness** | **Social Science Citation Index** |
| | **Alcohol Dependence and Mental Illness** | **Anthropological Literature Database to 1999** |
| | **Alcohol Misuse and Mental Illness** | **Reference Lists in Key Articles** |
| | **Schizophrenia and Drug Misuse** | **Internet – AltaVista** |
| | **Illicit Drug Misuse and Schizophrenia** | |
| | **Stress Vulnerability and Schizophrenia** | |
| | **Self-Medication** | |

**Table 1.1** The strategy used for literature search

## 1.11 Is substance misuse more prevalent among people with psychotic illnesses than the general population?

This epidemiological question is an important starting point, as specific explanations for dual diagnosis are required only if people with schizophrenia and other psychotic illnesses are more likely than the general population to misuse substances. If rates of substance use among people with psychotic illness were similar to those in the general population, it might be assumed that the important aetiological factors were probably similar to those in the population as a whole. One of the largest epidemiological investigations has been the Epidemiological Catchment Area survey in the US (Regier *et al.* 1990). In this study, 47% of subjects with schizophrenia (or schizophreniform disorder) showed evidence of current or past substance misuse, compared with general population rates of 13.5% for alcohol misuse, and 6.1% for drug misuse. The odds ratio obtained when rates of substance misuse among individuals with schizophrenia were compared with the US population was 4.6, strongly suggesting a raised rate in people with these illnesses. A limitation of the ECA study however, is that these comparisons do not take into account potentially confounding socio-demographic factors.

The authors of two major reviews regarding the epidemiology of dual diagnosis conclude that alcohol misuse is no more frequent in people with schizophrenia than in the general population, but that stimulant misuse is more prevalent (Schneier and Siris 1987, Mueser *et al.* 1995). Schneier and Siris (1987) reviewed eighteen U.S. and U.K. studies undertaken between 1960 and 1986, and found broad agreement that people with schizophrenia were more likely than control subjects to use amphetamines, cocaine, cannabis and hallucinogens, but less likely to use alcohol, opiates and sedative hypnotics. A significant limitation of this review however is that, with one exception, the control groups in the studies reviewed consisted of in-patients and out-patients in treatment for other psychiatric disorders. The conclusion from a review by Mueser *et al.* (1995) is that substance misuse is not more prevalent in people with

severe mental illnesses than in the general population, except for significantly raised rates of amphetamine and hallucinogen misuse. The evidence reviewed in this paper suggests that rates of cannabis, sedative, alcohol and narcotic misuse were lower than those of the general population as compared with the US national household survey on drug misuse. However, this survey used self-report of substance use, as opposed to the structured measures of DSM III -R substance misuse disorder or reports by key informants which are often used in studies of clinical populations. However a Scottish epidemiological study (McCreadie 2002) which did include a matched control group did find substance use more likely in people with schizophrenia than in the control group. At lifetime prevalence level the difference between patients and controls was 20% versus 6%, and within the previous year 17% versus 10%.

An early UK study was carried out by Bernadt and Murray (1986), who compared adult patients admitted to an inner London hospital with a general population survey carried out in the same area. Psychiatric in-patients did not appear to have higher total alcohol consumption than the local population, and those with schizophrenia appeared to be drinking significantly less than either subjects with other psychiatric diagnoses and than the local general population. In the UK National Psychiatric Morbidity Survey (Farrell *et al.* 1998) drug and alcohol use was studied in three samples: a general population sample, an 'institutional' sample and a group of homeless individuals. Not enough individuals with schizophrenia were picked up in the household sample to make valid comparisons with the general population regarding patterns of substance use, but in the 'institutional' sample, people with schizophrenia were more likely than the general population to be abstinent from alcohol and less likely to be heavy drinkers, as defined in the study (household population heavy drinkers 5%, residents with schizophrenia 2%). With regard to drug use, the household population rate for any drug use in the past year was 5%, as opposed to the residents with schizophrenia who had a rate of 7%. However, people with schizophrenia living in sheltered settings may be markedly different from those living in the community, as substance

misuse may both be a bar to entry to sheltered accommodation and closely monitored and proscribed within such settings. Elsewhere in Europe, the limited epidemiological work so far available suggests that prevalence and patterns of substance misuse vary substantially from country to country, with studies carried out in countries including Germany (Soyka *et al.*1990), France (Verdoux *et al.* 1996) and Switzerland (Modestin *et al.* 1997) suggesting that prevalence is not uniformly as high as in the US and that opiate use is more frequent than stimulant use in some European samples of people with schizophrenia. This evidence of large national variations is important in that it suggests that the mechanisms by which substance misuse develops among those with psychotic illness probably need to be understood in the context of local patterns of substance misuse and wider social and cultural factors influencing these. Thus there is as yet no definitive answer to the question of whether and how substance use patterns among those with schizophrenia really differ from those in the general population, with a lack of comparable general population data the main obstacle to drawing definitive conclusions.

## 1.12 Which problem generally develops first in dual diagnosis?

An understanding of the temporal relationship between onsets of substance misuse and of schizophrenia would be useful to understanding aetiology. If substance misuse were found generally to be present before the psychosis, this would make explanations in terms of self-medication less plausible and those invoking the concept of drug induced psychosis more plausible. If schizophrenia tends to occur first, this would be compatible with explanations involving self-medication or the social circumstances of the mentally ill as causes of substance misuse.

Mueser *et al.* (1998) draw attention to the difficulties in establishing temporal sequence. The insidious characteristic onset of both substance misuse and schizophrenia makes the beginning of each difficult to

pinpoint, and the retrospective methods of data collection used in most studies compound this difficulty. Silver and Abboud (1994) used first admission as the marker of onset of mental illness and retrospective self report to identify the onset of drug use. They reported that 60% of subjects with schizophrenia who used drugs had begun doing so before their first admission, although it remains unclear how long subjects had experienced psychotic symptoms before this admission. The conclusion that drug use more often develops before the onset of schizophrenia or during the prodromal phase of the illness is supported by other studies (Kovasznay *et al.* 1993, Turner and Tsuang 1990). Hambrecht and Häfner (1996) report a retrospective assessment of 232 people with schizophrenia in Germany, among whom a third already appeared to have had a drug problem for at least a year when schizophrenic illness began, whilst for a further third the two problems began within a year of each other, and for the final third the drug problem clearly occurred after the prodromal symptoms of schizophrenia. They also report that drug use tends to start slightly later in people with schizophrenia than in the general population, suggesting that drug use is unlikely to be the main direct cause of psychosis. Rabinowitz *et al.* (1998) report from a study of first onset psychosis patients which compared subjects with a psychotic illness and no life-time substance diagnosis, subjects in remission from substance misuse or reporting mild drug use (with a comorbid psychotic illness), and subjects with a comorbid psychotic illness who reported moderate or severe substance misuse. The study found that in almost all those with a history of moderate or severe substance misuse, this predated the onset of psychotic illness. It was also related to earlier onset of psychosis in females, and predictive of anti-social behaviour in both male and females. Addington and Addington (1998) report similar findings to Rabinowitz *et al.* (1998) with regard to age of onset of symptoms of psychotic illness: subjects with substance misuse and psychosis had been significantly younger at the age of onset than those with psychosis only, and were also younger at the time of first psychiatric admission. Cantwell *et al.* (1999) investigated a group of 168 subjects with first episode of schizophrenia in the UK to establish prevalence and pattern of substance use and misuse, and alcohol misuse. 37% of the sample met

the criteria for drug use, or misuse, or alcohol misuse at their first presentation to services (although 27% had experienced psychotic symptoms for more than one month before this point). This figure is similar to that reported for a mixed community sample of individuals with psychotic illness in the UK by Menezes *et al.* (1996), suggesting that substance misuse may often evolve either at a very early stage in schizophrenia, or possibly, prior to the illness. Barnes *et al.* (2006) also investigated a (London based) group of individuals in their first episode of schizophrenia. They found that those with cannabis use had a mean age of onset five years before those with no cannabis use. In summary there is some evidence that substantial numbers of people with schizophrenia may already be using drugs by the time of their first contact with specialist services, so that explaining substance use wholly in terms of severely ill subjects resorting to substance misuse as a form of self-medication may not be plausible. However, a particular barrier to drawing clear conclusions is the often very insidious nature of illness onset, which makes temporal order very hard to establish. It is also difficult to assess whether these effects are limited to individuals with a predisposition for the development of psychotic illness. Prospective studies of individuals identified as being at high risk of developing psychotic illnesses or follow up of cohorts of people who misuse substances might go some way towards clarifying the relationship between the onsets of psychosis and substance misuse.

## 1.13 Does substance misuse lead to functional psychotic illness?

A further possible explanation for the occurrence of comorbid substance misuse and schizophrenia might be that substance misuse causes psychosis. A full discussion of the concept of drug induced psychosis is beyond the scope of this review. Full reviews of this literature have been carried out by Boutros and Bowers (1996), Poole and Brabbins (1996) and more recently Schuckit (2006). The substances most discussed as candidates for an aetiological role in psychosis have been stimulants,

cannabis and hallucinogens. There is evidence that cannabis may trigger brief psychotic reactions (Mathers and Ghodse 1992) and can trigger relapse in pre-existing illness (Thornicroft 1990), and there was a consensus in the papers cited is that cannabis does not appear to cause a persisting schizophrenia-like psychosis. Hall *et al.* (1994, 1997) also suggest that it is unlikely that cannabis can precipitate long term schizophrenic illness in that, in countries such as Australia where cannabis use has considerably increased, there has been no corresponding increase in the incidence of schizophrenia. Andreasson *et al.* (1987) however, deduce from the findings of a fifteen year prospective study of conscripts to the Swedish army that cannabis is an independent risk factor in the development of schizophrenia, and that heavy users of cannabis (defined as having used more than fifty times) are six times more likely to develop schizophrenia than non cannabis users. However, the authors of this study did not control for social deprivation, other drug use and themselves note that another psychiatric diagnosis at conscription (largely neurosis and personality disorder) was present in 430 out of 730 individuals in the heavy cannabis users group, making assessment of which effects of cannabis use are independently associated with the development of functional psychotic illness very difficult to establish. However a follow up historical cohort study (Zammit *et al.* 2002) of this sample which did account for the previously uncontrolled factors in analysis (other psychiatric diagnosis at conscription, other drug use, prodromal cases) found cannabis to be associated with increased risk of development of schizophrenia in a dose related fashion. The authors concluded that cannabis does constitute an independent risk factor for the development of schizophrenia, which is consistent with a causal relationship.

For amphetamine users, it has been suggested that up to 10% of chronic users develop a chronic psychotic disorder which lasts more than six months after remaining abstinent from amphetamine use (making it difficult to distinguish from chronic psychotic illness), and that abstinent amphetamine users may develop paranoid exacerbation after single doses of amphetamine (Yousef *et al.* 1995, Flaum and Schultz 1996).

One of the few studies which has been longitudinal (McLellan *et al.* 1979) compared stimulant users (cocaine and amphetamine) with matched controls who were using depressant or narcotic substances. No subjects in any group demonstrated any psychotic phenomena on initial assessment. At later follow up a significant number of the stimulant users had developed chronic psychotic states, which again were indistinguishable from schizophrenia, but no such states had developed in the control group. These findings are not clear proof of the link, but could be consistent with the notion that schizophrenia has a multifactorial aetiology in which genes and environment interact, in this instance substance misuse becoming the factor which projects the individual over a 'threshold' into a psychotic illness (Murray and Fearon 1999).

The potential role of newer 'recreational' drugs in the development of psychotic illness has been discussed recently, but whilst there have been some reports of psychotic illness occurring in association with ingestion of 3,4- Methylendioxymethamphetamine ('Ecstasy') (McGuire *et al.* 1994) or the stimulant plant leaf khat (Yousef *et al.* 1995), the development of psychotic symptoms in the context of use of these drugs does not appear to occur frequently enough to constitute evidence for a causal link, and the weight of evidence is not yet great enough to reach clear conclusions.

More recently a number of studies have re-examined the relationship between cannabis and mental illness. Van Os *et al.* (2002) used a longitudinal method to examine cannabis use as a risk factor for the development of psychotic illness, and found it to increase the incidence of psychosis in healthy individuals. He also found it produce a poor prognosis in individuals with an established vulnerability to psychosis. Further to this, Arsenault *et al.* (2004) examined five population based studies, which used prospective measures of cannabis use and psychosis (the Swedish conscript cohort (Zammit *et al.* 2002), the NEMISIS study (van Os *et al.* 2002), the Christchurch study (Fergusson *et al.* 2003), and the Dunedin study (Arsenault *et al.* (2002)). She found that cannabis use doubles the risk for the development of schizophrenia at an individual level. A benefit of the studies above is that they adjusted for a range of possible confounding factors. However Arsenault *et al.* (2004) suggest

that cannabis use is neither sufficient by itself, or necessary as an individual component, to independently cause schizophrenia. In conclusion, she suggests that cannabis use is one component of a wide range of factors which leads to the development of psychotic illness.

In summary, the evidence regarding the role of substance misuse in relation to brief drug induced psychotic episodes is clear and positive; however in relation to its role in the genesis of schizophrenic illness the evidence is, at present inconclusive, and informed opinion continues to vary, though the evidence that cannabis may have a role in the aetiology of schizophrenia is currently becoming stronger.

## 1.14 Does dual diagnosis have a neurobiological basis?

There is some consensus that genetic factors have a role in both schizophrenia and alcohol misuse disorders, and increased rates of family history of alcohol disorders have been found among individuals with dual diagnosis compared with those with schizophrenia only (Noordsy *et al.* 1994). A possibility to be considered is thus whether this genetic vulnerability is to any degree a shared one between the two disorders. However, conflicting findings have been reported and it has not been clearly established that there is an increased vulnerability to psychotic illness among the relatives of individuals with drug and alcohol disorders or vice versa (Bidault-Russell *et al.* 1994). The relationship of dual diagnosis to genetic factors has been fully discussed by Mueser *et al.* 1998, who conclude that at present the available evidence does not support the idea of a common genetic basis for substance misuse and functional psychotic illness. In considering the possibility of a biological explanation for the co-occurrence of functional psychotic illness and substance misuse, it is also worth noting that the dopaminergic neurotransmitter system features prominently in explanations for each (Harrison 1999, Amara and Sonders, 1998, Fadda and Rossetti, 1998). However, convincing aetiological models based on this do not as yet seem to have been put forward.

## 1.15 Is dual diagnosis mediated by personality disorder?

A further hypothesis concerning the aetiology of comorbidity between psychotic illness and substance misuse concerns the idea that individuals may have a common vulnerability to the two disorders which is mediated by a third factor. Thus far, research in this area has concentrated on anti-social personality disorder. Personality disorders and substance misuse have long been observed to be associated (Nace *et al.* 1990, Dackis and Gold 1992, Campbell *et al.* 1993) and this is supported by evidence from the ECA survey (Regier *et al.* 1990) which reports a rate of severe substance misuse of over 80% among people with anti-social personality disorder. An earlier onset of substance misuse in persons with anti social personality disorder than in other substance users has also been reported (Johnston *et al.* 1978). A number of links have been reported between psychotic illness and anti social personality disorder and are consistent with the idea that anti-social personality disorder may be a risk factor for both psychotic illness and substance misuse and thus explain high rates of comorbidity. In particular, features of conduct disorder (the childhood precursor of anti-social personality disorder) have been linked with the development of schizophrenia, bipolar disorder and substance misuse in adulthood (Neumann *et al.* 1995) and a shared genetic vulnerability to anti-social personality disorder and schizophrenia remains a possibility (Mueser *et al.*1998). Further research has also demonstrated that people with functional psychotic illness and anti-social personality disorder are more likely to have substance misuse problems than similar people with a functional psychotic illness alone (Caton 1995). Despite this evidence remains unclear for a role of anti-social personality disorder as a risk factor for substance misuse in patients with a dual diagnosis; in particular diagnostic uncertainties may relate to the difficulty in separating out anti-social personality disordered behaviour which is consequent to substance misuse itself, as opposed to it having a role as a risk factor for substance misuse in this population.

Further to this, accurate assessment of the premorbid personality of individuals with schizophrenia or other functional psychotic illnesses

remains particularly difficult because of the often early appearance of prodromal features of psychosis, thereby complicating the diagnosis of anti-social personality disorder in persons with functional psychotic illness. A full discussion of research relating to common factor models in the development of dual diagnosis has been undertaken by Mueser and colleagues (1998).

## 1.16 Do individuals with schizophrenia use substances as a form of self-medication?

The self-medication hypothesis suggests that people with schizophrenia and other functional psychotic illnesses initiate and continue drug and alcohol use as a direct consequence of their illness experience (Phillips 1998, Khantzian 1985). Several North American researchers have investigated self-reported motivations for, and effects of, alcohol and drug use among the severely mentally ill. Dixon *et al.* (1990) investigated 83 in-patients with diagnoses of schizophrenia, schizoaffective and schizophreniform disorders admitted to a New York hospital over a six month period. The drugs most frequently used were cannabis, cocaine and alcohol. The most frequent self-reported reasons for use were to increase happiness and decrease depression and anxiety. Subjects also described using drugs to medicate positive symptoms such as hallucinations and suspiciousness, to counteract extrapyramidal side effects of medication, and to alleviate negative symptoms such as apathy and lack of motivation. Addington and Duchak (1997) report from a study of outpatients with schizophrenic illness that substances were more often used to relieve dysphoria and anxiety and to alleviate tension and increase pleasure than for any direct effects on positive symptoms. Noordsy *et al.* (1991) investigated subjective experiences of alcohol use among a community sample of 75 people with schizophrenic illnesses in New Hampshire. They found that over two thirds of the subjects identified their main motivation for alcohol use as relief of social anxiety and tension. Pristach and Smith (1996) reported the primary motivation for drinking among people with schizophrenia as relief of depressive symptoms. In both studies over 50 of the subjects also reported positive

effects of alcohol in alleviating apathy and anhedonia and improving sleep. Reports regarding effects on positive symptoms in these studies were mixed, with similar numbers reporting exacerbating and relieving effects. Baigent *et al.* (1995) report similar findings from a New Zealand study of in-patients with schizophrenia and substance misuse, the major self reported motivations for substance use among people with schizophrenia being for its activating effects and as a reliever of dysphoria and anxiety in those with schizophrenia.

Taken together, evidence that relief of negative symptoms such as anhedonia and apathy is often a self-reported motivation for substance use and the data suggesting people with schizophrenia may be particularly likely to use stimulants (discussed above) have formed the basis of a hypothesis that people with schizophrenia tend to use stimulants as a specific form of self-medication for negative symptoms. In relation to this possibility, Serper *et al.* (1996) report from a longitudinal study which compared cocaine using subjects with schizophrenic illness with non cocaine using subjects with schizophrenia at presentation to the emergency psychiatric service and then after three weeks in hospital. Serper *et al.* (1996) found that the cocaine using subjects reported significantly fewer negative symptoms than the non cocaine using subjects at first assessment, but that at retest the negative symptoms were similar in both groups. This finding could be explained in terms of the effects of cocaine in relieving negative symptoms at the time of first assessment. However, it contrasts with the report by Dixon *et al.* (1990) of similar clinical pictures at the time of admission among schizophrenic subjects with and without drug misuse, followed by greater symptomatic improvement (of both positive and negative symptoms) during admission among the drug using subjects. The beneficial effects of abstinence from drugs are put forward as a possible explanation for this finding.

Medication side effects have also been proposed as a possible target for self-medication. Some relevant evidence comes from Duke *et al.* (1994), who assessed alcohol comorbidity among 271 people with schizophrenia in South Westminster to assess alcohol comorbidity and found that high

levels of alcohol consumption were significantly correlated with severe orofacial tardive dyskinesia. The authors suggest that alcohol use may precipitate tardive dyskinesia in patients taking antipsychotic medications, and that this explains the severity of orofacial tardive dyskinesia in patients with highest levels of alcohol use. However, the causal basis of their finding is uncertain, and it would also be possible to explain this finding in terms of individuals with severe tardive dyskinesia or akathisia using alcohol to relieve these unpleasant side effects.

Thus at an individual psychological level of explanation, there is some evidence that people with severe mental illness use drugs to self-medicate negative symptoms, non-psychotic mood problems, anxiety and insomnia. Evidence regarding subjective effects on positive symptoms is less consistent, and effects of substance use on medication side effects warrant further investigation.

## 1.17 Have changes in the care and social circumstances of people with schizophrenia (particularly deinstitutionalisation) led to a rise in substance misuse among the mentally ill?

Other forms of explanation for substance misuse among those with psychotic illnesses focus on the effects of their social environments. Bachrach (1987) has argued that the effects of deinstitutionalisation have led to an increase in the prevalence of dual diagnosis and further, that living in the community probably does make people with psychotic illness more susceptible to some influences and social trends found in the population as a whole. She describes a generation of 'young adult chronic patients' who have never been institutionalised in long stay wards but lack adequate social support and activity in the community and have greater access to drugs and alcohol than would have been the case in the asylums. Whether the prevalence of dual diagnosis has in fact increased during the decades during which deinstitutionalisation has been taking place is a question which has been examined by Cuffell (1992). He reviewed published estimates of the prevalence of substance misuse in

persons with schizophrenia, and found that year of data collection was a very significant variable in explaining variance in reported prevalence rates, with more recently reported studies tending to report higher rates of substance misuse among the severely mentally ill. This is compatible with prevalence of dual diagnosis increasing as deinstitutionalisation proceeds, however no direct causal relationship can be assumed as the rise observed in substance misuse among those with schizophrenia or other psychotic illnesses might simply be a reflection of the increase of substance misuse observed in the general population. For example illicit drug use in lifetime/ever, past year, and past month epidemiological domains in persons aged 16 – 29 during the period between 2003 – 2004 all increased at a statistically significant level, with increases in cocaine consumption representing the largest single rise (Home Office, 2005). Other studies report approximately half of those aged 16 – 22 have ever used an illicit drug, with one study (Boys *et al.* 1999) reporting 98% of young people in the sample using alcohol, and 84% using cannabis in the previous twelve months.

## 1.18 Do the social situations and social difficulties of people with schizophrenia lead to substance misuse?

People with schizophrenia often have problems in finding satisfying activities relationships and social roles, avoiding boredom, and coping with everyday social situations (Lamb 1982). These problems are compounded by the limits on access to ordinary social networks and activities resulting from the stigma attached to mental illness. In a review of the literature, Bergman and Harris (1985) argue that these difficulties are a major factor in the initiation and continuation of drug use in this population, particularly for young people early in the course of their illness. In recent work such as that of the Sainsbury Centre (1998) it is suggested that substance misuse may be one of a constellation of problems experienced by a group of young people with severe mental illnesses who feel alienated from conventional services and society, have never been and see little chance of ever being employed, and live in poor and unstable social circumstances. This is the group targeted by

assertive outreach services established in the US, Australia and more recently the UK (Sainsbury Centre, 1998). A further social difficulty which may be confronted by people with schizophrenia is that they may have fewer skills than others for problem solving and coping with demanding social situations, so that drug use becomes a way of coping with situations which otherwise may be distressing and stressful. Lamb (1982) further suggests that difficulties in getting access to a social group can lead those with schizophrenia towards networks of drug users who may be more tolerant and more likely to accept people who are unusual in some way than other social groups. As yet there is very little evidence available regarding the social contexts in which people with schizophrenia use drugs and alcohol and the ways in which they may find substance use helpful in establishing social networks and coping with demanding social situations and lack of meaningful activity. Further gaps in the available evidence relate to how people with functional psychotic illnesses and the resulting social disabilities negotiate the drug market and obtain substances, and how they learn the techniques and regulation of dose levels required by drug use. These questions are particularly pertinent with regard to designing harm minimisation interventions for this group and warrant substantial empirical investigation.

## 1.19 Do individuals with schizophrenia tend to begin using drugs and alcohol within mental health service settings or in the company of other users of such services?

A further possibility is that drug and alcohol misuse may tend to be disseminated among people with schizophrenia because of wide availability of such substances in mental health service settings and within social networks of mental health service users. As with other social ways of understanding the basis of dual diagnosis, there is as yet little evidence about the social contexts in which those with schizophrenia are introduced to substance misuse and the sources from which they obtain drugs. In a survey of psychiatric nurses who were members of the UK

Royal College of Nursing by Sandford (1995), 68% of respondents were aware of illicit drug use in their workplaces, which were mainly in-patient units. They reported adverse consequences including violence, relapse of illness, drug dealing within wards and mistrust of patients among staff. In a survey carried out in a highly secure forensic hospital by McKeown and Liebling (1995), reports of cannabis use within the hospital were frequent, with concerns that the persisting supply of drugs to the hospital resulted in increased violence and disruptive behaviour. Evidence is still required about the sub-cultures within which people with schizophrenia and other functional psychotic illnesses live in the community, the networks which develop between them, and the extent to which people may be introduced to or continue drug use in mental health service settings or with people they have met in mental health service settings.

## 1.20 Summary and Conclusions

Currently the evidence base available to support any explanatory models for substance misuse among those with schizophrenia remains fragmented and limited. At an epidemiological level, there is some evidence in the US that rates of drug and alcohol misuse among this group do exceed those for the general population, so that it seems appropriate to seek specific explanations for substance misuse in this group. However, this probably does not apply to all substances and has only been clearly demonstrated outside the US by McCreadie (2002). Further, the extent to which this may be explicable in terms of the potentially confounding influence of social deprivation has yet to be established. Reliable evidence regarding the temporal sequence of severe mental illness and substance misuse is difficult to obtain, but so far suggests variations among people with a dual diagnosis in the temporal order in which the two problems arise, so that a unitary and generally applicable explanation of the way in which this comorbidity develops is unlikely. At a psychological level, there is fairly robust evidence that substances are used as a form of self-medication particularly for tension, low mood and anxiety and for negative symptoms, whilst evidence regarding subjective effects on positive symptoms is less

clear-cut. Other potential forms of explanation for comorbid substance misuse relate more to social context than individual psychology, and have as yet probably not received enough consideration, or been investigated enough empirically. Social isolation, boredom, difficulty coping with everyday interactions and lack of meaningful activity all warrant explanation as possible factors in the development of drug and alcohol problems among those with schizophrenia, as do the social networks and social lives of the severely mentally ill and the part substance misuse plays in these.

# 2.0 THE CURRENT STUDY

## 2.1 Methods

## 2.2 Aims

The purpose of this study was to provide further empirical evidence contributing to understanding the motivations for, and social contexts of drug and alcohol use amongst adult in-patient service users with psychotic illnesses. The study was given approval by the Camden and Islington Local Research Ethics Committee.

Research questions were formulated which related to gaps in the available research evidence. The primary research questions developed related to the self-reported motivations and reasons for alcohol and drug use in this population, (and its relationship to the theoretical concept of 'self-medication'). Secondary research questions were developed which related to the social context and settings in which substance use begins and continues in this population (specifically whom participants used drugs or alcohol with). A further gap in the available research evidence concerned the continued use of substances by in-patients, whilst resident in mental health admission wards, on which the study aimed to provide robust evidence through structured methods. The study also generated an estimated point prevalence rate of dual diagnosis amongst users of adult mental health in-patient services in the Camden and Islington.

These research aims will contribute towards the evaluation of various models which have been put forward to explain the aetiology of substance misuse amongst people with functional psychotic illness.

## 2.3 Objectives of the Study

The objectives of this study are:

1) To describe the self reported motivations for substance use among the participants.

2) To describe the frequencies of substance use, and types of substances used by participants.

3) To describe the social contexts in which the participants use drugs and alcohol, and particularly whether this occurs in the mental health service settings, and/or in the company of other mental health service users.

4) To identify the social situations in which continuing use of drugs and alcohol by the participants takes place and to describe whom members of the sample group use drug and alcohol with.

5) To investigate the temporal relationship between development of substance misuse and development of severe mental illness in this population by comparing the reported time of onsets of both substance misuse and mental illness.

6) To investigate participants beliefs regarding their drug and alcohol use and its potential relationship to their mental illness.

7) To investigate how participants' obtain illicit substances, and how they negotiate the social networks of the drug market.

8) To use staff reports to estimate point prevalence of conspicuous substance misuse among individuals with functional psychotic illnesses using the adult mental health in-patient services in Camden and Islington Mental Health and Social Care NHS Trust

## 2.4 Research design

Dual diagnosis is associated with substantial clinical, legal and ethical problems in relation to psychiatric in-patients, and those in other residential mental health facilities (Phillips and Johnson 2003, Weaver *et al.* 1999). However most research concerning dual diagnosis thus far in the United Kingdom has focused on samples of people with mental illness living in the community (Menezes *et al.* 1996, Wright *et al.* 2000) thereby leaving substantial unanswered questions regarding in-patient populations which warrant further investigation. Given these gaps in evidence it was decided that the participant group for this research programme would consist of in-patients with psychotic illnesses.

## 2.5 Geographical Study Setting

## 2.6 Population characteristics

The boroughs of Camden and Islington are located within inner north central London, and have a joint population of 374000 residents (Bains *et al.* 2005). During the past twelve years both boroughs' populations have grown by 9%. Both boroughs have a younger population than the national average, with 72% being aged under 45 (compared with 60% nationally), equally only 10% of the boroughs' populations are over 65, as compared with 16% nationally in England and Wales. People aged between 20-39 make up 43% (compared with 28% nationally) of the population in Camden (and is similarly higher than the national average in Islington), and women make up the majority of the elderly (over 65) population (62%) and are a majority of the overall populations (52%). Black and other ethnic minority communities constitute 28% of the populations with the largest groups being of Bangladeshi, Black African, Black Caribbean and Indian heritage. The ethnic minority populations make up over 38% of the populations under age 20 (Bains *et al.* 2005). The borough houses 3970 asylum seekers, of which 48% are children. Life expectancy for men is slightly lower than the national average (73.8 years vs. 75), and for women is slightly higher than the national average (80.8 years vs. 80.1).

## 2.7 Determinants of health - Islington

Islington is ranked the 11th most deprived borough in England. 37% of households receive means-tested benefits (compared with 31% (inner London) and 22% nationally). Only 28% of Islington 15 year olds achieved five or more GCSE A-C passes, compared with a London average of 45% and the national average of 47%. Housing problems are thought to be detrimental to health for approximately 3700 households, and 1500 households temporarily contain homeless people, of which a third are placed outside the borough (Bains *et al.* 2005).

## 2.8 Determinants of health - Camden

Camden is ranked as the 54th most deprived borough in England, although there are wide disparities within the borough. 30% of Camden households receive means-tested benefits. 51% of Camden 15 year olds achieved five or more GCSE A-C passes, comparing favorably with a London average of 45%, and a national average of 47%. Housing problems represent a significant issue in the borough, with over 2100 households classified as homeless; over a quarter of these people are placed outside the borough. (Bains *et al.* 2005).

## 2.9 Mental health and substance use disorders in the boroughs

It is difficult to accurately report the exact extent of drug and alcohol misuse and disorders amongst Camden and Islington residents, since there is no single data source, method of reporting, or agreed definitions across health and social care organisations. It is however, estimated that between 2 and 3.6% of Islington residents have a substance use disorder (Stimson *et al.* 1998). On average 20 deaths per year are recorded in Islington due to drug poisoning, and Islington has the highest rate in the U.K. for methadone related deaths in women (nineteen per million vs. two per million nationally). Drinking in excess of recommended limits is common in the borough, with 30% of men and 18% of women and drinking in excess of these limits. Psychological and psychiatric morbidity also demonstrate increased rates in Islington. Over a fifth of Islington

residents (22%) had a high score on the general health questionnaire (GHQ) (an indicator of psychiatric illness) compared with 16% nationally, and age standardized admission rates for people with schizophrenia are 2.5 times higher than the rate for England (190/100,000 vs. 75/1000,000). The rate of suicide is higher than the national average (26 deaths per year), being 46% more than expected for the population.

Similarly between 2 and 3.6% of Camden residents have a substance use disorder (Stimson *et al.* 1998). Camden records 34 deaths per year due to drug poisoning, and has the 4$^{th}$ highest rate nationally for methadone deaths amongst men (50 deaths per million, compared with 9 per million). Similarly Camden residents show increased scores on the GHQ (22% with a high score, vs. 16% nationally), and the rate of suicide is higher than the national average (35 deaths per year) being 70% more than expected). Age standardized admission rates for people with schizophrenia are the 4$^{th}$ highest in the country and are over 3.5 times higher than the rate for England (264/100,000 vs. 75/1000,000).

It is difficult to accurately estimate the actual extent of drug and alcohol misuse amongst London residents, since there is no single method of reporting, and subsequently no single data source. This question is further complicated by the different legal status of each substance (e.g. alcohol versus cannabis versus crack cocaine). Police seizures of drugs, ambulance call-outs, numbers seeking drug treatment, medical admissions, arrests and other limited data sources are combined to facilitate an estimate, and compare specific London data with that reported nationally.

Current available data relate to the year 2000, when there were more than 25000 seizures of illegal drugs- from which more than 20000 people were either cautioned, fined, or found guilty for offences under the Misuse of Drugs Act (1971). In 2001 6600 arrestees were assessed by drug referral workers in London police stations. In 2001/02 there were over 19000 reports of drug users seeking treatment. In the last month 22% (more than one in five) of Londoners aged 16-29 had taken an illegal

drug, compared with 16% nationally, and London accounted for 23% of all drugs offences in England, and over 55% of all offences relating to crack in England. Men are over represented in mortality rates due to drug use (80% deaths male), and in medical admissions due to drug use (69% admissions male) and in drug treatment (75% treatment population male). More than 90% of people in drug treatment in London are aged between 15-44, although there are considerable variations in rates by borough across the capital.

## 2.10 Study Sample

The study sample consisted of adults admitted to one of the eleven adult mental health admission wards (including two psychiatric intensive care wards) in the Islington and South Camden locality. These wards were within; The Huntley Centre (St. Pancras Hospital), The Waterlow Unit (The Whittington Hospital) and St Luke's Hospital. Participants were identified through an initial screening exercise in which ward staff (registered mental nurses and junior psychiatrists) used a unified Alcohol Use Scale (the AUS) and Drug Use Scale (the DUS) (Drake *et al.* 1990) to rate those with clinical diagnoses of functional psychotic disorders for evidence of harmful substance use or dependence within the six months directly preceding hospital admission.

The inclusion criteria for entry to the study were:

1) A clinical diagnosis of a functional psychotic illness (schizophrenia, schizoaffective disorder, manic depressive illness, depression with psychotic features, delusional disorder).
2) Evidence of substance misuse (misuse, dependence or severe dependence) (equivalent to ICD-10 harmful use or dependence categories) within the six months prior to hospital admission.
3) Adult of working age (between 18 to 65 years)

There were no major exclusion criteria for entry to the study. For practical reasons it was not possible to interview non-English speaking patients in the study, due to limited access to translation facilities.

## 2.11 Measures and instruments used in stage 1 of the study

## 2.12 Screening – case identification stage (phase I)

A composite version of the AUS and DUS (keyworker rating scale for alcohol and drug use, misuse and dependence, see appendices) was administered as a means of rapid identification of cases of dual diagnosis from staff reports (Drake *et al.* 1990). The AUS and DUS scales cover eleven substances including alcohol, illicit substances and commonly misused prescribed drugs, in a format which asks keyworkers to rate substance use during a stated rating interval (the previous six months in the current study) into one of five categories (abstinence, use without impairment, misuse, dependence and severe dependence) which are broadly similar to those used in the Diagnostic and Statistical Manual version 4 (APA 1995). The AUS and DUS were developed by Drake *et al.* (1990) as a means of comprehensive identification of substance use disorders in people with schizophrenia. Drake *et al.* (1990) compared i) clinical records, ii) research interviews which used standard substance use assessment interviews (the alcohol dependence scale (ADS), the CAGE, and the Michigan alcoholism screening test (MAST)), and iii) case manager ratings (i.e. the AUS and DUS). The case manager ratings which were made by utilising longitudinal behavioural observations and collateral data demonstrated higher sensitivity and specificity scores when compared with consensus ratings which took all data into account than either clinical records or the standardised instruments. This was particularly evident when considering current substance use disorder, since the MAST is a lifetime measure with poor specificity for current disorder. In the current study, the screening exercise was undertaken without the researcher having direct contact with the patients or seeing their clinical notes. Rather, the wards were visited on a series of set census dates, and ratings made by staff on the basis of their knowledge of patients, reference to clinical notes, and communication with community keyworkers where patients were not well known to ward staff

(e.g. patients newly admitted, or not known to the local in-patient service). Only patients whose substance use was rated as misuse, dependence or severe dependence were included in the study in order to assemble a sample group where there was evidence of adverse psychological, physical, social or functional deficit which was clearly related to the patients' substance use.

## 2.13 Interview stage (phase II)

Individuals identified as meeting study criteria were asked by the member of ward staff who rated their substance use if they would agree to be approached by the researcher to discuss participation in the study. Those who agreed were interviewed with the following instruments:

- The Inventory of Drug Taking Situations (the IDTS) and the Inventory of Alcohol Use Situations (the IAUS) (Annis *et al.* 1987). These questionnaires assess cognitive motivational factors for substance use. The inventories provide a comprehensive profile of the situations in which a participant has used alcohol and/or his/her drug of choice during the past year. It consists of forty-two items relating to common situations in which substances are used, and utilises a four point Likert scale for rating. Eight subscale scores are derived from these inventories, with underlying themes which relate to: unpleasant emotions (4 items), pleasant emotional states (4 items), testing personal control (4 items) interpersonal conflict (3 items), family difficulties, social or peer pressure to use (8 items), physical health states (4 items), urges to use (4 items), and pleasant times with others (7 items). These instruments have demonstrated reliability and validity in general populations of substance users but not in populations of those with dual diagnosis (Turner *et al.* 1997). The IDTS and IAUS show good split half reliability and construct validity when compared with other use situation measures. To help ensure consistency and full comprehension the questions were read aloud to each study participant.

- The IDTS and IAUS inventories do not assess the use of substances for self-medication of psychotic illness. For this purpose the study used the Self medication questionnaire (SMQ), (Gearon *et al.* 2001). This questionnaire utilises 21 items which evaluate motivation to use drugs and/or alcohol in eight areas: to medicate feelings of shame related to their illness (1 item), to reduce side effects of prescribed psychotropic medication (3 items), to alleviate fears of relapse (1 item), to increase feelings of social acceptance (4 items), to reduce feelings of isolation (2 items), to medicate positive and/or negative symptoms of psychosis (6 items), to facilitate social interaction (3 items) and to relieve boredom (1 item) . All items were read aloud to participants and were rated on a four point likert scale similar to those used with the IDTS and IAUS situation inventories above.

- A brief questionnaire administered by the researcher also developed by Gearon *et al.* (2001) was used with participants to obtain data relating to how participants accessed and purchased illicit drugs, the resources they used to finance their substance use, and whom they generally used substances with. The questionnaire specifically asked about the following drug use behaviours: how frequently the following people *give* substances to the participant (at no cost to the participant), partner, family members, friends, strangers; how frequently the participant buys substances from the same list (as above); whom the participant uses substances with most frequently (list as above) and what sources of income participants use to purchase substances (pay cheque, benefits, money from begging, stolen money, money given by family members, money from illegal activity (including prostitution and theft). To the frequency of use questions, receiving or purchasing substances from other in-patients or other users of mental health services were added in order to examine the relationship between adult mental health in-patient services and

the commencement and maintenance of substance use in this sample of hospital in-patients. Minor amendments were also made to make the schedule appropriate for use in a UK context.

- Assessment of substance use over the previous year was undertaken using a standard clinical drug and alcohol history, which enquired what substances participants currently used, their 'drug of choice', other drug and/or alcohol use, the frequency of substance use, and routes of substance administration. Age of first drug and alcohol use was recorded.

- A questionnaire eliciting basic information about socio-demographic characteristics, including age, sex, onset of mental health problems, first contact with mental health services, first admission to hospital, living situation and housing status was designed specifically for the study and administered alongside the inventories of use and self medication schedules.

- A set of structured questions developed by Gearon *et al.* (2001) about the environment in which drug use first began and the source from which drugs were obtained was administered by the researcher.

- A set of structured and unstructured questions developed for the current study concerning the extent to which participants used substances within mental health service settings (such as in-patient wards) and in the company of other users of mental health services. These questions were refined through initial piloting.

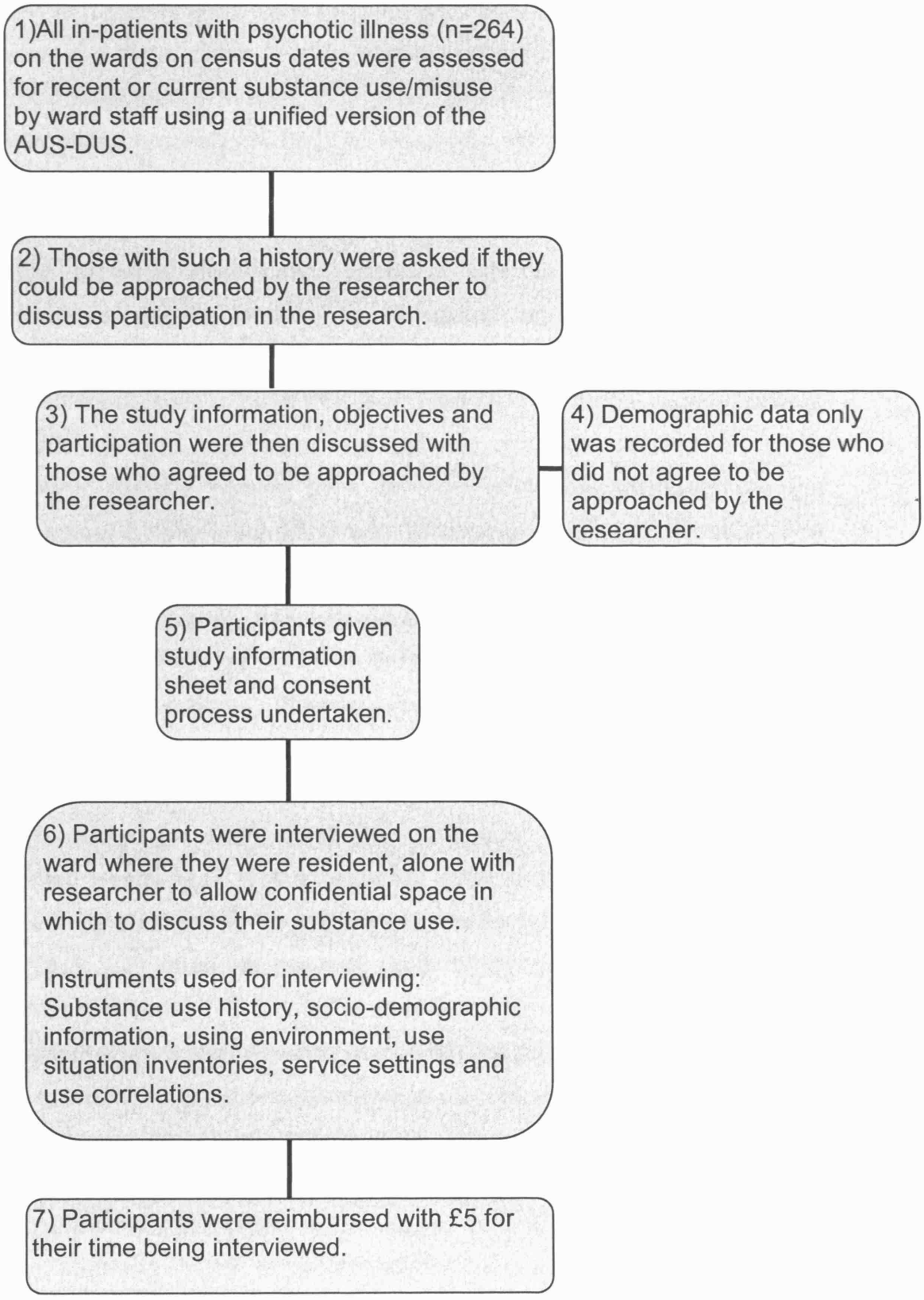


**Figure 2.2** Data collection process

## 2.14 Data collection process – phase I

Eleven in-patient sites were sampled on a series of pre-arranged census dates. On these dates, the researcher attended the ward and provided individual guidance to ward staff (ward psychiatrists and nursing staff) in rating the composite AUS-DUS screening instrument. Due to ethical concerns (that patient information such as names and diagnoses would be available to the researcher without consent of such patients) the first stage of case identification-screening was carried out without the researcher gaining access to casenotes or any other identifying information. The unified AUS-DUS had already been circulated to all eleven wards/sites in order that team members (potential raters) became familiar with the instrument, and had any questions relating to its use prepared for the census date, so they could be addressed by the researcher before proceeding with screening – case identification. The staff member undertaking the screening identified potential participants initially by listing all those in-patients resident on the ward with a confirmed diagnosis of psychotic illness (schizophrenia, manic-depressive psychosis, delusional disorder, severe depression with psychotic symptoms, schizoaffective disorder). A screening form would then be completed for every patient with such a diagnosis, with a minimum data set collected for each, consisting of: gender, age, clinical diagnosis, Mental Health Act status, ethnicity and substance use during the preceding six months. Those patients whose substance use on the AUS or DUS was rated as misuse, dependence, severe dependence with institutionalisation (i.e. 'cases' of dual diagnosis) were then asked by the member of ward staff who had completed the screening form if they could be approached (by the researcher) to discuss participating in the study. This allowed for collection of minimum data for all those screened (i.e. all those in-patients with functional psychotic illness) whether or not they subsequently participated in the study. Where information available to ward staff was limited, patients' community keyworkers were contacted to obtain information relating to substance use by such patients. Each

ward/site was visited twice during the period 1999 – 2001 so as to obtain an adequate numbers of participants for the study.

## 2.15 Data collection process – phase II

Those patients identified during the screening phase (I) who agreed to further interview were then interviewed by the researcher using the instruments listed in section 2.13 (see appendix A). The interviews took place on the wards where participants were resident and were conducted alone with the participant in order to provide a safe and confidential space in which the interview could be undertaken.

## 2.16 Information and Consent Procedures and Ethical Considerations

A patient information leaflet was developed for use in the study which covered the requirements of the local research ethics committee for research using human participants. The leaflet also outlined reasons for undertaking the study and what the possible benefits for improved patient care might be. A patient consent form was also developed for the requirements of the local research ethics committee which was used with all participants in phase II of the study (see appendix A).

Given the nature of this study and the possible consequences which may have been anticipated by some participants, e.g. the illegal nature status of much substance use, their personal possession of such substances, their continued management as in-patients, and their disclosure of substance use on hospital wards, for patients who agreed to participate as participants the process of information giving and consent was especially important. During meetings with the patients individually who had been identified as meeting the criteria for entry to the study the ethical promise of absolute confidentiality of all information given was made, except where it concerned the immediate health and well being of the participant or another. The participant was informed prior to commencing the interview that in these circumstances the ward clinical

team would be informed of the specific perceived risk which had become evident during the course of interviewing the participant. If the participant did not agree to these conditions interviews did not proceed.

Ethical approval was sought through the Camden and Islington Community Health Services NHS Trust Local Research Ethics Committee. In the course of this study information was collected which related to illicit drug use in National Health Service premises, and other illegal activity by persons in receipt of services. This may have resulted in fear of the disclosure of such information to treatment staff and as such it was clear that information of such nature was sensitive and confidential to the study.

The data collected in the course of the study did not form part of the participants' hospital records and did not inform any treatment decisions regarding the participants.

A full, comprehensive and informed consent procedure was used in which participants were given information about the purpose of the study, the methods used, and their right to withdraw from the study at any time without prejudice to their treatment. This was documented and retained.

## 2.17 Methodological limitations

Those participants whose drug and alcohol problems were not known to professionals were not included in the study. However, the screening method was an efficient way of assembling a substantial sample of individuals with dual diagnosis relatively rapidly. Given the very limited evidence currently available regarding possible explanations for dual diagnosis, a study confined to those with conspicuous morbidity is justifiable as a first step.

The cross-sectional and retrospective nature of the current study diminishes the reliability of data about the timecourse of onset of substance use. However, a longitudinal study would be substantially more time-consuming and difficult to carry out. Again the currently very limited

evidence available on this participant makes a cross-sectional study justifiable as an initial step.

## 2.18 Data coding, entry and analysis

Data for study phase I were recorded directly onto the unified AUS-DUS schedules by hand, and for phase II directly onto the interview schedule (see appendices).

Data analysis for phases I and II of the study was performed using the statistical package for the social sciences programme (SPSS) version 12.0. Descriptive statistics were initially used to describe patient characteristics, patterns and contexts of drug and alcohol use and motivations for use. A factor analysis on data obtained during phase II of the study was undertaken in order to identify underlying constructs in the questionnaires used in the study. Finally, cluster analysis was used with the aim of identifying sub-groups of participants with distinctive patterns of motivations for use. Analytic methods are described in more detail in the relevant results chapters. Table 2.2 lists the main statistical procedures used for analysis of study data in this thesis.

| Test | Description |
|---|---|
| Spearman's rho | A correlation coefficient indicating the magnitude of a relationship between variables measured on the ordinal scale |
| Correlation matrix | A two dimensional display showing the correlation between coefficients of the columns of a matrix |
| Cross tabulation | A determination of the number of cases occurring under simultaneous consideration of two categorical variables |
| Chi-square test | A nonparametric test of statistical significance used to assess whether a relationship exists between two nominal level variables. Symbolised as $\chi^2$ |
| Fishers Exact | A procedure used to test the significance of the difference in proportions. This test is used when cells in the contingency table have no observations |
| t-test | A parametric test used for analysing the difference between two means |
| Analysis of variance (ANOVA) | A procedure for testing mean differences among three or more groups, of approximately normally distributed data, by comparing the variability within groups |
| Principal components analysis (factor analysis) | Procedure for reducing a large set of variables into a smaller set of variables with common characteristics or underlying dimensions |
| Eigenvalue | Value equal to the sum of the squared weights for each factor |
| Kaiser normalisation | Test of the relative strength of emergent factors. Also known as the eigenvalue one test. |
| Cronbach's alpha (Coefficient alpha) | A reliability index that estimates the internal consistency or homogeneity of a measure composed of several items or subparts |
| K-means cluster analysis | A multivariate procedure used to cluster people or objects based on patterns of association |

**Table 2.2** Main statistical procedures used in the study

## 2.19 Benefits of the Study

It was hoped that the study would extend current knowledge about this combination of disorders. In particular, a better understanding of the factors which may underly substance use among the severely mentally ill may be useful in development of strategies for management and prevention of substance misuse among this population and for development of effective harm reduction strategies within this group. Finally, it was hoped that the study would stimulate greater awareness about the way in which dual diagnosis develops.

# 3.0 RESULTS - 1) Socio-demographic, clinical and substance use characteristics of the participants

Chapter 3 will report the results of the screening of all adult age in-patients for a recent or current substance misuse history, their self-reported substance use and patterns of use, and the clinical and socio-demographic characteristics of the participants (gender, age, clinical diagnosis, living arrangements, employment and substance use histories). The chapter will also present data concerning 'drug trading' amongst the participants whilst in hospital, and their attributions of substance use.

## 3.1 Screening phase

Ward staff (primary/charge nurses and ward psychiatrists) completed the unified AUS - DUS (Drake *et al.* 1990) for all two hundred and sixty four in-patients (100% of eligible patients) with a clinical diagnosis of functional psychotic illness who were resident on the ward on the days of the ward censuses. Patients were screened for evidence of substance misuse within the six months prior to their admission. Staff rated 129 (48.9%) patients as showing evidence of drug or alcohol problems (drug and/or alcohol misuse, harmful use or dependence), so that they met criteria for inclusion in the interview phase of the study. A further 39 (14.8%) were rated as using drugs and/or alcohol without impairment, and 96 (36.4%) as abstinent from drug and/or alcohol use.

| **Socio-demographic and clinical variables** | Participants with dual diagnosis (N = 129) (% of participants with dual diagnosis) | Participants with psychosis only (N = 135) (% of participants with psychosis only) | Significance test[1] |
|---|---|---|---|
| **Male gender** | 93 (72.1%) | 75 (55.6%) | $\chi^2 = 7.80$ p = 0.005 |
| **Mean age** | 34.7 (SD: 9.6) | 41.1 (SD 11.6) | T =7.06, p = <0.001 |
| **Ethnic origin** | | | |
| White European | 81 (62.8%) | 72 (53.3%) | |
| Black Caribbean, African or British | 36 (27.9%) | 54 (40%) | $\chi^2 = 4.42$ p =0.109 |
| Asian | 12 (9.3%) | 9 (6.7%) | |
| **Diagnosis** | | | |
| Schizophrenia | 98 (76.0%) | 101 (74.8%) | |
| Bipolar Affective Disorder | 31 (24.0%) | 16 (11.9%) | |
| Schizoaffective disorder | 0 (0%) | 12 (4.5%) | Fisher's exact test: p=0.005 |
| Depression with psychotic symptoms | 0 (0%) | 3 (2.2%) | |
| Delusional disorder | 0 (0%) | 3 (2.2%) | |
| Compulsorily Detained under MHA | 129 (72.9%) | 135 (68.1%) | $\chi^2 = 0.706$ p=0.401 |

**Table 3.1** Socio-demographic and clinical characteristics of the participants.

Table 3.1 shows the socio-demographic and clinical characteristics of the sample. The last column reports the result of testing whether there is a significant difference at the p=0.05 level between participants with dual diagnosis and those with psychosis only. Student's t test is used for continuous and $\chi^2$ for categorical data, except for diagnosis where Fisher's exact test (STATA statistical package) was used because of multiple empty cells.

As table 3.1 shows, those subjects with dual diagnosis were younger on average and more likely to be male than those with psychosis alone. Although there was a trend towards a lower proportion of Black Caribbean, Black African and Black British patients with dual diagnosis when compared to other ethnic groups, this trend did not reach statistical significance. Further, patients with schizoaffective disorder and depression with psychotic features were not represented at all in the group with dual diagnosis (but were represented minimally in the psychosis only group). Also of particular note was that the majority of patients (72%) with dual diagnosis were detained under the 1983 Mental Health Act (1983).

## 3.2 Interview phase

One hundred and twenty nine individuals met the study criteria, of whom 102 agreed to be interviewed; (response rate 79%). There were no statistically significant differences between the characteristics of responders and non-responders with regard to the following major study variables when tested using chi-squared statistical tests; sex, Mental Health Act status, ethnicity, diagnosis, alcohol use, cannabis use, amphetamine use, cocaine (and crack) use, opiate use, hallucinogenic drug use (lysergic acid diethylamide (LSD, "acid"), psilocybin ("magic mushrooms"), Ecstasy (MDMA) use, benzodiazepine use or barbiturate use.

## 3.3 Substance use reported by the participants

Rates and intervals of drug and alcohol use reported below come from participants' self report at the interview stage. Participants were read a list of twelve substances (as below) and asked to consider which they had used during the first three of the rated intervals as shown in table 3.2. Participants were also asked to list any substances they had used during the rating interval which were not mentioned on the list read out by the interviewer. Substance use while an in-patient, reported in column D of table 3.2, was elicited separately at the end of the interview, since it was felt that the development of a rapport between interviewer and participant was an important factor in participants feeling confident in disclosing use as in-patients due to possible worries over confidentiality.

| Substance Used | A. Used at least once in past 6 months. | B. Used at least once a week for at least 2 of past 6 months. | C. Used at least once daily for at least 2 of past 6 months. | D. Used on the in-patient ward at least once in past 6 months |
|---|---|---|---|---|
| Alcohol | 83 (81.4%) | 55 (53.9%) | 45 (44.1%) | 32 (31.4%) |
| Cannabis | 71 (69.6%) | 52 (51.0%) | 52 (51.0%) | 53 (52.0%) |
| Crack Cocaine | 32 (31.4%) | 11 (10.8%) | 10 (9.8%) | 7 (6.9%) |
| Opiates/Opioids | 33 (32.4%) | 15 (14.7%) | 9 (8.8%) | 7 (6.9%) |
| Cocaine | 33 (32.4%) | 6 (5.9%) | 4 (3.9%) | 5 (4.9%) |
| Khat | 4 (3.9%) | 3 (2.9%) | 3 (2.9%) | 2 (2.0%) |
| Amphetamine | 25 (24.5%) | 4 (3.9%) | 1 (2.0%) | None |
| Ecstasy | 21 (20.6%) | 2 (2.0%) | None | 1 (1.0%) |
| Hallucinogenics[1] | 19 (18.6%) | None | None | None |
| Benzodiazepines | 20 (19.6%) | 3 (2.9%) | 1 (1.0%) | 1 (1.0%) |

**Table 3.2** Substances and frequencies of use, including use on in-patient wards.

[1] Hallucinogenic substances = Lysergic acid diethylamide, "LSD" and Psilocybin "magic mushrooms".

| | Alcohol | | |
|---|---|---|---|
| | No alcohol use | Uses alcohol | Total |
| No drug use | 0 (0%) | 17 (16.7%) | 17 (16.7%) |
| Uses drugs | 19 (18.6%) | 66 (64.7%) | 85 (83.3%) |
| Total | 19 (18.6%) | 83 (81.4%) | 102 (100%) |

**Table 3.3** Participants' substances of choice

## 3.4 Alcohol and substance use patterns

A wide range of substances were used by study participants, as is indicated in tables 3.2 and 3.3. Four time intervals were used to assess substance use for the purposes of the study: substances used at least once during the previous six months, substances used at least once every week for at least two of the previous six months, substances used at least once daily for at least two of the past six months (frequent use/drugs of choice), and substances used while the participant was an in-patient on the ward. Whilst alcohol, crack cocaine and cannabis use rates were fairly similar for each of the four time intervals, the other eight substances assessed showed greater differences, reflecting considerable numbers of occasional users. Crack cocaine use frequency also showed little reduction between weekly and daily use in participants respectively (11% vs. 10%).

Eighty-nine participants (87.3%) reported that they had used alcohol and/or drugs on at least one occasion on a ward during an in-patient admission, whilst 83 participants (81.3%) reported using on the ward during the current admission. Forty-seven (46.1%) of the participants reported having obtained the substance they used from another in-patient, whilst 19 (18.6%) reported that friends had brought in alcohol or drugs to the ward for them. Only 5 participants (4.9%) had bought drugs from their regular dealers outside the ward. Twenty participants (19.6%) regularly used 'chasing' methods (vaporising the substance on tinfoil and

inhaling (or 'chasing') the fumes with a tinfoil pipe), while 17 (16.6%) regularly used intravenous injection as routes of administration. For the remainder, use was exclusively by oral means of administration. Four participants (3.9%) reported that their first ever drug use experience occurred in an in-patient ward, in the company of other in-patients.

As shown in table 3.3, the majority of participants' used both alcohol and drugs (64.7%). A very similar proportion (16.7% and 18.6% respectively) only used alcohol (not drugs) and drugs (not alcohol).

| **Practical Living Arrangements** | **N (%)** |
|---|---|
| Currently homeless | 15 (14.7%) |
| Living with others (not relatives) | 4 (3.9%) |
| Living with other relative (excluding partner or parent) | 1 (1%) |
| Living with parents | 7 (6.9%) |
| Living with spouse or partner | 11 (10.8%) |
| Living alone (or with child under 18) | 64 (62.7%) |
| **Type of Accommodation** | |
| Owner | 4 (3.9%) |
| Local authority | 47 (46.1%) |
| Housing association | 23 (22.5%) |
| Private rented | 2 (2%) |
| Supported accommodation with staff on site 24 hours daily. | 4 (3.9%) |
| Supported accommodation with staff on site on weekdays. | 1 (1%) |
| Bed and breakfast | 3 (2.9%) |
| Other | 3 (2.9%) |
| Homeless | 15 (14.7%) |

**Table 3.4** Housing and other practical living arrangements

Table 3.4 describes participants' living situations. The majority lived alone (64%), and a significant proportion (15%) were currently homeless at the time of the study. Very few lived in privately rented accommodation, with the majority (69%) living in either housing association property or local authority property. Similarly very few (less than 5%) lived in supported accommodation (with 24 hour staff cover, or daytime staff cover).

| **Current Employment status** | **N (%)** |
|---|---|
| Employed or self-employed | 4 (3.9%) |
| Unemployed | 91 (89.2%) |
| Voluntary employment | 2 (2%) |
| Student | 2 (2%) |
| Retired | 1 (1%) |
| House wife/husband | 1 (1%) |
| Other | 1 (1%) |
| **Employment History** | |
| Never worked since leaving school | 37 (36.3) |
| Has worked since leaving school | 65 (63.7%) |
| **Educational Background** | |
| Left School before 15, no formal qualifications | 13 (12.7%) |
| Left School after 15, no formal qualifications | 34 (33.3%) |
| At School (or subsequently) passed at least one secondary level qualification | 38 (37.3%) |
| Has Diploma or vocational qualification | 10 (9.8%) |
| Has University degree | 7 (6.9%) |

**Table 3.5** Current and Previous Employment History

As table 3.5 illustrates, general social integration in the participants was poor. Eighty-nine percent of the participants were unemployed at the time of the study. A further 36% had no history of paid employment as adults, reflecting high levels of social exclusion in the group as a whole. Forty-five percent of the participants left school with no formal qualifications, with thirteen percent leaving before completing their secondary education.

| **Marital Status** | **N (%)** |
|---|---|
| Single | 69 (67.6%) |
| Married | 5 (4.9%) |
| Living as couple | 8 (7.8%) |
| Divorced or separated | 20 (19.6%) |
| **Number of Dependent Children** | |
| No children | 70 (68.6%) |
| Up to two children | 21 (20.6%) |
| More than two children | 11 (10.8%) |
| **Number living with children under 18** | |
| Living with their child/children aged under 18 | 7 (6%) |

**Table 3.6** Marital Status and Dependent Children

As is shown in table 3.6 the majority of participants were single and had no children. A small number of the participants (7%) had children under the age of eighteen with whom they lived.

| **Family history of Substance Use Disorder** | **N (%)** |
|---|---|
| Family member with current or past alcohol or drug use problem | 71 (69.6%) |
| Family member who successfully stopped using drugs or alcohol | 22 (21.6%) |
| **Personal history of Alcohol Use** | |
| First drink of alcohol (mean age) | 14 (mean) |
| **Reported first drink with:** | |
| Family member | 32 (31.4%) |
| Friend | 53 (52%) |
| Alone | 12 (11.8%) |
| Boyfriend/girlfriend | 5 (4.9%) |
| **Personal history of Drug Use** | |
| First drug use (mean age) | 17 (mean) |
| **Reported first drug use with** | |
| Family member | 10 (9.8%) |
| Friend | 68 (66.7%) |
| Alone | 3 (2.9%) |
| Boyfriend/girlfriend | 17(16.7%) |
| **Reported mean onset of mental illness (age)** | |
| Mean onset of mental illness | 19 |
| Mean first contact with mental health services | 21 |
| Mean first psychiatric admission | 23 |

**Table 3.7** Participants personal and familial substance misuse history

Data regarding personal and family history of substance use disorders were reported by participants directly in the context of the research interview, and no attempts to verify this data with relatives were made. Data reported by participants regarding onset of mental illness were checked against clinical records for accuracy.

As table 3.7 illustrates, reported familial history of substance use disorder amongst participants in the study was very common (70% with family member with history of substance use disorder), however reported successful cessation of substance use amongst participants' family members was less common (22%). Participants generally drank alcohol for the first time with friend(s) at age 14, and used drugs for the first time with friend(s) at age 17. The mean age of the onset of mental illness in participants was 19, indicating that participants had on average started using substances considerably before the onset of mental illness (in the case of alcohol five years before, and in the case of illicit drugs, two years before).

## 3.5 Circumstances of substance use

| | Typically uses alone | Typically uses with other people |
|---|---|---|
| **Alcohol** | 26 (25.5%) | 76 (74.5%) |
| **Drugs** | 32 (31.4%) | 70 (68.6%) |
| **Drinks or uses drugs most frequently with:** | **Alcohol N (%)** | **Drugs N (%)** |
| Friend (total) | 66 (64.7%) | 50 (49%) |
| (mental health service users) | 22 (21.6%) | 29 (28.4%) |
| (met as an in-patient) | 17 (16.7%) | 24 (23.5%) |
| Family member | 3 (2.9%) | 6 (5.8%) |
| Stranger/acquaintance | 3 (2.9%) | 1 (0.9%) |
| Boyfriend/girlfriend/spouse | 3 (2.9%) | 8 (7.8%) |
| Other in-patient on the ward | - | 2 (1.9%) |
| Contact made through mental health services | - | 2 (1.9%) |

**Table 3.8** Physical and social circumstances of substance use

Table 3.8 illustrates that substance use amongst the participants was largely an activity undertaken in the company of other people (a social activity) with three quarters of alcohol use (74%) and 70% of drug use being in such circumstances. Most of this substance use was in the company of friends of which a substantial number were other mental health service users, of whom the majority were met whilst the participant was an in-patient in a psychiatric admission ward.

| In-Patients, wards and drug use | N (%) |
|---|---|
| Participants who felt helped on ward with current Substance Use problem? | 56 (54.9%) |
| Participants feeling pressurised to buy substances by other in-patients | 30 (29.4%) |
| Participants feeling pressurised to use substances by other in-patients | 32 (31.4%) |

**Table 3.9** Correlates of in-patient drug use

A sizeable proportion of participants reported feeling pressurised by other hospital in-patients concerning the purchase and use of illicit drugs and alcohol, as reflected in results shown in table 3.9, where one third of the participants report discomfort in one of these areas. However, more than a half of the participants (55%) reported feeling that they had received help appropriate to their substance use problem whilst an in-patient on a psychiatric admission ward.

| **Funding drug and alcohol use** [1] | **N (%)** |
|---|---|
| Salary/paycheque | 4 (4%) |
| Begging | 1 (1%) |
| Social security/benefits | 95 (93%) |
| Money stolen from close friend or family member | 1 (1%) |
| Money stolen from Stranger | 1 (1%) |
| Other illegal activities (including sex work) | 1 (1%) |
| Money given to participants for other purposes | 9 (8.8%) |
| **Buying Illicit Drugs; Usually buy from** | **N (%)** |
| Boyfriend/girlfriend | 4 (3.9%) |
| Friends | 14 (13.7%) |
| Dealers | 77 (75.5%) |
| Other in-patients | 5 (4.9%) |
| Contact made through mental health services | 5 (4.9%) |

**Table 3.10** Substance use trading and funding.

[1] is a composite score of likert scale responses 'frequently' and 'almost always'

As table 3.10 shows, substance use amongst the participants was funded very largely through utilising social security benefits, with 93% of the participants reporting their primary financial source for funding substance use was through benefits. Nine percent of participants used money given to them for other purposes to fund substance use, with only 4% of participants reporting that their substance use was funded by theft, begging, sex work or other illegal activity. Three quarters of the participants (75%) reported that their primary source of buying substances was through dealers who were not friends or family, but strangers, whilst 14% bought drugs primarily from friends. Ten percent conducted drug trading through other hospital in-patients, and contacts made through mental health services.

| **Subjective awareness of current and past difficulties with substance use** | | **N (%)** |
|---|---|---|
| Current problems with alcohol | | 26 (25.5%) |
| Past problem with alcohol | | 24 (23.5%) |
| Current problems with illicit or non-prescribed drugs | | 59 (57.8%) |
| Past problem with illicit or non-prescribed drugs | | 17 (16.7%) |
| 'I have a current drug or alcohol problem' | | 85 (83.3%) |
| **Factors which increased awareness that substance use is/was a problem** | **Alcohol N (%)** | **Drugs N (%)** |
| Physical health problems | 10 (9.8%) | 3 (2.9%) |
| Mental health problems | 6 (5.9%) | 30 (29.4%) |
| Difficulty with daily functioning | 11 (10.8%) | 17 (16.7%) |
| Financial problems | 1 (1%) | 8 (7.8%) |
| Interpersonal problems | - | 1 (1%) |
| Family problems | - | 1 (1%) |
| **Mental health problems directly attributed to substance use within the past twelve months** | | **N (%)** |
| None | | 25 (24.5%) |
| Increased paranoia | | 16 (15.7%) |
| Increased frequency of hallucinations | | 6 (5.9%) |
| Increased anxiety | | 3 (2.9%) |
| Increased depressive feelings | | 7 (6.9%) |
| Increased social isolation | | 1 (1%) |
| Relapse of existing mental health problem | | 44 (43%) |
| **Positive or 'helpful' effects of substance use within the past twelve months** | | |
| None | | 27 (26.5%) |
| Decreased depressive feelings | | 1 (1%) |
| Decreased anxiety | | 2 (2%) |
| Increased energy | | 7 (6.9%) |
| Less paranoid | | 3 (2.9%) |
| Less bored | | 18 (17.6%) |
| Increased social confidence | | 16 (15.7%) |
| Relieves side effects of prescribed psychiatric drugs | | 4 (3.9%) |

**Table 3.11** Participants attributions regarding substance use

Table 3.11 reports data concerning participants own attributions regarding their use of illicit substances and alcohol. A large proportion of the participants reported a subjective awareness of a substance use disorder (83%) either currently or in the past, with a quarter of participants reporting alcohol as a past problem and almost a fifth of participants reporting a past problem with illicit drug use. There was a difference by substance between factors identified as making participants aware of having a substance use disorder: people with alcohol use problems were more likely to report increased physical health concerns (10% vs. 3%) as the factor which made them aware of having a substance use problem increased awareness of the problem, whilst those with problematic illicit drug use were more likely to report mental health problems (6% vs. 30%) as the factor which made them aware of having a substance use problem. A similar number reported difficulty in daily functioning as the issue which raised subjective awareness of a substance use disorder. More than half of the participants (55%) felt they had been offered appropriate help with their substance use problems whilst on the ward.

In terms of subjectively reported problems and benefits of substance misuse a quarter of the participants in each report domain (problems and helpful aspects directly attributable to substance use within the previous twelve months) reported none. Forty three percent of the participants reported a relapse of their existing mental health problem directly attributable to their substance use, with a small number reporting effects on mood. Sixteen percent report a relationship between increased feelings of paranoia and their substance use, whiles 6% report increased frequency of auditory hallucinations. A very small number reported helpful effects of substance use regarding mood and feelings of paranoia, while 18% and 16% respectively reported feeling less bored, and more socially confident as the main helpful effects of their substance use, indicating that a key motivation for substance use in this participant group related to social factors as opposed to symptom control or relieve of the side effects of prescribed medicines.

The results presented in this chapter demonstrate a relatively high rate of substance use and associated issues amongst the participants. The majority were male, and younger than those patients with psychotic illnesses only, and three quarters were detained under the Mental Health Act (1983) at the time of the study. A wide range of substance use was reported by participants, which was reflected in a wide range of use methods (from oral to intravenous use).

## 3.6 Summary

The participants' appeared highly socially excluded with 15% being homeless, and 68% being single with no children. The majority of participants' (70%) have a close relative with a substance misuse history. The participants' mean onset of mental illness was between two and five years after their first mean alcohol and drug use (respectively). For the majority substance use was a social activity with only 25% (alcohol) and 31% (drugs) using alone. Between 20% and 30% used alcohol and/or drugs regularly with other mental health service users. Eighty three percent of the participants saw their substance use as problematic, with almost half (43%) attributing their current episode of illness to their substance use.

# 4.0 RESULTS - 2) Cognitive motivational factors and reasons for substance use

Chapter 4 will present the results of the factor and cluster analyses undertaken with data from the use situations inventories, and self medication schedule. The factor analysis is presented first, with a detailed account of how the data was prepared for undertaking the analysis (data reduction). The rotated and un-rotated factor solutions are presented, as are the eigenvalue tables and the six factors which emerge from the analysis. A k-means cluster analysis is also presented later in the chapter, allowing for the identification of sub-groups with distinct patterns of substance use motivations. Finally a number of key socio demographic and substance use variables are tested against cluster membership and these are presented in table form.

## 4.1 Introduction

A number of validated measures were used in the study (as described in Chapter 2) to investigate the circumstances in which participants used substances, their motivations and subjective reasons for such substance use. The measures used are listed in table 4.1.

The next step in interpreting results from the study was to try to use the many items in the measures used to identify a small number of main dimensions of motivations for drug and alcohol use. Factor analysis (principle component analysis) was selected as the initial method of multivariate analysis as its main applications are: (1) to detect structure in the relationships between variables through a correlational analysis (or to classify variables) and (2) to reduce the number of variables to a smaller number of factors suitable for use in further analyses.

In the context of this study, using factor analysis was intended to establish a set of motivations for substance use from a large volume of quantitative variables concerning complex behaviours, unknown relationships and interdependencies. Factor analysis has the benefit of allowing for the disentanglement of these complex interrelationships into their major and distinct factors (while explaining the relative amount of

variance explained separately by each factor). One difficulty with the emergent factors can be interpretability since there are no external criteria to understand the solution presented. The rotation of factors whilst not changing the underlying structure obtained tends to increase the interpretability of factors. Varimax rotation, the selected method of rotation, ensures factors are as far as possible uncorrelated with each other (i.e. distinct from each other) which maximises the explained variance.

| Measure | Number of Items | Number completed |
|---|---|---|
| Inventory of Alcohol Use Situations (IAUS) | 42 items | 102 |
| Inventory of Drug Use Situations (IDTS) | 42 items | 102 |
| Self Medication Questionnaire (SMQ) | 18 items | 102 |

**Table 4.1** Validated measures used in the factor analysis

## 4.2 Use situations and self medication questionnaire data

Tables 4.2 and 4.3 report the mean scores for the five individual variables (items) rated highest by all the participants completing the Inventory of Drug Use Situations, and the Inventory of Alcohol Use Situations. The mean scores for these items range from 3.28 to 3.55, representing responses in the 'frequently' to 'almost always' range.

| Variable number | Variable item | Minimum | Mean | Maximum | SD |
|---|---|---|---|---|---|
| 27 | When I unexpectedly found some of my favourite drug/alcohol | 1.00 | 3.55 | 4.00 | .880 |
| 35 | When something good happened and I felt like celebrating | 1.00 | 3.41 | 4.00 | .887 |
| 18 | When I was angry at the way things had turned out | 1.00 | 3.33 | 4.00 | .956 |
| 40 | When I wanted to celebrate with a friend | 1.00 | 3.28 | 4.00 | .908 |
| 39 | When I met a friend and he/she suggested that we use drugs/alcohol together | 1.00 | 3.28 | 4.00 | .881 |

**Table 4.2** Highest mean ratings (IDTS variables)

| Variable number | Variable item | Minimum | Mean | Maximum | SD |
|---|---|---|---|---|---|
| 23 | When I was angry at the way things had turned out | 1.00 | 3.18 | 4.00 | 1.03 |
| 35 | When something good happened and I felt like celebrating | 1.00 | 3.17 | 4.00 | 1.01 |
| 30 | When I was out with friends "on the town" and wanted to increase my enjoyment | 1.00 | 3.11 | 4.00 | .937 |
| 40 | When I wanted to celebrate with a friend | 1.00 | 3.10 | 4.00 | .919 |
| 29 | When I was at a party and people around me were drinking | 1.00 | 3.07 | 4.00 | 1.06 |

**Table 4.3** Highest mean ratings (IAUS variables)

| Variable number | Variable item | Minimum | Mean | Maximum | SD |
|---|---|---|---|---|---|
| 18 | Using drugs or alcohol makes it easier for me to talk to people. | 1.00 | 3.33 | 4.00 | .968 |
| 17 | Using drugs or alcohol helps me to be more relaxed with people | 1.00 | 3.33 | 4.00 | 7.62 |
| 13 | Using drugs or alcohol makes me feel more bothered by the things I hear and see. | 1.00 | 3.18 | 4.00 | .948 |
| 16 | Using drugs or alcohol helps me enjoy being around people more. | 1.00 | 3.15 | 4.00 | .883 |
| 8 | Using drugs or alcohol helps me feel less isolated. | 1.00 | 3.12 | 4.00 | .957 |

**Table 4.4** Highest mean ratings (SMQ variables)

Table 4.4 reports the mean scores for the five individual variables (items) rated highest by all the participants completing the Self Medication

Questionnaire. The mean scores for these items range from 3.28 to 3.55, representing responses in the 'frequently' to 'almost always' range. Individual items from the Use Situation Inventories, and the Self Medication Questionnaire rated highest overall, (reported in tables 4.2, 4.3 and 4.4) tended towards explanations for drinking and drug use which cite reward, personal and social difficulties as the observed motivators for use (although as previously stated, the Use Situation measures used were heavily orientated towards these domains). Thirteen of the fifteen individually highest rated items relate to these difficulties, and therefore, to motivations for use. Two individual items (IDTS item 27 'when I unexpectedly found some of my favourite drug', and SMQ item 13 'using makes me feel more bothered by the things I see/hear' were the two items which did not fit with the pattern seen for the other highly rated individual items.

## 4.3 Procedure: data reduction (use situations)

Tabachnick and Fidell (1996) suggest there is a minimum requirement of five cases per variable to perform factor analysis which has statistical validity. Given the ratio of cases to variables (as in table above) it was necessary to reduce the overall number of items to include in the factor analyses for this study.

Initially, the Inventory of Alcohol Use Situations (IAUS) and the Inventory of Drug Use Situations (IDTS) scales were combined to produce a set of composite items, which was called the Inventory of Substance Use Situations (ISUS). The IAUS and the IDTS measure response to situations in which people use alcohol and illicit drugs. These inventories have 42 identical items, which report alcohol use (IAUS) and drug use (IDTS). For example, IDTS item 12. "I used drugs heavily when I was afraid that things weren't going to work out"; and IAUS item 12. "I drank heavily when I was afraid that things weren't going to work out". The composite of these scores was created by combining alcohol and drugs into one new category, which was called 'substance use'. In creating the

Inventory of Substance Use Situations (ISUS) score for each study participant each equivalent variable from the IAUS and the IDTS was manually assessed, and the higher score used for the ISUS score. The higher score was used in this way because it contributed more to the explanations of motivations for substance use. For example, if a participant had scored 1 (never) on IAUS item 1 and 2 (rarely) on IDTS item 1, the score of 2 would be used for the ISUS (combined) score. Where one of the two items was missing (e.g. the study participant did not use one of the substances (alcohol or drugs) the rated score was used. This reduced the overall number of variables in the IAUS and IDTS scales from eighty-four to forty two, and left a new ratio of 2.4 cases per variable. However this ratio still did not meet the minimum requirement of five cases per variable.

Secondly, in order to reduce the number of items further correlations were examined between items on the scale (using spearman's rho). Each item was examined to look for the extent of correlations with all other individual ISUS items. Items which did not have a correlation of at least 0.5 with at least one other variable were removed from the analysis. The 0.5 value was used as it indicates a moderate correlation. Therefore it appears a reasonable cut off point between upper items (variables) and lower items (variables). At this stage the following items were removed (item numbers 3, 4, 8, 13, 15, 16, 21, 24, 26, 36 = 10 items). This reduction left 34 ISUS items and a new ratio of 3 cases per ISUS variable.

Since this still left too many items for the number of cases in the study a new threshold of 0.6 was applied to the remaining items. This meant that ISUS items needed to be correlated at a value of more than 0.6 with at least one other variable to remain in the analysis. This resulted in a further 17 ISUS items being dropped from the analysis, resulting in a new total of 15 variables to include in the factor analysis. The following variables were dropped from the analysis; 1, 2, 5, 7, 11, 14, 19, 20, 25, 27, 28, 30, 33, 34, 37, 39 and 41. This left a new total of 15 ISUS items with a ratio of 6.8 cases per ISUS variable and met the minimum

requirement of 5 cases per variable for undertaking exploratory factor analysis.

## 4.4 Procedure: principal components analysis (use situations)

The fifteen ISUS items selected (numbers 6, 9, 10, 12, 17, 18, 22, 23, 29, 31, 32, 35, 38, 40, and 42) were then subjected to a factor analysis, using an initial principal components analysis. The factor loadings were examined and displayed for values over 0.35.

As seen in table 4.5, the resultant un-rotated component matrix left five variables (items) loading onto all three of the emergent factors. Norman and Streiner (2000) suggest that an important consideration in factor analysis is ensuring that variables do not load onto more than one factor. In order to address this problem with the initial analysis, varimax rotation was used. Three interpretable factors emerged from this rotated analysis, which explained 68% of the variance in total. The rotation method used (varimax rotation, with Kaiser Normalisation) was orthogonal (i.e. the factors were uncorrelated, or independent of each other).

## 4.5 Un-rotated and rotated factor solutions (use situations)

| Variable number | component (factor) | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| ISUS 6 | .763 | | |
| ISUS 9 | .780 | | |
| ISUS 10 | .726 | | |
| ISUS 12 | .738 | | |
| ISUS 17 | .790 | | |
| ISUS 18 | .562 | .527 | |
| ISUS 22 | .634 | .550 | |
| ISUS 23 | .670 | | |
| ISUS 29 | .611 | .521 | |
| ISUS 31 | .678 | | |
| ISUS 32 | .809 | | |
| ISUS 35 | .536 | .617 | |
| ISUS 38 | .802 | | |
| ISUS 40 | .552 | | .554 |
| ISUS 42 | .696 | | |

**Table 4.5** Un-rotated component matrix (use situations)

| | component (factor) | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| ISUS 6 | .773 | | |
| ISUS 9 | .846 | | |
| ISUS 10 | .745 | | |
| ISUS 12 | .667 | | |
| ISUS 17 | .760 | | |
| ISUS 18 | | .861 | |
| ISUS 22 | | .749 | |
| ISUS 23 | .636 | | |
| ISUS 29 | | .792 | |
| ISUS 31 | .654 | | |
| ISUS 32 | .768 | | |
| ISUS 35 | | | .835 |
| ISUS 38 | .822 | | |
| ISUS 40 | | | .858 |
| ISUS 42 | .719 | | |

**Table 4.6** Rotated component matrix (use situations)

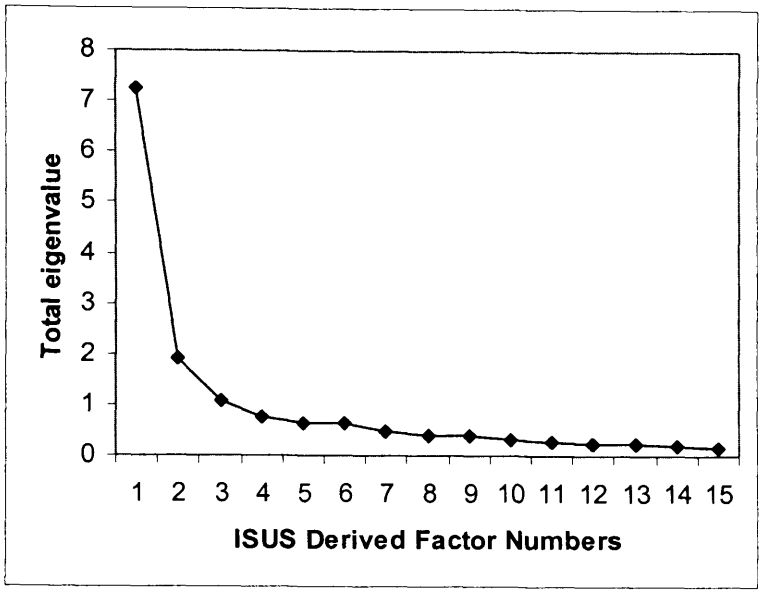


**Figure 4.1** Scree plot of ISUS derived factors with an eigenvalue over 1

As shown in figure 4.1 above, and table 4.6 fifteen factors emerged from the principal components analysis of the ISUS data. In order to assess the strength of these factors, (and therefore which factors to keep, and which to discard) the (total) eigenvalues of factors were examined to look for those with a minimum eigenvalues of one or more. The Kaiser Normalisation criterion (or eigenvalues 1 test) is a criterion by which only factors with an eigenvalues of one or more are kept, and those with an eigenvalues of less than one are discarded. As seen in figure (4.1) factors four to fifteen did not meet the criteria to be kept as factors, and so were discarded.

Eigenvalues are an index of how much of the total variance is encapsulated within each factor. In factor analysis (or principal components analysis) each factor produces an eigenvalue which is the total amount of variance of that factor. Factors with an eigenvalue of less than one account for less variance than is produced by one variable. The eigenvalue table (4.7) displays the eigenvalues for all factors.

| ISUS derived | Initial eigenvalues | | |
|---|---|---|---|
| **Component (factor)** | **Total** | **% of variance** | **Cumulative %** |
| **1** | **7.259** | **48.393** | **48.393** |
| **2** | **1.930** | **12.865** | **61.258** |
| **3** | **1.083** | **7.219** | **68.478** |
| 4 | .744 | 4.963 | 73.441 |
| 5 | .645 | 4.297 | 77.738 |
| 6 | .637 | 4.249 | 81.987 |
| 7 | .493 | 3.289 | 85.277 |
| 8 | .408 | 2.723 | 87.999 |
| 9 | .393 | 2.617 | 90.616 |
| 10 | .320 | 2.136 | 92.752 |
| 11 | .262 | 1.746 | 94.498 |
| 12 | .247 | 1.649 | 96.148 |
| 13 | .220 | 1.463 | 97.611 |
| 14 | .198 | 1.318 | 98.929 |
| 15 | .161 | 1.071 | 100.00 |

**Table 4.7** ISUS Eigenvalue table

## 4.6 Factor structure (ISUS derived items)

| **Factor One: negative personal and social states** | | |
|---|---|---|
| *Variable number* | *Variable item* | *Eigenvalue* |
| 6 | When I had an argument with a friend | .773 |
| 9 | When other people didn't seem to like me | .846 |
| 10 | When there were fights at home | .745 |
| 12 | When I was afraid that things weren't going to work out | .667 |
| 17 | When I felt uneasy in the presence of someone | .760 |
| 23 | When I was angry at the way things had turned out | .636 |
| 31 | When pressure built up because of the demands of my family | .654 |
| **Total eigenvalue for factor 1 (% variance)** | | **7.259 (48.393%)** |
| **Mean factor score** | | **3.01 SD .773** |

**Table 4.8** Factor one

Factor one was derived from ISUS items 6, 9, 10, 12, 17, 23, 31, 32, 38 and 42 and related to substance use due to difficult interpersonal relationships and negative intrapersonal emotional states. Factor one individually explained 48% of the variance. The internal consistency for factor one was high with a mean cronbach alpha score of .923.

| **Factor two: pleasant social conditions** | | |
|---|---|---|
| *Variable number* | *Variable item* | *Eigenvalue* |
| 18 | When I was at a party and other people were drinking/using | .861 |
| 22 | When I was enjoying myself at a party and wanted to feel even better | .749 |
| 29 | When I was at a party and people and people around me were using substances | .792 |
| **Total eigenvalue for factor 2 (% variance)** | | **1.930 (12.86%)** |
| **Mean factor score** | | **3.30 SD .832** |

**Table 4.9** Factor two

Factor two was derived from ISUS items 18, 22, and 29, and related to environmental explanations for increased substance use. Factor two individually explained 13% of the variance. The internal consistency for factor two was high with a mean cronbach alpha score of .841

| **Factor three: reward** | | |
|---|---|---|
| *Variable number* | *Variable item* | *Eigenvalue* |
| 35 | When something good happened and I felt like celebrating | .835 |
| 40 | When I wanted to celebrate with a friend | .858 |
| **Total eigenvalue for factor 3 (% variance)** | | **1.083 7.21%)** |
| **Mean factor score** | | **3.42 SD.749** |

**Table 4.10** Factor three

Factor three was derived from ISUS items 35 and 40, and related to substance use as a form of personal reward. Factor three individually

explained 7% of the variance. The internal consistency for factor three was high with a mean cronbach alpha score of .844.

## 4.7 Factor structure (SMQ items)

The IAUS and IDTS do not contain items which assess use of substances as a means of self-medication. The Self-Medication Questionnaire (SMQ), developed by Gearon *et al.* (2001) was used for this purpose in the study (see chapter 2). Factors four, five and six were derived from the SMQ questionnaire.

## 4.8 Procedure: data reduction (self medication data)

In order to reduce the number of variables correlations were examined between items on the scale (using spearman's rho). Each item was examined to look for high or low correlations with other SMQ items. Using the same procedure and correlation threshold (0.6) as used in the reduction of ISUS items, items with correlations of less than 0.6 (with other SMQ items) were removed from the analysis. The 0.6 value was used as it indicates a more than moderate correlation. Therefore it appears to act as a reasonable cut off point between variables with strong relationships with at least some others and variables without such relationships. The following items were removed (1, 4, 5, 6, 9, 12, and 13). This reduction left eleven SMQ items and a ratio of 9.27 cases per SMQ variable. This met the minimum requirement of 5 cases per variable for undertaking exploratory factor analysis.

## 4.9 Procedure: principal components analysis (self medication data)

The eleven SMQ items (numbers 2, 3, 7, 8, 10, 11, 14, 15, 16, 17, and 18) were then subjected to a factor analysis using an initial principal components analysis. The factor loadings were examined and displayed for values over 0.35. As seen in table 4.11, the resultant un-rotated component matrix left three variables loading onto all three of the emergent factors, as discussed previously, it is important that variables only load onto one factor. Varimax rotation was used to address this problem, and three interpretable factors emerged in the rotated component matrix. As with the use situations data, the rotation method used with the self medication data was orthogonal.

## 4.10 Un-rotated and rotated factor solutions (self medication)

| Variable number | Component (factor) | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| SMQ2 | .611 | | .547 |
| SMQ 3 | .592 | | .625 |
| SMQ 7 | .652 | | |
| SMQ 8 | .659 | | |
| SMQ 10 | .685 | | |
| SMQ 11 | .633 | | |
| SMQ 14 | .607 | | |
| SMQ 15 | .626 | -.518 | |
| SMQ 16 | .689 | | |
| SMQ 17 | .709 | | |
| SMQ 18 | .639 | | |

**Table 4.11** Un-rotated component matrix (self medication)

| Variable number | Components (factors) | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| SMQ2 | | | .821 |
| SMQ 3 | | | .842 |
| SMQ 7 | | .641 | |
| SMQ 8 | | .740 | |
| SMQ 10 | | .799 | |
| SMQ 11 | | .872 | |
| SMQ 14 | .693 | | |
| SMQ 15 | .806 | | |
| SMQ 16 | .620 | | |
| SMQ 17 | .802 | | |
| SMQ 18 | .768 | | |

**Table 4.12** Rotated component matrix (self medication)

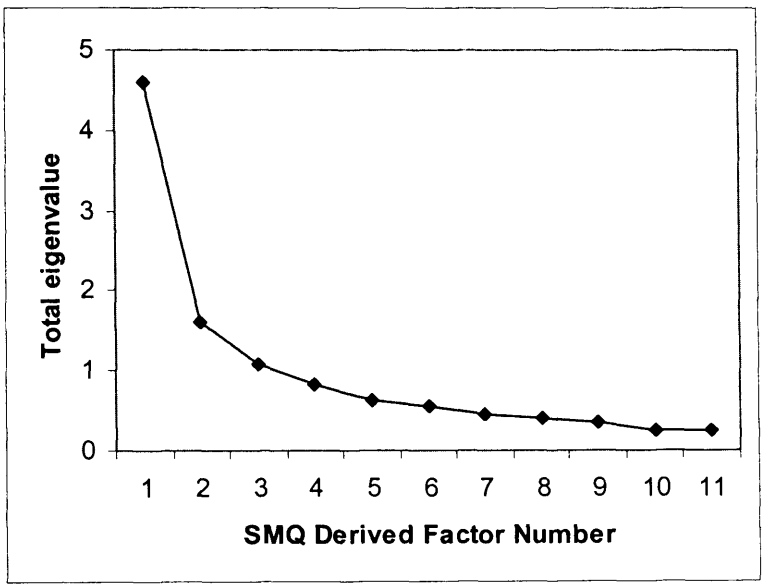


**Figure 4.2** Scree plot of SMQ derived factors with an eigenvalue over 1

As shown in figure 4.2 and table 4.13, eleven factors emerged from the principal component analysis of the SMQ data. As with the use situations data, the strength of factors (and therefore the decision of whether to keep or discard factors) the eigenvalue one (Kaiser Normalisation Criterion) was used to look for factors with a minimum value of one or more. Eight of the factors above did not meet this criterion and were discarded.

| SMQ derived | Initial Eigenvalues | | |
|---|---|---|---|
| Component (Factor) | Total | % of variance | Cumulative % |
| **1** | **4.600** | **41.821** | **41.821** |
| **2** | **1.613** | **14.664** | **56.485** |
| **3** | **1.077** | **9.791** | **66.276** |
| 4 | .834 | 7.582 | 73.859 |
| 5 | .622 | 5.654 | 79.513 |
| 6 | .548 | 4.981 | 84.494 |
| 7 | .462 | 4.196 | 88.690 |
| 8 | .405 | 3.679 | 92.369 |
| 9 | .347 | 3.154 | 95.523 |
| 10 | .253 | 2.298 | 97.821 |
| 11 | .240 | 2.179 | 100.00 |

**Table 4.13** SMQ Eigenvalue table

## 4.11 Factor structure (SMQ derived items)

| **Factor four: social interaction and boredom** | | |
|---|---|---|
| *Variable number* | *Variable item* | *Eigenvalue* |
| 14 | Using drugs or alcohol helps me concentrate better | .693 |
| 15 | Using drugs or alcohol helps me do more things | .806 |
| 16 | Using drugs or alcohol helps me enjoy being around people more | .620 |
| 17 | Using drugs or alcohol helps me to be more relaxed with people | .802 |
| 18 | Using drugs or alcohol makes it easier for me to talk to people | .768 |
| **Total eigenvalue for factor 4 (% variance)** | | **4.600 (41.821%)** |
| **Mean factor score** | | **2.94 SD .716** |

**Table 4.14** Factor four

Factor four was derived from SMQ items 14, 15, 16, 17, and 18 and related to substance use due to social interaction and boredom. Factor four individually explained 41.821% of the variance. The internal consistency for factor four was high with a mean cronbach alpha score of .825

| **Factor five: social acceptance** | | |
|---|---|---|
| *Variable number* | *Variable item* | *Eigenvalue* |
| 7 | I feel more accepted by the people I do drugs or alcohol with than by other people | .641 |
| 8 | Using drugs or alcohol helps me feel less isolated | .740 |
| 10 | Using drugs or alcohol makes me feel like I fit in with other people | .799 |
| 11 | Using drugs or alcohol helps me feel more a part of a group | .872 |
| **Total eigenvalue for factor 5 (% variance)** | | **1.613 (14.66%)** |
| **Mean factor score** | | **2.90 SD .809** |

**Table 4.15** Factor five

Factor five was derived from SMQ items 7, 8, 10, and 11 and related to substance use due to social acceptance. Factor five explained 14.66% of the variance. The internal consistency for factor four was high with a mean cronbach alpha score of .821

| **Factor six: medication side effects** | | |
|---|---|---|
| *Variable number* | *Variable item* | *Eigenvalue* |
| 2 | The side-efects from my medication don't bother me as much when I'm using drugs or alcohol | .821 |
| 3 | The restlessness caused by my medication is less when I'm using drugs or alcohol | .842 |
| **Total eigenvalue for factor 6 (% variance)** | | **1.077 9.791%)** |
| **Mean factor score** | | **3.0 SD .974** |

**Table 4.16** Factor six

Factor six was derived from items 2 and 3 and accounted for 9.79% of the variance, and related to substance use due to medication side-effects. The internal consistency for factor six was adequate with a mean cronbach alpha score of .741.

The Cronbach alpha coefficients for SMQ Scale ranged from 0.84 to 0.87, and the mean cronbach alpha was .85

| **Factor number** | **Factor name** | **Mean score** | **SD** |
|---|---|---|---|
| 1 | Negative personal and social states | 3.42 | .794 |
| 2 | Pleasant social conditions | 3.30 | .832 |
| 3 | Reward | 3.01 | .773 |
| 4 | Social interaction and boredom | 3.00 | .974 |
| 5 | Social acceptance | 2.94 | .716 |
| 6 | Medication side-effects | 2.90 | .809 |

**Table 4.17** Mean factor scores

## 4.12 Cluster analysis of factor derived data

The aim of the next stage of the analysis was to see if the factors emerging from the data could be used to identify sub-groups of participants with distinct patterns of motivation for substance use. Cluster analysis is a set of multivariate statistical methods which identify groupings, or clusters within data. It does this by classifying individuals or variables by the similarity of the characteristics they have. Cluster analysis techniques aim to minimise within cluster variance, and maximise between cluster (group) variance. This results in a solution whereby there are substantial differences between the clusters, but the individuals within the clusters are similar (in this study on the basis of their responses to the IDTS, IAUS and the SMQ questionnaires which established the factors used in the cluster analysis). The two most commonly used forms of cluster analysis are hierarchical cluster analysis and K-means cluster analysis. To differentiate between cluster and factor analysis it is important to consider that factor analysis identifies groups of variables with similar properties whereas cluster analysis identifies groups of cases that are similar.

A cluster analysis of cases is similar to discriminant analysis because it classifies or separates data (cases) into groups (clusters). K-means cluster analysis identifies homogeneity of selected characteristics within data, based on a pre-determined number of clusters (as chosen by researchers).

## 4.13 Cluster analysis: preparation and procedure

The means of variables which constituted each factor were computed, (e.g. for factor four, SMQ items 14, 15, 16, 17 and 18) and saved as new variables. This gave a mean score for each factor for every case, and produced six new variables in total. These new variables were then used in a k-means cluster analysis using the newly created variables in the variables section, while labelling cases by study (patient) number. Initially a number of cluster solutions were examined for interpretability. Four,

five, six, seven and eight cluster solutions were examined in this way before a final cluster solution was selected. Both the five and seven cluster solutions appeared to offer strong explanatory value. In both these cluster solutions one large group of individuals appeared with high mean scores on all factor items (ranging from 3.23 to 3.85, meaning every response of group members was in the 'frequently' or 'almost always' range).

| | CLUSTER | | | | | | |
|---|---|---|---|---|---|---|---|
| **FACTOR** | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| Factor 1 Negative personal and social states | 2.92 | 2.63 | 2.41 | 1.74 | 3.23 | 2.85 | 3.50 |
| Factor 2 Pleasant social conditions | 1.94 | 1.67 | 3.25 | 2.29 | 3.67 | 3.44 | 3.79 |
| Factor 3 Reward | 1.50 | 3.42 | 3.32 | 2.38 | 3.61 | 3.42 | 3.85 |
| Factor 4 Social interaction and boredom | 2.93 | 3.27 | 2.71 | 1.60 | 2.80 | 3.03 | 3.23 |
| Factor 5 Social Acceptance | 2.58 | 3.25 | 2.99 | 1.50 | 1.92 | 3.21 | 3.25 |
| Factor 6 Medication side-effects | 2.67 | 3.92 | 3.05 | 1.75 | 1.78 | 1.17 | 3.59 |
| **Total number of cases per cluster** | **6** | **6** | **19** | **8** | **9** | **6** | **48** |

**Table 4.18** Final Cluster Centres showing mean factor scores

Scores in table 4.18 are based on a likert scale 1= never, 2= rarely, 3= frequently and 4= almost always.

As can be seen in table 4.18 size of cluster membership varies significantly between the clusters. Cluster seven contains a large part of the total participant group (48 of 102), and cluster three contains almost a fifth of the total participant group (19 of 102). All the other study participants were distributed in five smaller clusters containing between six and nine individuals.

## 4.14 Characteristics of cluster members

## 4.15 Substance use within clusters

The final step in the analysis was to explore how the clusters derived above are different from one another with regard to substance use patterns and demographic characteristics, and whether investigation of these seemed to support the idea that the groups are distinct from one another. Given the relatively small numbers this was necessarily an exploratory analysis, as is usual with cluster analysis. Percentages are presented in the tables for ease of interpretation, but it must be borne in mind that numbers are well below the levels where percentages are a clearly meaningful way of presenting data.

A computation of substance use frequencies was performed for cluster membership (i.e. individuals within clusters who used either alcohol or drugs, or both substances). Substance use types and rates varied slightly throughout clusters however the most common pattern was the use of both substances. This can be seen in table 4.19.

| | Cluster 1 | Cluster 2 | Cluster 3 | Cluster 4 | Cluster 5 | Cluster 6 | Cluster 7 |
|---|---|---|---|---|---|---|---|
| **Uses drugs** | 6 (100%) | 5 (83%) | 13 (68%) | 4 (50%) | 8 (89%) | 6 (100%) | 43 (90%) |
| **Uses alcohol** | 3 (50%) | 4 (67%) | 15 (79%) | 6 (75%) | 9 (100%) | 6 (100%) | 40 (83%) |

**Table 4.19** Drug and alcohol use frequencies and cluster membership

## 4.16 Clinical, socio-demographic, substance use characteristics and cluster membership

In order to explore the characteristics of and differences between members of the seven clusters which emerged in the analysis, cluster membership and key variables were examined to look for distinct sub-groups. The variables selected to compare with cluster membership were: age, sex, ethnicity, clinical diagnosis, frequent substance use, in-patient substance use, attributions of substance use, and social context of substance use (whether cluster members typically used or drank with other people or alone). Some differences were observed between clusters on several variables in this exploratory analysis, supporting the idea that it may be possible to use motivations for use to identify distinct sub groups of substance users with psychotic illness. None of these differences reached statistical significance (because of the small numbers). However there were substantial variations on some variables, which if they were reproduced in larger samples might emerge as significant trends.

| | Cluster1 | Cluster2 | Cluster3 | Cluster4 | Cluster5 | Cluster6 | Cluster7 |
|---|---|---|---|---|---|---|---|
| Gender | | | | | | p=0.166 | |
| Male | 3 (50%) | 4 (67%) | 15 (74%) | 7 (87%) | 5 (56%) | 6 (100%) | 40 (83%) |
| Female | 3 (50%) | 2 (33%) | 5 (26%) | 1 (13%) | 4 (44%) | 0 (0%) | 8 (17%) |
| Age | | | | | | p=0.122 | |
| Mean age | 38 | 40 | 39 | 40 | 32 | 36 | 33 |
| Clinical diagnosis | | | | | | P=0.483 | |
| Schizophrenia | 3 (50%) | 5 (83%) | 17 (90%) | 5 (62%) | 7 (78%) | 4 (67%) | 37 (77%) |
| Bipolar affective disorder | 3 (50%) | 1 (17%) | 2 (10%) | 3 (38%) | 2 (22%) | 2 (33%) | 11 (23%) |
| Ethnicity | | | | | | p=0.587 | |
| White European | 3 (50%) | 5 (83%) | 13 (68%) | 6 (75%) | 7 (78%) | 2 (33%) | 28 (58%) |
| Black African or Caribbean | 2 (33%) | 1 (17%) | 5 (26%) | 1 (12%) | 1 (11%) | 3 (50%) | 10 (21%) |
| South Asian | 1 (17%) | 0 (0%) | 0 (0%) | 1 (12%) | 0 (0%) | 1 (17%) | 6 (12%) |
| Other | 0 (0%) | 0 (0%) | 1 (5%) | 0 (0%) | 1 (11%) | 0 (0%) | 4 (8%) |
| Substance use in hospital | | | | | | p=0.328 | |
| Used in hospital during current admission | 4 (67%) | 6 (100%) | 13 (68%) | 6 (75%) | 8 (89%) | 4 (67%) | 42 (87%) |

**Table 4.20** Clinical, socio-demographic, substance use characteristics and cluster membership

| Cluster Number | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Symptoms | | | | | | | |
| Improved mood | 0 (0%) | 0 (0%) | 1 (5%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Less anxiety | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (11%) | 0 (0%) | 1 (2%) |
| Relieves medication side effects | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 4 (8%) |
| Less paranoid | 0 (0%) | 1 (17%) | 1 (5%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (2%) |
| Personal and social functioning | | | | | | | |
| More able to talk with others | 1 (17%) | 1 (17%) | 6 (32%) | 2 (25%) | 2 (22%) | 1 (17%) | 3 (6%) |
| More relaxed | 0 (0%) | 2 (33%) | 5 (26%) | 0 (0%) | 1 (11%) | 2 (33%) | 14 (29%) |
| Less bored | 1 (17%) | 1 (17%) | 3 (16%) | 0 (0%) | 1 (11%) | 1 (17%) | 11 (23%) |
| More energy | 0 (0%) | 0 (0%) | 0 (0%) | 1 (12%) | 2 (22%) | 0 (0%) | 4 (8%) |

**Table 4.21** Cluster membership and positive attributions of substance use (preceding twelve months)

| Cluster Number | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Symptoms | | | | | | | |
| More paranoia | 0 (0%) | 0 (0%) | 1 (5%) | 0 (0%) | 2 (22%) | 0 (0%) | 13 (27%) |
| More auditory hallucinations | 0 (0%) | 1 (17%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (17%) | 4 (8%) |
| More anxiety | 0 (0%) | 0 (0%) | 1 (5%) | 0 (0%) | 0 (0%) | 0 (0%) | 2 (4%) |
| More depressed | 0 (0%) | 0 (0%) | 2 (10%) | 2 (25%) | 0 (0%) | 0 (0%) | 3 (6%) |
| More isolated | 1 (17%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) |
| Relapse of existing mental illness | 3 (50%) | 3 (50%) | 9 (47%) | 2 (25%) | 6 (67%) | 3 (50%) | 18 (37%) |

**Table 4.22** Cluster membership and negative attributions of substance use (preceding twelve months)

As can be seen in table 4.20 there were no significant differences (using $\chi^2$ or Fishers exact test) between cluster members concerning clinical and socio-demographic variables. This is likely to be attributable, to a considerable extent to small numbers in many of the clusters.

Participants' negative attributions about substance use in the preceding twelve months were only made about symptoms, whilst no negative attributions were made about personal and social functioning. The most common negative attribution of substance use concerned the relapse of participants' mental illness and their recent substance use. A considerable number of participants (ranging from 25% to 67%) across

the clusters made this attribution. However, participants were only asked to report their main positive and main negative attributions regarding their substance use, and this resulted in a large number of zero values, meaning it was not possible to test for significance between cluster membership and (positive and negative) attributions of substance use.

There was however a significant difference between clusters regarding the social circumstances of drug use (not alcohol) and this is shown in table 4.23. This difference suggests that drug use is a very social activity for most, but not all clusters

| **Social circumstances of substance use: typical use circumstances** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Cluster Number | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Significance $\chi^2$ |
| Uses drugs with others | 3 (50%) | 1 (17%) | 11 (58%) | 4 (50%) | 8 (89%) | 2 (33%) | 41 (85%) | p= .001 |
| Drinks with others | 4 (67%) | 6 (100%) | 14 (73%) | 4 (50%) | 7 (78%) | 3 (50%) | 38 (79%) | P= .296 |

**Table 4.23** The social circumstances of substance use

## 4.17 Understanding the cluster solution

As already indicated, this cluster analysis is of an exploratory nature, aimed at providing some preliminary evidence on whether motivations for substance use distinguish sub-groups of patients. This and the small numbers, especially in certain of the clusters, needs to be borne in mind throughout the interpretation of this analysis. The following is a

preliminary attempt to describe the characteristics of the sub-groups that have emerged from the analysis.

**Cluster 1 (bored self-medicators)** There were 6 members of cluster 1 with high mean scores (2.58 to 2.93) for all except factors two (pleasant social conditions) and three (reward). Gender was evenly divided (50% and 50%), as was diagnosis (50% with schizophrenia and 50% with bipolar affective disorder) and these characteristics were unusual when compared with other clusters' members. All (100%) the members of cluster 1 used drugs, and 50% used alcohol. Members of cluster 1 were different from other participants in that they had low scores on factors two and three, meaning that they typically used substances only in adverse or difficult situations, or to improve social functioning. Their mean scores for factor 2 and 3 indicate a response in the 'never or rarely' range to using in pleasant social situations, and for reward. They are the only cluster in which these two factors are not present as substantial motivators for substance use.

**Cluster 2 (medication-motivated)** Cluster two contained six participants' with high mean scores (2.63 to 3.92) for all except factor 2 (pleasant social conditions), where the mean score was 1.67. Members of the cluster had high rates of both drug use (83%) and alcohol use (67%), and all of them (100%) typically used or drank with other people. On average members had the highest mean score on factor 6 (substance use to counteract medication side effects). This taken together with the low mean score for factor 2 possibly indicates that members of cluster 2 may largely use substances to address deficits, and for reward; and this makes them different from members of the other clusters discussed here.

**Cluster 3 (reward users)** Cluster 3 contained nineteen members scoring highly on four factors (two to seven) and less on factor one. Members of this cluster also scored highest on factors 2 (pleasant social conditions and reward) and 3, indicating that they were more likely to use in pleasant or reward conditions than to alleviate their illness experience. Cluster 3's

members' low score on factor one suggests that they rarely use substances as a result of negative personal and social states, and this finding was only seen in one other cluster (4). For members of cluster 3, alcohol use (79%) was more common than drug use (68%), there was a higher frequency of schizophrenia (compared with other clusters), and a lower frequency of (substance) use on the wards than in four other clusters.

**Cluster 4 (infrequent users)** There were eight members of cluster 4, which had the lowest drug use rate among the clusters (50%), and an average alcohol use rate of 75%. Members of cluster 4 scored the highest on factors two (2.29, pleasant social conditions) and three (2.38, reward), and lower on all other factors. Members of this cluster used substances more in positive situations (pleasant social conditions and reward) than in others, however their highest scores still indicated a mean response between rarely (2.0) to frequently (3.0), and therefore members of this cluster possibly used substances less frequently than other study participants. They made no positive attributions about their symptoms and substance use, and few about personal and social functioning and their substance use. One quarter of cluster 4 participants' attributed their current illness episode to their substance use, and this is consistent with lower use rates, and less rated use situations.

**Cluster 5 (social users a)** There were nine members of cluster 5, and they all used alcohol (100%), whilst 89% used drugs. Members of this cluster also scored the highest on factors two (3.67) and three (3.61) (pleasant social conditions and reward). Their lowest scores were on factor 5 (social acceptance, score 1.92) and factor 6 (medication side effects, score 1.78), perhaps indicating either that they do not take medication, or that they do not experience medication side effects, and feel more socially accepted than members of other clusters. Cluster 5 contained a higher frequency of women than most other clusters, and members had the lowest mean age (32). The majority (78%) used substances with others, and most (89%) used substances on the wards.

**Cluster 6 (social users b)** Cluster 6 contained six male participants' (100%) whom all used alcohol (100%) and drugs (100%). They had high mean scores on all factors except factor 6 (use due to medication side effects, 1.17). Members of this cluster scored highest on factors two (3.44) and three (3.42), and lowest on factor 6 (1.17). Responses to factor 6 indicated a 'never to rarely' range indicating that members either did not experience medication side effects, or did not use substances to mediate them if experienced.

**Cluster 7 (multiply motivated)** There were 48 members of cluster 7 (almost half the total number of participants), and these participants had high mean scores (3.23 to 3.85) on all the factors identified in the principal components analysis. The highest factor scores for members of cluster 7 were on factor two (3.79) and three (3.85) relating to pleasant social conditions and reward. This finding is consistent with the patterns of use identified above, in that participants' belonging to cluster 7 had high substance use rates in both positive and negative personal and social conditions, indicating perhaps that substance use was more part of participants' lifestyle, triggered by a very wide range of experiences and contexts, than an attempt to mediate illness experience. For these individuals rates of both alcohol and drug use were high.

## 4.18 Summary

The results presented in chapter 4 contribute to understanding which motivational factors are likely to be important in substance misuse among the severely mentally ill. The factors derived from the study are clearly socially and personally orientated, with relatively high scores obtained for many of the social and interpersonal motivations presented in the questionnaires. This does not support the idea that participants use substances to ameliorate symptoms, providing stronger support for use in negative personal and social situations, and to help with other social

difficulties and anxieties. However, the measures used in the study had much greater coverage of personal, psychological and social motivational factors than motivations related to illness experience and symptom relief.

Two emergent factors had no particular connection with the experience of mental illness, but concerned substance use motivated by enjoyment and reward, and these motivations are more commonly associated with explanations of general population substance use. This requires further investigation.

A number of distinct sub-groups emerged during a k-means cluster analysis, delineating the participants into one large and six smaller clusters. The motivations for, and attributions of use in these sub-groups differed, with almost half of the participants producing high mean scores for all factors, indicating substance use was more part of lifestyle and general coping, than specific to certain situations. This suggests that there may be sub-groups among people with dual diagnosis with distinctive patterns of motivation for substance use, although large numbers are likely to be required for a definitive delineation of their nature and characteristics.

# 5.0 DISCUSSION

The results of this study will be discussed under main headings which address the social context, aetiology and development of dual diagnosis. These are: the prevalence of dual diagnosis in an in-patient sample of individuals with conspicuous psychotic illness and substance misuse, the nature and extent of substance use amongst the participants, the temporal relationship between the onsets of mental illness and substance misuse, the self-reported motivations for substance use, and the social context of substance use (including the relationship between mental health service settings and continuing substance misuse).

## 5.1 Limitations of the study

The cross sectional and self-report nature of much of the data in the current study requires some caution in interpretation. The study relied on ward staff screening of in-patients to detect evidence of current or recent substance misuse, and this may have resulted in some individuals being missed from the original screening on ward census dates or in inclusion of some individuals who did not in fact have substance related problems. Some patients who were not yet diagnosed with psychotic illnesses might also have been missed from screening. There may have been new or unknown patients on the wards during the screening, and lack of staff knowledge about such patients may have affected the way they were rated (although staff were asked to confirm with community keyworkers in such circumstances). Neither staff screening or patients' self report (of substance use) were confirmed through toxicological analysis of urine or hair. A further limitation during the initial stages of the study related to the choice of ward censuses rather than the use of series of admissions. This will have resulted in the recruitment of more patients with relatively long hospital stays than if a consecutive series of admissions were recruited, as those patients who left hospital quickly had a lower chance of being included (an example of incidence-prevalence bias).

Although participants were becoming more stable at the time of the research interview, they were nevertheless usually acutely unwell (hence being in hospital) with psychotic illness, and this may have affected

responses given. All self report data was collected through interviews (as opposed to self completion questionnaires), with each item being read out to the participant to aid understanding. This helped to avoid invalid responses due to poor literacy. The Likert scale rating used was also printed onto 4 cards which participants held during the interview. In itself this does not rule out the issues associated with self-report data, however it does increase likely reliability of reports. No method of assessing current mental state (at time of interview) was employed in the study, and a validated instrument was not used to assess participants' substance use history or psychotic diagnosis. In particular, the reliability and validity of the method used for collecting these substance misuse data was not established. These limitations to data on substance use history meant that it was not possible to differentiate individuals with drug dependence syndrome from other study participants. It is very possible that motivations for substance use in those with such dependence may have differed from motivations for use amongst the participant group, in that use among dependent users is likely to be driven by a wider range of motivations including craving and the relief of uncomfortable mental and physical states. These motivations do not relate strongly to socially orientated explanations for use. This important area warrants exploration in future studies. The Use Situations Inventories which were used in the study had a good coverage of personal and social situations in which individuals often use substances, (being particularly strong on social situations) but did not have good coverage of items specific to the mentally ill. In this respect the effect of the stigma of mental illness was not covered, and there were no items specifically concerning either positive or negative symptoms. The self medication schedule was used in order to rectify this deficit, however many of the items in this schedule were also focused around social exclusion, acceptance and attributions of substance use; with only a few items specifically concerning positive symptoms. The cluster analysis undertaken in the study was very much an exploratory analysis, which has indicated that differentiating sub-groups of service users on the basis of their patterns of motivation for use may be feasible, but certainly cannot be said to have resulted in any kind of definitive categorisation. The (relatively small) overall number of study

participants meant that some clusters contained very few individuals, and this prevented the testing of significance between cluster membership and important clinical and demographic characteristics. A considerably larger study is likely to be required to establish categories of motivation for use that may be stable and replicable: the current study is unlikely to have done so.

## 5.2 The prevalence of dual diagnosis in an in-patient sample of individuals with psychotic illnesses

The rate of problematic alcohol or drug use reported amongst this group of working age in-patients in inner London is high (48.9%), and substantially exceeds that reported in U.K. community studies (Menezes *et al.* 1996, Wright *et al.* 2000), including those which used the same method of participant identification (case manager ratings) as used in the current study (Graham *et al.* 2001, Weaver *et al.* 2001a, Miles *et al.* 2003). These community based studies generally report a prevalence of substance misuse amongst patients with psychotic illnesses of between 24% and 34%, and mental illness amongst substance misuse (service) patients of around 35%.

The prevalence reported in the current study however, is consistent with that reported in another inner London based in-patient study of (all) admissions to six acute wards (Barnaby *et al.* 2003). The study reported by Barnaby *et al.* 2003 of 200 working age in-patients (all admissions, not only individuals with psychotic illness) found higher rates of alcohol misuse (49%) and dependence (22%), and also reported an even higher lifetime prevalence for drug misuse (58%) than found in the current study. This indicates a substantial difference between prevalence rates observed in the community and those seen among in-patients. In general this means that the proportion of patients managed by in-patient services who have substance misuse problems is about a third to half higher than the corresponding proportion of community mental health team clients.

This study prevalence fits with reports of increased bed use among individuals with dual diagnosis, although it is unclear from the current data whether it is admission rate, length of stay or both variables, which are increased. In understanding increased bed use one factor may be that people with dual diagnosis tend to get 'stuck' on the wards because they are difficult to place in the community, because of either their substance use directly, or the complexity which it adds to the difficulties encountered in their care and management. Other explanations for increased bed use by individuals with dual diagnosis include that these patients are likely to be admitted more regularly than patients without substance misuse problems, because of the exacerbation of illness symptoms, precipitation of relapse, medication non-adherence, poor engagement with services and the exacerbation of risk behaviours (especially violence) associated with substance misuse (Linszen *et al.* 1994, Soyka 2000, Scott *et al.* 1998).

The prevalence reported in the current study of dual diagnosis amongst in-patients in inner London may not represent true prevalence rates as identification of dual diagnosis depended on staff awareness of substance use/misuse in patients. It is likely that some patients with current or recent alcohol or substance use may not ever have disclosed such substance use to mental health staff, whether because they had not been asked or because they feared possible negative consequences of disclosing use if they were asked. This fear of negative consequences has to be understood against a service setting which is clear that substance use is prohibited, proscribed and seen in an adverse way (both as a reflection of general attitudes towards substance misuse, and more specifically because of the associations between substance misuse and mental health problems). Thus the prevalence estimate could be an under-report. A further consideration concerning the high study prevalence of dual diagnosis is that because the study participants form an acute treatment population rates of substance misuse might be partly explained by other factors (e.g. participants' mental health is at is poorest and stress levels are highest, i.e. at the time of an acute admission). In other words, the participants are particularly 'unwell', necessitating admission. Participants

also came from an entirely inner London catchment area, and this might have produced higher rates of substance use (because of well established links between social deprivation, poverty and substance misuse), and also different patterns and types of substance misuse (because of availability). With this in mind it is feasible that rates of substance misuse in inner London might be higher than those observed outside such areas, and this is supported (especially concerning drug use rates) by Wright *et al.* (2000), Weaver *et al.* (2001b). Bains *et al.* (2005) confirm this is the case for the London borough's of Camden and Islington, which have higher reported rates (than the national average) of drug related deaths, alcohol problems, and suicide.

Conversely, ward staff undertaking patient ratings may have over attributed mental illness symptoms to substance use. Prevalence rates may also have been affected because patients with dual diagnosis often get 'stuck' on wards and the method of assessment used for rating was a series of ward censuses.

## 5.3 Substance use: types, frequencies and use methods

Participants' mean age of first substance use demonstrated the beginning of substance use in late adolescence. The mean age of participants' first alcohol use was 14; and the mean age of first drug use was 17. The mean age of participants' first reported drug use however is later than is commonly reported among other groups such as young people aged 16 to 24 (mean first drug use reported at age 15, Home Office 2005). Participants first used drugs more often with friends (67%) than family members (9%); whereas although their first alcohol use also tended to be with friends (52%), more had used alcohol for the first time with family members (31%) when compared to drug use. However it is difficult to use first alcohol use as a reliable marker of future alcohol problems in that it

may not be particularly unusual for many 14 year old teenagers to use alcohol within the family home with the consent of parents/carers.

The majority of participants' had a close relative (parent or sibling) with a history of substance misuse. Sixty nine percent of the participants reported they had a relative with such a history, with 22% also reporting their relative had managed to successfully stop using substances. It is difficult to assess whether the rate of family history of substance misuse is actually higher amongst participants in the study, as opposed to those without personal substance use histories (i.e. those with mental illness only), or those in the general population, although some studies (Bidault-Russell (1994), Noordsy *et al.* (1994)) have found higher rates when examining alcohol use disorders among mentally ill individuals and their families. This remains an unanswered question in the context of the current research, and certainly warrants further investigation. If the rates of family history of substance misuse are indeed particularly high, this suggests some form of transmission of this risk from family, either through a genetic vulnerability, or as a result of social environment.

Participants generally funded their substance use without recourse to either theft or other illegal activity (although a small number were involved in such activities). Ninety-three percent of participants reported that the main source of funding their substance use was through social security benefits. This necessarily limits the actual amount of substance use through economic issues (lack of funds), although many mentally ill individuals receive disability living allowance and this goes some way towards explaining the number of participants who used benefits as the main source of funding substance use. Thirteen percent of participants reported that they used other means of funding their substance use, and these included (funding substance use through) money given for another purpose (9%), begging (1%), money stolen from friends or family (1%) or strangers (1%). Only 1% of the participants' reported involvement in illegal activities (such as prostitution or fraud) in order to fund their substance use, though social desirability may obviously have reduced these responses.

For the majority of participants their regular method of buying substances (i.e. when the participant is living in the community) was undertaken with 'dealers' (75%) who were described as strangers or acquaintances to the participants. This finding suggests that participants have a higher degree of social confidence and networking than might be expected of some severely mentally ill individuals, since locating dealers and negotiating cost of substances can be understood as an advanced social skill.

A further 14% reported that their main supplier was a friend. A smaller number of participants reported that their main supplier (when living in the community) was either a hospital in-patient (5%) or a contact they had made through mental health services whilst an in-patient themselves (5%), and this supports the possibility that there is a link between mental health service settings and drug trading. A further 4% of participants' were supplied mainly by their partners. This means that although the frequency of general drug trading between hospital in-patients and the community at large is low, approximately ten participants in this study use mental health services as a source of buying substances. These figures are radically different when considering drug dealing between hospital in-patients and this is discussed later in this chapter.

A wide range of substances were used by study participants, over the four rated time intervals. The time intervals used to rate substance use intervals were: substances used at least once during the previous six months (occasional) , substances used at least once each week for at least two of the previous six months (regular), substances used at least once daily (frequent), and finally substances used in the ward premises (whilst an in-patient).

The wide range of substances used was reflected in a wide range of using methods employed by study participants, and included snorting/sniffing (1%), intravenous injection (2%), chasing (1%), combination of oral and chasing (19%), combination of oral and injection use (15%), and exclusively oral use (63%). This array of use methods is

consistent with reported substance use. Whilst the effects of substance misuse in the context of mental illness are well established, there is little evidence relating to dual diagnosis and risks for blood borne viral illnesses (such as hepatitis C virus and Human Immunodefiency Virus), risk behaviours, and other health problems commonly associated with the effects of injecting drug use. It is also unclear from the data whether the participants who used substances through injection were in contact with appropriate substance misuse services (such as needle exchange and/or drug treatment services), to what extent they understood the risks associated with such use, and how they obtained and disposed of injection equipment.

While the range of drugs used was wide, three were especially prominent. Alcohol, cannabis, crack cocaine, opiates and cocaine had been used by at least a third of participants at least once in the previous six months (up to 81% for alcohol, and 70% for cannabis). A wide range of other substances featured less frequently in the six month time interval, and included hallucinogenic drugs, amphetamine, ecstasy, benzodiazepines and khat. Thus the pattern that emerged was of intermittent use of a wide variety of substances, but regular use primarily of alcohol, cannabis and, in a few cases, crack cocaine. This pattern contrasts with substance misuse treatment populations where heroin and crack cocaine misuse are often very prominent, and users of only cannabis and alcohol do not often feature.

Frequent substance use was rated using the 'used at least once daily' time interval, and showed little difference to 'at least once weekly use', with the three most frequently used substances being alcohol, cannabis and crack cocaine. Thus people who used a drug at least once a week tended in fact to be daily users, suggesting possible dependence. Most of the substances rated in the 'once in the previous six months' domain are represented in the 'at least once daily' domain, except for ecstasy and hallucinogenic drugs, but numbers of daily users were small except for the three dominant substances already identified. Participants also reported substances used whilst they were on the ward, during their

current admission. The data showed that the majority of participants who had a history of substance use continued to use whilst an in-patient in hospital. Eighty three percent of participants reported having used during the current admission and 89% reported 'ever' using during other hospital admissions. The main substances used in this context were again alcohol, cannabis and crack cocaine. Cannabis was used by 52% of participant in-patients, a slightly higher proportion than reported that daily use had been usual for them over the past 6 months. The pattern of substance use seen in this study indicates a large amount of infrequent polysubstance use among the participants, with three regularly used substances showing consistency across the weekly use, daily use and use in hospital. This indicates that 'drugs of choice' for most participants were similar to those commonly used in the general population, with other drugs used in an infrequent 'binge' or 'treat' pattern. It also supports the idea that people with mental illness do not have a predilection for specific substances. This has substantial implications for the delivery of mental health services, and for the development of shared care approaches (joint substance misuse and mental health working with individual patients). On balance cannabis use is more likely to lead to problematic consequences for mentally ill individuals than the general population, and since most substance misuse services have little (specialist) experience in the treatment of cannabis problems a clear gap emerges where few treatment options exist. This needs to be addressed within both sets of services. Although the use of other substances was widespread as stated, it was generally infrequent, and of lesser volume than seen in users of substance misuse services. However because of the nature of the effects of these other substances used by participants it is important to further assess their relevance to overall substance use patterns, and symptoms of mental illness.

Overall substances used most frequently (alcohol, cannabis and cocaine) across all rating intervals are substances with well documented mental health associations. These three substances also have higher use rates in the general population (compared with other substances), indicating

that they might be more easily available for purchase than other substances used by study participants (Eaton *et al.* 2004).

In attempting to evaluate the study findings (in the context of self-medication explanations for dual diagnosis) assessing these factors against each other provides evidence. These results tend more towards substance availability being a key to choice of substance for participants, as opposed to participants seeking substances which ameliorate individual symptom experience directly. If self-medication for positive or negative symptoms were being sought, one might expect to see a wider range of frequently or regularly used substances with a broader range of (drug) effects including more narcotic substances and more stimulant substances. This is particularly pertinent in the case of heroin and methadone, which are reported to possess anti-psychotic properties (Brizer *et al.* 1985).

Despite the differences between participants' clinical and substance use characteristics a large majority felt the effects of substances were detrimental to them. Eighty three percent responded affirmatively to the statement "I have a current drug or alcohol problem", and of these 58% reported a current problem with illicit or non-prescribed drugs. This means that a small proportion of participants disagreed with staff ratings of their substance use, in that only 17% did not acknowledge a current substance use problem. When participants were asked about which factors had led them to acknowledge a personal substance misuse problem, there was a substantial difference between participants whom reported on alcohol as opposed to drugs. Difficulties with daily functioning (11%) and physical health issues (10%) were the concerns which lead participants' with alcohol problems to acknowledge the problem, whereas mental health problems (29%) and difficulties with daily functioning (17%) were the issues which lead drug using participants' to acknowledge a substance use problem. RachBeisel *et al.* (1999a) found similarly high levels of recognition of substance misuse problems among mentally ill in-patients in a US study; and in terms of service implications, this widespread acknowledgement of the presence of a substance-related problem does

suggest there may be scope for engaging at least some of this group in active treatment, perhaps in the context of their inpatient stays.

These findings clearly have a number of implications for both the management of mental health services, and the care of individual patients (e.g. the safety of wards, drug dealing between patients, and admission of patients for drug free observation). Since substance use was particularly common in this study (49%), and most substance using participants (83%) disclosed continued substance use whilst on the ward it seems likely that most in-patients (whether substance users or not) would be exposed to substance use whilst in hospital. This can be seen as problematic because acute in-patient wards often contain people who are particularly vulnerable, and open to exploitation because of their illness. Further, for some in-patients hospital admission is a final place of safety during difficult and stressful illness episodes, and as such the safety of the ward is paramount. Among the participants' thirty percent reported feeling pressurised to use substances, and a similar number reported feeling pressurised to buy substances from other in-patients. Development of a market in substances within the hospital is likely to make use on the wards particularly hard to tackle.

The methods of assessment of substance use employed in the study relied on initial staff awareness of use, which was then confirmed and explored further through participants' self report during administration of questionnaires, in participant interviews. It is therefore not possible to rule out either under or over report since data gained this way was not confirmed through urine toxicology screening. However, urine toxicology screening is only relevant in the context of current substance use (with considerable variations in detection periods) and therefore is not a good measure for infrequent substance use.

## 5.4 The temporal relationship between the onsets of substance misuse and mental illness

Most participants in the study were male (72%) and were diagnosed with schizophrenia (76%). A further 24% were diagnosed with bipolar affective disorder. Although three other psychotic illnesses featured in the study inclusion criteria (schizoaffective disorder, depression with psychotic features and delusional disorder) no individuals who met the other study criteria (concerning the severity or extent of substance use problems) was diagnosed with those illnesses. However they were represented among patients whose substance use had been rated as 'without impairment' (15%). The majority (73%) of participants were detained under the Mental Health Act (1983).

Studies which have examined the temporal sequence of mental illness and substance misuse have usually found that substance use usually begins before the clear onset of mental illness (Duke *et al.* 1994, Hambrecht and Häfner 1996, 2000, Henquet *et al.* 2005, Barnes *et al.* 2006). In another inner London study (Barnes *et al.* 2006) the mean age of onset (of schizophrenia) was five years earlier in cannabis users; leading the authors to speculate that cannabis use may precipitate schizophrenia, and may be an independent risk factor for the development of the disease.

However, it is sometimes difficult to pinpoint the onset (particularly of schizophrenia) as many individuals who go onto develop the disorder experience a prodrome prior to the full onset of the disease. Features of the prodrome can be present for months or years and are often non specific, revolving around almost undetectable changes in mood, behaviour and perception. No attempts were made in the current study to try to pinpoint evidence of the prodrome in participants, or substance use which might have begun during this period, and this remains a limitation of the study methods.

This study relied on retrospective accounts of the onset of mental illness and the start of substance misuse in individual participants, and therefore may be subject to bias, misinterpretation and other unknown factors (such as family pressure, carers responses to substance misuse, influence of professionals etc.) which can affect participant responses about the beginning of their mental illness and substance misuse problems. Therefore the reliability of data reported in this study concerning the temporal sequence of the disorders is diminished by the cross sectional and retrospective nature of the study design. In order to address this, participant reports were (wherever possible) checked against clinical records for accuracy. Even taking into account these issues the patterns of sequencing may provide a helpful indication of overall temporal sequencing.

In the current study most participants' first substance use was during their teenage years. Mean first alcohol use was at age 14, and mean first drug use was at age 17. This was on average between two and five years before the onset of mental illness symptoms reported by participants as the start of their illness. The mean first contact with mental health services (defined as specialist contact with a psychiatrist, mental health nurse, or other mental health professional) was at age 21. The mean age of participants' first admission to a mental health in-patient ward was at age 23. This suggests that some participants were untreated for a duration, and this might well be a period during which some individuals begin using substances as a form of self-medication (although the data do not allow for the confirmation of this). These results are consistent with other studies in finding that substance use tends to predate the emergence and onset of mental illness (Duke *et al.*1994, Hambrecht and Häfner 1996, 2000, Henquet *et al.* 2005, Barnes *et al.* 2006)

Although methodological limitations of the current study do not allow accurate confirmation of the temporal sequence of the disorders most participants reported the use of substances before the onset of mental illness, which is consistent with explanations of dual diagnosis that

identify substance use as a contributing factor to the onset of mental illness. These findings are not however, so consistent with the idea that substance use motivated by the subjective experience of mental illness (self medication), although it is possible that participants began using substances prior to the onset of illness, but that the experience of being ill has increased the range, or volume (or both) of substance use.

## 5.5 Motivations for, and attributions of substance use

Analyses of use situations and self medication data were performed in order to elucidate participants' motivations and reasons for substance use. Simple descriptive statistics suggested that social motivations were prominent, with most of the items attracting very high ratings relating to use of substances in social situations. When factor analysis was carried out in order to reduce the data and identify a smaller number of dimensions in motivation for substance use six factors emerged.

Factors one, two and three were derived from inventories of substance use situations and related to negative personal and social states, pleasant social conditions, and reward. Items which constituted the factors concerned social or family situations, negative emotional states (including unpleasant emotions) or social rejection (factor one), social substance use (factor two), and pleasant emotions. Factors four, five and six were derived from a self medication questionnaire, and related to social interaction and boredom, social acceptance, and medication side effects. Factor one had the highest mean score (3.42). Items which constituted these factors concerned the relief of boredom and the facilitation of social interaction (factor four), increasing feelings of acceptance, and the reduction of isolation (factor five), and the reduction of medication side effects (factor six). Taken together the factors which accounted for most of the variance tend towards social, situational and personal explanations for substance use among the participants, and not towards (self) medication of the specific symptoms of psychosis. This however, does not mean that substance use by participants was

unrelated to their experience of being mentally ill, and the lack of variable items which covered this in the study measures used means that use due to symptoms or other aspects of mental illness cannot be discounted. Items which constituted factors gave an in-depth insight into the day to day difficulties which participants faced.

Factor one explained 48.3% of the variance, and this suggests that participants felt that difficulties in their relationships with other people, (notably family members and others at 'home'), were a major motivation to use substances. Only two of the ten items which constituted the factor did not relate to feelings about, or difficulties with other people (but concerned personal anxiety and frustration). This factor lends support to the idea that people with mental illness use substances to mediate boredom, negative mood states, and to facilitate social interaction, rather than to directly manage the symptoms of their illness (such as hallucinations or delusional beliefs). The mean scores for factor one (3.01, SD .773) indicate a response in the 'frequently' range, and support factor one as an important motivation for substance use. These findings have been reported by other studies (Gearon, *et al.* 2001, Carey and Carey 1995, Dixon *et al.* 1990, 1991).

Factor two was constituted of three items concerning substance use in social situations, and individually explained 12.8% of the variance. The situations described in all three items related to substance use in pleasant settings, and were positively phrased (e.g. 'I was enjoying myself at a party and wanted to feel even better). This factor does not contribute to established self medication type understandings for substance use among the mentally ill, and is more associated with explanations of motivations to use substances seen amongst the general population. It also suggests that despite high levels of difficulties, participants' found functioning in social situations important to subjective quality of life, and social network. Since all three items in this factor concern social gatherings, it also suggests that in some ways the participants have an established social life, within which substance use contributes to increased ease and social confidence. The mean scores for factor two

(3.30, SD .832) indicate a response in the 'frequently' and 'almost always' range, and support factor two as an important motivation for substance use.

Factor three was constituted of two items concerning pleasant emotions and social substance use; and explained 7.2% of the variance. The items within this factor related clearly to substance use as a form of personal reward and concerned 'celebrating' with friends and after 'good events'. This factor is again more related to motivations for substance use which might be more expected in non-mentally ill populations; and is not consistent with self medication of psychotic symptoms as the main explanation for substance use among the mentally ill. This indicates that participants used substances not only to alleviate negative states, but to enhance their experience in social gatherings and more personal-social interactions. The mean score for factor three (3.42, SD .749) was the highest mean score of all the emergent factors, and indicates a response in the 'frequently' to 'almost always' range. This supports factor three as an important motivation for substance use.

Factors four, five and six were derived from a principal components analysis (factor analysis) of a self medication schedule. Factor four explained 41.8% of the variance on the self-medication questionnaire and was constituted of five items, three of which related to facilitating social interaction, and two to relieving boredom. It again suggests that participants clearly associate using substances with more general relief of mood and boredom than with the relief of illness symptoms. In the context of the self medication schedule this is more indicative as the schedule was developed for mentally ill populations and featured several items relating directly to the mediation of symptoms (such as the relief of auditory hallucinations). These items did not appear in any of the factors in the analysis of the schedule, and were generally not among those most highly rated by participants. The mean scores for factor four (2.94, SD .716) indicate a response in the 'frequently' range, and this supports factor four as an important motivation for substance use.

Factor five was constituted of four items relating to social acceptance and explained 14.6% of the variance. Factor five items related to reducing isolation, feeling accepted by others, and belonging to a group. This is consistent with motivations observed in factors one and four. It suggests that substance use helped participants to develop a sense of belonging and identity, and also indicates that participants felt their relationships with other people who used substances were more accepting than with people who did not use drugs or alcohol. This is consistent with the findings of Lamb (1982) and Bachrach (1987) who report belonging, group membership and social identity as key motivating factors for substance use among the mentally ill. Lamb (1982) suggests that substance use in the mentally ill is often a conscious attempt to develop an identity alternative to that of 'patient' and this is partially supported by the findings of factor five in the current study. The mean scores for factor five (2.90, SD .809) indicate a response in the 'frequently' range, and supports factor five as an important motivation for substance use.

Factor six was constituted of two items directly relating to the reduction of medication side effects, and explained 9.7% of the variance. The two items in factor 6 concerned the reduction of medication induced restlessness, and the general reduction of medication side effects. Factor 6 was the only factor found in the analysis which directly related to the 'practical' effects and management of illness (symptoms or medication), and is less consistent with the other factors found during analysis. The mean scores for factor six (3.00, SD .974) indicate a response in the 'frequently' range, and support factor six as an important contributing motivation for substance use.

Taken together the factors which emerged from the principal components (factor) analysis clearly identify a set of motivations for substance use which revolve around common themes, and have been found in other studies (Carey and Carey 1995, Dixon *et al.* 1990, 1991). The majority of factors (one, four and five) support the notion that participants' use drugs and alcohol to improve their social functioning and increase social confidence, relieve negative emotional states and boredom. Two of the

remaining factors (two and three) are not commonly found in other studies, and suggest motivations for substance use which are more often found in studies examining the motivations for use among the general population, and among populations of 'substance users' who do not identify themselves as mentally ill. These factors together explain 20% of the variance and attracted high mean scores, suggesting that they were reasonably important as motivators for substance use. This finding contributes a new motivating factor to understandings of substance use among the mentally ill, and suggests a pattern of substance use which is not only about addressing deficits, or managing personal-social difficulties; but also concerns the enjoyment of pleasant times, and the rewarding of success or celebration.

Gearon *et al.* (2001) also used the Self-Medication Questionnaire and the Inventories of Use Situations to investigate motivations for, and correlates of substance misuse among 25 outpatients with schizophrenia or major affective disorders (although there were some differences in study design, other measures and data analysis). Gearon *et al.* (2001) reports that the most highly rated questionnaire items motivating substance use in the study were peer pressure, urges and cravings, pleasant emotions (from the use situation inventories) and acceptance, the facilitation of social interaction, and boredom (from the self medication questionnaire). This is a slightly different set and ranking of motivations for use than seen in the current study, in that the most commonly cited motivations from the Use Situation Inventories were peer pressure, followed by urges and cravings. Neither of these motivations emerged as highly rated individual questionnaire items, or factors in the current study, although pleasant emotions was a motivation common to both the Gearon *et al.* (2001) study, and the current study. Turning to the self-medication questionnaire, the findings of the two studies are closer, and the two most cited motivations for use from this measure are the same as in the current study. Gearon *et al.* (2001) concludes that although the symptoms of psychotic illness may motivate individuals to use substances, the social context and environment in which many individuals with severe mental illness live and operate has more influence in motivating substance use.

These conclusions are broadly supported by the current study, although as previously stated, coverage of illness specific motivations for substance use in Gearon *et al.* (2001) and the current study was limited.

In order to explore whether the factors identified could be used to identify distinct sub-groups with different patterns an exploratory cluster analysis was undertaken. This allowed for the identification of sub-groups of participants, with similar scores for factors, indicating distinct patterns of motivations for use. After examination of a number of cluster solutions, a seven cluster solution was finally selected, as it appeared to provide the best fit for data, and the most interpretable clusters. Factor scores varied across clusters, and delineated distinct sub-groups, although several of the clusters were very small, so that this set of sub-groups and the interpretations must necessarily be seen as very preliminary and exploratory.

Members of **cluster 1** (bored self medicators) used substances most frequently because of boredom and to facilitate social interaction. They tended not to make positive attributions about their symptoms and substance use. However, they made a number of positive attributions about their substance use and personal and social functioning (more able to talk with others, more relaxed, and less bored). Members of cluster 1 were the only participants to report feeling more isolated as a result of their substance use, and half of them (50%) attributed their current episode of illness to their substance use.

Members of **cluster 2** (medication motivated) used or drank most frequently because of medication side-effects. They all used in hospital whilst on the ward. Members attributions' of substance use mirrored other clusters in that there were very few positive attributions about symptoms (17% reported feeling less paranoid as a result of using), and more about personal and social functioning. Members also attributed feeling more relaxed, finding it easier to talk with other people, and feeling less bored to their substance use. Negative attributions were as seen in other clusters: half the members of cluster 2 attributed their current illness

episode to their substance use, and 17% felt their use had increased the volume of auditory hallucinations.

Members of **cluster 3** (reward users) used most frequently for reward. The majority used both alcohol (79%) and drugs (68%). They were the only participants in the study to attribute improved mood to their substance use. Approximately half of them (47%) attributed their current illness episode to substance use, and the majority (68%) used whilst in hospital as an in-patient.

Members of **cluster 4** (infrequent users) most frequently use for reward. They have the lowest drug use scores in any cluster (50%) and three quarters (75%) use alcohol. They scored between 1.50 and 1.75 for all 'negatively' orientated items (i.e. those items which refer to coping with symptoms, difficult social situations or medication effects). The individuals in cluster 4 scored highest on factor 2 (pleasant social conditions, 2.29) and factor 3 (reward 2.38) (although these scores were still 'low' being under 2.50. Generally the scores of cluster 4 members were low for all factors suggesting low motivation for substance use overall.

Members of **cluster 5** (social users a) most frequently use in pleasant social conditions. More members of this cluster (67%) attributed their current illness experience to their substance use than in any other cluster, and 22% felt their substance use had led to an increase in paranoia. Eleven percent of cluster 5 members made a positive attribution (substance use reduces anxiety) of their substance use relating to (non psychotic) symptoms, whilst making a range of positive attributions about personal and social functioning related to their substance use. They made no positive attributions about their substance use and symptoms, whilst making some concerning substance use and personal and social functioning. Half the members of this cluster directly attributed their current illness episode to their substance use.

All members of **cluster 6** (social users b) use both alcohol and drugs. They are most motivated to use in pleasant conditions, but use less with other people, when compared with other clusters. They made no positive attributions about their substance use and symptoms, whilst making some concerning substance use and personal and social functioning. Half the members of this cluster directly attributed their current illness episode to their substance use, and most (67%) used while in hospital.

Members of **cluster 7** (multiply motivated) frequently used under all conditions generated in the factors. The majority of cluster 7 members used substances with others, and on the wards. The majority use drugs (90%) and alcohol (83%). Few of them made positive attributions about their substance use and symptoms, whilst more positive attributions were reported by them concerning personal and social functioning. Members of cluster 7 attributed being 'more paranoid' to their substance use more than any other cluster (27%) and just over a third of them attributed their current illness episode to their substance use. There were no substantial differences between members of cluster 7 and the other clusters on a range of other variables concerning use, social and clinical characteristics.

A number of distinct sub-groups appeared to have emerged from the cluster analysis, and these sub-groups produced different patterns of motivations for substance use. There are likely to be a variety of mechanisms underlying substance use among the severely mentally ill, and the current study gives some sense of what these might be, testable in future research. For some sub-groups, use seems to be a habitual response to many situations, for other groups, a way of coping with psychological tension and social difficulties, and for others a way of enjoying social situations. Understanding these varying patterns better may be helpful in the future development of treatment strategies that address the role substances have in people's lives.

The cluster analysis described above was exploratory in nature, and the (relatively small) number of participants and the very small size of some clusters means many of the differences observed between clusters are non significant. However, these findings suggest that motivations for substance use taken together with demographic characteristics may be a basis for differentiating distinct sub-groups. To confirm these findings studies with larger numbers would be useful, since some of the clusters reported above may not be stable when reanalysed with a larger numbers of participants.

## 5.6 The social context of substance misuse in people with dual diagnosis

The results of this study demonstrate very high levels of social exclusion and dislocation among the participants. The majority were single, unemployed (36% had never worked), living alone (or homeless), were poorly educated, while a striking two thirds of participants had parents or siblings with a substance use disorder. This suggests a low quality of life, which might possibly be an independent motivator for substance use among the participants. As discussed previously, the findings of this study support the idea that social difficulties, social anxiety, and the need to increase (social) acceptance are important motivators for substance use among the participants. In this context participants' substance use can be understood partly as a means of reducing anxiety about coping in social situations and general social functioning.

The study results taken together create a picture of participants which suggests they may be seeking social activity and friendship, but equally find the use of common social skills difficult, and use substances in these circumstances as a way of coping with social anxiety and the possibility of social rejection. Substance use variables show three quarters of participants who used alcohol did so in the company of others, while 69% of those who used drugs did so with others. Clearly therefore, for the

majority of participants' substance use is very much a social activity undertaken in the company of others. Participants used substances with a variety of other people; friends, partners, other mental health service users and other in-patients. Most participants used with friends, but a considerable minority used with other in-patients, and (when living in the community), with contacts with other mental health service users they had made while in hospital. However, participants' were still three times as likely to use with friends, than either mental health service contacts, or other in-patients.

## 5.7 Mental health service settings and substance use

These findings suggest that a culture of substance use and dealing exists within the adult inpatients mental health services sampled for this study in central London. Eighty-one percent of participants used substances on the ward at least once during their current admission, and 87% reported ever using during a psychiatric admission; the majority (73%) of whom were detained under the Mental Health Act (1983). Although it is very uncommon for service users' first drug use experience to occur whilst in the hospital premises, those who regularly use alcohol and/or drugs in the community usually continue to use these substances on the wards when in-patients.

Drug dealing is also common on wards, with 10% of participants regularly trading with each other. When participants' were asked where they had bought substances they had used on the ward, 47% disclosed buying from another in-patient. This clearly creates substantial management problems in residential mental health services, and contributes to serious safety concerns. Of greater concern is that a third of the participants' reported feeling pressured to buy from, or use with other in-patients. Despite this, the majority of participants felt that they had a 'problem' with either drinking or using substances, and a majority felt they were receiving appropriate help for substance use problems while in hospital.

It is striking that the majority of participants who reported any cannabis use during the previous six months reported use of the drug on the wards at least once, in contrast to other substances. This suggests the drug is very available, and widely used in the in-patient wards sampled.

These results demonstrate an established relationship between the participants and the use and misuse of drugs and alcohol. The prevalence of substance use disorders is high among the mentally ill, and substance use behaviours are well established within mental health services. Much of the participants' substance use did relate to deficits in personal and social functioning, and as the factors described in this chapter show, the most motivating factor for substance use was negative personal and social states. Rather than relating to the management of symptoms, this concerns the day to day experience and difficulties that the mentally ill face in attempting to develop and maintain social relationships. Further, a common motivating factor for most of the participants was pleasure seeking through the use of substances, and most participants used substances in pleasant social conditions and for reward. This motivational factor has not been reported in other studies, and represents a new angle for further research exploration, and the development of therapeutic strategies and clinical interventions.

The findings of the current study discussed in this chapter support the idea that people with psychotic illness self-medicate in a non specific way, and that such substance use is often the result of personal and social difficulties, a need for social acceptance, and a remedy for boredom. Very few participants associated the self management of (positive) symptoms with the use of substances (although there were only a limited number of items testing this), and none made positive attributions relating to psychotic symptoms and substance use, though a substantial number reported that substance use had contributed to a relapse. The only exception was the case of countering medication side effects, which was a smaller factor motivating substance use among the participants. Only a small number of participants' belonged to clusters (one and two) where use was largely restricted to coping with negative personal and social

situations, and it is likely that these individuals are truly self-medicating their experience of mental illness. For the majority, substance use is a frequent response to difficulties of a personal and social nature, a method of enjoyment, and a way to feel more included.

# 6.0 CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

This study has demonstrated that substance misuse amongst the mentally ill is a complex and substantial problem for patients and front-line clinical staff managing in-patient mental health services, to which greater understanding and innovative solutions need to be sought with urgency. The study has also demonstrated that simply to ask what motivates or causes substance use in mentally ill individuals is a complicated question, which involves various components of an individual's whole life. No single explanations (self medication, social difficulties, social networks etc) appear to motivate substance use in all the study participants and this reflects the fact that people with dual diagnosis are an extremely heterogeneous group.

This chapter will summarise the main findings of the current study, and will also make suggestions for clinical practice and service management, policy, education and preparation of staff, and further research.

## 6.1 Research

The current study has identified a number of themes and questions concerning the aetiology and development of dual diagnosis, and its social and clinical correlates which warrant further investigation and exploration.

The study identified high prevalence of dual diagnosis amongst in-patients with psychotic illness in inner London, and this finding should be confirmed with other studies of both psychotic and non-psychotic in-patients, involving direct interviews with standardised measures rather than partial reliance on staff ratings.

The high rates (69%) of family history of substance misuse among the participants possibly identify a vulnerability for the development of substance misuse beyond that which could result directly from being mentally ill. This should be investigated using rigorous methods which examine rates of substance misuse among those with dual diagnosis and

their relatives, those with mental illness and controls in the general population.

The temporal sequence of dual diagnosis should be investigated using prospective methods to identify the onset of both substance misuse, and mental illness in a large cohort of healthy individuals. A good alternative to prospective methods might involve the use of early onset studies of individuals with schizophrenia using very detailed retrospective methods to identify the sequence of the disorders. This in itself will be helpful in understanding how the development of these problems contribute (or not) to each other, and will therefore provide useful information for prevention and treatment of both.

The current study found that participants were often motivated to use substances because of personal and social difficulties, and for enjoyment, however the measures used tended towards these explanations with more variables reflecting these areas than symptoms. Further research using measures which represent a broader range of motivations (particularly relating to positive symptoms, psychological states, mood and stigma) would be useful in identifying the role of substance use in the lives of the mentally ill. Further studies relating generally to the social lives and social networks of those with dual diagnosis would also help to identify the role of drug and alcohol use.

Qualitative research might also help to provide in-depth material relating to motivations for use, for example by examining substance use during a typical day of individuals with mental illness, and this might help to tease out and separate use which relates to symptoms, social functioning and social life. The role of medication side effects as a motivating factor for substance use should be further explored using these methods.

Given the high prevalence of cannabis use by study participants (both regular use, and use in hospital), and its unique social position (being widely accepted as a recreational drug and as 'almost legal', being widely available, and very widely used in the general population) further

research concerning cannabis use and psychotic illness (cause, precipitation and exacerbation of illness) may help inform dialogues about UK national drug policy and treatment strategies with regard to cannabis.

## 6.2 Development of treatments and interventions

Developing awareness of the motivations for, and social context of substance misuse amongst individuals with mental illness is a potentially fruitful source for the development of interventions and treatments at an individual level. The current study has identified that motivations for use do not always relate directly to symptoms, or the experience of being mentally ill; rather some substance use is motivated simply by enjoyment and other motivations for use observed more commonly in the general population. This has substantial implications for the initiation and maintenance of treatment, and the way in which mental health and substance misuse services engage and manage people with this combination of problems.

The motivations for substance use reported by study participants' indicate an emphasis on adverse emotional states, and social functioning; and this suggests that for patients the relief of these features is crucial in motivating drug and alcohol use. This fits with a model of the self-medication of dysphoria and social difficulties, but not with the self medication of other (positive) symptoms of psychotic illness, and this is consistent with other studies as reported by Carey and Carey (1995) and Dixon (1990). This in turn indicates a need to respond more effectively to these problems among in patients in order to try to prevent patients from turning to substances for help; an in depth examination of the different social patterns of substance use reported in the study may be a useful source for the development of clinical interventions and treatments which address these deficits.

Medication side effects have been cited in the literature as a possible motivation for substance use, and this is consistent with the findings of the current study in that although factor six (substance use to counteract

prescribed medication side effects) individually explained a small amount of the overall variance, it produced the highest mean score of any factor indicating its importance to overall motivations and reasons for use. The potential consequences of this are substantial since using substances to counteract medication side effects may well affect medication efficacy and compliance, and this in turn may lead to other illness consequences. This suggests optimising treatment regimes to achieve maximum effectiveness with minimum side effects may be important in managing people who have, or are at risk of dual diagnosis.

The findings also indicate the extent to which patients are socially excluded, and experience social difficulties and anxiety, and this is another area which should be addressed in the overall provision of mental health care. Further, this study reports other motivations not commonly discussed in the context of mentally ill people; 20% of the variance (factors two and three) concerned substance use due to pleasant social conditions (13%) and reward (7%). Substance use in these conditions (social gatherings and positive personal events) is far more often associated with motivations for substance use seen in the general population and did not link with negative personal or social states or social anxiety. This suggests that initiatives to prevent all substance use in mentally ill people will have limited success unless these aspects are also considered and the positive subjective aspects of patients' substance use considered. These positive effects may be especially salient if patients' lives currently contain relatively few rewarding activities and if positive social interactions and relationships are difficult to achieve.

## 6.3 Service planning and policy

The prevalence of problematic alcohol or drug use in these in-patients in inner London is particularly high (48.9%), and is much greater than reported in UK community studies (Menezes *et al.* 1996, Wright *et al.* 2000, Graham *et al.* 2001, Weaver *et al.* 2001a, Miles *et al.* 2003). This indicates that substance use is much more usual than exceptional

amongst in-patients (Department of Health 2002), and ward staff (especially) should have a high index of suspicion for such substance use in their patients. This is consistent with measures as introduced by UK national guidance (Department of Health 2002) which suggest urine toxicology screening of all adult age in-patients to detect the presence of substances. This is especially pertinent for younger in-patients, in whom the risk for substance use is higher. There are a number of well recognised barriers to women's disclosure (and treatment) of substance use in health and other social service settings, which often include worries about child custody and other childcare concerns (Schober and Annis 1996, Hodgins *et al.* 1997). It is unlikely that the gender division of participants' in the current study truly reflects the number of women patients who use substances and particular sensitivity should be shown in attempting to address this.

The substances most commonly used by study participants were alcohol and cannabis (respectively) and in this regard the planning of services is important. Most specialist substance misuse services work mainly with individuals with heroin and polysubstance misuse and have little expertise in either cannabis misuse or alcohol problems. Further to this, most alcohol services are separate from both mental health and substance misuse services, and this creates a further issue in attempting to provide appropriate focused and comprehensive services for those with dual diagnosis.

The development of interventions and treatments for individuals should also take into account the very high prevalence of substance use reported on the wards in the current study, and therefore the likelihood that individuals will be exposed to substance use when in hospital.

The findings of the current study suggest that although it is very uncommon for patients first drug use experience to occur whilst in the hospital premises, those who regularly use alcohol and/or drugs in the community usually continue to use these substances on the wards when in-patients. In the current study the substance use reported by

participants ranged from drinking alcohol and smoking cannabis, to crack use on the wards. It was striking that the majority of participants who reported any cannabis use during the previous six months reported use of the drug on the wards at least once, in contrast to other substances. This suggests the drug is very available, inexpensive and widely used in the in-patient wards sampled. It is also clear that within an established culture of substance use on wards, an element of coercion exists, both in the supply and trading, and use of substances by patients. This is especially problematic since acute mental health wards are often the last place of safety available to patients, and (supposedly) a drug free environment within which patients' mental states can be assessed without the effects of substance use.

Attitudes of staff and managers towards substance misuse on these wards certainly did not seem permissive, yet local policies did not appear to have achieved the goal of preventing substance use. Increasing the use of invasive interventions (such as insisting on frequent searches of patients and visitors) may create problems with civil liberties and therapeutic relationships with patients. The fact that the majority are detained under the Mental Health Act (1983) indicates that in the assessment of professionals there is little scope for managing their acute mental health problems effectively in the community. Current policies both in the study area and many other NHS sites often advocate the discharge of patients found to be using alcohol and/or other substances. This creates a considerable dilemma where the discharge of a detained patient appears unsafe and inappropriate. In the management of substance misuse in community settings, it would not necessarily be expected that substance users have a good chance of achieving abstinence at the time when their mental health is at is poorest and stress levels are highest, i.e. at the time of an acute admission. Achieving abstinence is a long-term goal, which is often not realistic to expect, in people who are at the precontemplation stage (i.e. people who have not acknowledged that they have a substance misuse problem, or considered the possibility of change to their substance use behaviours) (Miller and Rollnick 1991). Yet the great difficulties associated with coping with active

substance misuse in hospital do mean that achieving abstinence, at least on a short-term basis, at this point necessarily does become the goal.

Current UK government policy concerning dual diagnosis is contained within the Mental Health Policy Implementation Guide (Department of Health 2002) and has been active since 2002. This policy sets out guidance on how to locally determine dual diagnosis priorities, and also clarifies usual treatment settings for patients with dual diagnosis. The main approach of the policy is to 'mainstream' patients with dual diagnosis into mental health services, whilst accepting that substance misuse services will continue to see and treat many alcohol and drug users with considerable psychological morbidity. This has so far met with some success, at least in increasing awareness of dual diagnosis problems among mental health service staff. However, it is increasingly clear that substance use among people with mental illness is complex and multi-faceted. Some individuals with dual diagnosis clearly only use substances when trying to mediate their experience of symptoms, and some only use in social gatherings and other pleasant conditions. This finding suggests that using a wider range of approaches might be useful. In particular in working with active substance users who do not demonstrate high levels of motivation to change, the use of collaborative low threshold harm reduction focused approaches would possibly facilitate better outcomes especially in terms of service engagement and retention (Phillips 1998, 1999, Phillips and Labrow 2000).

## 6.4 Education and training

As reported in the current study, dual diagnosis is a very common clinical problem in inner city in-patient mental health services in London. A wide range of health and social care professionals (including mental health staff) have frequent contact with individuals with dual diagnosis, and these individuals present across most general health, emergency, mental health and social care service settings. Despite this, substance misuse generally, and dual diagnosis specifically are not well covered in the

education of health professionals (including nursing, medicine, psychology and other allied health professions). This strongly indicates the need for the development of appropriate educational responses, ranging from generic to specialist skills, appropriate to practitioner role and setting. A better understanding of the motivations for, and social context of substance use amongst mentally ill service users' is one component in facilitating the initial identification and recognition of this co-morbidity in individuals'; understanding of the role and function of substance use in individuals' daily lives and social networks, identifying goals for treatment and the reduction of substance related harms. Understanding these specific aspects of dual diagnosis however, should be set within educational curricula which provide a detailed framework for understanding the clinical presentations of dual diagnosis, the relationships between specific substances (and types of use) and mental health problems; and the clinical correlates of this combination of problems. This is turn, should be complementary to comprehensive education in substance misuse which identifies the different major groups of substances, their use patterns and effects, gives an in-depth review of the epidemiology and aetiological explanations for substance use disorders, and identifies the common physical, social and psychiatric sequelae of substance misuse, whilst emphasising the importance of a non judgemental approach in establishing a helping relationship with those with substance use disorders. This educational content should become a core (assessed) element of the undergraduate (or pre-registration) preparation of all students from the mental health disciplines. Since those with dual diagnosis present to a wide range of health and social care services which are not necessarily mental health, or substance misuse orientated (e.g. hospital emergency departments, social service departments and primary care services), it is also important to provide greater coverage of dual diagnosis and substance misuse in the undergraduate curricula of students in these general health and social care disciplines.

This approach however, does not address the educational needs of the current workforce, and a number of educational initiatives have attempted

to redress this gap. The Pan London dual diagnosis training is one such course for current mental health practitioners (organised by the Care Services Improvement Partnership (CSIP)) and is based on key learning areas identified in the Department of Health (2002) Dual Diagnosis Good Practice Guide. It offers a five day course focusing on the theoretical knowledge required for working with service users with dual diagnosis, including: professional attitudes to substance misuse amongst the mentally ill, the prevalence of dual diagnosis, current policy guidance, drug & alcohol awareness (including the 1971 Misuse of Drugs Act), understanding motivations and reasons for substance use, mental health and substance use interactions (including medications); and practical (skills based) preparation including: engagement and assessment skills, assessing readiness to change, legal aspects (including confidentiality), risk assessment, motivational interviewing (working with ambivalence and resistance), relapse prevention and harm reduction. A research evaluation of this approach would be helpful in determining the usefulness of this approach for a broader U.K. context (although preliminary evidence from an evaluation of the Birmingham Assertive Outreach team training in the delivery of integrated treatment is positive, Graham *et al.* 2006). Further focused education and training which specifically addresses the needs of in-patient staff is also urgently required, and should be evidence based, taking into account the complex relationship between substance use and in-patient wards.

As evidence concerning the efficacy of treatment and intervention for those with dual diagnosis remains inconclusive, it is not currently possible to be able to provide training that reaches a high level in terms of evidence base, therefore current staff training should be based on interventions that have proved effective in populations of substance users, and have been demonstrated to be feasible in in-patient and dual diagnosis settings (e.g. harm reduction approaches, motivational interviewing and relapse prevention). These skills should be contextualised within established theoretical frameworks that enable the better assessment of readiness to change substance use behaviours.

It is also important to consider the provision of the ongoing in service education and training needs of mental health and substance misuse staff trained in dual diagnosis, since preparation which is grounded in ongoing clinical supervision, regular updates and practice development is more likely to have an impact on practice with dual diagnosis service users. This is likely to be particularly relevant in the retention of specialist dual diagnosis practitioners (although it is again unclear whether the 'specialist' approach is effective as against whole team training for instance).

## 6.5 Summary

The findings of this study of the motivations for, and social context of substance use among people with mental illness are preliminary, however they suggest that achieving a more comprehensive understanding of contexts and motivations for use in this population is a potentially fruitful direction for future research in dual diagnosis, and for the development of individual treatments, and wider service provision.

# 7.0 REFERENCES

Addington, J. and Addington, D. (1998) Effect of Substance Misuse in Early Psychosis. British Journal of Psychiatry (172) (Supplement 33) 134 – 136

Addington J. and Duchak V. (1997) Reasons for substance use in schizophrenia. Acta Psychiatrica Scandinavica. (96) 329 – 333

Amara, S. and Sonders, M. (1998) Neurotransmitter transporters as molecular targets for addictive drugs. Drug and Alcohol Dependence 51: 87-96)

American Psychiatric Association. (1994) Diagnostic and Statistical Manual of Mental Disorders, 4th Edition. APA. Washington, DC.

Amminger, G. P., Pape, S., Rock, D., Roberts, S.A., Ott, S.L., Squires-Wheeler, E., Kestenbaum, C. and Erlenmeyer-Kimling, L. (1999) Relationship between childhood behavioral disturbance and later schizophrenia in the New York High-Risk Project.American Journal of Psychiatry. 156(4) 525-530

Andreasson, S., Allebeck, P., Engstrom, A and Rydberg, U (1987) Cannabis and Schizophrenia. A Longitudinal Study of Swedish Conscripts. Lancet. 1483 – 1486

Annis, H.M., Graham, J.M. and Davis, C.S. (1987) Inventory of Drinking Situations (IDS): User's guide. Toronto. Addiction Research Foundation of Ontario.

Arseneault, L., Cannon, M., Poulton, R., Murray, R., Caspi, A. and Moffitt, T.E. (2002) Cannabis use in adolescence and risk for adult psychosis: Longitudinal prospective study. British Medical Journal. 325(7374) 1212-1213.

Arseneault, L., Cannon, M., Witton, J. and Murray, R.M. (2004) Causal association between cannabis and psychosis: Examination of the evidence. British Journal of Psychiatry. 184(2)110-117.

Bachrach LL. (1987) New Directions for Mental Health Services. Leona Bachrach Speaks: Selected Speeches and Lectures. ( 35). 1 – 102

Baigent, M., Holme, G. and Häfner, R.J (1995) Self reports of the interaction between substance misuse and schizophrenia. Australian and New Zealand Journal of Psychiatry 29 (1) 69 – 74

Baines, B., Hay, G. and Klodawski, E. (2005) Greater London Demographic Review 2004. Data Management and Analysis Group. Greater London Authority

Barnaby, B., Drummond, C., McCloud, A., Burns, T. and Omu, N. (2003) Substance misuse in psychiatric inpatients: comparison of a screening questionnaire survey with case notes. British Medical Journal. 327(7418): 783-4.

Barnes, T.R., Mutsatsa, S.H., Mutton, S.B., Watt, H.C., and Joyce, E.M. (2006) Comorbid substance use and age at onset of schizophrenia. British Journal of Psychiatry. (188) 237-242.

Bergman, H.C. and Harris, M. (1985) Substance Misuse Among Young Adult Chronic Patients. Psychosocial Rehabilitation Journal 9, 45 – 54

Bernadt, M.W. and Murray, R.M. (1986) Psychiatric Disorder, Drinking and Alcoholism: What are the Links? British Journal of Psychiatry. 148, 393 – 400

Bidaut-Russell, M., Bradford, S.E. and Smith, E.M. (1994) Prevalence of mental illnesses in adult offspring of alcoholic mothers. Drug and Alcohol Dependence, 35, 81 -90

Boutros, N.N. and Bowers, M.B. (1996) Chronic substance-induced psychotic disorders: the state of the literature. Journal of Neuropsychiatry and Clinical Neurosciences. (8), 262 – 269

Boys, A., Marsden, J., Fountain, J., Griffiths, P., Stillwell, G and Strang, J. (1999) What Influences Young People's Use of Drugs? A Qualitative Study of Decision – Making. Drugs: Education, Prevention and Policy. 6 (3) 373 – 387 British Medical Journal, 313, 318

Breakey, W.R., Goodell, H., Lorenz, P.C. and McHugh, P.R. (1974) Hallucinogenic drugs as precipitants of schizophrenia. Psychological Medicine. 4(3)255-61

Brizer, D.A., Hartman, N., Sweeney, J. and Millman, R.B. (1985) Effect of methadone plus neuroleptics on treatment-resistant chronic paranoid schizophrenia American Journal of Psychiatry (142) 1106 - 1107.

Campbell, M.S., Moss, H.B. and Daley, D.C (1993) Dual disorders: Counselling Clients with chemical dependency and mental illness. Hazelden. Minnesota.

Cantor-Graae,E., Nordstrom,L. G. and McNeil,T. F. (2001) Substance misuse in schizophrenia: a review of the literature and a study of correlates in Sweden. Schizophrenia Research, 48 69–82.

Cantwell, R. (2003) Substance use and schizophrenia: effects on symptoms, social functioning and service use. British Journal of Psychiatry (182) 324-329

Cantwell, R., Brewin, J., Glazebrook, C., Dalkin, T., Fox, R., Medley, I. and Harrison, G. (1999) Prevalence of substance misuse in first-episode psychosis. British Journal of Psychiatry. 174, 150 – 153

Carey, K.B. and Carey, M.P. (1995) Reasons for drinking among psychiatric outpatients: relationship to drinking patterns. Psychology of Addictive Behaviours. 9 (4) 251-257

Caspari D. (1999) Cannabis and schizophrenia: Results of a follow-up study. European Archives of Psychiatry and Clinical Neuroscience. 249(1) 45-49

Caton, C.L.M. (1995) Mental Service Use among homeless and never homeless men with schizophrenia . Psychiatric Services 46, 1139 – 1143.

Cuffell, B. (1992) Prevalence Estimates of Substance Misuse in Schizophrenia and their Correlates. Journal of Nervous and Mental Disease. 180, 589 – 592

Dackis, C.A. and Gold, M.S. (1992) Psychiatric Hospitals for the Treatment of Dual Diagnosis. In: Lowinson, J.H., Ruiz, P. and Millman, R.B. (eds) Substance Misuse: A comprehensive Textbook. Williams and Williams. Baltimore.

Department of Health (2002) Mental health policy implementation guide: Dual diagnosis good practice guide. Department of Health. London.

Dickey, B. and Azeni, H. (1996) Persons with Dual Diagnoses of Substance Abuse and Major Mental Illness: Their Excess Costs of Psychiatric Care. American Journal of Public Health 86 (7) 973-977.

Ditton, J. and Taylor, A. (1990) Scotland's Drug Misuse Agencies: 1987 Survey Central Research Unit papers. Edinburgh. Scottish Office

Dixon L. (1999) Dual diagnosis of substance misuse in schizophrenia: prevalence and impact on outcomes. Schizophrenia Research (25) (S) 93-100.

Dixon, L., Haas, G., Weiden, P., Sweeney, J. and Francis, A.J. (1991) Drug abuse in schizophrenic patients: clinical correlates and reasons for use. American Journal of Psychiatry (148) (2) 224-230

Dixon, L., Haas, G., Wieden, P., Sweeney, J. and Frances, A. (1990) Acute Effects of Drug Misuse in Schizophrenic Patients: Clinical Observations and Patients' Self-Reports. Schizophrenia Bulletin. 16 (1) 69 – 79

Drake, R.E., Osher F.C., Noordsy, D.L., Hurlbut, S.C., Teague, G.B. and Beaudett, M.S. (1990) Diagnosis of alcohol use disorders in schizophrenia. Schizophrenia Bulletin (16) 57-67.

Drake, R.E. and Wallach, M.A. (1989) Substance abuse among the chronic mentally ill. Hospital & Community Psychiatry. 40(10) 1041-1046

Duke, P.J., Pantelis, C. and Barnes, T.R.E. (1994) South Westminster Schizophrenia Survey. Alcohol Use and Its Relationship to Symptoms, Tardive Dyskinesia and Illness Onset. British Journal of Psychiatry (164), 630 – 636

Dyer, C. (1996) Violence may be predicted among psychiatric patients. British Medical Journal 313 (7053)318

Eaton, G., Morleo, M., Lodwick, A., Bellis, M. and McVeigh, J. (2004) United Kingdom Drug Situation. Annual Report to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) 2004. Reitox National Focal Point.

Fadda, F. and Rossetti, Z. (1998) Chronic ethanol consumption: from neuroadaptation to neurodegeneration. Progress in Neurobiology 56: 385-431.

Farrell, M., Howes, S., Taylor, C., Lewis, G., Jenkins, R., Bebbington, P., Jarvis, M., Brugha, R., Gill, B. And Meltzer, H. (1998) Substance misuse and psychiatric comorbidity: An overview of the OPCS National Psychiatric Morbidity Survey. Addictive Behaviours Vol 23, 909-918.

Farris, C., Brems, C., Johson, M., Wells, R., Burns, R. and Kletti, N. (2003) A Comparison of schizophrenic patients with or without coexisting substance use disorder. Psychiatric Quarterly. 74 (3) 205-222.

Fergusson, D.M. (2004) Cannabis and Psychosis: Accumulating evidence. Addiction. 99 (10)1351-1352.

Fergusson, D.M., Horwood, L.J. and Swain-Campbell, N.R. (2003) Cannabis dependence and psychotic symptoms in young people. Psychological Medicine. 33(1)15-21.

Flaum, M. and Schultz, S.K. (1996) When Does Amphetamine-Induced Psychosis Become Schizophrenia? American Journal of Psychiatry 153: 812 - 815.

Gearon JS, Bellack AS, RachBeisel, J. and Dixon, L. (2001) Drug use behaviours and correlates in schizophrenia. Addictive Behaviours 26(1), 51-61

Gerding, L.B., Labbate, L.A., Measom, M.O., Santos, A.B. and Arana, G.W.(1999) Alcohol dependence and hospitalization in schizophrenia. Schizophrenia Research. 38 (1)71-75.

Graham, H.L., Maslin, J., Copello, A., Birchwood, M., Mueser, K., McGovern, D. and Georgiou, G. (2001) Drug and alcohol problems amongst individuals with severe mental health problems in an inner city area of the UK. Social Psychiatry and Psychiatric Epidemiology. 36, 448-455

Grech A., van Os, J., Jones, P.B., Lewis, S.W. and Murray R.M. (2005) Cannabis use and outcome of recent psychosis. European Psychiatry (20) 349-353

Graham, H.L., Copelle, A., Birchwood, M., Orford, J., McGovern, D., Mueser, K.T., Clutterbuck, R., Godfrey, E., Maslin, J., Day, E. and Tobin, D. (2006) A preliminary evaluation of integrated treatment for co-existing substance use and severe mental health problems: Impact on teams and service users. Journal of Mental Health. 15 (5) 577-591

Gunn, J. (1993) Dangerousness. In: J. Gunn and P. Taylor (Eds) , Forensic psychiatry, clinical, legal and ethical issues (pp. 624-645). Butterworth. Oxford

Gunn, J. and Robertson, G. (1976) Psychopathic personality: A conceptual problem. Psychological Medicine. 6(4) 631-634.

Hall, W. and Solowij, N. (1997) Long term cannabis use and mental health. British Journal of Psychiatry171, 107 – 108

Hall, W., Solowij, N. and Lemon, J. (1994) Health and psychological consequences of cannabis use. National Drug Strategy Monograph No 25. Australian Government Publication Service

Hambrecht, M. and Häfner, H. (1996) Führen Alkohol oder Drogenmissbrauch zur Schizophrenie? Nervenarzt. 67. 36 – 45

Hambrecht, M. and Häfner, H. (2000) Cannabis, vulnerability, and the onset of schizophrenia: an epidemiological perspective. Australian and New Zealand Journal of Psychiatry. 34 (3)468-75

Harrison, P.J. (1999) The neuropathology of schizophrenia. A critical review of the data and their interpretation. Brain. (122) 593 – 624.

Henquet, C., Krabbendaum, L. and Spauwen, J., Kaplan, C., Lieb, R., Wittchen, H. and van Os, J. (2005) Prospective cohort study of cannabis use, predisposition for psychosis and psychotic symptoms in young people. British Medical Journal. 330, (7481) 11.

Hodge, J.E. (1993) Alcohol and Violence. In: P.J. Taylor (Ed) Violence in society. Royal College of Physicians. London

Hodgins, D.C., El-Guebaly N. and Addington J. (1997) Treatment of substance misusers: Single or mixed gender programs? Addiction 92 (7) 805-812

Home Office (2005) Drug misuse declared: findings from the 2003/4 British Crime Survey (England and Wales). Home Office Statistical Bulletin. Home Office. London

Home Office (1999) Drug Misuse Declared in 1998: Results from the British Crime Survey (Research Study 197). Home Office. London

Johns, A. (1997) Substance misuse: a primary risk and a major problem of comorbidity. International Review of Psychiatry, 9, 233-241

Johnston, L.D., O'Malley, P.M. and Evelyn, L.K. (1978) Drugs and Delinquency: A Search for Causal Connections. In: Kanel, D.B. (ed) Longitudinal Research on Drug Use. Hemisphere. Washington DC.

Khantzian, E.J. (1985) The Self-Medication Hypothesis of Addictive Disorders: Focus on Heroin and Cocaine Dependence. American Journal of Psychiatry 142 (11) 1259 – 1264

Kovasznay, B., Bromet, E., Schwartz, J.E., Ram, R., Lavelle, J.and Brandon, L. (1993) Substance Misuse and Onset of Psychotic Illness. Hospital and Community Psychiatry 44,(6) 567 – 571

Lamb H.R. (1982) Young Adult Chronic Patients: The New Drifters. Hospital and Community Psychiatry33 (6) 465 – 468

Linszen, D.H., Dingemans, P.M. and Lenior, M.E. (1994) Cannabis misuse and the course of recent-onset schizophrenic disorders. Archives of General Psychiatry. 51 (4)

McCreadie, R.G. (2002) Use of drugs, alcohol and tobacco by people with schizophrenia: case—control study. British Journal of Psychiatry (181) 321-325

McCrone P., Menezes P.R., Johnson S., Scott H., Thornicroft G., Marshall J., Bebbington P. and Kuipers E. (2000) Service use and costs of people with dual diagnosis in South London Acta Psychiatrica Scandinavica 101 (6) 464-472

McGuire, P.K., Cope, H. and Fahy, T. (1994) Diversity of Psychopathology Associated with use of 3,4 Methylenedioxymethamphetamine. British Journal of Psychiatry (165) 391 – 395

McKeown M. and Liebling H. (1995) Staff perception of illicit drug use within a special hospital. Journal of Psychiatric and Mental Health Nursing (2) 343 – 350.

McLellan, A.T., Woody, G.E. and O'Brien, C.P. (1979) Development of Psychotic Illnesses in Drug Misusers: Possible Role of Drug Preference. New England Journal of Medicine 301: 1310 - 1314.

Mathers, D.C. and Ghodse, A.H. (1992) Cannabis and psychotic Illness. British Journal of Psychiatry. 161, 648 – 653

Menezes, P.R., Johnson, S., Thornicroft, G., Marshall, J., Prosser, D., Bebbington, P., and Kuipers, E. (1996) Drug and alcohol problems among people with severe mental illness in South London. British Journal of Psychiatry. (168) 612 – 619

Miles, H., Johnson, S., Amponsah-Afuwape, S., Finch, E., Leese, M. and Thornicroft, G.(2003) Characteristics of subgroups of individuals with psychotic illness and a comorbid substance use disorder. Psychiatric Services. 54(4)554-561

Miller, W.R. and Rollnick, S. (1991) Motivational Interviewing: Preparing people to change addictive behaviours. The Guildford Press. New York

Mirrlees-Black, C. (1999) Domestic violence: findings from a new British Crime Survey self-completion questionnaire. London: HMSO

Mitchell, D.P., Betts, A. and Epling, M. (2002) Youth employment, mental health and substance misuse: a challenge to mental health services. Journal of Psychiatric & Mental Health Nursing. 9 (2)191-8

Modestin, J., Nussbaumer, C., Angst, D., Scheidegger, P. and Hell, D. (1997) Use of potentially abusive psychotropic substances in psychiatric inpatients. European Archives of Psychiatry and Clinical Neurosciences 247: 146-153

Mueser, K.T., Drake, R.E. and Wallach, M.A. (1998) Dual diagnosis: A review of etiological theories. Addictive Behaviours 23 (6) 717 – 734

Mueser, K.T., Nishith, P., Tracy, JI., DeGirolamo, J. and Molinaro, M. (1995) Expectations and Motives for Substance Use in Schizophrenia. Schizophrenia Bulletin 21 (3) 367 – 378

Mueser, K.T., Yarnold, P.R., Rosenberg, S.D., Swett, C., Miles, K.M. and Hill, D. (2000) Substance use disorder in hospitalized severely mentally ill psychiatric patients: Prevalence, correlates, and subgroups. Schizophrenia Bulletin. 26(1) 179-192.

Murray, R.E. and Fearon, P. (1999) The Developmental 'Risk Factor' Model of Schizophrenia. Journal of Psychiatric Research 33 (6) 497 – 499.

Murray, R.M., Grech, A., Phillips, P. and Johnson, S. (2002) What Is The Relationship Between Substance Misuse And Schizophrenia? In Murray, R.M., Cannon, M., Jones, P., Van Os, J., and Susser, E. (eds). The Epidemiology of Schizophrenia. Cambridge University Press. Cambridge.

Nace, E.P., Davis, C.W. and Gaspari, J.P. (1990) Axis I comorbidity in substance misusers. American Journal of Psychiatry. (40) 54 – 56

Neumann, C.S., Grimes, K., Walker, E. and Baum, K. (1995) Developmental pathways to schizophrenia: Behavioural subtypes. Journal of Abnormal Psychology. 104, 558 – 566.

Noordsy, D.L., Drake, R.E., Biesanz, J.D., and McHugo, G.J. (1994) Family History of Alcoholism in Schizophrenia. Journal of Nervous and Mental Disease. (182) 651 – 655

Noordsy, D.L., Drake, R.E., Teague, G.B., Osher, F.C., Hurlbut, S.C., Beaudett, M.S., and Paskus, T.S. (1991) Subjective Experiences Related to Alcohol Use among Schizophrenics. Journal of Nervous and Mental Disease (179) 410 – 414

Norman, G.R., Streiner, D.L. (2000) Biostatistics: The Bare Essentials, Second Edition. Hamilton, Ontario: BC Decker

Owen. R.R., Fischer, E.P., Booth, B.M. and Cuffell, B. (1996) Medication noncompliance and substance misuse among patients with schizophrenia. Psychiatric Services. (47) 853-858

Parker, H., and Bottomley, T. (1997) The Rock Repertoire: Crack Cocaine, Polydrug Use and Criminal Careers. Probation Journal, Vol 44 , 1, 26-31

Phillips, P. (2000) Substance misuse, offending and mental illness: a review. Journal of Psychiatric and Mental Health Nursing. 7 (6) 483-489

Phillips, P. (1999) Dual diagnosis- a review of approaches to care. Mental Health Nursing. 19 (6) 10-13

Phillips, P. (1998) The mad, the bad and the dangerous - harm reduction in dual diagnosis. International Journal of Drug Policy 9, 345 – 349

Phillips, P. and Hassan, A. (1997) Valuing drug user experience in substance misuse education. In Substance Use/Misuse-Education and Training: are you prepared? The Report of a National Seminar. English National Board, London.

Phillips, P. and Johnson, S (2003) Drug and alcohol misuse amongst in-patients with psychotic illnesses in three inner-London psychiatric units. Psychiatric Bulletin 27, (6) 217-220

Phillips, P. and Johnson, S. (2001) How does drug and alcohol misuse develop among people with psychotic illness? A literature review. Social Psychiatry and Psychiatric Epidemiology. (36) 269-276.

Phillips, P. and Labrow, J. (2000) Dual diagnosis- does harm reduction have a role? International Journal of Drug Policy. 11 (4) 281-285.

Poole, R. and Brabbins, C. (1996) Drug Induced Psychosis. British Journal of Psychiatry. 168, 135 – 138

Pristach, C.A. and Smith, C.M. (1996) Self reported effects of alcohol use on symptoms of schizophrenia. Psychiatric Services47(4) 421 – 423

Rabinowitz, J., Bromet, E.J., Lavelle, J., Carlson, G., Kovasznay, B. and Schwartz, J.E.(1998) Prevalence and Severity of Substance Use Disorder and Onset of Psychosis in First Admission Psychotic Patients. Psychological Medicine (28) 1411 – 1419

RachBeisel J., Dixon L. and Gearon J. (1999a) Awareness of substance abuse problems among dually-diagnosed psychiatric inpatients. Journal of Psychoactive Drugs. 31(1) 53-57

RachBeisel J., Scott J. and Dixon L. (1999b) Co-occurring severe mental illness and substance use disorders: A review of recent research. Psychiatric Services. 50(11)1427-1434

Regier DA, Farmer ME, Rae DS, Locke BZ, Keith SJ, Judd LL. And Goodwin, FK. (1990) Co-morbidity of mental disorders with alcohol and other drugs of misuse: results from the epidemiological catchment area (ECA) study. Journal of the American Medical Association (264) 2511 – 2518

Reinking, D.P., Wolf, J.R.L.M. and Kroon, H. (2001) Hoge prevalentie van psychische stoornissen en verslavingsproblemen bij daklozen in de stad Utrecht. Nederlands Tijdschrift voor Geneeskunde. 145 (24): 1161-6

Sainsbury Centre for Mental Health. (1998) Keys to Engagement: Review of Care for People with Severe Mental Illness who are Hard to Engage with Services. Sainsbury Centre. London

Sandford, T. (1995) Drug Use is Increasing. Nursing Standard. 9, (38) 16

Schneier, F.R. and Siris, S.G. (1987) A Review of Psychoactive Substance Use and Misuse in Schizophrenia: Patterns of Drug choice. Journal of Nervous and Mental Disease. 175, (11) 641 – 651

Schober, R. and Annis, H.M. (1996) Barriers to help-seeking for change in drinking: A gender-focused review of the literature. Addictive Behaviors. 21(1) 81-92.

Schuckit, M. (2006) Comorbidity between substance use disorders and psychiatric conditions. Addiction. (101) Supplement 1. 76-88

Scott, H., Johnson, S., Menezes, P., Thornicroft, G., Marshall, J., Bindman, J., Bebbington, P. and Kuipers, E. (1998) Substance misuse and risk of aggression and offending among the severely mentally ill. British Journal of Psychiatry, 172, 345 -350.

Serper, M.R., Alpert, M. and Trujillo, J. (1996) Recent Cocaine Use Decreases Negative Signs in Acute Schizophrenia: A Case Study over Two Consecutive Admissions. Biological Psychiatry 39, 816 – 818

Silver, H. and Abboud, E. (1994) Drug misuse in schizophrenia: comparison of patients who began drug misuse before their first admission with those who began abusing drugs after their first admission. Schizophrenia Research. 13, 57 – 63

Smith, J., Frazer, S., Boer, H., and Donovan, M. (1994) Dual Diagnosis in the U.K. Hospital and Community Psychiatry, 45, 3, 280-281

Smith, J., and Hucker, S. (1994) Schizophrenia and Substance Misuse. British Journal of Psychiatry, 165, 13-21

Soyka, M. (2000) Substance misuse, psychiatric disorder and violent and disturbed behaviour British Journal of Psychiatry 176, 345-350.

Soyka, M., Albus, M., Kathmann, N., Finelli, A., Hofstetter, S., Holzbach, R., Swanson, J.W., Holzer, C.E., Ganju, V.K., Jono, R.T. (1990) Violence and Psychiatric Disorder in the Community: Evidence from the Epidemiologic Catchment Area Surveys. Hospital and Community Psychiatry (41), 7, 761-770.

Stimson, G., Fitch, C. and Judd, A. (1998) Drug Use in London. The Centre for Research on Drugs and Health Behaviour. London

Tabachnik, B.G. and Fidell, L.S. (1996) Using Multivariate Statistics 3rd ed. Harper Collins College Publishers New York

The Mental Health Act (1983). HMSO. United Kingdom

The Misuse of Drugs Act (1971) HMSO. United Kingdom

Thornicroft, G. (1990) Cannabis and Psychosis: Is there Epidemiological Evidence for an Association ? British Journal of Psychiatry. 157, 25 – 33

Timko, C. and Moos, R.H. (2002) Symptom Severity, Amount of Treatment, and 1-Year Outcomes Among Dual Diagnosis Patients. Administration and Policy in Mental Health and Mental Health Services Research (30) 1: 35-44.

Turner, N.E., Annis, H.M. and Sklar, S.M. (1997) Measurement of antecedents to drug and alcohol use: psychometric properties of the Inventory of Drug-Taking Situations (IDTS). Behaviour Research and Therapy 35 (5) 465-483

Turner, W.M. and Tsuang, M.T. (1990) Impact of Substance Misuse on the Course and Outcome of Schizophrenia. Schizophrenia Bulletin16 (1) 87 – 95

United Nations Office on Drugs and Crime (2005) World Drug Report. Volume 1: Analysis. United Nations Publications.

van Os, J., Bak, M., Hanssen, M., Bijl, R.V., de Graaf, R. and Verdoux, H. (2002) Cannabis Use and Psychosis: A Longitudinal Population-based Study. American Journal of Epidemiology. (156) 319-327

Verdoux, H., Mury, M. and Besanon, G.M. (1996) Etude comparative des conduites toxicomaniaques et les troubles bipolaires, schizophréniques et schizoaffectifs. L'Encéphale 22: 95-101

Vinestock, M. (1996) Risk assessment: 'A Word to the wise?' Advances in Psychiatric Treatment, 2, 3-10

Weaver T., Renton A., Stimson., G. and Tyrer, P. (1999) Severe Mental Illness and Substance Misuse. British Medical Journal (318) 137 - 138

Weaver, T., Rutter, D., Madden, P., Ward, J., Stimson, G. and Renton, A. (2001a) Results of a screening survey for co-morbid substance misuse amongst patients in treatment for psychotic disorders. Social Psychiatry and Psychiatric Epidemiology. 36, 399-406

Weaver, T., Hickman, M., Rutter, D., Ward, J., Stimson, G. and Renton, A. (2001b) The prevalence and management of co-morbid substance misuse and mental illness: Results of a screening survey in substance misuse and mental health treatment populations. Drug and Alcohol Review. 20(4) 407-416

World Health Organisation (1992) ICD-10 : The ICD-10 Classification of Mental and Behavioural Disorders : Clinical Descriptions and Diagnostic Guidelines. World Health Organisation. Geneva

Wright S, Gournay K, Glorney E, and Thornicroft G. (2000) Dual diagnosis in the suburbs: prevalence, need and in-patient service use. Social Psychiatry and Psychiatric Epidemiology. (35) 297-304

Yousef, G., Huq, Z. and Lambert, T. (1995) Khat chewing as a cause of psychosis. British Journal of Hospital Medicine. 54 (7) 322 – 326

Zammit S., Allebeck P., Andreasson S., Lundberg I. And Lewis G. (2002) Self reported cannabis use as a risk factor for schizophrenia in Swedish conscripts of 1969: Historical cohort study. British Medical Journal. 325(7374) 1199-1201

## Appendix A: Measures and instruments

**UNDERSTANDING DRUG AND ALCOHOL USE AMONG THE SEVERELY MENTALLY ILL STUDY**

***Clinician Drug and Alcohol Use Rating Scale**
**Code: ☐☐☐☐☐☐ Date of Rating:☐☐☐☐☐☐**

Please rate the patient's use of the substances in the following table **over the past year** by placing a tick in the appropriate box. Please weigh any evidence you have from self-reports, interviews, observations of behaviour and collateral reports in making the rating. Definitions of each category in the table are provided overleaf. Please read these before making the ratings. Please also complete the following first.
Sex ☐ Age ☐☐ If detained during admission which section number(s) ☐☐ ☐
Ethnic group ☐☐
Diagnosis:_____

| SUBSTANCE | Abstinence | Use without Impairment | Abuse | Dependence | Dependence Institutional -isation |
|---|---|---|---|---|---|
| Alcohol | | | | | |
| Cannabis | | | | | |
| Amphetamines | | | | | |
| Cocaine | | | | | |
| Crack | | | | | |
| Opiates | | | | | |
| LSD, Mushrooms | | | | | |
| Ecstacy | | | | | |
| Barbiturates | | | | | |
| Benzodiazepine | | | | | |
| Solvents & gases | | | | | |

***Ask verbatim to the patient:* 'Do you agree to be *approached* by a researcher to *discuss* participating in a study investigating the relationship between drug/alcohol use and mental health problems. Agreeing to be approached does not indicate agreement to participate in the study ?' YES/NO**
If YES: NAME [ _____ ] WARD [ ]

**Rater:** Please see notes on reverse re: adequacy of rating

## DEFINITIONS FOR RATINGS

**ABSTINENCE:**
The client has not used alcohol or any other substance during the time interval rated.

**USE WITHOUT IMPAIRMENT:**
The client has used alcohol and/or other substances during the time interval, but there is no evidence of persistent or recurrent social, occupational, psychological or physical problems realted to use, nor evidence of recurrent dangerous use. (e.g. recreational or social use)

**ABUSE:**
The client has used alcohol and/or other substances during this period, and there is evidence of persistent or recurrent social, occupational, psychological or physical problems related to use, or evidence of recurrent dangerous use. (e.g. recurrent use leading to disruptive behaviour and housing problems: problems have persisted for at least one month).

**DEPENDENCE:**
Meets criteria for moderate impairment, plus at least three of the following:

- Much time spent obtaining or using alcohol or other substances
- Frequent intoxication or withdrawl interferes with other activities
- Important activities are given up because of alcohol or other substance use
- Continued use despite knowledge of alcohol or other substance related problems
- Marked tolerance
- Characteristic withdrawal symptoms
- Alcohol or other substances are used to relieve or avoid withdrawl problems

(e.g. binges and preoccupation with alcohol or other substances have caused the client to drop out of job training and non drinking/non substance using social activities)

**DEPENDENCE WITH INSTITUTIONALIZATION**
Meets criteria for severe impairment, plus related problems which are so severe that they make non institutional living difficult.
(e.g. constant alcohol or substance use leads to disruptive behaviour and inability to pay rent, so that client is frequently reported to police, has no current access to stable housing, and seeks hospitalization)

**Rater:** Please circle the statement which best describes your rating:
no difficulty in making rating  some problems but most ratings reasonably accurate
major difficulty in rating (caution with results)  impossible to rate with any confidence. **If difficult to rate**, reasons for difficulties: (Please circle all that apply) language problem
poor cooperation  high suspicion or failure to disclose full extent of substance misuse
poor quality of collateral sources  no collateral sources
Please note assistance is available from Peter Phillips 0171 504 9424 with these forms.

UNDERSTANDING THE REASONS FOR DRUG AND ALCOHOL USE AMONG PEOPLE WITH MENTAL HEALTH PROBLEMS

**INFORMATION SHEET**

**Researchers: Peter Phillips & Dr Sonia Johnson**
Royal Free and University College Medical School
Department of Psychiatry and Behavioural Sciences

This study is investigating the reasons why people with mental health problems, who are in contact with psychiatric services use illicit drugs (like cannabis, heroin, amphetamine, ecstasy, cocaine and acid) and alcohol.
It is important that we understand more about the links between drug/alcohol use and mental health problems because people have very different experiences. Some people report that their symptoms get worse after they use drugs, others report that their symptoms get better, others report no difference - we need to ask you some questions to try and find out what your experience is. The study is COMPLETELY CONFIDENTIAL and NOTHING YOU TELL US will be passed on to the ward staff, the doctors, your family or anyone not in the research team.

THE POLICE WILL NOT BE INFORMED ABOUT ANYTHING YOU SAY.

The study will use a number of questionnaires which we will ask you to complete with Peter Phillips, (Researcher) usually on the ward. This will not usually take any longer than 45 minutes.

The researchers in the study are not here to pass any judgements about your drug use, and anything you tell us will be used only to help us understand more. We hope eventually that this study might help us create better services for people with mental health problems.
You do not have to take part in this study if you do not want to. If you decide to take part you may withdraw at any time without having to give any reasons. Your decision whether to take part or not will not affect your care and management in any way.

All proposals for research using human subjects are reviewed by an ethics committee before than can proceed. This proposal was reviewed by the Camden and Islington Community Health Services NHS Trust Local Research Ethics Committee.
If you have any questions about the study now, or at any time you can telephone or write to:

Peter Phillips
Royal Free and University College Medical School
Dept of Psychiatry & Behavioural Sciences
48 Riding House Street
LONDON W1N 8AA Tel: 020 7679 9424

ROYAL FREE & UNIVERSITY COLLEGE MEDICAL SCHOOL

UNDERSTANDING THE REASONS FOR DRUG USE IN THE MENTALLY ILL

# CONSENT FORM

**Please read this form carefully and ask if you don't understand or would like any further information.**

**Title of the study: Understanding the reasons for drug use in the mentally ill**

**Investigator's name: Peter Phillips & Dr Sonia Johnson**

**To be completed by the patient:**

**1. I have read the information sheet about this study**
**YES/NO**

**2. I have had an opportunity to ask questions and discuss this study**
**YES/NO**

**3. I have received satisfactory answers to all my questions**
**YES/NO**

**4. I have received sufficient information about this study**
**YES/NO**

**5. Which health professional have you spoken to about this study?**

**6. I understand that I am free to withdraw from this study**

***at any time**
***without giving a reason for withdrawing**
***without affecting my future medical care**
**YES/NO**

**7. Do you agree to take part in this study ?**
**YES/NO**

**Signed .....**
**Date.....**

**Name in block letters**

**Signature of investigator.....**

## Understanding drug use among the mentally ill study

## INTERVIEW SCHEDULE

Patient Number: ☐☐☐ DOB: ☐☐☐☐☐☐ Site Code: ☐☐☐

☐

**D1.Clinical Diagnosis**:

**D2. Sex**: ☐ [1/male 2/female]

**D3 Family**: ☐

1 single

2 married

3 living as couple

4 divorced/seperated

5 widowed

9 not known

**D4 Living arrangements:** ☐

1 living alone or only with children under 18

2 living with other adults including husband/wife/partner

3 living with other adults including at least one parent

4 living with other adults including at least one relative but not partner or parent

5 living with others not relatives

6 currently homeless

7 other please specify:

9 not known

**D5 Children**

how many children do you have ?

if any, how many aged under 18 ?

how many of your children aged under 18 live with you?

**D6 Accomodation Type:** ☐

What sort of accomodation do you live in ?

1 owner occupier

2 local authority

3 housing association

4 private rented

5 roofless

6 supported housing with staff on site 24 hours per day

7 supported housing with staff on site at least five days per week [not 6]

8 supported or sheltered housing [not 6/7]

9 bed and breakfast

10 direct access hostel or night shelter

11 inpatient ward

12 other please state:

99 not known

Employment and occupational status

D7 what is your employment status? ☐

1 employed/self employed

2 voluntary employment

3 sheltered employment

4 unemployed

5 student

6 housewife/husband

7 retired

8 other/state:

99 not known

D7a current occupation/or course [student] :

D7b if working: P/T or F/T {.20 hours}

D7c have you ever held open market employment ? YES/NO

D7d if yes, how long was the longest period in job ?

[round to nearest year, code 66 if <6 months]

D7e how long ago did you leave that job ?

[round to nearest year, code 66 if <6 months, 88 if still in job]

D7f what was your occupation in that job ?

n/k = 99

Educational Background:

D8 which of the following best describes the educational level you reached ? ☐

1 left school before 15 no formal qualifications obtained at school or subsequently

2 left school after 15 no formal qualifications obtained at school or subsequently

3 at school or subsequently has passed at least one recognized secondary level qualification

4 has tertiary level diploma or recognized vocational qulaification

5 has University degree

9 n/k

other please state:

D9Ethnicity:

1 white UK 2 white Irish 3 white other 4 black caribbean 5 black African 6 black other 7 indian 8 pakistani 9 bangladeshi 10 chinese 11 turkish 12 Greek 13 other specify :

D10 Where were you born ?

D11 When did you start developing mental health problems ?

age/year

D12 When did you first see a psychiatrist or other mental health worker?

age/year

D13 When were you first admitted to a mental health ward ?

age/year

D14 What drugs have you used in the last six months ?

*alcohol cannabis amphetamines cocaine crack opiates opioids LSD mushrooms ecstasy barbituates benzodiazepines solvents/gases khat other (state)*

D15 Route of administration:

D16 Which of these do you use regularly ? [at least weekly > 2 months]

D17 Which of these do you use at least daily or more frequently [> 1 month]

## INVENTORY OF DRUG USE SITUATIONS

**I am going to read you a number of situations of events in which some people use drugs heavily**

**Listen carefully, and answer in terms of your own drug use**

**Please use the scale to answer all of the questions**

| | I USED DRUGS HEAVILY | | | |
|---|---|---|---|---|
| | Never | Rarely | Frequently | Almost Always |
| 1. When I felt that I had let myself down | 1 | 2 | 3 | 4 |
| 2. When I had trouble sleeping | 1 | 2 | 3 | 4 |
| 3. When I felt confident and relaxed | 1 | 2 | 3 | 4 |
| 4. When I convinced myself that I was a new person and could take drugs without problems | 1 | 2 | 3 | 4 |
| 5. When I remembered how good it felt | 1 | 2 | 3 | 4 |
| 6. When I had an argument with a friend | 1 | 2 | 3 | 4 |
| 7. When I was out with friends and they were scoring | 1 | 2 | 3 | 4 |
| 8. When I wanted to heighten my sexual enjoyment | 1 | 2 | 3 | 4 |
| 9. When other people didn't seem to like me | 1 | 2 | 3 | 4 |
| 10. When there were fights at home | 1 | 2 | 3 | 4 |
| 11. When I was relaxed with a good friend and wanted to have a good time | 1 | 2 | 3 | 4 |
| 12. When I was afraid that things weren't going to work out | 1 | 2 | 3 | 4 |
| 13. When I felt drowsy and wanted to stay alert | 1 | 2 | 3 | 4 |
| 14. When everything was going well | 1 | 2 | 3 | 4 |
| 15. When I wondered about my self-control over drugs and felt like having drugs to test it out | 1 | 2 | 3 | 4 |
| 16. When I passed by the corner of the area where I buy drugs | 1 | 2 | 3 | 4 |

| | | | | |
|---|---|---|---|---|
| 17. When I felt uneasy in the presence of someone | 1 | 2 | 3 | 4 |
| 18. When I was at a party and other people were taking drugs | 1 | 2 | 3 | 4 |
| 19. When other people interfered with my plans | 1 | 2 | 3 | 4 |
| 20. When I wanted to feel closer to someone I liked | 1 | 2 | 3 | 4 |
| 21. When there were problems with friends in my area | 1 | 2 | 3 | 4 |
| 22. When I was enjoying myself at a party and wanted to feel even better | 1 | 2 | 3 | 4 |
| 23. When I was angry at the way things had turned out | 1 | 2 | 3 | 4 |
| 24. When I felt nauseous | 1 | 2 | 3 | 4 |
| 25. When I felt satisfied with something that I had done | 1 | 2 | 3 | 4 |
| 26. When I started to think that using once could cause no harm | 1 | 2 | 3 | 4 |
| 27. When I unexpectedly found some of my favourite drug | 1 | 2 | 3 | 4 |
| 28. When someone criticised me | 1 | 2 | 3 | 4 |
| 29. When I was at a party and people around me were using drugs | 1 | 2 | 3 | 4 |
| 30. When I was out with friends "on the town" and wanted to increase my enjoyment | 1 | 2 | 3 | 4 |
| 31. When pressure built up because of the demands of my family | 1 | 2 | 3 | 4 |
| 32. When other people treated me unfairly | 1 | 2 | 3 | 4 |
| 33. When I felt confused about what I should do | 1 | 2 | 3 | 4 |
| 34. When my stomach felt like it was tied in knots | 1 | 2 | 3 | 4 |
| 35. When something good happened and | 1 | 2 | 3 | 4 |

I felt like celebrating

| | | | | |
|---|---|---|---|---|
| 36. When I wanted to prove to myself that I could use without becoming high | 1 | 2 | 3 | 4 |
| 37. When I suddenly had the urge to do drugs | 1 | 2 | 3 | 4 |
| 38. When other people around me made me tense | 1 | 2 | 3 | 4 |
| 39. When I met a friend and he/she suggested that we use drugs together | 1 | 2 | 3 | 4 |
| 40. When I wanted to celebrate with a friend | 1 | 2 | 3 | 4 |
| 41. When I felt under a lot of pressure from family members at home | 1 | 2 | 3 | 4 |
| 42. When I was not getting along well with others | 1 | 2 | 3 | 4 |

## SELF-MEDICATION QUESTIONS

**I am going to ask you some questions about why you use drugs or alcohol. Listen carefully, and answer in terms of your own drinking or drug taking**

| | Never | Rarely | Frequently | Almost Always |
|---|---|---|---|---|
| 1. Using drugs or alcohol helps me feel less embarrassed about having a mental illness | 1 | 2 | 3 | 4 |
| 2. The side-effects from my medication don't bother me as much when I'm using drugs/alcohol | 1 | 2 | 3 | 4 |
| 3. The restlessness caused by my medication is less when I am using drugs or alcohol. | 1 | 2 | 3 | 4 |
| 4. The drowsiness caused by my medication is less when I am using drugs or alcohol. | 1 | 2 | 3 | 4 |
| 5. Using drugs or alcohol helps me worry less about my mental illness getting worse. | 1 | 2 | 3 | 4 |
| 6. I worry that using drugs or alcohol will make my mental illness worse. | 1 | 2 | 3 | 4 |
| 7. I feel more accepted by the people I do drugs or alcohol with than by other people. | 1 | 2 | 3 | 4 |
| 8. Using drugs or alcohol helps me feel less isolated. | 1 | 2 | 3 | 4 |
| 9. Using drugs or alcohol makes me fell less different. | 1 | 2 | 3 | 4 |
| 10. Using drugs or alcohol makes me feel like I fit in with other people. | 1 | 2 | 3 | 4 |
| 11. Using drugs or alcohol helps me feel more a part of a group. | 1 | 2 | 3 | 4 |
| 12. Using drugs or alcohol helps me fell | 1 | 2 | 3 | 4 |

less bothered by the voices

| | | | | |
|---|---|---|---|---|
| 13. Using drugs or alcohol makes me feel more bothered by the things I hear and see/ | 1 | 2 | 3 | 4 |
| 14. Using drugs or alcohol helps me concentrate better | 1 | 2 | 3 | 4 |
| 15. Using drugs or alcohol helps me do more things | 1 | 2 | 3 | 4 |
| 16. Using drugs or alcohol helps me enjoy being around people more. | 1 | 2 | 3 | 4 |
| 17. Using drugs or alcohol helps me to be more relaxed with people | 1 | 2 | 3 | 4 |
| 18. Using drugs or alcohol makes it easier for me to talk to people. | 1 | 2 | 3 | 4 |

**INVENTORY OF ALCOHOL USE SITUATIONS**

**I am going to read you a number of situations or events in which some people drink heavily. Listen carefully, and answer in terms of your own drinking over the past year.**

**Please use the scale on the card to answer all of the questions.**

| | I DRANK HEAVILY | | | |
|---|---|---|---|---|
| | Never | Rarely | Frequently | Almost Always |
| 1. When I felt that I had let myself down | 1 | 2 | 3 | 4 |
| 2. When I had trouble sleeping | 1 | 2 | 3 | 4 |
| 3. When I felt confident and relaxed | 1 | 2 | 3 | 4 |
| 4. When I convinced myself that I was a new person and could take a few drinks | 1 | 2 | 3 | 4 |
| 5. When I remembered how good it tasted | 1 | 2 | 3 | 4 |
| 6. When I had an argument with a friend | 1 | 2 | 3 | 4 |
| 7. When I was out with friends and they stopped by a bar for a drink | 1 | 2 | 3 | 4 |
| 8. When I wanted to heighten my sexual enjoyment | 1 | 2 | 3 | 4 |
| 9. When other people didn't seem to like me | 1 | 2 | 3 | 4 |
| 10. When there were fights at home | 1 | 2 | 3 | 4 |
| 11. When I was relaxed with a good friend and wanted to have a good time | 1 | 2 | 3 | 4 |
| 12. When I was afraid that things weren't going to work out | 1 | 2 | 3 | 4 |
| 13. When I felt drowsy and wanted to stay alert | 1 | 2 | 3 | 4 |
| 14. When everything was going well | 1 | 2 | 3 | 4 |
| 15. When I wondered about my self-control over alcohol and felt like | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| | having some to try it out | | | | |
| 16. | When I passed by the corner of the area where I buy alcohol (off license) | 1 | 2 | 3 | 4 |
| 17. | When I felt uneasy in the presence of someone | 1 | 2 | 3 | 4 |
| 18 | When I was at a party and other people were drinking | 1 | 2 | 3 | 4 |
| 19 | When other people interfered with my plans | 1 | 2 | 3 | 4 |
| 20 | When I wanted to feel closer to someone I liked | 1 | 2 | 3 | 4 |
| 21 | When there were problems with friends in my area | 1 | 2 | 3 | 4 |
| 22 | When I was enjoying myself at a party and wanted to feel even better | 1 | 2 | 3 | 4 |
| 23 | When I was angry at the way things had turned out | 1 | 2 | 3 | 4 |
| 24 | When I felt nauseous | 1 | 2 | 3 | 4 |
| 25 | When I felt satisfied with something that I had done | 1 | 2 | 3 | 4 |
| 26 | When I started to think that just one drink could cause no harm | 1 | 2 | 3 | 4 |
| 27 | When I unexpectedly found some of my favourite alcohol | 1 | 2 | 3 | 4 |
| 28 | When someone criticised me | | | | |
| 29 | When I was at a party and people around me were drinking | 1 | 2 | 3 | 4 |
| 30 | When I was out with friends "on the town" and wanted to increase my enjoyment | 1 | 2 | 3 | 4 |
| 31 | When pressure built up because of the demands of my family | 1 | 2 | 3 | 4 |
| 32 | When other people treated me | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| | unfairly | | | | |
| 33 | When I felt confused about what I should do | 1 | 2 | 3 | 4 |
| 34 | When my stomach felt like it was tied in knots | 1 | 2 | 3 | 4 |
| 35 | When something good happened and I felt like celebrating | 1 | 2 | 3 | 4 |
| 36 | When I wanted to prove to myself that I could have a few drinks without becoming high | 1 | 2 | 3 | 4 |
| 37 | When I suddenly had the urge to drink ? | 1 | 2 | 3 | 4 |
| 38 | When other people around me made me tense | 1 | 2 | 3 | 4 |
| 39 | When I met a friend and he/she suggested that we drink together | 1 | 2 | 3 | 4 |
| 40 | When I wanted to celebrate with a friend | 1 | 2 | 3 | 4 |
| 41 | When I felt under a lot of pressure from family members at home | 1 | 2 | 3 | 4 |
| 42 | When I was not getting along well with others | 1 | 2 | 3 | 4 |

**FAMILY AND ACCESS INVENTORY**

**Family Information**

F1. Do you have any family members that currently use or have used in the past drugs or alcohol?

| Yes | No |
|---|---|
| 1 | 0 |

F1a) If Yes, who?

**ALCOHOL**

| ***Mother's side*** | *Current* | *Past* | ***Father's Side*** | *Current* | *Past* | ***Siblings*** | *Current* | *Past* |
|---|---|---|---|---|---|---|---|---|
| Grandmother | | | Grandmother | | | Brother #1 | | |
| Grandfather | | | Grandfather | | | Brother #2 | | |
| Mother | | | Father | | | Sister #1 | | |
| Stepmother | | | Stepfather | | | Sister #2 | | |
| Aunt | | | Aunt | | | | | |
| Uncle | | | Uncle | | | | | |

*Instruction: Place '0' in relative category where the answer is clearly NO, '1' where the answer is clearly YES, 'N' where there was never a relative in this category, 'X' where the answer is uncertain.*

**DRUGS**

| ***Mother's side*** | *Current* | *Past* | ***Father's Side*** | *Current* | *Past* | ***Siblings*** | *Current* | *Past* |
|---|---|---|---|---|---|---|---|---|
| Grandmother | | | Grandmother | | | Brother #1 | | |
| Grandfather | | | Grandfather | | | Brother #2 | | |
| Mother | | | Father | | | Sister #1 | | |
| Stepmother | | | Stepfather | | | Sister #2 | | |
| Aunt | | | Aunt | | | | | |
| Uncle | | | Uncle | | | | | |

F2. Are you are aware of any family member who has successfully stopped using drugs or alcohol?

| Yes | No |
|---|---|
| 1 | 0 |

F3. How helpful has your family been in your effort to stop or cut down your drug use? (dealing with)

1_____2_____3_____4_____5

Very Unhelpful Very Helpful

**SUBSTANCE USE INFORMATION**

**Alcohol**

S1. When did you first drink? How old were you
.....

S2. Who did you first drink with? What was your relationship with that person (e.g. family, friend, boyfriend/girlfriend, etc)

| | |
|---|---|
| Family | 1 |
| Friend | 2 |
| Boyfriend/Girlfriend | 3 |
| Alone/self | 4 |
| Stranger | 5 |

S3 Was this person a mental health service user ?
S4 If so did you meet in a mental health service setting ?
S5 If so, was this whilst you were an in-patient in hospital ?

| | |
|---|---|
| Other in-patient | 6 |
| Other user of MHS (not6) | 7 |
| Other MHSU approached outside | 8 |
| Contact through MHS | 9 |
| Other (explain)..... | |

S6. Where were you and what was going on at the time when you first drank?

| | |
|---|---|
| Home | 1 |
| Friend's house | 2 |
| Bar/Pub | 3 |
| Sporting event | 4 |
| School | 5 |
| Family member's house | 6 |
| Streets | 7 |
| MHS IP Setting | 8 |
| Other MHS setting | 9 |
| N/A | 89 |
| Other (explain)..... | |

S7. Is alcohol currently a problem for you? (If no, please go to Question 7)

| **Yes** | **No** |
|---|---|
| **1** | **0** |

S8. If yes, what made you realise it was a problem?
.....

S9. Did somebody else help you realise it was a problem?
.....

S10. Has alcohol ever been a problem? (If yes, answer 7a-c)

| | **Yes** | **No** |
|---|---|---|
| | **1** | **0** |

S10a) When? .....

S10b) What made you realise it was a problem?
.....

.....

S10c) Did somebody help you realise it was a problem?
.....

S11. When you use alcohol, do you typically drink alone or with others?

| **With others** | **Alone** |
|---|---|
| **1** | **0** |

**<u>Only answer 12 and 13 if the person drinks with others! Otherwise go to Question 11.</u>**

S12. Who do/did you drink with <u>the most</u> (circle responses)?

| | Yes | No |
|---|---|---|
| Friend | 1 | 0 |
| Family member | 1 | 0 |
| Boy/girlfriend | 1 | 0 |
| Stranger/acquaintance | 1 | 0 |

S13 Was this person a mental health service user ?
S13a If so did you meet in a mental health service setting ?
S13b If so, was this whilst you were an in-patient in hospital ?

| | | |
|---|---|---|
| Other in patient | 1 | 0 |
| MHSU outside ward | 1 | 0 |
| Contact through MHS | 1 | 0 |

S14. Is there anyone else you drink/drank with very frequently (circle responses)

| | Yes | No |
|---|---|---|
| Friend | 1 | 0 |
| Family member | 1 | 0 |
| Boy/girlfriend | 1 | 0 |
| Stranger/acquaintance | 1 | 0 |

Was this person a mental health service user ?
If so did you meet in a mental health service setting ?
If so, was this whilst you were an in-patient in hospital ?

| | | |
|---|---|---|
| Other in patient | 1 | 0 |
| MHSU outside ward | 1 | 0 |
| Contact through MHS | 1 | 0 |

**Drugs**

S15. When did you first use? How old were you?
.....

S16. Who did you first take drugs with? What was your relationship with that person (e.g. family,
friend, boyfriend/girlfriend, etc)

| | |
|---|---|
| Family | 1 |
| Friend | 2 |
| Boyfriend/Girlfriend | 3 |
| Alone/self | 4 |
| Stranger | 5 |

Was this person a mental health service user ?
If so did you meet in a mental health service setting ?
If so, was this whilst you were an in-patient in hospital ?

| | |
|---|---|
| Other in patient | 6 |
| MHSU outside ward | 7 |
| Contact through MHS | 8 |

Other
(explain).....
.....

S17. Where were you and what was going on at the time?

| | |
|---|---|
| Home | 1 |
| Friend's house | 2 |
| Bar | 3 |
| Sporting event | 4 |
| School | 5 |
| Family member's house | 6 |
| Streets | 7 |
| MHS IP Setting | 8 |

Other MHS setting 9
N/A 89
Other
(explain).....
.....

S18. Are drugs currently a problem for you? (If no, please go to Question 15)

**Yes No**

**1 0**

a) If yes, what made you realise it was a problem?
.....
.....
.....

b) Did somebody help you realise it was a problem?
.....

S19. Has alcohol ever been a problem? (If yes, answer 15a - c)

**Yes No**

**1 0**

a) When? .....

b) What made you realise it was a problem?
.....

.....

S20. When you use drugs do you use alone or with other people?

**Others Alone**

**1 0**

**<u>Only answer 21 and 22 if the person uses with others!</u>**

S21. Who do/did you use drugs with <u>the most</u> (circle response)

| | Yes | No |
|---|---|---|
| Friend | 1 | 0 |
| Family member | 1 | 0 |
| Boyfriend/Girlfriend | 1 | 0 |
| Stranger/acquaintance | 1 | 0 |

Was this person a mental health service user ?
If so did you meet in a mental health service setting ?

If so, was this whilst you were an in-patient in hospital ?

| | | |
|---|---|---|
| Other in patient | 1 | 0 |
| MHSU outside ward | 1 | 0 |
| Contact through MHS | 1 | 0 |

S22. Is there anyone else you use/used drugs with very frequently? (circle responses)

| | Yes | No |
|---|---|---|
| Friend | 1 | 0 |
| Family member | 1 | 0 |
| Boyfriend/Girlfriend | 1 | 0 |
| Stranger/acquaintance | 1 | 0 |

Was this person a mental health service user ?
If so did you meet in a mental health service setting ?
If so, was this whilst you were an in-patient in hospital ?

| | | |
|---|---|---|
| Other in patient | 1 | 0 |
| MHSU outside ward | 1 | 0 |
| Contact through MHS | 1 | 0 |

## ACCESS INFORMATION

A1. How many people where you live?

a) Use drugs? .....
b) Drink? .....
c) Sell drugs? .....

ALCOHOL

A2. How often is alcohol given to you by the following people?

| | Never | Rarely | Occasionally | Frequently | Almost Always |
|---|---|---|---|---|---|
| a. boyfriend/girlfriend | 1 | 2 | 3 | 4 | 5 |
| b. family members | 1 | 2 | 3 | 4 | 5 |
| c. friends | 1 | 2 | 3 | 4 | 5 |
| d. stranger or acquaintance | 1 | 2 | 3 | 4 | 5 |
| e. other in patient | 1 | 2 | 3 | 4 | 5 |
| f. mhsu not on ward | 1 | 2 | 3 | 4 | 5 |
| g. contact through mhs | 1 | 2 | 3 | 4 | 5 |

A3. How often do you use the following sources of money to buy alcohol?

| | Never | Rarely | Occasionally | Frequently | Almost Always |
|---|---|---|---|---|---|
| a. Pay cheque | 1 | 2 | 3 | 4 | 5 |
| b. Benefits | 1 | 2 | 3 | 4 | 5 |
| c. Money from begging | 1 | 2 | 3 | 4 | 5 |
| d. Money stolen from someone close to you | 1 | 2 | 3 | 4 | 5 |
| e. Money stolen from a stranger | 1 | 2 | 3 | 4 | 5 |
| f. Money from stolen goods | 1 | 2 | 3 | 4 | 5 |
| g. Money your family or others gave you for something else | 1 | 2 | 3 | 4 | 5 |
| h. Illegal activities | 1 | 2 | 3 | 4 | 5 |

DRUGS

AD4. How often are drugs given to you by the following people:

| | Never | Rarely | Occasionally | Frequently | Almost Always |
|---|---|---|---|---|---|
| a. boyfriend/girlfriend | 1 | 2 | 3 | 4 | 5 |
| b. family members | 1 | 2 | 3 | 4 | 5 |
| c. friends | 1 | 2 | 3 | 4 | 5 |
| d. stranger or acquaint | 1 | 2 | 3 | 4 | 5 |
| e. other in-patient | 1 | 2 | 3 | 4 | 5 |
| f. mhsu not on ward | 1 | 2 | 3 | 4 | 5 |
| g. contact through mhs | 1 | 2 | 3 | 4 | 5 |

AD5. How often do you buy drugs from the following people?:

| | Never | Rarely | Occasionally | Frequently | Almost Always |
|---|---|---|---|---|---|
| a. boyfriend/girlfriend | 1 | 2 | 3 | 4 | 5 |
| b. family members | 1 | 2 | 3 | 4 | 5 |
| c. friends | 1 | 2 | 3 | 4 | 5 |
| d. stranger or acquaintance | 1 | 2 | 3 | 4 | 5 |
| e. other in patient | 1 | 2 | 3 | 4 | 5 |
| f. mhsu not on ward | 1 | 2 | 3 | 4 | 5 |
| g. contact through mhs | 1 | 2 | 3 | 4 | 5 |

**AD6 Have you ever used drugs or alcohol on an in-patient ward ? Yes/No**

**AD7 Have you used drugs or alcohol during this admission ? Yes/No**

**AD8 What did/do you use**_____

**AD9 Where did you get it from ?**

**AD10 Have you ever felt pressurised by other mental health service users to buy drugs ? Yes/No**

**AD11 Have you ever felt pressurised by other mental health service users to use drugs ? Yes/No**

**AD12 Do you think you have a drug or alcohol problem ? Yes/No/Maybe**

**AD13 Do you feel you have been offered appropriate help with your drug or alcohol problem ?**

**Yes/No**

**AD14 Would you have liked more help with your drug or alcohol problem than you got?**

**Yes/No**

**AD15 What stopped you getting the help you would have liked ?**

_____
_____
_____
_____

**AD16 Do you feel that you have experienced any mental health problems during the last year that you can directly attribute to your drug/alcohol use ?**

**AD17 Do you feel that your drug/alcohol use during the last year has had any positive (good) effects on your mental health ? if so, what ?**

# Appendix B Study Publications

P

Phil